Report on Screening for Beryllium Sensitization and Disease in Former DOE Federal and Contractor Workers through 2005

Office of Health, Safety and Security

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http://www.hss.energy.gov/healthsafety/fwsp/formerworkermed/

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Acronyms

Be	Beryllium
BeLPT	Beryllium Lymphocyte Proliferation Test
CBD	Chronic Beryllium Disease
D&D	Decontamination and Decommission
DOE	U.S. Department of Energy
DOL	U.S. Department of Labor
ETTP	East Tennessee Technology Park
EEOICPA	Energy Employees Occupational Illness Compensation Program Act
Fermi	Fermi National Accelerator Laboratory
FBeWP	Former Beryllium Worker Medical Surveillance Program
FWP	Former Worker Medical Surveillance Program
Hanford	Hanford Reservation
IAAP	Iowa Army Ammunition Plant
INL	Idaho National Laboratory
LANL	Los Alamos National Laboratory
LLNL	Lawrence Livermore National Laboratory
Nevada	Nevada Test Site
ORISE	Oak Ridge Institute for Science and Education
ORNL	Oak Ridge National Laboratory
Oak Ridge Site	ORNL, Y-12, and ETTP
Pantex	Pantex Plant
Rocky Flats	Rocky Flats Environmental Technology Site
SRS	Savannah River Site
Y-12	Y-12 National Security Complex

At a Glance

This report provides information and data collected through December 2005 regarding beryllium sensitization (BeS) and Chronic Beryllium Disease (CBD) among former workers who voluntarily participated in Department of Energy (DOE)-funded medical surveillance programs. Beryllium has been used by DOE in the nuclear weapons complex and has the potential to create health hazards when workers are exposed to beryllium particles. Exposure to beryllium can cause sensitization, an immune system response, and can also cause CBD. Former workers from DOE sites have been screened for beryllium sensitization and CBD since 1991. The Department has used the Beryllium Lymphocyte Proliferation Test (BeLPT) as a screening tool to learn the extent of beryllium sensitization. DOE has also used clinical evaluations by pulmonologists specializing in the diagnosis of CBD to learn the extent of the disease among individuals with abnormal BeLPT results.

This report is primarily descriptive in nature and not intended to present a rigorous statistical analysis of the data collected. The information is intended to help DOE identify and offer screening to other workers who may be at risk of developing CBD and to provide DOE with general insights about how to improve the effectiveness of CBD prevention programs for current workers. While the results of the beryllium sensitization screening are broken down by site in this report, many individuals worked at multiple DOE sites and their exposure to beryllium may not have occurred at the reporting facility. Individuals may have also been exposed to beryllium as a result of working in private industry.

Between 1991 and 2005, over 38,000 former workers and over 8,000 current production workers participated in screening for beryllium sensitization and disease. The current production workers were from the Gaseous Diffusion Plants (GDP) and participated as part of a congressionally directed project. Of these over 46,000 workers, 841 (1.8%) had one abnormal BeLPT, an additional 719 workers (1.6%) had two abnormal BeLPTs, and 210 other workers were diagnosed with CBD. All individuals with one or more abnormal BeLPT(s) are eligible for medical coverage to check for the onset of CBD under the Energy Employees Occupational Illness Compensation Program Act (EEOICPA).

Overall, there is an extremely low level of beryllium sensitization and CBD among those former and current workers who participated in the Former Beryllium Worker Medical Surveillance Program (FBeWP) and the Former Worker Medical Surveillance Program (FWP) through 2005. Most individuals who developed sensitization or disease began work at DOE sites prior to 1989.

The lower rate of sensitization and/or disease in the screened individuals who began working at DOE after 1989 may be explained by several factors which reduce the likelihood of exposure to beryllium:

- limited use of beryllium;
- fewer weapons-related activities;
- more comprehensive worker safety and health regulations;
- better housekeeping methods; and
- better sampling techniques to determine housekeeping conditions.

Introduction

History of Beryllium Screening

Beryllium is a silver-gray metallic element found in approximately 30 minerals and is a lightweight, strong, hard metal with many industrial applications. The primary commercial use of beryllium is for hardening other metals, especially copper. These copper-beryllium alloys have many applications in the electronic industries and other fields where strength, the ability to be fabricated into complex shapes, and electrical conductivity are desirable. The ability of light-weight beryllium oxide ceramics to dissipate heat has led to applications in the electronic, nuclear, and aerospace industries.

Beryllium components have been manufactured and used at Department of Energy (DOE) facilities since the 1940s. Over the years, however, DOE and other industries have learned of a potential health hazard to workers exposed to beryllium particles, dust, or fumes below the previously established occupational protection levels. A percentage of these individuals may develop chronic beryllium disease (CBD); an irreversible and sometimes fatal scarring of the lungs.

Workers' exposure to beryllium may have come from a number of jobs and locations over their work history. Machinists, welders, and operators can be exposed through direct handling of beryllium and beryllium compounds. Other workers may have been exposed by performing beryllium material analyses, contacting contaminated equipment, or working near a beryllium operation. Exposure usually occurs when a person inhales beryllium mists, dusts, or fumes. These exposures may then lead to sensitization and subsequently to CBD that usually develops over several years or even decades. Symptoms of CBD can range from mild to severe.

Former workers from DOE sites have been screened for beryllium sensitization and CBD under two separate programs.

- ***Former Beryllium Worker Medical Surveillance Program (FBeWP)*** was established following the diagnosis of several CBD cases at the DOE Rocky Flats Plant in the late 1980s. Pilot screening was initiated at Rocky Flats in 1991 and at the Oak Ridge Y-12 Plant in 1993 to determine how widespread beryllium sensitization and CBD were among former workers from these sites. In 1998, the program was expanded to offer voluntary screening for beryllium sensitization and disease among former workers from 14 additional DOE sites who were thought to be at risk of being sensitized to beryllium and developing CBD.

DOE sites that were covered by the FBeWP:

- Ames Laboratory
- Argonne National Laboratory East
- Argonne National Laboratory West
- Brookhaven National Laboratory
- Fermi National Accelerator Laboratory
- Iowa Army Ammunition Plant
- Kansas City Plant
- Knolls Atomic Power Laboratory
- Lawrence Livermore National Laboratory
- Lawrence Berkeley National Laboratory
- Mound Plant
- Oak Ridge National Laboratory
- Oak Ridge Y-12 Nuclear Weapons Complex
- Pantex Plant
- Rocky Flats Environmental Technology Site
- Sandia National Laboratories

- ***Former Worker Medical Surveillance Program (FWP)*** was established in 1994, following the issuance of the FY 1993 National Defense Authorization Act (PL 102-484), to assist former DOE workers with determining whether they had health issues related to their prior work with DOE. Site- and population-specific medical screening efforts were initiated in 1996. DOE has conducted the FWP using consortia of universities, labor unions, organizations with expertise in administration of medical programs, and nationwide networks of occupational health clinics. The FWP provides voluntary medical screening focused on identifying conditions potentially related to a broad range of occupational hazards, including beryllium. The FBeWP, previously managed for DOE by the Oak Ridge Institute for Science and Education (ORISE), was merged with FWP in 2005. Today, DOE serves former workers from all DOE sites through FWP.

These programs have served heterogeneous groups of former workers, including both production and construction workers who worked at DOE sites all over the country at any time from the 1940s to present. Production workers have performed a wide range of duties, including machining, operations, maintenance work, and cleanup. Construction workers have been responsible for new building as well as renovations.

Worker rosters and exposure information are obtained from the sites to enable project staff to identify living former DOE workers who may be at risk for occupational disease. Workers are invited to participate in the voluntary screening effort through various methods: mass mailings; newspaper, television or radio ads; newsletters; and retiree events. Workers are offered screening in multiple areas around the country so they do not have to travel far from home to participate. Since participants in this program self-select, the data collected may not be representative of the target population at each site thereby limiting opportunities for detailed analyses to simple descriptive statistics.

Purpose of Medical Screening

CBD is very rare and almost always occupationally induced. Therefore, screening for beryllium sensitization and CBD is generally not available in the primary healthcare community. DOE offers this service to its former workers because: (a) in some cases, the disability caused by CBD can be minimized through early detection and treatment; (b) workers with one abnormal blood test for beryllium sensitization are eligible for lifetime medical monitoring to check for CBD through the Department of Labor (DOL)-conducted EEOICPA, as well as compensation if they develop CBD; and (c) results from the program can provide information that may help evaluate and improve protection programs in place for current workers.

Beryllium Lymphocyte Proliferation Test

The beryllium lymphocyte proliferation test (BeLPT) is a blood test that examines how lymphocytes, which are cells in the body's immune system that fight disease, react to beryllium in the laboratory. For this test, lymphocytes are obtained from a sample of blood drawn from a person's vein. A BeLPT is considered abnormal if a person's lymphocytes react strongly to beryllium. This may also indicate that a person is more likely than others with similar exposure to develop CBD in the future or may be an early sign of CBD. An individual must have two consecutive abnormal BeLPTs to be considered by a physician to be sensitized to beryllium. However, only one abnormal BeLPT is required in order to be eligible for medical coverage under EEOICPA. Through 2003, DOE offered sensitized workers further clinical evaluations designed to detect and diagnose CBD. In 2004, management of these clinical evaluations became and continues to be the responsibility of DOL.

Presentation of Reported Data

As of December 31, 2005, over 46,000 participants in the FWP were screened for beryllium sensitization and CBD. Of this total, 841 (1.8%) had only one abnormal BeLPT, an additional 719 (1.6%) had two abnormal BeLPTs, and 210 (0.5%) others were diagnosed with CBD. In order to better depict the circumstances that may lead to beryllium sensitization and/or CBD, DOE placed workers into one of seven job categories based on their job titles while employed at a site. The categories were developed using the job titles as indicators for which workers had similar potential for beryllium exposure. For example, beryllium fabricators were presumed to have the highest potential for exposure, while the scientific and administrative groups of workers were presumed to have the lowest potential. Since many workers worked in more than one job category during their careers and may have worked at a number of sites, each worker was categorized in the job category that was considered to have the greatest potential for beryllium exposure.

Illustrative tasks for each major job category are:

- beryllium fabrication (machining, welding, grinding, cutting, process operations, polishing);
- beryllium handling (assembling, sample analysis, parts handling);
- maintenance (machine maintenance, inspecting, operating equipment, general machining);
- stand-by (security, beryllium area supervision, beryllium area clerk, shipping and receiving, fire hazard inspections, firefighting);
- labor and D&D (electrical, pipefitting and plumbing, equipment cleaning, janitorial duties, unskilled labor tasks, grounds and roads maintenance);
- administrative (planning and estimating, administrative security inspections, production scheduling, clerical tasks, computer tasks); and
- scientific (engineering, research and development, radiography, nuclear materials control, material/product inspection, non-destructive testing).

Beryllium screening summary data through 2005 across all sites individually and for all sites combined are provided in Figure 1.

Figure 1. Beryllium Screening Summary Data from DOE Sites through 2005

DOE Site	State	Number of workers screened	Number w/1 abnormal BeLPT	Number w/2 abnormal BeLPTs	Number w/CBD
Amchitka Site	AK	43	1 (2.3%)	0 (0.0%)	0 (0.0%)
Fernald Environmental Management Project	OH	19	0 (0.0%)	0 (0.0%)	0 (0.0%)
Hanford Reservation	WA	3,982	63 (1.6%)	47 (1.2%)	12 (0.3%)
Iowa Army Ammunition Plant	IA	854	9 (1.1%)	13 (1.5%)	7 (0.8%)
Idaho National Laboratory	ID	2,734	41 (1.5%)	16 (0.6%)	0 (0.0%)
Kansas City Plant	MO	3,272	43 (1.3%)	64 (2.0%)	4 (0.1%)
Los Alamos National Laboratory	NM	2,114	28 (1.3%)	22 (1.0%)	2 (0.1%)
Lawrence Livermore National Laboratory	CA	1,804	25 (1.4%)	47 (2.6%)	7 (0.4%)
Misc DOE<1000[1]		1,399	8	17 (1.2%)	4
Mound Plant	OH	15	0 (0.0%)	0 (0.0%)	0 (0.0%)
Multi-facility[2]		145	97 (66.9%)	43 (29.7%)	N/A[3]
Nevada Test Site	NV	1,836	34 (1.9%)	21 (1.1%)	2 (0.1%)
Oak Ridge Site (Y-12, ORNL, ETTP)	TN	9,129	137 (1.5%)	121 (1.3%)	39 (0.4%)
Paducah Gaseous Diffusion Plant	KY	2,483	57 (2.3%)	13 (0.5%)	0 (0.0%)
Pantex Plant	TX	1,228	19 (1.5%)	22 (1.8%)	5 (0.4%)
Portsmouth Gaseous Diffusion Plant	OH	3,020	31 (1.0%)	7 (0.2%)	0 (0.0%)
Rocky Flats Environmental Technology Site	CO	8,695	236 (2.7%)	224 (2.6%)	131 (1.5%)
Savannah River Site	SC	3,331	20 (0.6%)	42 (1.3%)	1 (0.3%)
Totals		**46,103**	**841 (1.8%)**	**719 (1.6%)**	**210 (0.5%)**

[1] A combined total of less than 1,000 workers were screened through the FBeWP at the following sites: Ames, Argonne National Laboratory, Brookhaven National Laboratory, Chicago Operations, Fermi, Fernald, Huntington Pilot Plant, Knolls, Lawrence Berkeley National Laboratory, Mound, Sandia National Laboratory, and Stanford Linear Accelerator Center. New screening projects were initiated at Fernald and Mound in 2005, apart from the screening at these sites through the FBeWP, and are listed separately above.
[2] Individuals screened worked at multiple facilities.
[3] Number not available.

More detailed summary outcome data for sites where large numbers of workers were screened in the FBeWP and the FWP are provided in Figures 2 and 3. A detailed description of screening data from all sites covered in these figures is found in Appendix A. Figure 2 presents descriptive statistics for worker screening outcomes in the context of selected work history and demographic variables through December 31, 2003. Figure 3 presents data in the same format and context for the screening period January 1, 2004, through December 31, 2005. The data are presented in this way because the scope of the DOE program changed with the implementation of EEOICPA. From 1991 through the initial implementation of EEOICPA (December 2003), DOE provided periodic beryllium sensitization screening. For workers with two abnormal BeLPTs, DOE also provided periodic clinical evaluations by pulmonologists specializing in the diagnosis of CBD. With the implementation of EEOICPA, the DOL became responsible for providing medical followup after the first abnormal BeLPT. As a result, DOE's program now only offers beryllium sensitization screening. Individuals with one abnormal BeLPT are informed about the DOL medical monitoring program under EEOICPA and how to apply. They are offered an additional BeLPT while waiting to be accepted into the DOL program. The data in these figures include the following DOE sites:

- Hanford Reservation
- Idaho National Laboratory
- Iowa Army Ammunition Plant
- Kansas City Plant
- Lawrence Livermore National Laboratory
- Los Alamos National Laboratory
- Nevada Test Site
- Oak Ridge Site: Y-12, ORNL, ETTP
- Paducah Gaseous Diffusion Plant
- Pantex Plant
- Portsmouth Gaseous Diffusion Plant
- Rocky Flats Environmental Technology Site
- Savannah River Site

Over the years, DOL claims adjudication process has become increasingly efficient, and the time period between the date a former worker with one abnormal BeLPT files a claim and the date that claim is approved is now as little as a few weeks. During the first few years, there was often time for DOE to offer a followup BeLPT and a clinical evaluation to check for CBD in those with a second abnormal BeLPT. By the end of 2003, DOL had become efficient enough in processing beryllium sensitization claims and providing medical followup to individuals that DOE no longer felt it necessary to offer clinical evaluations to check for CBD in participants with two abnormal BeLPTs. DOE has continued to offer program participants the opportunity to receive a second BeLPT during the interim period between the date the participant files a claim and the date DOL approves the claim. Since clinical evaluations are now provided by DOL, DOE is no

longer informed of the number of CBD cases among former workers. This information is not made available to DOE due to DOL's concerns regarding privacy issues.

Figure 2. Summary Outcomes Data for Sites Where Large Numbers of Workers Were Screened through December 31, 2003

Number of workers screened	39,632
Number w/1 abnormal BeLPT	657 (1.7%)
Number w/2 abnormal BeLPTs	632 (1.6%)
Number w/ CBD	210 (0.5%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Be Fabricator	67	73	46
Be Handling	91	77	37
Maintenance	208	175	61
Stand-by	36	25	4
Labor and D&D	88	102	17
Administrative	93	96	22
Scientific	57	67	18
Unknown	17	17	5
Totals	657	632	210

Years Worked	Number Screened	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Less Than 5	8,851	136 (1.5%)	145 (1.6%)	47 (0.5%)
5 to <10	6,032	110 (1.8%)	88 (1.5%)	25 (0.4%)
10 to <15	5,196	83 (1.6%)	69 (1.3%)	30 (0.6%)
15 to <20	3,484	63 (1.8%)	62 (1.8%)	15 (0.4%)
20 to <25	3,236	59 (1.8%)	50 (1.5%)	18 (0.6%)
25 to <30	3,321	47 (1.4%)	64 (1.9%)	23 (0.7%)
30 or >	5,897	125 (2.1%)	124 (2.1%)	40 (0.7%)
Not Reported	3,615	34 (0.9%)	30 (0.8%)	12 (0.3%)
Totals	39,362	657	632	210

Year of First Hire	Number Screened	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
<= 1959	8,789	161 (1.8%)	177 (2.0%)	57 (0.6%)
1960 – 1969	7,641	150 (2.0%)	160 (2.1%)	61 (0.8%)
1970 – 1979	9,884	161 (1.6%)	130 (1.3%)	54 (0.5%)
1980 – 1989	7,618	138 (1.8%)	134 (1.8%)	31 (0.4%)
1990 – 1999	2,920	30 (1.0%)	26 (0.9%)	7 (0.2%)
2000 and >	134	2 (1.5%)	2 (1.5%)	0 (0.0%)
Not Reported	2,646	15 (0.6%)	3 (0.1%)	0 (0.0%)
Totals	39,632	657	632	210

Figure 3. Summary Outcomes Data for Sites Where Large Numbers of Workers Were Screened from January 1, 2004, through December 31, 2005

Number of workers screened	4,850
Number w/1 abnormal BeLPT	86 (1.8%)
Number w/2 abnormal BeLPTs	27 (0.6%)
Number w/ CBD	0 (0.0%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Be Fabricator	17	0
Be Handling	6	3
Maintenance	14	4
Stand-by	8	4
Labor and D&D	22	12
Administrative	8	1
Scientific	8	3
Unknown	3	0
Totals	86	27

Years Worked	Number Screened	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Less Than 5	1,332	18 (1.4%)	8 (0.6%)
5 to <10	669	14 (2.1%)	3 (0.4%)
10 to <15	510	6 (1.2%)	6 (1.2%)
15 to <20	406	6 (1.5%)	2 (0.5%)
20 to <25	439	10 (2.2%)	2 (0.5%)
25 to <30	378	3 (0.8%)	3 (0.8%)
30 or >	735	21 (2.9%)	2 (0.3%)
Not Reported	381	8 (2.1%)	1 (0.3%)
Totals	4,850	86	27

Year of First Hire	Number Screened	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
<= 1959	1,169	26 (2.2%)	7 (0.6%)
1960 – 1969	866	11 (1.3%)	10 (1.2%)
1970 – 1979	1,169	28 (2.4%)	4 (0.3%)
1980 – 1989	912	9 (1.0%)	5 (0.5%)
1990 – 1999	327	5 (1.5%)	1 (0.3%)
2000 and >	32	0 (0.0%)	0 (0.0%)
Not Reported	375	7 (1.9%)	0 (0.0%)
Totals	4,850	86	27

Summary and Related DOE Initiatives

Summary

In reviewing the beryllium screening data, the following points are notable:

- Of those screened, there is an extremely low level of beryllium sensitization and disease in former workers from all DOE sites, with only two sites deviating notably from the others: Rocky Flats and LLNL. Approximately 2.5% of participants from Rocky Flats and 2.6% from LLNL had two abnormal BeLPTs (or sensitization), as opposed to a range of 0.2% - 1.9% of former workers from other DOE sites;
- Most individuals who developed sensitization (654 out of 719, or 91%) or disease (203 out of 210, or 97%) began work at DOE sites prior to 1989; and
- While most individuals with one or more abnormal BeLPT or CBD worked in job categories that were most likely to involve exposures to beryllium dust, there were also 333 individuals in the scientific and administrative job categories with one or more abnormal BeLPT and 40 who developed CBD. These findings underscore leading pulmonologists' beliefs that this illness has a genetic component.

As mentioned earlier, this report is intended to provide descriptive data on beryllium screening outcomes through these programs and not a detailed statistical analysis. Such an analysis would not be possible since participation is voluntary and a representative sample could not be selected from each site.

Related DOE Initiatives

Effort to Share DOE Results

The Office of Health, Safety and Security will work closely with DOE site occupational medical directors, program offices, and field safety and health personnel to share the results of beryllium sensitization screening through FWP. The Office of Health, Safety and Security will also work with site occupational medical directors to facilitate communication with current workers, as they separate from DOE, regarding DOE's FWP. Final reports for each FWP project will be made available to DOE workers, communities, and other interested parties as they are completed. Additionally, DOE will work with DOL in an attempt to obtain additional information, while still complying with DOL's privacy requirements, about findings in individuals who are followed by DOL after their first abnormal BeLPT through the DOE program.

CBD Bio-repository

In the absence of an animal model to study CBD, current research to improve understanding, diagnosis, and treatment of this disease depends entirely on human cells and tissues. Given that DOE has conducted medical surveillance programs for more than a decade the Department is in a unique position to facilitate research on CBD by setting up a repository of specimens. This bio-repository will include donated blood and tissues (bio-specimens) from former and current DOE workers who voluntarily participate: workers with CBD, workers who developed sensitization to beryllium, and workers exposed to beryllium who are not sensitized and do not have the disease (controls).

Based on the current number of workers who were either diagnosed with CBD or beryllium sensitization and matching controls, the total number of donors for the repository is expected to be 1,200 to 1,500 individuals. The protocol for this repository initiative has been reviewed and approved by the DOE Central Beryllium Institutional Review Board and a worker's participation will require his or her signed informed consent.

DOE has been in close contact with the National Heart Lung and Blood Institute (NHLBI), which has established several repositories on chronic lung diseases and has the necessary infrastructure to maintain and distribute the specimens to expert scientists. It is anticipated that the clinical centers will transfer the donated specimens to this NHLBI lung repository after the 3-year collection period. NHLBI will maintain the repository, in collaboration with a Research Review Committee, and will manage inquiries and access for future investigators who have approved study proposals and investigations of genetic factors, mechanisms, and pathogenesis of beryllium sensitization and CBD.

Rocky Flats Data Analysis

DOE is also funding a review of the health effects associated with the new lower levels of permissible exposure to beryllium levels after the January 7, 2000, implementation of the Beryllium Rule (Title 10, Code of Federal Regulations, part 850). This review will compare the rates of beryllium sensitization, as determined by two abnormal BeLPTs, and clinical diagnoses of CBD in current and former Rocky Flats workers. The data analysis will be conducted for the periods 1984-1986, when the Occupational Safety and Health Administration (OSHA) permissible exposure limit was 2 $\mu g/m^3$, and for 2000-2005, when this exposure limit had been decreased to 0.2 $\mu g/m^3$.

APPENDIX A

BERYLLIUM SCREENING SUMMARY OUTCOMES DATA FOR INDIVIDUAL DOE SITES

HANFORD RESERVATION
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through December 31, 2003

Number of workers screened	3093
Number w/1 abnormal BeLPT	55 (1.8%)
Number w/2 abnormal BeLPTs	42 (1.4%)
Number w/CBD	12 (0.4%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Be Fabricator	0	0	0
Be Handling	0	0	0
Maintenance	0	0	0
Stand-by	0	0	0
Labor and D&D	38	24	8
Administrative	13	9	1
Scientific	4	7	3
Unknown	0	2	0
Totals	55	42	12

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Less Than 5	862	11 (1.3%)	11 (1.3%)	2 (0.2%)
5 to <10	504	15 (3.0%)	8 (1.6%)	1 (0.2%)
10 to <15	382	9 (2.4%)	8 (2.1%)	3 (0.8%)
15 to <20	303	5 (1.7%)	4 (1.3%)	2 (0.7%)
20 to <25	212	2 (0.9%)	0 (0.0%)	1 (0.5%)
25 to <30	168	2 (1.2%)	3 (1.8%)	2 (1.2%)
30 or >	433	10 (2.3%)	8 (1.8%)	1 (0.2%)
Not Reported	229	1 (0.4%)	0 (0.0%)	0 (0.0%)
Totals	3,093	55	42	12

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
<= 1959	760	16 (2.1%)	13 (1.7%)	3 (0.4%)
1960 - 1969	464	9 (1.9%)	8 (1.7%)	2 (0.4%)
1970 - 1979	991	16 (1.6%)	8 (0.8%)	5 (0.5%)
1980 - 1989	482	8 (1.7%)	12 (2.5%)	2 (0.4%)
1990 - 1999	146	4 (2.7%)	1 (0.7%)	0 (0.0%)
2000 and >	8	1 (12.5%)	0 (0.0%)	0 (0.0%)
Not Reported	242	1 (0.4%)	0 (0.0%)	0 (0.0%)
Totals	3,093	55	42	12

HANFORD RESERVATION
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through January 1, 2004, to December 31, 2005

Number of workers screened	889
Number w/1 abnormal BeLPT	8 (0.9%)
Number w/2 abnormal BeLPTs	5 (0.6%)
Number w/ CBD	0 (0%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Be Fabricator	0	0
Be Handling	0	0
Maintenance	0	0
Stand-by	0	0
Labor and D&D	2	4
Administrative	4	1
Scientific	2	0
Unknown	0	0
Totals	8	5

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Less Than 5	271	1 (0.4%)	2 (0.7%)
5 to <10	116	2 (1.7%)	0 (0.0%)
10 to <15	78	1 (1.3%)	1 (1.3%)
15 to <20	68	1 (1.5%)	0 (0.0%)
20 to <25	44	0 (0.0%)	0 (0.0%)
25 to <30	21	0 (0.0%)	0 (0.0%)
30 or >	81	0 (0.0%)	1 (1.2%)
Not Reported	210	3 (1.4%)	1 (0.5%)
Totals	889	8	5

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
<= 1959	148	1 (0.7%)	1 (0.7%)
1960 - 1969	121	1 (0.8%)	3 (2.5%)
1970 - 1979	258	4 (1.6%)	1 (3.9%)
1980 - 1989	45	1 (2.2%)	0 (0.0%)
1990 - 1999	47	0 (0.0%)	0 (0.0%)
2000 and >	3	0 (0.0%)	0 (0.0%)
Not Reported	267	1 (0.4%)	0 (0.0%)
Totals	889	8	5

IDAHO NATIONAL LABORATORY
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through December 31, 2003

Number of workers screened	2,711
Number w/1 abnormal BeLPT	41 (1.5%)
Number w/2 abnormal BeLPTs	16 (0.6%)
Number w/CBD	0[4] (0.0%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Be Fabricator	2	1
Be Handling	13	2
Maintenance	5	2
Stand-by	7	5
Labor and D&D	0	0
Administrative	10	2
Scientific	2	3
Unknown	2	1
Totals	41	16

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Less Than 5	260	2 (0.8%)	1 (0.4%)
5 to <10	271	2 (0.7%)	0 (0.0%)
10 to <15	316	7 (2.2%)	2 (0.6%)
15 to <20	296	9 (3.0%)	0 (0.0%)
20 to <25	293	5 (1.7%)	2 (0.7%)
25 to <30	251	5 (2.0%)	2 (0.8%)
30 or >	522	10 (1.9%)	8 (1.5%)
Not Reported	502	1 (0.2%)	1 (0.2%)
Totals	2,711	41	16

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
<= 1959	500	10 (2.0%)	4 (0.8%)
1960 - 1969	513	6 (1.2%)	5 (1.0%)
1970 - 1979	581	15 (2.6%)	3 (0.5%)
1980 - 1989	408	7 (1.7%)	3 (0.7%)
1990 - 1999	185	2 (1.1%)	0 (0.0%)
2000 and >	22	0 (0.0%)	0 (0.0%)
Not Reported	502	1 (0.2%)	1 (0.2%)
Totals	2,711	41	16

[4] To date, the production screening project has not received results of clinical evaluations to check for CBD.

IDAHO NATIONAL LABORATORY
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through January 1, 2004, to December 31, 2005

Number of workers screened	23
Number w/1 abnormal BeLPT	0 (0.0%)
Number w/2 abnormal BeLPTs	0 (0.0%)
Number w/ CBD	0 (0%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Be Fabricator	0	0
Be Handling	0	0
Maintenance	0	0
Stand-by	0	0
Labor and D&D	0	0
Administrative	0	0
Scientific	0	0
Unknown	0	0
Totals	0	0

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Less Than 5	3	0 (0.0%)	0 (0.0%)
5 to <10	4	0 (0.0%)	0 (0.0%)
10 to <15	2	0 (0.0%)	0 (0.0%)
15 to <20	5	0 (0.0%)	0 (0.0%)
20 to <25	4	0 (0.0%)	0 (0.0%)
25 to <30	1	0 (0.0%)	0 (0.0%)
30 or >	3	0 (0.0%)	0 (0.0%)
Not Reported	1	0 (0.0%)	0 (0.0%)
Totals	23	0	0

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
<= 1959	3	0 (0.0%)	0 (0.0%)
1960 - 1969	5	0 (0.0%)	0 (0.0%)
1970 - 1979	6	0 (0.0%)	0 (0.0%)
1980 - 1989	6	0 (0.0%)	0 (0.0%)
1990 - 1999	0	0 (0.0%)	0 (0.0%)
2000 and >	2	0 (0.0%)	0 (0.0%)
Not Reported	1	0 (0.0%)	0 (0.0%)
Totals	23	0	0

KANSAS CITY PLANT
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through December 31, 2003

Number of workers screened	3,263
Number w/1 abnormal BeLPT	43 (1.3%)
Number w/2 abnormal BeLPTs	63 (1.9%)
Number w/CBD	4 (0.1%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Be Fabricator	2	3	0
Be Handling	9	16	1
Maintenance	9	13	1
Stand-by	1	3	0
Labor and D&D	9	10	1
Administrative	6	11	1
Scientific	4	4	0
Unknown	3	3	0
Totals	43	63	4

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Less Than 5	708	6 (0.8%)	19 (2.7%)	1 (0.1%)
5 to <10	534	10 (1.9%)	12 (2.2%)	0 (0.0%)
10 to <15	469	5 (1.1%)	6 (1.3%)	1 (0.2%)
15 to <20	276	3 (1.1%)	3 (1.1%)	0 (0.0%)
20 to <25	158	2 (1.3%)	2 (1.3%)	1 (0.6%)
25 to <30	238	4 (1.7%)	8 (3.4%)	0 (0.0%)
30 or >	724	12 (1.7%)	13 (1.8%)	1 (0.1%)
Not Reported	156	1 (0.6%)	0 (0.0%)	0 (0.0%)
Totals	3,263	43	63	4

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
<= 1959	1000	15 (1.5%)	20 (2.0%)	3 (0.3%)
1960 - 1969	856	10 (1.2%)	15 (1.8%)	1(0.1%)
1970 - 1979	516	7 (1.4%)	7 (1.4%)	0 (0.0%)
1980 - 1989	621	9 (1.4%)	19 (3.1%)	0 (0.0%)
1990 - 1999	106	1 (0.9%)	1 (0.9%)	0 (0.0%)
2000 and >	23	0 (0.0%)	1 (4.3%)	0 (0.0%)
Not Reported	141	1 (0.7%)	0 (0.0%)	0 (0.0%)
Totals	3,263	43	63	4

KANSAS CITY PLANT
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through January 1, 2004, to December 31, 2005

Number of workers screened	9
Number w/ 1 abnormal BeLPT	0 (0%)
Number w/ 2 abnormal BeLPT	1 (1.1%)
Number w/ CBD	0 (0%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Be Fabricator	0	0
Be Handling	0	0
Maintenance	0	0
Stand-by	0	0
Labor and D&D	0	1
Administrative	0	0
Scientific	0	0
Unknown	0	0
Totals	0	0

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Less Than 5	4	0 (0.0%)	0 (0.0%)
5 to <10	1	0 (0.0%)	1 (100.0%)
10 to <15	1	0 (0.0%)	0 (0.0%)
15 to <20	0	0 (0.0%)	0 (0.0%)
20 to <25	0	0 (0.0%)	0 (0.0%)
25 to <30	0	0 (0.0%)	0 (0.0%)
30 or >	0	0 (0.0%)	0 (0.0%)
Not Reported	3	0 (0.0%)	0 (0.0%)
Totals	9	0	1

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
<= 1959	1	0 (0.0%)	0 (0.0%)
1960 - 1969	2	0 (0.0%)	0 (0.0%)
1970 - 1979	0	0 (0.0%)	0 (0.0%)
1980 - 1989	2	0 (0.0%)	1 (50.0%)
1990 - 1999	0	0 (0.0%)	0 (0.0%)
2000 and >	1	0 (0.0%)	0 (0.0%)
Not Reported	3	0 (0.0%)	0 (0.0%)
Totals	9	0	1

LAWRENCE LIVERMORE NATIONAL LABORATORY
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through December 31, 2003[5]

Number of workers screened	1,804
Number w/1 abnormal BeLPT	25 (1.4%)
Number w/2 abnormal BeLPTs	47 (2.6%)
Number w/CBD	7 (0.4%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Be Fabricator	0	0	0
Be Handling	4	2	0
Maintenance	7	8	0
Stand-by	2	0	0
Labor and D&D	1	1	0
Administrative	7	18	3
Scientific	3	16	4
Unknown	1	2	0
Totals	25	47	7

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Less Than 5	589	6 (1.0%)	11 (1.9%)	2 (0.3%)
5 to <10	231	4 (1.7%)	6 (2.6%)	1 (0.4%)
10 to <15	182	3 (1.6%)	6 (3.3%)	1 (0.5%)
15 to <20	122	5 (4.1%)	3 (2.5%)	0 (0.0%)
20 to <25	100	2 (2.0%)	6 (6.0%)	0 (0.0%)
25 to <30	149	1 (0.7%)	6 (4.0%)	1 (0.7%)
30 or >	288	3 (1.0%)	8 (2.8%)	2 (0.7%)
Not Reported	143	1 (0.7%)	1 (0.7%)	0 (0.0%)
Totals	1,804	25	47	7

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
<= 1959	312	6 (2.0%)	10 (3.2%)	2 (0.6%)
1960 - 1969	529	4 (0.8%)	17 (3.2%)	1 (0.2%)
1970 - 1979	430	9 (2.1%)	9 (2.1%)	3 (0.7%)
1980 - 1989	303	5 (1.7%)	10 (3.3%)	1 (0.3%)
1990 - 1999	85	0 (0.0%)	0 (0.0%)	0 (0.0%)
2000 and >	2	0 (0.0%)	0 (0.0%)	0 (0.0%)
Not Reported	143	1 (0.7%)	1 (0.7%)	0 (0.0%)
Totals	1,804	25	47	7

[5] There was no beryllium screening at LLNL for the period January 1, 2004, through December 31, 2005.

LOS ALAMOS NATIONAL LABORATORY
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through December 31, 2003

Number of workers screened	2002
Number w/1 abnormal BeLPT	27 (1.3%)
Number w/2 abnormal BeLPTs	22 (1.1%)
Number w/CBD	2 (0.1%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Be Fabricator	4	0	2
Be Handling	4	7	0
Maintenance	7	5	0
Stand-by	0	0	0
Labor and D&D	5	2	0
Administrative	2	3	0
Scientific	5	5	0
Unknown	0	0	0
Totals	27	22	2

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Less Than 5	231	3 (1.3%)	1 (0.4%)	0 (0.0%)
5 to <10	201	3 (1.5%)	2 (1.0%)	1 (0.5%)
10 to <15	233	3 (1.3%)	1 (0.4%)	0 (0.0%)
15 to <20	236	2 (0.8%)	3 (1.3%)	0 (0.0%)
20 to <25	263	1 (0.4%)	5 (1.9%)	0 (0.0%)
25 to <30	250	2 (0.8%)	0 (0.0%)	0 (0.0%)
30 or >	585	13 (2.2%)	10 (1.7%)	1 (0.2%)
Not Reported	3	0 (0.0%)	0 (0.0%)	0 (0.0%)
Totals	2,002	27	22	2

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
<= 1959	677	11 (1.6%)	10 (1.5%)	1 (0.1%)
1960 - 1969	495	7 (1.4%)	4 (0.8%)	1 (0.2%)
1970 - 1979	554	7 (1.3%)	6 (1.1%)	0 (0.0%)
1980 - 1989	223	2 (0.9%)	2 (0.9%)	0 (0.0%)
1990 - 1999	51	0 (0.0%)	0 (0.0%)	0 (0.0%)
2000 and >	0	0 (0.0%)	0 (0.0%)	0 (0.0%)
Not Reported	2	0 (0.0%)	0 (0.0%)	0 (0.0%)
Totals	2,002	27	22	2

LOS ALAMOS NATIONAL LABORATORY
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through January 1, 2004, to December 31, 2005

Number of workers screened	112
Number w/1 abnormal BeLPT	1 (0.9%)
Number w/2 abnormal BeLPTs	0 (0.0%)
Number w/ CBD	0 (0%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Be Fabricator	0	0
Be Handling	0	0
Maintenance	1	0
Stand-by	0	0
Labor and D&D	0	0
Administrative	0	0
Scientific	0	0
Unknown	0	0
Totals	1	0

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Less Than 5	10	0 (0.0%)	0 (0.0%)
5 to <10	16	0 (0.0%)	0 (0.0%)
10 to <15	14	0 (0.0%)	0 (0.0%)
15 to <20	15	0 (0.0%)	0 (0.0%)
20 to <25	20	1 (5.0%)	0 (0.0%)
25 to <30	16	0 (0.0%)	0 (0.0%)
30 or >	20	0 (0.0%)	0 (0.0%)
Not Reported	1	0 (0.0%)	0 (0.0%)
Totals	112	1	0

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
<= 1959	14	0 (0.0%)	0 (0.0%)
1960 - 1969	16	0 (0.0%)	0 (0.0%)
1970 - 1979	45	1 (2.2%)	0 (0.0%)
1980 - 1989	30	0 (0.0%)	0 (0.0%)
1990 - 1999	6	0 (0.0%)	0 (0.0%)
2000 and >	1	0 (0.0%)	0 (0.0%)
Not Reported	0	0 (0.0%)	0 (0.0%)
Totals	112	1	0

NEVADA TEST SITE
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through December 31, 2003

Number of workers screened	1,096
Number w/1 abnormal BeLPT	23 (2.1%)
Number w/2 abnormal BeLPTs	14 (1.3%)
Number w/CBD	2 (0.2%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Be Fabricator	0	0	0
Be Handling	0	0	0
Maintenance	14	8	1
Stand-by	4	3	1
Labor and D&D	4	3	0
Administrative	0	0	0
Scientific	1	0	0
Unknown	0	0	0
Totals	23	14	2

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Less Than 5	237	3 (1.3%)	1 (0.4%)	1 (0.4%)
5 to <10	208	3 (1.4%)	2 (1.0%)	0 (0.0%)
10 to <15	187	3 (1.6%)	0 (0.0%)	0 (0.0%)
15 to <20	102	2 (2.0%)	5 (4.9%)	0 (0.0%)
20 to <25	80	7 (8.8%)	2 (2.5%)	0 (0.0%)
25 to <30	78	1 (1.3%)	2 (2.6%)	0 (0.0%)
30 or >	80	2 (2.5%)	2 (2.5%)	1 (1.3%)
Not Reported	124	2 (1.6%)	0 (0.0%)	0 (0.0%)
Totals	1,096	23	14	2

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
<= 1959	132	4 (3.0%)	1 (0.8%)	0 (0.0%)
1960 - 1969	430	9 (2.1%)	7 (1.6%)	1 (0.2%)
1970 - 1979	200	5 (2.5%)	5 (2.5%)	0 (0.0%)
1980 - 1989	304	5 (1.6%)	1 (0.3%)	1 (0.3%)
1990 - 1999	7	0 (0.0%)	0 (0.0%)	0 (0.0%)
2000 and >	0	0 (0.0%)	0 (0.0%)	0 (0.0%)
Not Reported	23	0 (0.0%)	0 (0.0%)	0 (0.0%)
Totals	1,096	23	14	2

NEVADA TEST SITE
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through January 1, 2004, to December 31, 2005

Number of workers screened	740
Number w/1 abnormal BeLPT	11 (1.5%)
Number w/2 abnormal BeLPTs	7 (0.9%)
Number w/ CBD	0 (0%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Be Fabricator	0	0
Be Handling	0	0
Maintenance	7	3
Stand-by	2	3
Labor and D&D	1	0
Administrative	1	0
Scientific	0	1
Unknown	0	0
Totals	11	7

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Less Than 5	179	4 (2.2%)	1 (0.6%)
5 to <10	176	4 (2.3%)	1 (0.6%)
10 to <15	119	0 (0.0%)	1 (0.8%)
15 to <20	62	0 (0.0%)	1 (1.6%)
20 to <25	51	1 (2.0%)	1 (2.0%)
25 to <30	52	1 (1.9%)	1 (1.9%)
30 or >	62	0 (0.0%)	1 (1.6%)
Not Reported	39	1 (2.6%)	0 (0.0%)
Totals	740	11	7

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
<= 1959	89	0 (0.0%)	0 (0.0%)
1960 - 1969	348	5 (1.4%)	3 (0.9%)
1970 - 1979	112	3 (2.7%)	2 (1.8%)
1980 - 1989	153	2 (1.3%)	2 (1.3%)
1990 - 1999	23	1 (4.3%)	0 (0.0%)
2000 and >	4	0 (0.0%)	0 (0.0%)
Not Reported	11	0 (0.0%)	0 (0.0%)
Totals	740	11	7

OAK RIDGE SITE
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through December 31, 2003

Number of workers screened	8,281
Number w/1 abnormal BeLPT	100 (1.2%)
Number w/2 abnormal BeLPTs	120 (1.4%)
Number w/CBD	39[6] (0.5%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Be Fabricator	26	45	19
Be Handling	9	6	6
Maintenance	26	22	8
Stand-by	7	5	0
Labor and D&D	8	17	0
Administrative	11	11	0
Scientific	9	11	2
Unknown	4	3	4
Totals	100	120	39

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Less Than 5	1599	15 (0.9%)	16 (1.0%)	5 (0.3%)
5 to <10	1413	20 (1.4%)	20 (1.4%)	4 (0.3%)
10 to <15	945	14 (1.5%)	11 (1.2%)	3 (0.3%)
15 to <20	639	3 (0.5%)	7 (1.1%)	0 (0.0%)
20 to <25	793	7 (0.9%)	13 (1.6%)	4 (0.5%)
25 to <30	733	8 (1.1%)	13 (1.8%)	6 (0.8%)
30 or >	1492	29 (1.9%)	40 (2.7%)	17 (1.1%)
Not Reported	667	4 (0.6%)	0 (0.0%)	0 (0.0%)
Totals	8,281	100	120	39

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
<= 1959	2597	37 (1.4%)	62 (2.4%)	13 (0.5%)
1960 - 1969	1282	16 (1.2%)	21 (1.6%)	12 (0.9%)
1970 - 1979	2597	29 (1.1%)	22 (0.8%)	11 (0.4%)
1980 - 1989	749	11 (1.5%)	10 (1.3%)	3 (0.4%)
1990 - 1999	372	2 (0.5%)	5 (1.3%)	0 (0.0%)
2000 and >	25	0 (0.0%)	0 (0.0%)	0 (0.0%)
Not Reported	659	5 (0.8%)	0 (0.0%)	0 (0.0%)
Totals	8,281	100	120	39

[6] To date, the production screening project has not received results of clinical evaluations to check for CBD.

OAK RIDGE SITE
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through January 1, 2004, to December 31, 2005

Number of workers screened	848
Number w/1 abnormal BeLPT	37 (4.3%)
Number w/2 abnormal BeLPTs	1 (0.1%)
Number w/ CBD	0 (0%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Be Fabricator	15	0
Be Handling	1	0
Maintenance	5	0
Stand-by	5	1
Labor and D&D	0	0
Administrative	2	0
Scientific	6	0
Unknown	3	0
Totals	37	1

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Less Than 5	88	1 (1.1%)	0 (0.0%)
5 to <10	41	2 (4.9%)	0 (0.0%)
10 to <15	70	0 (0.0%)	1 (1.4%)
15 to <20	69	5 (7.2%)	0 (0.0%)
20 to <25	99	3 (3.0%)	0 (0.0%)
25 to <30	126	2 (1.6%)	0 (0.0%)
30 or >	316	20 (6.3%)	0 (0.0%)
Not Reported	39	4 (10.3%)	0 (0.0%)
Totals	848	37	1

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
<= 1959	340	16 (4.7%)	0 (0.0%)
1960 - 1969	206	4 (1.9%)	1 (0.5%)
1970 - 1979	158	7 (4.4%)	0 (0.0%)
1980 - 1989	70	4 (5.7%)	0 (0.0%)
1990 - 1999	17	0 (0.0%)	0 (0.0%)
2000 and >	8	0 (0.0%)	0 (0.0%)
Not Reported	49	6 (12.2%)	0 (0.0%)
Totals	848	37	1

PADUCAH GASEOUS DIFFUSION PLANT
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through December 31, 2003

Number of workers screened	1966
Number w/1 abnormal BeLPT	46 (2.3%)
Number w/2 abnormal BeLPTs	10 (0.5%)
Number w/CBD	0[7] (0.0%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Be Fabricator	11	4
Be Handling	0	0
Maintenance	16	5
Stand-by	6	0
Labor and D&D	0	0
Administrative	4	0
Scientific	6	1
Unknown	3	0
Totals	46	10

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Less Than 5	249	6 (2.4%)	1 (0.4%)
5 to <10	320	6 (1.9%)	0 (0.0%)
10 to <15	268	5 (1.9%)	1 (0.4%)
15 to <20	142	2 (1.4%)	2 (1.4%)
20 to <25	123	4 (3.3%)	1 (0.8%)
25 to <30	296	7 (2.4%)	3 (1.0%)
30 or >	277	13 (4.7%)	2 (0.7%)
Not Reported	291	3 (1.0%)	0 (0.0%)
Totals	1,966	46	10

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
<= 1959	341	9 (2.6%)	2 (0.6%)
1960 - 1969	133	3 (2.3%)	0 (0.0%)
1970 - 1979	726	23 (3.2%)	8 (1.1%)
1980 - 1989	133	5 (3.8%)	0 (0.0%)
1990 - 1999	316	3 (0.9%)	0 (0.0%)
2000 and >	26	0 (0.0%)	0 (0.0%)
Not Reported	291	3 (1.0%)	0 (0.0%)
Totals	1,966	46	10

[7] To date, the production screening project has not received results from clinical evaluations to check for CBD.

PADUCAH GASEOUS DIFFUSION PLANT
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through January 1, 2004, to December 31, 2005

Number of workers screened	517
Number w/1 abnormal BeLPT	11 (2.2%)
Number w/2 abnormal BeLPTs	3 (0.6%)
Number w/ CBD	0 (0%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Be Fabricator	0	0
Be Handling	0	0
Maintenance	1	0
Stand-by	1	0
Labor and D&D	8	3
Administrative	1	0
Scientific	0	0
Unknown	0	0
Totals	11	3

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Less Than 5	326	8 (2.5%)	2 (0.6%)
5 to <10	50	2 (4.0%)	1 (2.0%)
10 to <15	29	0 (0.0%)	0 (0.0%)
15 to <20	17	0 (0.0%)	0 (0.0%)
20 to <25	19	1 (5.3%)	0 (0.0%)
25 to <30	20	0 (0.0%)	0 (0.0%)
30 or >	44	0 (0.0%)	0 (0.0%)
Not Reported	12	0 (0.0%)	0 (0.0%)
Totals	517	11	3

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
<= 1959	223	4 (1.8%)	1 (0.4%)
1960 - 1969	30	0 (0.0%)	2 (6.7%)
1970 - 1979	136	5 (3.7%)	0 (0.0%)
1980 - 1989	30	0 (0.0%)	0 (0.0%)
1990 - 1999	85	2 (2.4%)	0 (0.0%)
2000 and >	3	0 (0.0%)	0 (0.0%)
Not Reported	10	0 (0.0%)	0 (0.0%)
Totals	517	11	3

PANTEX PLANT
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through December 31, 2003

Number of workers screened	1075
Number w/1 abnormal BeLPT	16 (1.5%)
Number w/2 abnormal BeLPTs	22 (2.0%)
Number w/CBD	5 (0.5%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Be Fabricator	0	0	0
Be Handling	2	3	2
Maintenance	8	8	1
Stand-by	2	2	1
Labor and D&D	1	2	0
Administrative	2	3	1
Scientific	0	2	0
Unknown	1	2	0
Totals	16	22	5

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Less Than 5	269	2 (0.7%)	6 (2.2%)	2 (0.7%)
5 to <10	135	3 (2.2%)	1 (0.7%)	1 (0.7%)
10 to <15	115	0 (0.0%)	0 (0.0%)	1 (0.9%)
15 to <20	117	4 (3.4%)	4 (3.4%)	0 (0.0%)
20 to <25	88	2 (2.3%)	1 (1.1%)	0 (0.0%)
25 to <30	88	0 (0.0%)	2 (2.3%)	0 (0.0%)
30 or >	194	5 (2.6%)	8 (4.1%)	1 (0.5%)
Not Reported	69	0 (0.0%)	0 (0.0%)	0 (0.0%)
Totals	1,075	16	22	5

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
<= 1959	161	3 (1.9%)	6 (3.7%)	1 (0.6%)
1960 - 1969	175	5 (2.9%)	5 (2.9%)	0 (0.0%)
1970 - 1979	250	4 (1.6%)	4 (1.6%)	2 (0.8%)
1980 - 1989	245	3 (1.2%)	4 (1.6%)	1 (0.4%)
1990 - 1999	174	1 (0.6%)	3 (1.7%)	1 (0.6%)
2000 and >	2	0 (0.0%)	0 (0.0%)	0 (0.0%)
Not Reported	68	0 (0.0%)	0 (0.0%)	0 (0.0%)
Totals	1,075	16	22	5

PANTEX PLANT
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through January 1, 2004, to December 31, 2005

Number of workers screened	153
Number w/1 abnormal BeLPT	3 (2.0%)
Number w/2 abnormal BeLPTs	0[8] (0.0%)
Number w/ CBD	0 (0%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Be Fabricator	0	0
Be Handling	3	0
Maintenance	0	0
Stand-by	0	0
Labor and D&D	0	0
Administrative	0	0
Scientific	0	0
Unknown	0	0
Totals	3	0

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Less Than 5	2	0 (0.0%)	0 (0.0%)
5 to <10	7	0 (0.0%)	0 (0.0%)
10 to <15	8	1 (12.5%)	0 (0.0%)
15 to <20	10	0 (0.0%)	0 (0.0%)
20 to <25	19	1 (5.3%)	0 (0.0%)
25 to <30	24	0 (0.0%)	0 (0.0%)
30 or >	80	1 (1.3%)	0 (0.0%)
Not Reported	3	0 (0.0%)	0 (0.0%)
Totals	153	3	0

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
<= 1959	47	0 (0.0%)	0 (0.0%)
1960 - 1969	47	1 (2.1%)	0 (0.0%)
1970 - 1979	42	2 (4.8%)	0 (0.0%)
1980 - 1989	13	0 (0.0%)	0 (0.0%)
1990 - 1999	3	0 (0.0%)	0 (0.0%)
2000 and >	0	0 (0.0%)	0 (0.0%)
Not Reported	1	0 (0.0%)	0 (0.0%)
Totals	153	3	0

[8] Participants received their followup BeLPT through DOL-run EEOICPA program. No results available.

PORTSMOUTH GASEOUS DIFFUSION PLANT
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through December 31, 2003

Number of workers screened	2185
Number w/1 abnormal BeLPT	22 (1.0%)
Number w/2 abnormal BeLPTs	5 (0.2%)
Number w/CBD	0[9] (0.0%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Be Fabricator	3	0
Be Handling	0	0
Maintenance	8	3
Stand-by	5	0
Labor and D&D	0	0
Administrative	3	0
Scientific	2	1
Unknown	1	1
Totals	22	5

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Less Than 5	201	3 (1.5%)	0 (0.0%)
5 to <10	274	1 (0.4%)	1 (0.4%)
10 to <15	319	3 (0.9%)	0 (0.0%)
15 to <20	172	1 (0.6%)	1 (0.6%)
20 to <25	303	7 (2.3%)	0 (0.0%)
25 to <30	380	2 (0.5%)	2 (0.5%)
30 or >	228	3 (1.3%)	0 (0.0%)
Not Reported	308	2 (0.6%)	1 (0.3%)
Totals	2,185	22	5

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
<= 1959	325	5 (1.5%)	0 (0.0%)
1960 - 1969	67	0 (0.0%)	1 (1.5%)
1970 - 1979	880	12 (1.5%)	3 (0.3%)
1980 - 1989	321	3 (0.9%)	0 (0.0%)
1990 - 1999	281	0 (0.0%)	0 (0.0%)
2000 and >	4	1 (25.0%)	0 (0.0%)
Not Reported	307	1 (0.3%)	1 (0.3%)
Totals	2,185	22	5

[9] To date, the production screening project has not received results from clinical evaluations to check for CBD.

PORTSMOUTH GASEOUS DIFFUSION PLANT
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through January 1, 2004, to December 31, 2005

Number of workers screened	835
Number w/1 abnormal BeLPT	9 (1.1%)
Number w/2 abnormal BeLPTs	2 (0.2%)
Number w/ CBD	0 (0%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Be Fabricator	2	0
Be Handling	0	0
Maintenance	0	0
Stand-by	0	0
Labor and D&D	7	0
Administrative	0	0
Scientific	0	2
Unknown	0	0
Totals	9	**2**

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Less Than 5	225	2 (0.9%)	0 (0.0%)
5 to <10	126	4 (3.2%)	0 (0.0%)
10 to <15	109	3 (2.8%)	1 (0.9%)
15 to <20	47	0 (0.0%)	0 (0.0%)
20 to <25	95	0 (0.0%)	0 (0.0%)
25 to <30	100	0 (0.0%)	1 (1.0%)
30 or >	88	0 (0.0%)	0 (0.0%)
Not Reported	45	0 (0.0%)	0 (0.0%)
Totals	835	9	2

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
<= 1959	207	3 (1.4%)	2 (1.0%)
1960 - 1969	28	0 (0.0%)	0 (0.0%)
1970 - 1979	332	4 (1.2%)	0 (0.0%)
1980 - 1989	161	0 (0.0%)	0 (0.0%)
1990 - 1999	86	2 (2.3%)	0 (0.0%)
2000 and >	2	0 (0.0%)	0 (0.0%)
Not Reported	19	0 (0.0%)	0 (0.0%)
Totals	835	9	2

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through December 31, 2003[10]

Number of workers screened	8,695
Number w/1 abnormal BeLPT	236 (2.7%)
Number w/2 abnormal BeLPTs	224 (2.6%)
Number w/CBD	131 (1.5%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Be Fabricator	19	19	25
Be Handling	42	40	23
Maintenance	105	94	50
Stand-by	2	6	2
Labor and D&D	11	12	5
Administrative	35	36	15
Scientific	20	14	9
Unknown	2	3	2
Totals	236	224	131

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Less Than 5	2891	77 (2.7%)	70 (2.4%)	32 (1.1%)
5 to <10	1257	36 (2.9%)	27 (2.1%)	15 (1.2%)
10 to <15	1291	27 (2.1%)	29 (2.2%)	20 (1.5%)
15 to <20	697	24 (3.4%)	24 (3.4%)	13 (1.9%)
20 to <25	583	18 (3.1%)	15 (2.6%)	11 (1.9%)
25 to <30	534	15 (2.8%)	19 (3.6%)	13 (2.4%)
30 or >	526	21 (4.0%)	14 (2.7%)	15 (2.9%)
Not Reported	916	18 (2.0%)	26 (2.8%)	12 (1.3%)
Totals	8,695	236	224	131

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
<= 1959	1049	36 (3.4%)	33 (3.1%)	30 (2.9%)
1960 - 1969	2254	79 (3.5%)	71 (3.1%)	39 (1.7%)
1970 - 1979	1532	31 (2.0%)	46 (3.0%)	33 (2.2%)
1980 - 1989	2635	71 (2.7%)	58 (2.2%)	23 (0.9%)
1990 - 1999	1094	17 (1.6%)	15 (1.4%)	6 (0.5%)
2000 and >	18	0 (0.0%)	1 (5.6%)	0 (0.0%)
Not Reported	113	2 (1.8%)	0 (0.0%)	0 (0.0%)
Totals	8,695	236	224	131

[10] There was no beryllium screening at Rocky Flats for the period January 1, 2004, through December 31, 2005.

SAVANNAH RIVER SITE
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through December 31, 2003

Number of workers screened	2712
Number w/1 abnormal BeLPT	17 (0.6%)
Number w/2 abnormal BeLPTs	38 (1.4%)
Number w/CBD	1 (0.0%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Be Fabricator	0	1	0
Be Handling	3	0	0
Maintenance	2	3	0
Stand-by	0	0	0
Labor and D&D	11	30	1
Administrative	0	1	0
Scientific	1	3	0
Unknown	0	0	0
Totals	17	38	1

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
Less Than 5	523	1 (0.2%)	6 (1.1%)	0 (0.0%)
5 to <10	552	4 (0.7%)	8 (1.4%)	0 (0.0%)
10 to <15	419	4 (1.0%)	5 (1.2%)	0 (0.0%)
15 to <20	326	2 (0.6%)	6 (1.8%)	0 (0.0%)
20 to <25	181	1 (0.6%)	2 (1.1%)	0 (0.0%)
25 to <30	111	0 (0.0%)	2 (1.8%)	0 (0.0%)
30 or >	447	4 (0.9%)	8 (1.8%)	1 (0.2%)
Not Reported	153	1 (2.1%)	1 (2.1%)	0 (0.0%)
Totals	2,712	17	38	1

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs	Number w/CBD
<= 1959	623	5 (0.8%)	10 (1.6%)	1 (0.2%)
1960 - 1969	98	0 (0.0%)	3 (3.1%)	0 (0.0%)
1970 - 1979	589	3 (0.5%)	9 (1.5%)	0 (0.0%)
1980 - 1989	1193	9 (0.8%)	15 (1.3%)	0 (0.0%)
1990 - 1999	103	0 (0.0%)	1 (1.0%)	0 (0.0%)
2000 and >	4	0 (0.0%)	0 (0.0%)	0 (0.0%)
Not Reported	102	0 (0.0%)	0 (0.0%)	0 (0.0%)
Totals	2,712	17	38	1

SAVANNAH RIVER SITE
Beryllium Screening Summary Outcomes

Beryllium Screening Outcomes through January 1, 2004, to December 31, 2005

Number of workers screened	619
Number w/1 abnormal BeLPT	3 (0.5%)
Number w/2 abnormal BeLPTs	4 (0.7%)
Number w/ CBD	0 (0%)

Job Category	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Be Fabricator	0	0
Be Handling	0	0
Maintenance	0	0
Stand-by	0	0
Labor and D&D	3	4
Administrative	0	0
Scientific	0	0
Unknown	0	0
Totals	3	4

Years Worked	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
Less Than 5	183	1 (0.5%)	0 (0.0%)
5 to <10	118	0 (0.0%)	0 (0.0%)
10 to <15	72	1 (1.4%)	1 (1.4%)
15 to <20	108	0 (0.0%)	1 (0.9%)
20 to <25	81	1 (1.2%)	1 (1.2%)
25 to <30	13	0 (0.0%)	1 (7.7%)
30 or >	30	0 (0.0%)	0 (0.0%)
Not Reported	14	0 (0.0%)	0 (0.0%)
Totals	619	3	4

Year of First Hire	Number Tested	Number w/1 Abnormal BeLPT	Number w/2 Abnormal BeLPTs
<= 1959	54	0 (0.0%)	1 (1.9%)
1960 - 1969	20	0 (0.0%)	0 (0.0%)
1970 - 1979	76	1 (1.3%)	0 (0.0%)
1980 - 1989	401	2 (5.0%)	2 (5.0%)
1990 - 1999	60	0 (0.0%)	1 (1.7%)
2000 and >	8	0 (0.0%)	0 (0.0%)
Not Reported	0	0 (0.0%)	0 (0.0%)
Totals	619	3	4