



# FORMER WORKER MEDICAL SCREENING PROGRAM



# 2012 ANNUAL REPORT





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## Abbreviations Used in This Report

AEC	<i>Atomic Energy Commission</i>
AFL-CIO	<i>American Federation of Labor and Congress of Industrial Organizations</i>
BAECP	<i>Burlington Atomic Energy Commission Plant</i>
BeLPT	<i>Beryllium Lymphocyte Proliferation Test</i>
BTMed	<i>Building Trades National Medical Screening Program</i>
CBD	<i>Chronic Beryllium Disease</i>
CEDR	<i>Comprehensive Epidemiologic Data Resource</i>
COPD	<i>Chronic Obstructive Pulmonary Disease</i>
CPWR	<i>CPWR – The Center for Construction Research and Training</i>
CT	<i>Computed Tomography</i>
DOE	<i>U.S. Department of Energy</i>
DOL	<i>U.S. Department of Labor</i>
EEOICP	<i>Energy Employees Occupational Illness Compensation Program</i>
EEOICPA	<i>Energy Employees Occupational Illness Compensation Program Act</i>
ELCD	<i>Early Lung Cancer Detection</i>
FMPC	<i>Feed Materials Production Center</i>
FWP	<i>Former Worker Medical Screening Program or Former Worker Program</i>
FY	<i>Fiscal Year</i>
GDP	<i>Gaseous Diffusion Plant</i>
HSS	<i>Office of Health, Safety and Security</i>
IAAP	<i>Iowa Army Ammunition Plant</i>
IRB	<i>Institutional Review Board</i>
JHBSPH	<i>Johns Hopkins Bloomberg School of Public Health</i>
JOTG	<i>Joint Outreach Task Group</i>
K-25	<i>Oak Ridge K-25 Gaseous Diffusion Plant</i>
LANL	<i>Los Alamos National Laboratory</i>
NIOSH	<i>National Institute for Occupational Safety and Health</i>
NNSS	<i>Nevada National Security Site</i>
NSSP	<i>National Supplemental Screening Program</i>
ORNL	<i>Oak Ridge National Laboratory</i>
PFT	<i>Pulmonary Function Test</i>
SNL	<i>Sandia National Laboratories</i>
SOMD	<i>Site Occupational Medical Director</i>
UNM	<i>University of New Mexico</i>
WHPP	<i>Worker Health Protection Program</i>
Y-12	<i>Y-12 National Security Complex</i>

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## Foreword

The year 2012 marked the 70<sup>th</sup> anniversary of the establishment of the Manhattan Project by President Roosevelt. The U.S. Department of Energy's (DOE) Office of Health, Safety and Security (HSS) has the honor and privilege of working to protect the health and safety of thousands of workers throughout the DOE complex – past and present. HSS proudly takes responsibility for fulfilling DOE's obligations to the former workers who may have contracted illnesses as a result of their exposure to hazardous materials in the development and maintenance of the Nation's nuclear weapons.

HSS is able to fulfill this obligation through the Former Worker Medical Screening Program or Former Worker Program (FWP), which was established by the U.S. Congress as part of Section 3162 of the National Defense Authorization Act for Fiscal Year 1993.

The legislation called for DOE to provide ongoing medical examinations, at no cost, to all DOE Federal, contractor, and subcontractor workers. The medical screenings are designed to check for adverse health effects resulting from their work at DOE facilities. The exams are available to individuals every three years through a group of dedicated medical experts from teams comprised of universities, unions, and commercial organizations with expertise in administering occupational medical programs. The program's success and accomplishments are largely due to these medical experts and their dedication to DOE's former workforce.

The recognition of DOE workers' faithful service and dedication to their country in building its nuclear defense and contributing to its security from World War II through the Cold War was once again epitomized by the U.S. Senate's unanimous approval, for the fourth consecutive year, of a resolution (*S. Res. 519*) dedicating October 30, 2012, as the National Day of Remembrance for Cold War nuclear weapons workers.

While we have made great strides throughout the past 16 years in proactively identifying, locating, and offering medical screening services to our former workers, there are still many who have not been served. HSS, in partnership with the HSS-funded organizations administering the program and DOE program offices, will continue to meet our commitment to these workers who made great sacrifices for our National security. While the administering organizations serve as objective, third-party providers of the exams, the DOE program offices and sites also provide a valuable service by assisting HSS in identifying former workers and sharing information with current workers about the availability of this program when they retire or separate from DOE sites.

The FWP demonstrates the importance of advocating for the thousands of workers throughout DOE, especially those who have been harmed or injured in performing their work for the Nation. HSS continues to advocate for former, as well as current, DOE workers by challenging the organizations administering the program to look for ways to maximize its effectiveness in order to enhance the program and to provide improved services within existing funding. The FWP is an exceptionally important program, and we take great pride in our support and management of it.

**Glenn S. Podonsky**  
**Chief Health, Safety and Security Officer**  
**U.S. Department of Energy**

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## Executive Summary

The U.S. Department of Energy's (DOE) Office of Health, Safety and Security (HSS) is pleased to present the 2012 Annual Report of the DOE Former Worker Medical Screening Program, also known as the Former Worker Program (FWP). The FWP was mandated by the U.S. Congress as part of Section 3162 of the National Defense Authorization Act for Fiscal Year (FY) 1993 (Public Law 102-484).

Since 1996, FWP has provided ongoing medical screening examinations, at no cost, to all interested and eligible former DOE Federal, contractor, and subcontractor workers from all DOE sites. The estimated population of former workers who may be eligible to receive these medical screening services is upwards of 600,000 individuals.

Medical screening is a strategy used to identify diseases or conditions in a select population at an early stage, often before signs and symptoms develop. The medical screening exams offered by the FWP are designed to detect work-related health effects from a wide range of potentially hazardous exposures, including radiation, beryllium, asbestos, lasers, silica, lead, cadmium, chromium, solvents, noise, and other occupational exposures. Individuals who are found to have any abnormal medical findings are referred to their personal physicians or a specialist for additional testing and diagnoses. Follow-up care is not covered by the FWP, and the program is not intended to serve as a substitute for routine medical exams through an individual's personal physician.

In order to ensure objective and credible medical examinations, HSS, on behalf of DOE, offers medical screening exams by third-party providers. The administration of these medical examinations is built on the principles of absolute confidentiality and respect for the privacy of individuals. Exams are offered at clinics in communities near DOE sites, as well as through a large network of health clinics nationwide to allow for services to be provided in close proximity to most workers' residences. In fact, this vast network of clinics has allowed the FWP to provide participant medical screening exams in all 50 states, Canada, Puerto Rico, and the Philippines.

The success of the FWP is due, in large part, to HSS's collaboration with independent, credible, and highly regarded medical experts in the field of occupational medicine. Their dedication to the DOE workforce over the past 16 years has resulted in high-quality services, and the level of satisfaction expressed by participants speaks to the skill and professionalism of the organizations administering the program for HSS.

In 2012, the FWP continued to successfully fulfill its congressional mandate of delivering free medical screening services to all interested and eligible former workers. The program continued to implement numerous outreach and awareness campaigns to inform and encourage former workers to take advantage of its potentially life-saving medical screening benefits.

The program activities undertaken in 2012 focused on meeting the following objectives:

- **Deliver high-quality medical screening services to thousands of former workers nationwide.**

To date, 93,684 screenings and re-screen exams have been performed. In FY 2012 alone, 4,815 initial medical examinations and 3,578 re-screen exams were conducted.

- **Enhance the efficiency and effectiveness of program implementation.**

The overall success of the FWP is ultimately measured by the number of former workers who can be identified, located, contacted, and provided with timely medical examinations and follow-up recommendations. This process requires close coordination, timely communication, and frequent interaction among several stakeholders that include workers, labor unions, worker advocates, DOE Institutional Review Boards (committees overseeing the protection of human subjects), DOE Headquarters program offices, DOE field and site offices, DOE contractors, local and state entities and elected officials, and congressional representatives. Additionally, the process requires adequate protection of personally identifiable information and protected health information.

In 2012, HSS continued to focus on improving program effectiveness. These efforts included:

- *Worked with DOE Headquarters program offices, field offices, contractors, and labor unions to more effectively and efficiently access employment records and obtain “last known” contact information.* This effort has resulted in improved communication and sharing of employee rosters.
- *Strengthened the effectiveness and coordination of various outreach and awareness campaigns by continuing to partner with other Federal agencies in the previously established Joint Outreach Task Group (JOTG).* The agencies and entities involved include HSS, the U.S. Department of Labor (DOL), the National Institute for Occupational Safety and Health (NIOSH), the Offices of the Ombudsman for DOL and NIOSH, and the HSS-funded FWP projects. This effort enabled more effective outreach, enhanced communication, and provided more clarity and consistency in the information and guidance provided to former workers on the programs and benefits available to them. In 2012, the JOTG began preparing an informational video that describes the benefits and services available to DOE workers and their family members through the FWP and the DOL-administered Energy Employees Occupational Illness Compensation Program. HSS plans to make the video available on its website to make it easily accessible to interested parties.

Ultimately, the results of these medical examinations provide valuable insights to advance the scientific and public health communities’ understanding of the health effects that may result from work-related exposures. This improved knowledge has led to enhanced safety and health measures that will better protect the current and future generations of workers.

The FWP has served, and continues to serve, as a benefit to the former DOE workforce. While the program has identified, located, and offered medical screening services to tens of thousands of former workers, there is still much work to be done to continue these efforts. Therefore, the FWP will continue to fulfill its obligation to the original mandate, as well as to fulfill the huge debt we owe to the workers who served our Nation during World War II, the Cold War, and beyond.

“You’ll never get a physical as good as the one you receive through the BTMed. Not even from your own personal doctor.”

*-Grady Boyd, Jr., former Oak Ridge Y-12, K-25, and X-10 worker*

## 1.0 Program Overview

This 2012 Annual Report presents an overview of the structure, accomplishments, and future endeavors of the U.S. Department of Energy (DOE) Former Worker Medical Screening Program or Former Worker Program (FWP). The FWP is a congressionally mandated program that is responsible for providing medical screening exams to interested and eligible former DOE workers to check for potential adverse health outcomes related to occupational exposures, including but not limited to radiation, beryllium, asbestos, lasers, silica, welding fumes, lead, cadmium, chromium, solvents, and noise. The FWP makes ongoing medical examinations available, at no cost, to all interested former DOE Federal, contractor, and subcontractor workers from all DOE sites.

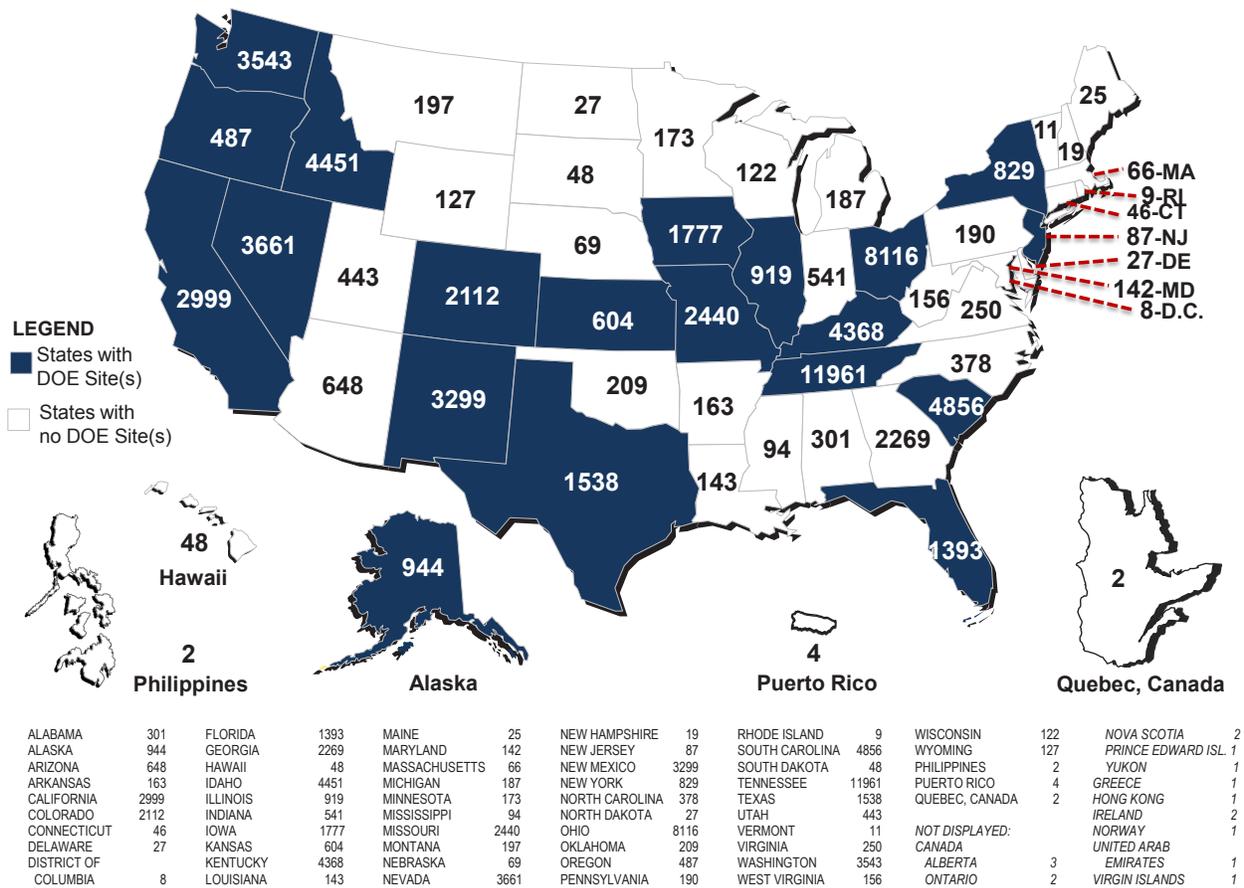
The program was established following the issuance of the National Defense Authorization Act for Fiscal Year (FY) 1993 (Public Law 102-484), which called for DOE to:

**“... establish and carry out a program for the identification and on-going medical evaluation of its... former employees who are subject to significant health risks as a result of the exposure of such employees to hazardous or radioactive substances during such employment.”**

Since the inception of the FWP, DOE has made great strides in addressing the occupational health legacy of its nuclear weapons design and production activities. The FWP, managed by the DOE Office of Health, Safety and Security (HSS), uses independent occupational health experts from universities, labor unions, and commercial organizations to administer the medical screening program. The medical exams are offered by third-party providers to ensure objective and credible medical evaluation services.

The success of the FWP is due, in large part, to HSS’s collaboration with independent, highly regarded medical experts in the field of occupational medicine. Funded by HSS, these projects operate independently and are perceived as flexible, accessible, and sensitive to worker concerns and issues. While each project has unique characteristics and has employed different approaches to meeting their objectives, all have continuously improved and upgraded their delivery systems. Consequently, they enjoy a high comfort factor among their participant populations. Their dedication to the DOE workforce over the past 16 years has resulted in high-quality services, and the level of satisfaction expressed by participants speaks to the skill and professionalism of the organizations administering the program for HSS.

Screenings are provided at clinics in communities near DOE sites, as well as through a large network of health clinics nationwide to allow for services to be provided in close proximity to most workers’ residences. In fact, this vast network of clinics has allowed the FWP to provide participant exams in all 50 states, Canada, Puerto Rico, and the Philippines (see Figure 1).



**Figure 1. Participants Screened by State of Residence Program to Date through September 2012**

The estimated population of former workers who may be eligible to receive these medical screenings is upwards of 600,000 individuals. Over 456,000 potential FWP participants have been contacted to date. Of those, 74,295 have participated in the program. A total of 93,684 exams have been conducted through the FWP, 72,866 initial exams and 20,818 re-screen exams. In addition, 1,429 workers have participated solely in the Early Lung Cancer Detection (ELCD) program (see Section 2.0, Program Implementation, for more information regarding this program).

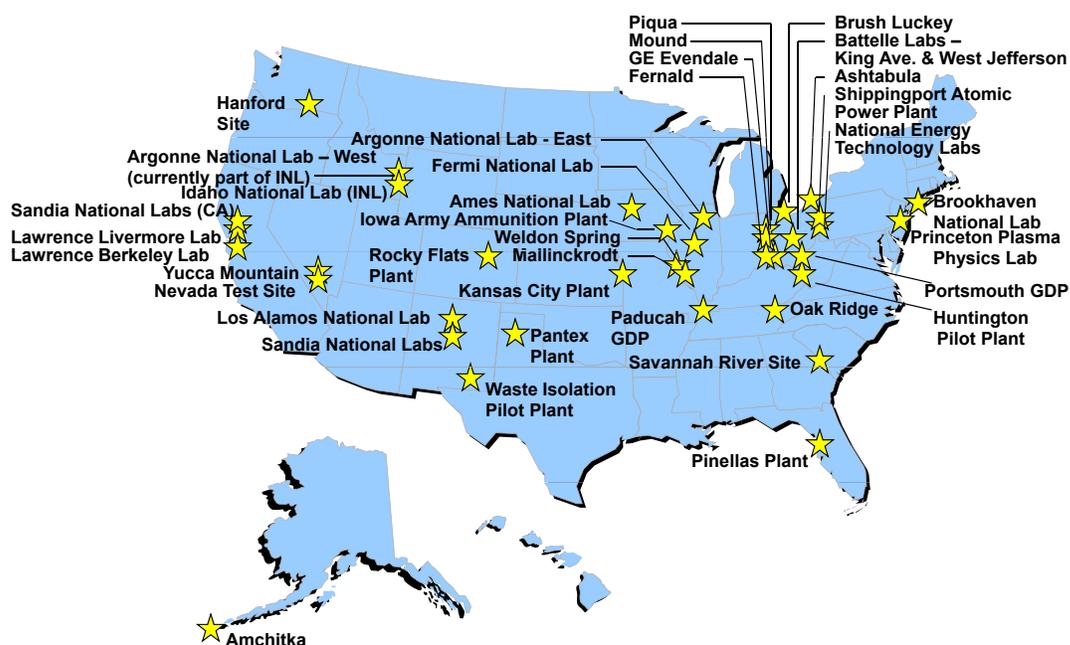
The FWP infrastructure consists of four designated regional projects located near major DOE sites, as well as two nationwide projects.

The regional projects include:

- Pantex Former Worker Medical Surveillance Program, conducted by Drexel University School of Public Health in conjunction with the University of Texas Health Science Center at Tyler and West Texas A&M Partners Clinic
- Medical Exam Program for Former Workers from Los Alamos and Sandia (New Mexico) National Laboratories, conducted by Johns Hopkins Bloomberg School of Public Health in conjunction with the University of New Mexico

- Worker Health Protection Program, conducted jointly by Queens College of the City University of New York, United Steelworkers, the Atomic Trades and Labor Council in Oak Ridge, and the former Fernald Atomic Trades and Labor Council
- Former Burlington Atomic Energy Commission Plant and Ames Laboratory Workers Medical Screening Program conducted by The University of Iowa College of Public Health.

The nationwide projects include the Building Trades National Medical Screening Program (BTMed) and the National Supplemental Screening Program (NSSP). The BTMed provides medical screening exams for construction workers from 27 DOE sites. BTMed is structured to meet the requirements of former workers who have had many different employers and extremely sporadic job-related exposures due to the nature of the work conducted by the building trades at DOE sites. These workers are exposed not only to the hazards typical of construction workers, but, potentially, also to additional hazardous substances within the production or cleanup environment on DOE sites. The NSSP, in addition to providing medical exams to workers from eight primary DOE sites, also provides medical screening services to former DOE workers from sites not covered by a regional project, workers whose regional project has been phased out, or workers who no longer live in close proximity to the regional screening clinics. Since many former workers move away from DOE sites once they retire/leave employment, both BTMed and NSSP ensure that all former DOE workers have easy access to screening, regardless of their previous worksite or location, through their nationwide network of clinics. Figure 2 provides a map indicating the DOE sites where regional projects have been initiated. The DOE sites, sponsoring organizations, and the year that screening was initiated are provided in a summary of services posted on the FWP website ([http://www.hss.doe.gov/healthsafety/fwsp/formerworkermed/Summary\\_of\\_Services.pdf](http://www.hss.doe.gov/healthsafety/fwsp/formerworkermed/Summary_of_Services.pdf)), and individual FWP projects are described in Appendix A.



**Figure 2. DOE Sites Served by FWP Regional Projects**

The FWP directly benefits former DOE workers by: (1) identifying health problems at an early stage when they are more treatable, and (2) improving workers' understanding of health risks they may face due to possible exposures during their prior employment with DOE. To date, FWP has provided 93,684 free medical screening examinations to former Federal, contractor, and subcontractor employees who worked for the Department and/or its predecessor agencies (the Atomic Energy Commission and the Energy Research and Development Administration).

Additional in-depth information regarding the FWP, how it is managed and administered by HSS, and descriptions of the exam components can be found on the FWP website (<http://www.hss.energy.gov/HealthSafety/FWSP/formerworkermed/>).

“I participated in the medical screening not expecting to find any problems as I worked in the shop with calibration reports and as clerical support in the general stores area. For several years I had been treated for breathing problems related to ‘adult asthma.’ The findings of the Pantex screening showed asbestosis and occupational lung disease. I feel my doctor can more effectively manage my breathing problems now. While discussing how I was exposed, the Pantex former worker program doctors found Richard, my husband, had worked at Mason Hanger in areas where asbestos and other agents were used and that he was eligible for the same screening. A few months later the x ray report showed that Richard also has asbestosis and we are both now involved in the claims process.”

*-Marilyn Keene, former Pantex worker*



## 2.0 Program Implementation

Program implementation focuses on four specific activities, which are:

- Outreach: Identify and notify former DOE workers about FWP medical screening services.
- Ongoing Medical Screening: Provide medical screening exams that are designed to check for health conditions related to occupational exposures to former workers who choose to participate in the program, including a re-screen exam every three years.
- Communicate Results: Provide exam results to participants, as well as information regarding any conditions that may require follow-up medical care with their personal physicians or specialists, and provide information regarding possible compensation for work-related illnesses. *Follow-up care is not covered by the program.*
- Sharing Data: Use the collected information to implement new strategies for current worker safety and health programs at DOE sites while still protecting sensitive participant information and confidentiality.

### **Outreach: Identify and notify former DOE workers about FWP medical screening services.**

All former DOE Federal, contractor, and subcontractor employees from all DOE facilities are eligible to participate in the program. Although the historical best estimate for the population of former workers who are entitled to receive medical examinations through the FWP is upwards of 600,000 individuals, the precise number of workers remains unknown.

Most of the FWP projects use multiple outreach methods to increase the visibility of the program in communities surrounding DOE sites and to notify potentially eligible DOE workers about the availability of FWP services. These methods are three-fold: 1) roster-based, 2) community-based, and 3) organization-based.

In order to determine workers who may be eligible to participate in the program, HSS works closely with DOE Headquarters program offices to obtain *rosters* of former employees from site contractors and DOE field offices. Rosters are lists of names, along with other identifying information, of former DOE workers that may be available from employers or DOE. In 2012 alone, the FWP received new or updated rosters from 11 sites. Invitations are sent by the FWP projects to employees on the rosters, using the last known addresses. When addresses are found to be outdated or inaccurate, supplemental outreach methods are used; these include Internal Revenue Service mailings and address-update services, such as credit bureaus.



**Lou Doll, BTMed local outreach coordinator, participating at the Cincinnati AFL-CIO Labor Day Picnic.**

However, from the inception of the FWP, DOE recognized the challenges inherent in locating workers to participate in the medical screening program since there is no centralized database of DOE workers. In addition, many workers were intermittently employed by subcontractors, and these companies typically do not leave a copy of employee records with the prime contractor when their job is completed. The result is that the availability of rosters varies greatly by site.

To overcome this obstacle, the FWP also employs a *community-based* approach to increase the likelihood of successfully locating and informing former workers of the program. Chief among these practices is the greater reliance on former workers themselves to serve as program advocates. Specifically, the FWP projects have recruited former workers to serve as local outreach coordinators. These coordinators or local “ground teams” are one of the program’s most effective resources for identifying and reaching out to their former colleagues and coworkers.

*Organization-based* approaches center on DOE workers’ direct or indirect contact with their former employers, unions, or news media. These contacts are enhanced by the relative closeness of rural communities where many DOE facilities are or were located. Local unions are also actively involved and engaged with the FWP in identifying potential participants. A great advantage of both the community- and organization-based outreach is that the communication can be targeted either to the individual DOE worker or to an entire DOE worker population.

In addition, program information is shared through providing FWP brochures in exit packets for workers separating from the site, and publishing program materials and hyperlinks on retiree and DOE site webpages.

The necessity for effective and creative outreach has gained increasing prominence over the life of the FWP, as the less easily located and notified workers require added effort and attention in order to fulfill the mandate of the FWP.

As of September 30, 2012, over 456,000 potential FWP participants have been contacted. Those who are interested and eligible have either completed their examinations or are in the process of being scheduled for an exam.

**Ongoing Medical Screening: Provide medical screening exams that are designed to check for health conditions related to occupational exposures to former workers who choose to participate in the program, including a re-screen exam every three years.**

### **Conventional Medical Screening Program**

Medical screening is a strategy used to identify diseases or conditions in a select population at an early stage, often before signs and symptoms develop, and to refer individuals with suspicious findings to their personal physician or a specialist for further testing, diagnosis, and treatment. The program is not intended to serve as a substitute for routine medical exams through an individual’s personal physician.



The medical screening exam offered by the FWP evaluates employees’ health as it relates to their potential occupational exposures to hazardous agents. The FWP uses a customized medical screening protocol that



was developed by a team of independent physicians specializing in occupational medicine and disease in partnership with subject matter experts from HSS. The protocol is periodically updated, as necessary, based on new research findings within the scientific/medical community. The health conditions targeted in the exams include chronic lung and pleural diseases, beryllium-related disorders, hearing loss, and damage to other selected major organ systems that may be associated with occupational exposures. A listing of exposures and medical examinations offered through the FWP is available in the medical protocol posted on the FWP website ([http://www.hss.doe.gov/healthsafety/fwsp/formerworkermed/Medical\\_Protocol.pdf](http://www.hss.doe.gov/healthsafety/fwsp/formerworkermed/Medical_Protocol.pdf)).

Prior to participating in the medical screening program, former workers must complete a medical history questionnaire and an occupational history questionnaire, either on their own or via an interviewer-conducted session. The interviews are conducted by the local outreach coordinators employed by the FWP projects who, in many cases, are former workers with knowledge of DOE sites and exposures.

The initial medical screening examination includes a physical examination and may consist of the following based on the individual's occupational exposure history as reported in the questionnaire/interview:

- Chest x-ray with interpretation for occupational lung disease (B reading)
- Spirometry (breathing test)
- Beryllium Lymphocyte Proliferation Test (BeLPT)
- Blood chemistry test
- Urinalysis
- Audiometry (hearing test).

*Participation in the FWP is completely voluntary, and participants can refuse any portion of the screening examination.*

The original legislation for the FWP also called for the program to provide ongoing medical examinations; therefore, former workers are entitled to a re-screen examination three years after their initial medical screening and every three years thereafter. A period of latency (the time between the exposure and the potential onset of the disease) is common with a number of the work materials and processes at DOE sites that have an established association with a particular disease risk due to a particular exposure. The re-screening improves the detection of latent occupational disease, which may not show signs or symptoms for decades after exposure. It should also be noted that certain tests may be recommended only during the initial screening exam and excluded from the re-screen exam. For example, audiometry (hearing test) is not offered on the re-screen exam, since occupational hearing loss would typically be detected during the initial screening exam of retired workers.

The medical screening examinations, while focusing on the detection of occupational disease, also provide an overall picture of the "general health" of DOE former workers. In addition to its core function of identifying conditions that may have been related to workplace exposures, the program also provides some general health screening services at little additional cost to the Department.

Participants are screened for some common non-occupational health conditions, such as blood sugar (diabetes), cholesterol (coronary artery disease), blood pressure (cardiovascular disease/hypertension), obesity, and elevated creatinine levels (a blood test used to assess kidney function). While not intended to be a comprehensive examination, these tests provide for the early detection of these conditions without significantly impacting the overall focus and cost of the program.

The standard medical screening protocol used by the FWP is known to detect incidental findings. An incidental finding, or unanticipated abnormal finding, is information discovered during routine medical exams that, in many cases, ends up saving lives. Examples of incidental findings include:

- Chest x-ray: pneumonia, abdominal aortic aneurysm
- Audiogram (hearing test): age-related hearing changes
- Complete blood count: anemia
- Physical exam: non-cancerous skin conditions.

A value-added benefit to the FWP physical exam is the opportunity for health practitioners to provide wellness counseling. Studies have shown that individuals are more likely to stop smoking, for example, when a health care provider counsels them to do so. Similarly, the re-screening examination is an opportunity to educate former workers about behavior changes to improve their overall health status for improved quality of life and also affords the opportunity to look for any changes in the individual's overall health condition from the previous exam, making early referral and treatment more effective for a positive outcome.

The results of general health screening tests, as well as incidental findings picked up on examination, can be of great benefit to a participant. Many of the conditions that fall into this category can be readily treated by the participant's personal physician and can significantly improve longevity and quality of life. HSS and the FWP projects are committed to ensuring that the overall wellbeing of our workers is evaluated within the program.

As of September 2012, 72,866 initial exams have been conducted and 20,818 re-screens have been performed three or more years after the initial screening and evaluation. A breakdown of the number of initial and re-screen exams by DOE site is presented in Appendix B. A detailed description of each of the components of the medical exams can be found on the FWP website ([http://www.hss.energy.gov/healthsafety/FWSP/formerworkermed/conventional\\_medical\\_screening\\_program.html](http://www.hss.energy.gov/healthsafety/FWSP/formerworkermed/conventional_medical_screening_program.html)). The medical findings broken out by DOE site, can be found in Appendix C. A summary of medical examinations performed to date is presented in Tables 1-4 below. Only new abnormal findings on re-screen exams are reported.

“Three years ago I participated in the Ames Laboratory Former Worker Medical Screening by the University of Iowa College of Public Health. They provided a series of extensive diagnostics medical workups. My results detected symptoms of cancer cells in my body.

A follow-up colonoscopy detected a mass; two days later one third of my colon was removed. It was pre-cancerous. This early diagnosis saved my life. I am grateful for the Ames Lab screening. I wish ALL people could have this opportunity.”

*-former Ames Laboratory worker*

**Table 1. Chest X-ray Findings on Initial and Re-screen Exams  
(through September 2012)**

Screening Exam	Workers Screened	Asbestos-related Lung Disease <sup>1</sup>	Silicosis <sup>2</sup>	Other Dust-related Disease	Lung Nodules, Nodes, or Lesions
Initial	65,269	7,936 (12.2%)	192 (0.3%)	979 (1.5%)	2,022 (3.1%)
Re-screen	16,894	1,135 (6.7%)	13 (0.1%)	130 (0.8%)	328 (1.9%)

**Table 2. Spirometry Findings on Initial and Re-screen Exams  
(through September 2012)**

Screening Exam	Workers Screened	Obstructive Airways Dysfunction Detected <sup>3</sup>
Initial	65,013	13,772 (21.2%)
Re-screen	16,924	3,197 (18.9%)

**Table 3. Results of Beryllium Lymphocyte Proliferation Tests on Initial and Re-screen Exams  
(through September 2012)**

Screening Exam	Workers Screened	1 Abnormal <sup>4</sup>	2 Abnormal	1 Abnormal and 1+ Borderline
Initial	57,502	804 (1.4%)	613 (1.1%)	213 (0.4%)
Re-screen	16,175	114 (0.7%)	111 (0.7%)	50 (0.3%)

**Table 4. Audiometry Findings on Initial Exam  
(through September 2012)**

Workers Screened	Noise-induced Hearing Loss
57,975	35,018 (60.4%)

- 1 Asbestos-related disease, or asbestosis, is a lung disease caused by breathing in asbestos fibers.
- 2 Silicosis is a lung disease caused by breathing in silica dust.
- 3 Chronic Obstructive Pulmonary Disease is a progressive lung disease caused by long-term exposure to lung irritants, such as cigarette smoke, air pollution, chemical fumes, or dust. Asthma is a chronic inflammatory disease of the bronchial tubes, or airways, that causes swelling and narrowing of the airways. It is thought to be caused by a combination of environmental and genetic factors.
- 4 Individuals with one abnormal BeLPT are encouraged to file a claim with the Department of Labor Energy Employees Occupational Illness Compensation Program. Beryllium sensitization is diagnosed by an occupational medicine physician based on abnormal BeLPT results.

## Early Lung Cancer Detection Program

Since 2000, DOE has made screening for occupational lung cancer with low-dose helical computed tomography (CT) scans available to workers at high risk for lung cancer. Many former workers are at risk for lung cancer as a result of the essential activities they undertook in fulfilling the Department's mission. Through the FWP, DOE initiated the Early Lung Cancer Detection (ELCD) program using low-dose helical CT scans to detect lung cancers at an earlier, more treatable stage. Lung cancer results in about 160,000 deaths in the U.S. every year. The most common causes of lung cancer are long-term exposures to tobacco smoke and residential radon emissions, but occupational hazards, such as asbestos and ionizing radiation, also cause or contribute to the disease.

In 2000, the Worker Health Protection Program (WHPP), one of the FWP projects that is administered by Queens College of the City University of New York and the United Steelworkers, began using low-dose helical CT scans to screen individuals who met established eligibility criteria, including a history of at-risk occupational exposure to lung carcinogens such as asbestos, beryllium, radioactive materials, nickel, and chromium. WHPP offers the ELCD program at the following DOE sites: Oak Ridge K-25, Paducah, and Portsmouth Gaseous Diffusion Plants; Y-12 National Security Complex; Oak Ridge National Laboratory; Mound Plant; and the Feed Materials Production Center (FMPC or Fernald).

FWP medical screening services, including the ELCD, are covered by DOE human subjects protection requirements, and DOE has taken steps to ensure that participants are fully informed of the possible risks and benefits of the ELCD. The WHPP screening program is overseen and approved by two Institutional Review Boards (IRBs), which were established to oversee the protection of human subjects research. The IRB's role is to review FWP information provided to potential participants and informed consent material to ensure that they clearly and accurately depict the benefits and risks of participating in the screening program, the screening process, and how individuals' test results will be stored and protected.

From 2000 through September 30, 2012, WHPP performed chest CT scans on 12,148 workers, for a total of 32,684 CT scans (including repeat scans for indeterminate nodules). The results are summarized in Table 5 below. Eighty-seven ELCD program participants were identified as having primary lung cancer. WHPP determined the stage of these cancers – indicated by a descriptor (usually numbers I to IV) representing how much the cancer has spread – and found that 57 of the 77 individuals whose lung cancers have been staged to date (10 are pending) had a Stage I or II non-small cell or limited small cell cancer at the time of diagnosis. CT screening detected these cancers at an early stage, when treatment is more likely to be effective, and proved to be better for early detection than conventional chest x-rays.



**Informed consent being administered to a WHPP participant.**

**Table 5. Stage of Lung Cancers Detected by WHPP  
Early Lung Cancer Detection Program, 2000-September 30, 2012<sup>5</sup>**

Site of ELCD Program	Number of Participants Screened	Number of Lung Cancers Detected	Number of Detected Lung Cancers That Were Staged	Number (%) of Early (Stage I or II Non-Small Cell or Limited Small Cell) Cancers Detected
Paducah	1,942	12	9	8 (67%)
Portsmouth	2,218	19	19	15 (79%)
K-25	2,804	25	23	19 (76%)
ORNL	1,249	10	8	2 (20%)
Y-12	2,866	16	15	10 (63%)
Mound Plant	575	4	3	3 (75%)
FMPC	400	0	N/A	N/A
<b>Total</b>	12,148	87	77	57 (66%)

The WHPP ELCD program has also detected other diseases of importance, as shown in Table 6.

**Table 6. Other Diseases Found on CT Scan**

Condition	Number Detected
Appendiceal cancer	1
Breast cancer	1
Kidney cancer	4
Liver cancer	1
Lymphoma	2
Thyroid cancer	4
Aortic aneurysms	21
Pneumonia	30

More recently, WHPP expanded its ELCD program to include former Nevada National Security Site (NNSS, formerly known as the Nevada Test Site) workers who may have been exposed to lung carcinogens such as asbestos, silica, beryllium, radioactive materials, and diesel exhaust. The opening ceremony for the NNSS ELCD program was held on August 8, 2012, at the National Atomic Testing Museum in Las Vegas. Data from this new program will be presented in next year's annual report.

In addition, the Building Trades National Medical Screening Program (BTMed), another component of the FWP, began a pilot screening program in April 2011. This pilot program included 100 participants at Oak Ridge, and was coordinated by CPWR – The Center for Construction Research and Training and

<sup>5</sup> Early cancer is defined as Stage I or II non-small cell or limited small cell.

supported by the Building and Construction Trades Department of the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) and the Knoxville Building and Construction Trades Council that represent construction workers at the Oak Ridge Reservation. Baseline scans have been completed, and workers are now returning for either their follow-up scans to check on indeterminate nodules or their one-year follow-up scan. Two workers were found to have Stage IV lung cancer, and one individual was found to have kidney cancer.

In early FY 2013, the WHPP ELCD program was further expanded to former Idaho National Laboratory production workers. Additional plans for expansion to other projects are underway.

Ultimately, the results of low-dose helical CT scans and medical examinations provide valuable insights to advance the scientific and public health communities' understanding of the health effects that may result from work-related exposures. This improved knowledge is likely to lead to enhanced safety and health measures that will better protect the current and future generation of workers.

More in-depth information regarding the ELCD program, including low-dose CT scans, can be found on the FWP website ([http://www.hss.energy.gov/healthsafety/FWSP/formerworkermed/early\\_lung\\_cancer\\_detection\\_program.html](http://www.hss.energy.gov/healthsafety/FWSP/formerworkermed/early_lung_cancer_detection_program.html)).

“I’ve been through cancer four times, and I’m still here. I’ve been able to see my grandson play football in college because of the information I’ve received from this program.”

*-Greg Love, former K-25 worker*



**Communicate Results: Provide exam results to participants, as well as information regarding any conditions that may require follow-up medical care with their personal physicians or specialists, and provide information regarding possible compensation for work-related illnesses. *Follow-up care is not covered by the program.***

Occupational medicine physicians review the results from the screening exams, along with the completed medical and occupational exposure history questionnaires, to determine whether there are any abnormal findings that may require immediate attention and whether the findings may have been caused by a work-related exposure. Participants requiring urgent medical attention for an abnormal test result are contacted immediately by phone, informed of the finding, and provided recommendations for further evaluation and treatment by their primary care physicians or a specialist. The findings are also documented in a letter to the participant, otherwise known as an “urgent letter,” that is sent by overnight mail.

Workers are provided with a summary of all of the findings from their screening examination in a results letter several weeks after their examination, along with any necessary follow-up recommendations. Although the primary focus of the results letter is to provide a summary of any possible occupational-related findings and follow-up recommendations for those findings, the letter also includes a summary of all of the findings, including non-occupational findings, discovered during the screening. The results letter also includes general health advice for workers, such as recommendations for smoking cessation. Individuals who are found to have any abnormal medical findings are referred to their personal physicians or a specialist for follow-up care.

While the FWP projects offer medical screening tests, follow-up medical care is not covered by the program. If the FWP screening result indicates a need for medical treatment, efforts are made to ensure that participants get the necessary care. This involves communicating with the participants, their families, and their personal physicians. If participants do not have personal physicians or if they do not have the means to pay for additional medical care, the projects try to arrange for care in a variety of ways.

When appropriate, the physicians who write the results letters include language regarding the possible work-relatedness of a condition, especially if the condition is known to be a potential occupational disease. The inclusion of this language, known as “causation” language, can be very helpful for participants who decide to file a claim under the Energy Employees Occupational Illness Compensation Program Act (EEOICPA), which is administered by the U.S. Department of Labor (DOL). Moreover, participants are provided contact information for EEOICPA Resource Centers in the results letters.

The FWP complements the Energy Employees Occupational Illness Compensation Program (EEOICP), as it offers former DOE workers medical examinations that are conducted by expert occupational medicine physicians, providing workers with expert, detailed information about the possible relationship between their condition and their occupational exposure at a DOE site. In addition, FWP project staff, many of whom are former DOE workers, are able to assist participants by providing useful site and exposure information to include in their claims packages. While participation in the medical screening program is not required for filing a compensation claim, the medical results are often useful in supporting an EEOICPA claim. The FWP will also refer individuals to other state and Federal workers’ compensation programs when appropriate.

**Sharing Data: Use the collected information to implement new strategies for current worker safety and health programs at DOE sites while still protecting sensitive participant information and confidentiality.**

The confidentiality and privacy rights of former workers are not only a legal requirement, they are crucial to establishing and maintaining credibility with the former worker community. All medical information that is collected as part of this program is treated as confidential and is used only as allowed by the Privacy Act of 1974. All FWP activities are conducted with the approval of the IRBs, or Human Subjects Committees, from DOE and involved universities. All individuals sign an informed consent and Health Insurance Portability and Accountability Act (HIPAA) authorization prior to participation.

De-identified (i.e., with personal identifiers removed), combined medical results from FWP activities are shared with the DOE Field and Site Office Managers, Laboratory Directors, Contractor Plant Managers, and Site Occupational Medical Directors (SOMDs) during site visits and reported on at various meetings, such as the Energy Facility Contractors Group Occupational Medicine Subgroup meetings and the Beryllium Health and Safety Committee meetings, as well as through this annual report. The collection and analysis of this information can assist with identifying disease trends at a particular site, within a specific population (job class) of workers, or for a specific exposure/hazard. In addition, DOE has applied operational “lessons learned” to its current workforce based on exposures identified through the FWP. Beryllium data in particular have led to significant changes at some DOE sites. Based on the beryllium data from BTMed, the Savannah River Site instituted a policy change requiring characterization of facilities for beryllium before construction operations start and providing construction workers with suitable protection. In addition, The University of Iowa-conducted FWP collaborated with the Ames Laboratory Health and Safety staff to map areas where beryllium-sensitized former employees worked.

The Ames Laboratory Industrial Hygiene staff has systematically performed beryllium swipe testing and documented several areas with existing residual beryllium contamination.

The gathered data are also valuable for other researchers to review. In order to share this information with researchers while still protecting the workers' right to privacy and confidentiality, the data are provided in de-identified form to the DOE Comprehensive Epidemiologic Data Resource (CEDR). CEDR is a public-use data repository that was established to improve public access, as well as access by researchers, to data from health studies and other activities funded or conducted by the Department.

In summary, DOE remains committed to ensuring the safety and health of its workforce and to using the information provided through these programs to continually improve worker safety. This continual improvement will positively impact the long-term health of our current workforce, as well as the next generation of DOE workers.

## 3.0 Program Accomplishments

**The program continued to fulfill its critical mandate of providing medical screening services, at no cost, to all interested former DOE workers.** To date, 93,684 screenings have been performed. In FY 2012 alone, 4,815 initial medical examinations and 3,578 re-screen exams were conducted.

**The program has resulted in a high level of satisfaction among participating former DOE workers.** In FY 2012, an average of 98.1% of the participants indicated satisfaction with the program. The vast majority of participants are very satisfied with the program in general, the services they receive, the quality of the personnel, and the timeliness of service delivery.

**The program is served by renowned occupational medicine physicians from across the country.** To overcome both the longstanding shortage of occupational medicine expertise in communities surrounding DOE sites and the perceived lack of objectivity of local physicians expressed by some DOE workers, DOE has been able to match and connect national occupational medicine expertise with local parties throughout the DOE complex. These physicians have worked with HSS to develop and conduct the FWP medical screening program using clinics in DOE communities, as well as a nationwide network of clinics and prominent medical institutions with expertise in respiratory conditions. These physicians have worked with local clinics to ensure highly accessible and appropriate medical screening services. In some instances, FWP project personnel have provided occupational medicine training and clinical sessions to medical clinic staff in DOE communities in order to offer the best quality service to FWP participants.

**The program has resulted in the identification of conditions at early stages, allowing for successful treatment.** The FWP has identified pre-cancerous conditions and cancers at early stages, allowing successful treatment and, in some cases, the elimination of the disease, thus substantially improving the health and wellbeing of many former workers who participated in the program. With the knowledge that DOE is committed to worker safety and health, current workers will likely have fewer concerns about working at DOE sites, may remain with DOE longer than they might have otherwise, and may be more productive while employed. In addition, a valuable added benefit of the medical screenings provided through the FWP is the identification of non-occupational health conditions, such as uncontrolled high blood pressure, diabetes, and elevated cholesterol levels.

**FWP screening exam results continue to benefit former workers by providing useful information to support EEOICPA claim adjudication.** The FWP provides former DOE workers with an accessible, affordable means of obtaining a medical evaluation targeted at work-related health conditions. While participation in the medical screening program is not required for filing an EEOICPA compensation claim, the medical results have been useful in supporting workers' claims.

**The program has advanced the state of medical knowledge.** The FWP has contributed 26 articles to peer-reviewed scientific literature, either directly by studying former workers in the context of the screening program or by recruiting former workers in the program as research participants for scientific studies funded by the National Institutes of Health or other research funding sources. A list of the major publications that have benefited from program activities to date can be found on the FWP website ([http://www.hss.energy.gov/healthsafety/FWSP/formerworkermed/FWP\\_Scientific\\_publications.html](http://www.hss.energy.gov/healthsafety/FWSP/formerworkermed/FWP_Scientific_publications.html)). Some of

the topics include beryllium sensitization, hearing loss, and pulmonary abnormalities among former DOE workers. Not included in the list are numerous briefings to small groups, including DOE staff, SOMDs, and site employees.

**The program strengthened its partnership with other Federal agencies on outreach initiatives.**

The Joint Outreach Task Group (JOTG) focuses on educating the former workers on the programs and resources available to them. The JOTG includes representatives from HSS, DOL, National Institute for Occupational Safety and Health (NIOSH), the Offices of the Ombudsman for DOL and NIOSH, and the HSS-funded FWP projects. The JOTG was established in 2009 under the premise that agencies/programs with common goals can work together by combining resources and coordinating outreach efforts. In addition, this partnership among different government agencies responds to the President's recommendations for transparency and open government. Each involved agency has a different mission, but the missions are complementary. By working together, the agencies are better able to serve the DOE workforce.

The JOTG conducts monthly conference calls with group members. The regular conference calls encourage communication and collaboration among the group members, as well as facilitating the planning of outreach activities and events. The JOTG also maintains and supports a calendar of events ([http://www.hss.energy.gov/healthsafety/FWSP/formerworkermed/events\\_calendars.html](http://www.hss.energy.gov/healthsafety/FWSP/formerworkermed/events_calendars.html)). The JOTG created this calendar of community events to facilitate interagency and community involvement in these events. In 2012, the JOTG began preparing an informational video on the benefits and services available to DOE workers and their family members through the FWP and the DOL-administered EEOICP. HSS plans to make the video available on its website to make it easily accessible to interested parties.

In 2012 alone, the FWP projects participated in over 260 outreach events in the communities near DOE facilities and closure sites. These events include community events, such as picnics and fairs, as well as events geared specifically to the DOE workforce, such as DOE site health and safety fairs, retiree luncheons, and union-sponsored events. The FWP projects provided support for 11 outreach events sponsored by DOL. The assistance included mailing invitations to former workers regarding the upcoming events, distributing outreach materials for the events in the local communities, locating facilities where the events could be held, as well as having FWP project staff attend the events to support DOL and provide information regarding the FWP.

**The program enhanced communication with beryllium-affected current and former workers.**

HSS, in partnership with workers, labor organizations, and the occupational medicine community, including two FWP investigators who are experts in the field of beryllium disease, developed the Chronic Beryllium Disease (CBD) Awareness website (<http://hss.doe.gov/healthsafety/fwsp/advocacy/cbd/>) as part of HSS's corporate outreach initiative to provide information to the worker community, as well as the medical community, and to enhance the likelihood of timely diagnosis and treatment of potential CBD cases. The main driver for this effort was the concern associated with the potential difficulties experienced by beryllium-sensitized or CBD victims in receiving appropriate medical care within medical communities that may lack specific training in the care of beryllium-affected patients. The medical community at large does not generally encounter cases of CBD or have extensive knowledge of the disease, and as such does not often generate medical documentation that adequately captures the relationship between the presenting illness (i.e., a secondary effect or consequential condition of CBD or its treatment) with the underlying condition of CBD.

Along with the website, HSS created a CBD information card, an easy-to-carry pocket reference for former/current workers to share with their primary physicians, which can be printed from the website.

The website is intended to provide a broad-based set of information and resources about beryllium, CBD, CBD symptoms, and consequential conditions of CBD and its treatment.

**In summary,** DOE has made great advances in addressing the occupational health legacy of its over 60 years of nuclear weapons design and production. The FWP is a prime example of DOE's commitment to its workforce and demonstrates the feasibility and value of conducting targeted medical screening programs for occupational diseases. In 2013, the Department will continue to meet its obligation through the FWP by maintaining the program elements and practices that account for the program's high degree of success, while building on lessons learned to continually improve program implementation.

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## Appendix A: Individual Project Descriptions

The U.S. Department of Energy (DOE) Former Worker Program (FWP) projects are briefly described below.



### Building Trades National Medical Screening Program

#### Who we are:

The Building Trades National Medical Screening Program (BTMed) is a program of CPWR – The Center for Construction Research and Training, the occupational health research and development center of the Building and Construction Trades Department of the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO). BTMed is operated in partnership with Stoneturn Consultants, Duke University Medical Center, University of Cincinnati, and Zenith-American. This program is supported by the National Building and Construction Trades Department, AFL-CIO, and state and local Building and Construction Trades Councils that represent construction workers on U.S. Department of Energy (DOE) facilities.

#### What we do:

America is dotted with DOE facilities where we built and fueled our nuclear arsenal. How often do we stop and think about the workers who toiled there over the past seven decades – exposed, often unknowingly, to hazardous substances like asbestos, beryllium, cadmium, chromium, lead, mercury, radiation, airborne silica, and toxic solvents? For us at BTMed, the answer is “every day.”

BTMed has been screening former DOE-site construction workers since 1997, currently from 27 different DOE facilities. The screening begins with an interview with the participant to develop a work history and determine which dangerous exposures the worker might have experienced. These interviews are performed by a former worker specially trained for the task. A medical exam follows that includes special testing for illnesses associated with these exposures. Each worker receives a full report that identifies which health conditions, if any, could be work-related.

Based on new data, BTMed estimates that work at DOE facilities has been responsible for approximately 20,000 cases of occupational lung cancer in construction workers. Early detection of lung cancer using computed tomography (CT) scans with low radiation dose has recently been proven to be effective in preventing premature deaths, so BTMed is expanding a pilot screening program using CT scans for workers at Hanford and Oak Ridge.

#### What we have found:

To date, BTMed has:

- Completed 26,000 screenings
- Diagnosed almost 4,100 cases of asbestos-related disease
- Diagnosed over 4,700 cases of chronic obstructive pulmonary disease

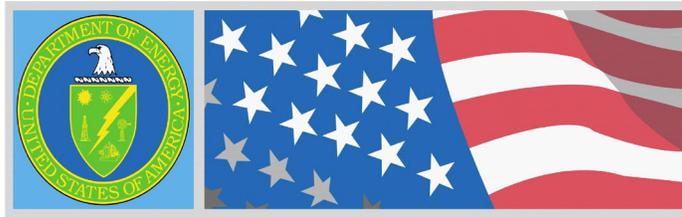
- Diagnosed nearly 9,000 cases of hearing loss
- Earned a satisfaction rating of 97% from workers who have participated.

The results indicate that former DOE construction workers suffer disproportionately from a variety of relatively rare medical conditions. For instance, evidence of work-related lung disease appears on the x-rays of one in five BTMed participants, mostly due to asbestos exposure. Perhaps the test result that most distinguishes these workers is the 1.4 per 100 testing abnormal for beryllium sensitivity, a condition virtually unknown in the general population, and also unknown among construction workers until BTMed discovered it. Twenty-eight BTMed participants have been diagnosed with chronic beryllium disease.

In a pilot CT scan screening program for 100 former Oak Ridge site workers, doctors identified 29 nodules needing additional evaluation. Two participants were diagnosed with stage IV lung cancer; follow-up scans identified two more with nodules requiring antibiotic treatment and a third diagnosed with a kidney cancer. The DOE has committed additional resources to expand the CT scan program, and BTMed is partnering with university-based lung cancer detection and treatment programs to create a highly innovative model to optimize the effectiveness of screening using CT scans.

**Toll-free number:** 1-800-866-9663 or 1-888-464-0009

**Website:** [www.btmed.org](http://www.btmed.org)



**THE PANTEX FORMER WORKER MEDICAL SURVEILLANCE PROGRAM**  
Conducted by the Drexel University School of Public Health

**Who we are:**

- Primary: Drexel University School of Public Health
- Outreach: Department of Occupational Health Sciences, The University of Texas Health Science Center at Tyler, Texas
- Clinical Services: West Texas A&M Health Partners Clinic, Amarillo, Texas

**What we do:**

- The Pantex Former Worker Medical Surveillance Program offers former Pantex Plant employees and contract workers the opportunity to obtain an independent, objective assessment of their health in relation to their workplace exposures by a health care provider experienced in occupational medicine.
- Participants are scheduled for an appointment at a time convenient for them at the Health Partners Clinic in Amarillo, which is affiliated with a university nursing program. Staff shown here are Valerie Bergara, Brynn Mereness, and Jennifer Dodson.
- Each participant completes an occupational exposure history, as well as past medical history, prior to having their medical screening examination.
- The screening exam may include some or all of the following tests: chest x-ray, spirometry, Beryllium Lymphocyte Proliferation Test, blood chemistry tests, and urinalysis.
- Former workers who participate in the program receive results of their clinical exam and medical tests in a personalized “results letter” from a board certified occupational medicine physician along with any necessary follow-up recommendations.
- The screening process is an opportunity for former workers to receive additional wellness information and support for lifestyle changes to improve their health and quality of life.
- Each participant is offered the opportunity to return for a “re-screening” exam every three years; the re-screening exam is focused on previous findings and any new health developments.
- 99% of the responding participants are satisfied with their experience in the program.



**What we have found:**

- Chest x-rays: 6.5% demonstrated findings consistent with work-related lung disease
- Pulmonary function tests: 38% demonstrated findings consistent with obstructive disease
- Beryllium Lymphocyte Proliferation Tests (BeLPT): 1.6% had at least one abnormal BeLPT
- Audiometry: Audiometry is not part of the Pantex former worker screening protocol.

**Toll-free number:** 1-888-378-8939

## Medical Exam Program for Former Workers from Los Alamos and Sandia (NM) National Laboratories

### Who we are:

- Johns Hopkins Bloomberg School of Public Health (JHBSPH)
- University of New Mexico (UNM)

### What we do:

- Provide medical screening exams to all interested former workers from Los Alamos National Laboratory (LANL) and Sandia National Laboratories (SNL).
- The JHBSPH Medical Exam Program is one of several unique programs within the U.S. Department of Energy Former Worker Program. Examinations are done in New Mexico in Espanola, NM, and Albuquerque, NM, by occupational health professionals from JHBSPH and UNM.
- Examination sessions are scheduled over a two-day period two to three times per year. Physicians, health care providers, and occupational health professionals travel from Baltimore, MD; Espanola, NM; and Albuquerque, NM, to the examination site to conduct physical examinations.
- During examination sessions, former workers have the opportunity to meet with the program occupational medicine physician to discuss their examination results and to ask questions.
- Each participant has a detailed exposure and medical history interview prior to their initial examination and a short medical history interview before their re-examination. These interviews are conducted by former workers from LANL and SNL.
- The program staff assists former workers with workers' compensation claims and, when appropriate, writes letters in support of claims for Federal compensation for former workers from both sites.
- The project has completed 3,536 examinations of former workers since the program began in 2000. Of these exams, 3,124 were new exams, and 442 were re-examinations of former LANL workers for past exposures to asbestos, beryllium, and radiation, and SNL former workers for past exposure to asbestos, beryllium, radiation, and silica.
- On exit surveys, over 97% of program participants stated that they were satisfied with their overall evaluation, and 99% would recommend the program to other former workers.
- The program works with the Joint Outreach Task Group to develop outreach strategies to recruit former workers who are eligible for the medical screening program and the Energy Employees Occupational Illness Compensation Program.
- We recently participated in a Department of Labor Town Hall Meeting in Albuquerque, NM, where we spoke with former workers and invited them to participate in the program.



Clinic used for exams in Albuquerque, NM.

- We were invited to participate in a Cold War Patriots Resource Meeting where we spoke with former workers and invited them to participate in the program.

**What we have found:**

- Chest x-rays: 10% have findings consistent with work-related lung disease
- Pulmonary function tests: 19% demonstrated findings consistent with obstructive disease
- Beryllium Lymphocyte Proliferation Tests (BeLPT): 2% had at least one abnormal BeLPT
- Audiometry: 56% demonstrated hearing loss for normal speech tones.



**Clinic used for exams in Espanola, NM.**

**Toll-free number:** 1-877-500-8615

**Website:** <http://www.jhsph.edu/lanlfw/>



## **National Supplemental Screening Program (NSSP)**

### **Who we are:**

The National Supplemental Screening Program (NSSP) is managed by Oak Ridge Associated Universities with a team from National Jewish Health, the University of Colorado Denver Health Sciences Center, Comprehensive Health Services, and Axion Health.

### **What we do:**

The NSSP provides medical examinations to former U.S. Department of Energy (DOE) workers from Argonne National Laboratory, Fermi National Accelerator Laboratory, Hanford Site, Kansas City Plant, Princeton Plasma Physics Laboratory, Pinellas, Rocky Flats Plant, Savannah River Site, and DOE sites where no Former Worker Program (FWP) has been assigned. The NSSP also accepts referrals (production and construction/building trades) from the other FWPs whose participants may live outside of their respective medical screening coverage areas.

### **What we have found:**

- Chest x-rays: 14.6% demonstrated findings consistent with work-related lung disease
- Pulmonary function tests: 22.2% demonstrated findings consistent with obstructive disease
- Beryllium Lymphocyte Proliferation Tests (BeLPT): 3.2% had at least one abnormal BeLPT
- Audiometry: 43.4% demonstrated hearing loss for normal speech tones.

**Toll-free number:** 1-866-812-6703

**Website:** <http://www.ornl.gov/nssp>



## Worker Health Protection Program (WHPP)

### Who we are:

Worker Health Protection Program (WHPP) is administered by Queens College of the City University of New York in conjunction with the United Steelworkers, the Atomic Trades and Labor Council in Oak Ridge, and the Fernald Medical Screening Program. Screening is conducted through partnerships with medical groups located within local U.S. Department of Energy (DOE) communities. Medical partners include Kaiser Permanente in Northern California and the University of Nevada School of Medicine's Department of Family and Community Medicine in Las Vegas, Nevada.

### What we do:

The consortium utilizes expert occupational medicine physicians and support staff to provide independent medical screening to workers who are at risk of illnesses related to their work from 13 DOE sites. In addition to the standard Former Worker Program (FWP) medical screening, WHPP administers the Early Lung Cancer Detection (ELCD) Program with low-dose computed tomography (CT) scans at nine DOE sites.

WHPP provides both FWP medical screening and the ELCD Program to workers from:

- Idaho National Laboratory (ID)
- K-25 Gaseous Diffusion Plant (TN)
- Fernald (OH)
- Mound (OH)
- Nevada Test Site, now called the Nevada National Security Site (NV)
- Oak Ridge National Laboratory (TN)
- Paducah Gaseous Diffusion Plant (KY)
- Portsmouth Gaseous Diffusion Plant (OH)
- Y-12 National Security Complex (TN)

Only FWP medical screenings are provided to workers from:

- Brookhaven National Laboratory (NY)
- Lawrence Berkeley National Laboratory (CA)
- Lawrence Livermore National Laboratory (CA)
- Sandia National Laboratories (CA).

In 2013, WHPP plans to begin medical screening at the Waste Isolation Pilot Plant in New Mexico and to conduct a site characterization to begin screening at the SLAC National Accelerator Laboratory.

## **What we have found:**

### FWP medical screening

- Chest x-rays (CXR) (N=39,334): 5.91% demonstrated findings consistent with work-related lung disease (total percentage of CXR abnormalities in the following categories: asbestosis without pleural disease, asbestosis with pleural disease, asbestos-related pleural disease, silicosis, mixed dust pneumoconiosis, and pneumoconiosis not otherwise specified)
- Pulmonary function tests (PFT) (N=38,642): 20.95% demonstrated findings consistent with obstructive disease (percentage of PFT abnormalities – obstructive pattern and mixed pattern combined)
- Beryllium Lymphocyte Proliferation Tests (BeLPT) (N=34,422): 2.53% had at least one abnormal BeLPT (total percentage of BeLPT abnormalities – 1, 2 or 1 and 1+ borderlines)
- Audiometry (N=25,950): 62.11% demonstrated hearing loss for normal speech tones.

### ELCD Program

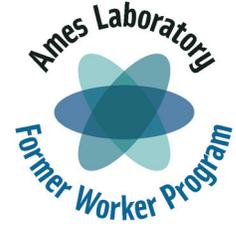
- 87 ELCD Program participants have been identified as having primary lung cancer.
- 57 of the 77 (74%) individuals whose lung cancers have been staged to date had an early stage lung cancer (Stage I or II non-small cell or limited small cell) at the time of diagnosis.
- Lung cancer was detected in one of approximately 140 DOE workers tested (N=12,148).

**Toll-free number:** 1-888-241-1199

**Website:** <http://worker-health.org>



**Former Burlington Atomic Energy  
Commission Plant  
and Ames Laboratory Workers  
Medical Screening Program**



**Who we are:**

The University of Iowa College of Public Health

**What we do:**

The University of Iowa College of Public Health administers medical screenings to former nuclear weapons workers from two U.S. Department of Energy (formerly the Atomic Energy Commission or AEC), facilities in Iowa: Line 1/Division B/Burlington AEC Plant (BAECP), operational between 1949 and mid-1975 at the Iowa Army Ammunition Plant (IAAP) in West Burlington, Iowa, and the Ames Laboratory, established in the early 1940s at Iowa State University in Ames, Iowa.



**Line 1, IAAP commemoration luncheon held September 7, 2012.**

Approximately 7,000 workers were employed in assembly and disassembly of nuclear weapons on IAAP's Line 1, and approximately 5,684 are living and current addresses have been obtained for these individuals; 7% of those live outside of Iowa and are being referred to the National Supplemental Screening Program (NSSP) for screenings. Medical screenings for BAECP workers began in 2002. As of September 30, 2012, a total of 1,315 former workers have been screened. A total of 727 Line 1 former workers have received a three-year repeat screening, with 263 receiving a six-year and

32 a nine-year repeat screening.

In the early 1940s, the Ames Laboratory developed the process for producing large quantities of high-purity uranium metal for nuclear reaction purposes for the Manhattan Project. Overall, the Ames Laboratory produced over 2 million pounds (1,000 tons) of purified uranium. The Ames Laboratory presently conducts a broad range of applied chemical and physical research.

Over 13,000 employees worked at the Ames Laboratory, and 10,029 of those workers are still living and addresses have been obtained for these individuals; 74% live outside of Iowa and are referred to NSSP for screenings. Medical screenings for former Ames Laboratory workers began in 2006. As of September 30, 2012, a total of 1,652 former Ames Laboratory workers have been screened. A total of 501 former Ames Laboratory workers have received a three-year repeat screening, and 17 have received a six-year repeat screening.

## What we have found:

- Chest x-rays: 393 (14%) former workers demonstrated findings suspicious for work-related lung disease, n=2,726.
- Pulmonary function tests: 416 (15%) former workers demonstrated findings consistent with obstructive disease, n=2,818.
- Beryllium Lymphocyte Proliferation Tests (BeLPT): 89 (3%) former workers had at least one abnormal BeLPT, n=2,874.
- Uncontrolled Hypertension Detected: 337 (21%) former workers were hypertensive, and 10 (0.6%) had urgent/severe hypertension (blood pressure >180/110), n=1,637.
- Uncontrolled Diabetes Mellitus Detected: 137 (2%) former workers had hyperglycemia (non-fasting glucose  $\geq$  200mg/dL), n=2,834. 59 (11%) former workers indicated fair control of their diabetes (hemoglobin A1c 7.1-9.0), and 12 (2.2%) had poor control (A1c  $\geq$  9.1), n=542.
- Cancers: 50 (1.7%) former workers have been newly diagnosed with cancer since having their screening, with almost half diagnosed with lung cancer (21 cases), n=2,917.
- Sarcoid lung disease: 5 (0.48%) of the BAIECP former workers (n=1,170) and 11 (0.71%) of the Ames Laboratory former workers (n=1,556) were found to have a history of pulmonary sarcoidosis.



**Ames Laboratory commemoration luncheon held  
September 21, 2012.**

**Toll-free number:** 1-866-282-5818

**Website:** [www.iowafwp.org](http://www.iowafwp.org)

## Appendix B: Exams Conducted through the FWP

### Number of Former Workers Screened and Re-screened by DOE Site (through September 2012)

State	Sites	Initial Screenings	Re-screens <sup>7</sup>
AK	Amchitka Island Test Site	1,342	490
CA	Lawrence Berkeley National Laboratory	519	11
CA	Lawrence Livermore National Laboratory	1,800	393
CA	Sandia National Laboratories, CA	210	36
CO	Rocky Flats Plant (Construction Workers)	675	199
CO	Rocky Flats Plant (Production Workers)	3,212	461
FL	Pinellas (Production Workers)	606	103
IA	Ames Laboratory	1,652	518
IA	Iowa Army Ammunition Plant	1,315	1,022
ID	Idaho National Laboratory (Construction Workers)	1,017	224
ID	Idaho National Laboratory (Production Workers)	4,485	1,921
IL	Argonne National Laboratory	436	15
KY	Paducah GDP (Construction Workers)	887	304
KY	Paducah GDP (Production Workers)	3,300	1,376
MO	Kansas City Plant (Construction Workers)	647	144
MO	Kansas City Plant (Production Workers)	2,320	325
NM	Los Alamos National Laboratory	2,749	382
NM	Sandia National Laboratories, NM	358	35
NV	Nevada National Security Site	4,233	1,454
NY	Brookhaven National Laboratory (Construction Workers)	587	199

<sup>7</sup> Re-screen exams not yet being offered at Brookhaven National Laboratory for production workers.

NY	Brookhaven National Laboratory (Production Workers)	337	0
OH	Feed Materials Production Center (Construction Workers)	1,867	577
OH	Feed Materials Production Center (Production Workers)	1,233	367
OH	Mound Plant (Construction Workers)	350	96
OH	Mound Plant (Production Workers)	1,461	541
OH	Portsmouth GDP (Construction Workers)	1,094	353
OH	Portsmouth GDP (Production Workers)	3,577	1,888
SC	Savannah River Site (Construction Workers)	4,029	1,206
SC	Savannah River Site (Production Workers)	4,344	9
TN	Oak Ridge K-25 (Production Workers)	4,598	1,597
TN	Oak Ridge National Laboratory (Production Workers)	1,678	544
TN	Oak Ridge Reservation (Construction Workers) <sup>8</sup>	3,021	1,010
TN	Y-12 National Security Complex (Production Workers)	3,466	1,007
TX	Pantex Plant	883	199
WA	Hanford Site (Construction Workers)	3,047	928
WA	Hanford Site (Production Workers)	4,023	649
	Other Sites <sup>9</sup> (Construction Workers)	1,310	225
	Other Sites <sup>10</sup> (Production Workers)	198	10
<b>Grand Total</b>		<b>72,866</b>	<b>20,818</b>

8 Includes Oak Ridge K-25, Oak Ridge National Laboratory, and Y-12 National Security Complex.

9 Sites where the number of individuals screened by the Building Trades National Medical Screening Program to date is less than 100.

10 Sites where the number of individuals screened by the National Supplemental Screening Program to date is less than 100.

## Appendix C: Program Findings

More in-depth information regarding the exam components offered through the program can be found on the FWP website ([http://www.hss.energy.gov/healthsafety/FWSP/formerworkermed/conventional\\_medical\\_screening\\_program.html](http://www.hss.energy.gov/healthsafety/FWSP/formerworkermed/conventional_medical_screening_program.html)). Medical findings by DOE site/worker population are provided below.

Table 7 illustrates chest x-ray findings on initial exams to date, and Table 8 provides findings on re-screens.

**Table 7. Chest X-ray Findings on Initial Screening  
(through September 2012)**

State	Sites	Workers Screened	Asbestos-related Lung Disease	Silicosis	Other Dust-related Disease	Lung Nodules, Nodes, or Lesions
AK	Amchitka Island Test Site	1,035	148 (14.3%)	1 (0.1%)	0 (0.0%)	54 (5.2%)
CA	Lawrence Berkeley National Laboratory	491	9 (1.8%)	0 (0.0%)	5 (1.0%)	27 (5.5%)
CA	Lawrence Livermore National Laboratory	1,704	39 (2.3%)	0 (0.0%)	6 (0.4%)	116 (6.8%)
CA	Sandia National Laboratories, CA	199	4 (2.0%)	0 (0.0%)	1 (0.5%)	16 (8.0%)
CO	Rocky Flats Plant (Construction Workers)	603	205 (34.0%)	5 (0.8%)	12 (2.0%)	23 (3.8%)
CO	Rocky Flats Plant (Production Workers)	2,795	701 (25.1%)	2 (0.1%)	45 (1.6%)	86 (3.1%)
FL	Pinellas (Production Workers)	581	48 (8.3%)	4 (0.7%)	16 (2.8%)	29 (5.0%)
IA	Ames Laboratory	1,632	56 (3.4%)	0 (0.0%)	52 (3.2%)	44 (2.7%)
IA	Iowa Army Ammunition Plant	1,153	138 (12.0%)	0 (0.0%)	82 (7.1%)	26 (2.3%)
ID	Idaho National Laboratory (Construction Workers)	823	97 (11.8%)	0 (0.0%)	2 (0.2%)	27 (3.3%)
ID	Idaho National Laboratory (Production Workers)	4,431	316 (7.1%)	1 (0.0%)	18 (0.4%)	82 (1.9%)

IL	Argonne National Laboratory	400	48 (12.0%)	0 (0.0%)	13 (3.3%)	17 (4.3%)
KY	Paducah GDP (Construction Workers)	812	142 (17.5%)	7 (0.9%)	12 (1.5%)	44 (5.4%)
KY	Paducah GDP (Production Workers)	3,295	189 (5.7%)	26 (0.8%)	16 (0.5%)	53 (1.6%)
MO	Kansas City Plant (Construction Workers)	576	80 (13.9%)	0 (0.0%)	1 (0.2%)	30 (5.2%)
MO	Kansas City Plant (Production Workers)	2,255	239 (10.6%)	1 (0.0%)	62 (2.7%)	96 (4.3%)
NM	Los Alamos National Laboratory	2,577	176 (6.8%)	0 (0.0%)	84 (3.3%)	52 (2.0%)
NM	Sandia National Laboratories, NM	340	22 (6.5%)	1 (0.3%)	15 (4.4%)	5 (1.5%)
NV	Nevada National Security Site	4,161	493 (11.8%)	38 (0.9%)	71 (1.7%)	313 (7.5%)
NY	Brookhaven National Laboratory (Construction Workers)	472	88 (18.6%)	0 (0.0%)	0 (0.0%)	9 (1.9%)
NY	Brookhaven National Laboratory (Production Workers)	323	15 (4.6%)	0 (0.0%)	4 (1.2%)	2 (0.6%)
OH	Feed Materials Production Center (Construction Workers)	1,640	196 (12.0%)	4 (0.2%)	0 (0.0%)	31 (1.9%)
OH	Feed Materials Production Center (Production Workers)	1,204	42 (3.5%)	0 (0.0%)	8 (0.7%)	16 (1.3%)
OH	Mound Plant (Construction Workers)	289	60 (20.8%)	0 (0.0%)	3 (1.0%)	6 (2.1%)
OH	Mound Plant (Production Workers)	1,448	75 (5.2%)	2 (0.1%)	3 (0.2%)	23 (1.6%)
OH	Portsmouth GDP (Construction Workers)	972	182 (18.7%)	3 (0.3%)	3 (0.3%)	35 (3.6%)
OH	Portsmouth GDP (Production Workers)	3,570	208 (5.8%)	9 (0.3%)	13 (0.4%)	56 (1.6%)

SC	Savannah River Site (Construction Workers)	3,538	372 (10.5%)	3 (0.1%)	1 (0.0%)	127 (3.6%)
SC	Savannah River Site (Production Workers)	2,698	885 (32.8%)	55 (2.0%)	330 (12.2%)	15 (0.6%)
TN	Oak Ridge K-25 (Production Workers)	4,584	270 (5.9%)	9 (0.2%)	23 (0.5%)	56 (1.2%)
TN	Oak Ridge National Laboratory (Production Workers)	1,674	91 (5.4%)	4 (0.2%)	1 (0.1%)	15 (0.9%)
TN	Oak Ridge Reservation (Construction Workers) <sup>11</sup>	2,494	490 (19.6%)	6 (0.2%)	6 (0.2%)	97 (3.9%)
TN	Y-12 National Security Complex (Production Workers)	3,446	186 (5.4%)	3 (0.1%)	11 (0.3%)	42 (1.2%)
TX	Pantex Plant	868	45 (5.2%)	1 (0.1%)	5 (0.6%)	35 (4.0%)
WA	Hanford Site (Construction Workers)	2,423	695 (28.7%)	3 (0.1%)	2 (0.1%)	142 (5.9%)
WA	Hanford Site (Production Workers)	3,567	850 (23.8%)	1 (0.0%)	42 (1.2%)	202 (5.7%)
	Other Sites <sup>12</sup> (Construction Workers)	1,049	165 (15.7%)	4 (0.4%)	0 (0.0%)	23 (2.2%)
	Other Sites <sup>13</sup> (Production Workers)	182	19 (10.4%)	0 (0.0%)	11 (6.0%)	4 (2.2%)
<b>Grand Total</b>		<b>65,269</b>	<b>7,936 (12.2%)</b>	<b>192 (0.3%)</b>	<b>979 (1.5%)</b>	<b>2,022 (3.1%)</b>

11 Includes Oak Ridge K-25, Oak Ridge National Laboratory, and Y-12 National Security Complex.

12 Sites where the number of individuals screened by the Building Trades National Medical Screening Program to date is less than 100.

13 Sites where the number of individuals screened by the National Supplemental Screening Program to date is less than 100.

**Table 8. Chest X-ray Findings on Re-screening  
(through September 2012)**

State	Sites	Workers Screened	Asbestos-related Lung Disease	Silicosis	Other Dust-related Disease	Lung Nodules, Nodes, or Lesions
AK	Amchitka Island Test Site	388	22 (5.7%)	1 (0.3%)	0 (0.0%)	12 (3.1%)
CA	Lawrence Berkeley National Laboratory	9	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
CA	Lawrence Livermore National Laboratory	307	0 (0.0%)	0 (0.0%)	1 (0.3%)	15 (4.9%)
CA	Sandia National Laboratories, CA	29	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (3.4%)
CO	Rocky Flats Plant (Construction Workers)	192	11 (5.7%)	0 (0.0%)	2 (1.0%)	2 (1.0%)
CO	Rocky Flats Plant (Production Workers)	451	174 (38.6%)	0 (0.0%)	6 (1.3%)	2 (0.4%)
FL	Pinellas (Production Workers)	97	5 (5.2%)	0 (0.0%)	1 (1.0%)	0 (0.0%)
IA	Ames Laboratory	482	7 (1.5%)	0 (0.0%)	8 (1.7%)	5 (1.0%)
IA	Iowa Army Ammunition Plant	447	24 (5.4%)	0 (0.0%)	19 (4.3%)	6 (1.3%)
ID	Idaho National Laboratory (Construction Workers)	208	16 (7.7%)	0 (0.0%)	0 (0.0%)	2 (1.0%)
ID	Idaho National Laboratory (Production Workers)	1,426	59 (4.1%)	1 (0.1%)	2 (0.1%)	3 (0.2%)
IL	Argonne National Laboratory	13	1 (7.7%)	0 (0.0%)	2 (15.4%)	0 (0.0%)
KY	Paducah GDP (Construction Workers)	285	22 (7.7%)	0 (0.0%)	1 (0.4%)	18 (6.3%)
KY	Paducah GDP (Production Workers)	1,210	35 (2.9%)	1 (0.1%)	0 (0.0%)	8 (0.7%)
MO	Kansas City Plant (Construction Workers)	136	7 (5.1%)	0 (0.0%)	0 (0.0%)	2 (1.5%)
MO	Kansas City Plant (Production Workers)	309	12 (3.9%)	0 (0.0%)	9 (2.9%)	7 (2.3%)

NM	Los Alamos National Laboratory	363	50 (13.8%)	0 (0.0%)	28 (7.7%)	2 (0.6%)
NM	Sandia National Laboratories, NM	35	8 (22.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
NV	Nevada National Security Site	1,044	60 (5.7%)	8 (0.8%)	30 (2.9%)	87 (8.3%)
NY	Brookhaven National Laboratory (Construction Workers)	177	9 (5.1%)	0 (0.0%)	0 (0.0%)	2 (1.1%)
OH	Feed Materials Production Center (Construction Workers)	546	35 (6.4%)	0 (0.0%)	0 (0.0%)	2 (0.4%)
OH	Feed Materials Production Center (Production Workers)	348	4 (1.1%)	0 (0.0%)	0 (0.0%)	4 (1.1%)
OH	Mound Plant (Construction Workers)	85	7 (8.2%)	0 (0.0%)	1 (1.2%)	1 (1.2%)
OH	Mound Plant (Production Workers)	523	12 (2.3%)	0 (0.0%)	0 (0.0%)	2 (0.4%)
OH	Portsmouth GDP (Construction Workers)	335	41 (12.2%)	0 (0.0%)	0 (0.0%)	4 (1.2%)
OH	Portsmouth GDP (Production Workers)	1,441	85 (5.9%)	1 (0.1%)	1 (0.1%)	14 (1.0%)
SC	Savannah River Site (Construction Workers)	990	96 (9.7%)	1 (0.1%)	0 (0.0%)	41 (4.1%)
SC	Savannah River Site (Production Workers)	8	1 (12.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
TN	Oak Ridge K-25 (Production Workers)	1,367	41 (3.0%)	0 (0.0%)	2 (0.1%)	9 (0.7%)
TN	Oak Ridge National Laboratory (Production Workers)	520	12 (2.3%)	0 (0.0%)	1 (0.2%)	1 (0.2%)
TN	Oak Ridge Reservation (Construction Workers) <sup>14</sup>	852	110 (12.9%)	0 (0.0%)	0 (0.0%)	32 (3.8%)

14 Includes Oak Ridge K-25, Oak Ridge National Laboratory, and Y-12 National Security Site.

TN	Y-12 National Security Complex (Production Workers)	937	40 (4.3%)	1 (0.1%)	2 (0.2%)	2 (0.2%)
TX	Pantex Plant	198	9 (4.5%)	0 (0.0%)	0 (0.0%)	7 (3.5%)
WA	Hanford Site (Construction Workers)	773	61 (7.9%)	0 (0.0%)	1 (0.1%)	26 (3.4%)
WA	Hanford Site (Production Workers)	536	71 (13.2%)	0 (0.0%)	13 (2.4%)	20 (3.7%)
	Other Sites <sup>15</sup> (Construction Workers)	216	8 (3.7%)	0 (0.0%)	0 (0.0%)	1 (0.5%)
	Other Sites <sup>16</sup> (Production Workers)	8	2 (25.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
<b>Grand Total</b>		<b>16,894</b>	<b>1,135 (6.7%)</b>	<b>13 (0.1%)</b>	<b>130 (0.8%)</b>	<b>328 (1.9%)</b>

Table 9 illustrates spirometry (breathing test) findings to date on initial exams, and Table 10 provides findings on re-screening.

**Table 9. Spirometry Findings on Initial Screening (through September 2012)**

State	Sites	Workers Screened	Obstructive Airways Dysfunction Detected
AK	Amchitka Island Test Site	1,033	159 (15.4%)
CA	Lawrence Berkeley National Laboratory	500	50 (10.0%)
CA	Lawrence Livermore National Laboratory	1,706	215 (12.6%)
CA	Sandia National Laboratories, CA	196	21 (10.7%)
CO	Rocky Flats Plant (Construction Workers)	594	184 (31.0%)
CO	Rocky Flats Plant (Production Workers)	3,121	789 (25.3%)
FL	Pinellas (Production Workers)	571	167 (29.2%)
IA	Ames Laboratory	1,663	201 (12.1%)
IA	Iowa Army Ammunition Plant	1,228	249 (20.3%)
ID	Idaho National Laboratory (Construction Workers)	808	214 (26.5%)
ID	Idaho National Laboratory (Production Workers)	4,390	800 (18.2%)
IL	Argonne National Laboratory	412	42 (10.2%)

15 Sites where the number of individuals screened by the Building Trades National Medical Screening Program to date is less than 100.

16 Sites where the number of individuals screened by the National Supplemental Screening Program to date is less than 100.

KY	Paducah GDP (Construction Workers)	800	213 (26.6%)
KY	Paducah GDP (Production Workers)	3,239	494 (15.3%)
MO	Kansas City Plant (Construction Workers)	567	136 (24.0%)
MO	Kansas City Plant (Production Workers)	2,242	534 (23.8%)
NM	Los Alamos National Laboratory	1,703	544 (31.9%)
NM	Sandia National Laboratories, NM	311	48 (15.4%)
NV	Nevada National Security Site	4,142	1,240 (29.9%)
NY	Brookhaven National Laboratory (Construction Workers)	492	66 (13.4%)
NY	Brookhaven National Laboratory (Production Workers)	330	45 (13.6%)
OH	Feed Materials Production Center (Construction Workers)	1,614	328 (20.3%)
OH	Feed Materials Production Center (Production Workers)	1,184	168 (14.2%)
OH	Mound Plant (Construction Workers)	294	74 (25.2%)
OH	Mound Plant (Production Workers)	1,395	324 (23.2%)
OH	Portsmouth GDP (Construction Workers)	968	244 (25.2%)
OH	Portsmouth GDP (Production Workers)	3,534	746 (21.1%)
SC	Savannah River Site (Construction Workers)	3,546	641 (18.1%)
SC	Savannah River Site (Production Workers)	2,056	266 (12.9%)
TN	Oak Ridge K-25 (Production Workers)	4,447	927 (20.8%)
TN	Oak Ridge National Laboratory (Production Workers)	1,632	338 (20.7%)
TN	Oak Ridge Reservation <sup>17</sup> (Construction Workers)	2,481	487 (19.6%)
TN	Y-12 National Security Complex (Production Workers)	3,369	792 (23.5%)
TX	Pantex Plant	866	330 (38.1%)
WA	Hanford Site (Construction Workers)	2,438	640 (26.3%)
WA	Hanford Site (Production Workers)	3,915	825 (21.1%)
	Other Sites <sup>18</sup> (Construction Workers)	1,042	198 (19.0%)
	Other Sites <sup>19</sup> (Production Workers)	184	33 (17.9%)
<b>Grand Total</b>		<b>65,013</b>	<b>13,772 (21.2%)</b>

17 Includes Oak Ridge K-25, Oak Ridge National Laboratory, and Y-12 National Security Site.

18 Sites where the number of individuals screened by the Building Trades National Medical Screening Program to date is less than 100.

19 Sites where the number of individuals screened by the National Supplemental Screening Program to date is less than 100.

**Table 10. Spirometry Findings on Re-screening  
(through September 2012)**

<b>State</b>	<b>Sites</b>	<b>Workers Screened</b>	<b>Obstructive Airways Dysfunction Detected</b>
AK	Amchitka Island Test Site	383	30 (7.8%)
CA	Lawrence Berkeley National Laboratory	9	1 (11.1%)
CA	Lawrence Livermore National Laboratory	314	14 (4.5%)
CA	Sandia National Laboratories, CA	28	0 (0.0%)
CO	Rocky Flats Plant (Construction Workers)	194	10 (5.2%)
CO	Rocky Flats Plant (Production Workers)	448	86 (19.2%)
FL	Pinellas (Production Workers)	99	35 (35.4%)
IA	Ames Laboratory	488	53 (10.9%)
IA	Iowa Army Ammunition Plant	403	110 (27.3%)
ID	Idaho National Laboratory (Construction Workers)	206	12 (5.8%)
ID	Idaho National Laboratory (Production Workers)	1,409	502 (35.6%)
IL	Argonne National Laboratory	14	1 (7.1%)
KY	Paducah GDP (Construction Workers)	283	12 (4.2%)
KY	Paducah GDP (Production Workers)	1,179	248 (21.0%)
MO	Kansas City Plant (Construction Workers)	133	2 (1.5%)
MO	Kansas City Plant (Production Workers)	305	52 (17.0%)
NM	Los Alamos National Laboratory	319	48 (15.0%)
NM	Sandia National Laboratories, NM	33	4 (12.1%)
NV	Nevada National Security Site	1,055	305 (28.9%)
NY	Brookhaven National Laboratory (Construction Workers)	184	4 (2.2%)
OH	Feed Materials Production Center (Construction Workers)	521	22 (4.2%)
OH	Feed Materials Production Center (Production Workers)	334	49 (14.7%)
OH	Mound Plant (Construction Workers)	82	4 (4.9%)
OH	Mound Plant (Production Workers)	515	137 (26.6%)
OH	Portsmouth GDP (Construction Workers)	327	25 (7.6%)
OH	Portsmouth GDP (Production Workers)	1,424	524 (36.8%)
SC	Savannah River Site (Construction Workers)	969	52 (5.4%)
SC	Savannah River Site (Production Workers)	7	0 (0.0%)
TN	Oak Ridge K-25 (Production Workers)	1,299	285 (21.9%)
TN	Oak Ridge National Laboratory (Production Workers)	512	104 (20.3%)

TN	Oak Ridge Reservation <sup>20</sup> (Construction Workers)	835	79 (9.5%)
TN	Y-12 National Security Complex (Production Workers)	915	203 (22.2%)
TX	Pantex Plant	190	6 (3.2%)
WA	Hanford Site (Construction Workers)	756	58 (7.7%)
WA	Hanford Site (Production Workers)	528	114 (21.6%)
	Other Sites <sup>21</sup> (Construction Workers)	215	6 (2.8%)
	Other Sites <sup>22</sup> (Production Workers)	9	0 (0.0%)
<b>Grand Total</b>		<b>16,924</b>	<b>3,197 (18.9%)</b>

Table 11 illustrates beryllium testing findings on initial exams to date, and Table 12 provides findings on re-screens.

**Table 11. Results of Beryllium Lymphocyte Proliferation Tests (BeLPTs) by DOE Site on Initial Screening (through September 2012)**

State	Sites	Workers Screened	1 Abnormal	2 Abnormal	1 Abnormal and 1+ Borderline
AK	Amchitka Island Test Site	57	2 (3.5%)	0 (0.0%)	0 (0.0%)
CA	Lawrence Berkeley National Laboratory	226	5 (2.2%)	4 (1.8%)	0 (0.0%)
CA	Lawrence Livermore National Laboratory	1,064	10 (0.9%)	29 (2.7%)	5 (0.5%)
CA	Sandia National Laboratories, CA	130	0 (0.0%)	3 (2.3%)	2 (1.5%)
CO	Rocky Flats Plant (Construction Workers)	603	4 (0.7%)	3 (0.5%)	0 (0.0%)
CO	Rocky Flats Plant (Production Workers)	1,789	14 (0.8%)	14 (0.8%)	12 (0.7%)
FL	Pinellas (Production Workers)	565	7 (1.2%)	21 (3.7%)	3 (0.5%)
IA	Ames Laboratory	1,656	25 (1.5%)	21 (1.3%)	6 (0.4%)
IA	Iowa Army Ammunition Plant	1,275	15 (1.2%)	11 (0.9%)	8 (0.6%)
ID	Idaho National Laboratory (Construction Workers)	799	11 (1.4%)	4 (0.5%)	5 (0.6%)
ID	Idaho National Laboratory (Production Workers)	4,091	38 (0.9%)	30 (0.7%)	14 (0.3%)

20 Includes Oak Ridge K-25, Oak Ridge National Laboratory, and Y-12 National Security Site.

21 Sites where the number of individuals screened by the Building Trades National Medical Screening Program to date is less than 100.

22 Sites where the number of individuals screened by the National Supplemental Screening Program to date is less than 100.

IL	Argonne National Laboratory	221	5 (2.3%)	2 (0.9%)	1 (0.5%)
KY	Paducah GDP (Construction Workers)	811	15 (1.8%)	8 (1.0%)	1 (0.1%)
KY	Paducah GDP (Production Workers)	2,816	43 (1.5%)	18 (0.6%)	7 (0.2%)
MO	Kansas City Plant (Construction Workers)	567	2 (0.4%)	11 (1.9%)	3 (0.5%)
MO	Kansas City Plant (Production Workers)	2,169	38 (1.8%)	21 (1.0%)	9 (0.4%)
NM	Los Alamos National Laboratory	2,574	40 (1.6%)	31 (1.2%)	20 (0.8%)
NM	Sandia National Laboratories, NM	334	11 (3.3%)	3 (0.9%)	3 (0.9%)
NV	Nevada National Security Site	2,493	29 (1.2%)	21 (0.8%)	11 (0.4%)
NY	Brookhaven National Laboratory (Construction Workers)	478	5 (1.0%)	23 (4.8%)	0 (0.0%)
NY	Brookhaven National Laboratory (Production Workers)	315	1 (0.3%)	14 (4.4%)	4 (1.3%)
OH	Feed Materials Production Center (Construction Workers)	1,612	5 (0.3%)	13 (0.8%)	3 (0.2%)
OH	Feed Materials Production Center (Production Workers)	1,012	7 (0.7%)	6 (0.6%)	2 (0.2%)
OH	Mound Plant (Construction Workers)	290	0 (0.0%)	2 (0.7%)	0 (0.0%)
OH	Mound Plant (Production Workers)	1,389	22 (1.6%)	13 (0.9%)	4 (0.3%)
OH	Portsmouth GDP (Construction Workers)	967	14 (1.4%)	2 (0.2%)	0 (0.0%)
OH	Portsmouth GDP (Production Workers)	3,180	23 (0.7%)	10 (0.3%)	5 (0.2%)
SC	Savannah River Site (Construction Workers)	3,543	23 (0.6%)	33 (0.9%)	11 (0.3%)
SC	Savannah River Site (Production Workers)	1,630	44 (2.7%)	6 (0.4%)	4 (0.2%)
TN	Oak Ridge K-25 (Production Workers)	4,530	108 (2.4%)	93 (2.1%)	25 (0.6%)
TN	Oak Ridge National Laboratory (Production Workers)	1,455	22 (1.5%)	18 (1.2%)	7 (0.5%)
TN	Oak Ridge Reservation <sup>23</sup> (Construction Workers)	2,777	21 (0.8%)	20 (0.7%)	11 (0.4%)
TN	Y-12 National Security Complex (Production Workers)	2,803	54 (1.9%)	50 (1.8%)	5 (0.2%)

23 Includes Oak Ridge K-25, Oak Ridge National Laboratory, and Y-12 National Security Site.

TX	Pantex Plant	850	10 (1.2%)	0 (0.0%)	0 (0.0%)
WA	Hanford Site (Construction Workers)	2,434	30 (1.2%)	26 (1.1%)	5 (0.2%)
WA	Hanford Site (Production Workers)	3,288	100 (3.0%)	25 (0.8%)	17 (0.5%)
	Other Sites <sup>24</sup> (Construction)	631	2 (0.3%)	2 (0.3%)	0 (0.0%)
	Other Sites <sup>25</sup> (Production)	135	1 (0.7%)	2 (1.5%)	0 (0.0%)
<b>Grand Total</b>		<b>57,502</b>	<b>804 (1.4%)</b>	<b>613 (1.1%)</b>	<b>213 (0.4%)</b>

**Table 12. Results of Beryllium Lymphocyte Proliferation Tests (BeLPTs) by DOE Site on Re-screening (through September 2012)**

State	Sites	Workers Screened	1 Abnormal <sup>26</sup>	2 Abnormal <sup>27</sup>	1 Abnormal and 1+ Borderline
AK	Amchitka Island Test Site	21	0 (0.0%)	0 (0.0%)	0 (0.0%)
CA	Lawrence Berkeley National Laboratory	8	0 (0.0%)	0 (0.0%)	0 (0.0%)
CA	Lawrence Livermore National Laboratory	265	2 (0.8%)	0 (0.0%)	0 (0.0%)
CA	Sandia National Laboratories, CA	26	2 (7.7%)	0 (0.0%)	0 (0.0%)
CO	Rocky Flats Plant (Construction Workers)	194	1 (0.5%)	0 (0.0%)	0 (0.0%)
CO	Rocky Flats Plant (Production Workers)	194	2 (1.5%)	0 (0.0%)	1 (0.5%)
FL	Pinellas (Production Workers)	96	0 (0.0%)	0 (0.0%)	1 (1.0%)
IA	Ames Laboratory	482	1 (0.2%)	1 (0.2%)	0 (0.0%)
IA	Iowa Army Ammunition Plant	705	8 (1.1%)	3 (0.4%)	0 (0.0%)
ID	Idaho National Laboratory (Construction Workers)	207	2 (1.0%)	0 (0.0%)	0 (0.0%)
ID	Idaho National Laboratory (Production Workers)	1,414	3 (0.2%)	11 (0.8%)	5 (0.4%)
IL	Argonne National Laboratory	13	1 (7.7%)	0 (0.0%)	0 (0.0%)

24 Sites where the number of individuals screened by the Building Trades National Screening Program to date is less than 100.

25 Sites where the number of individuals screened by the National Supplemental Screening Program to date is less than 100.

26 May include individuals who did not receive a BeLPT at the time of their initial screening or who had a normal result on their initial screening and a single abnormal result on their re-screening.

27 May include individuals who did not receive a BeLPT at the time of their initial screening, had a normal result on the initial screening, or had a single abnormal or borderline result on their initial screening that was confirmed on their re-screening.

KY	Paducah GDP (Construction Workers)	272	0 (0.0%)	2 (0.7%)	0 (0.0%)
KY	Paducah GDP (Production Workers)	1,135	8 (0.7%)	3 (0.3%)	6 (0.5%)
MO	Kansas City Plant (Construction Workers)	131	2 (1.5%)	1 (0.8%)	0 (0.0%)
MO	Kansas City Plant (Production Workers)	304	0 (0.0%)	1 (0.3%)	2 (0.7%)
NM	Los Alamos National Laboratory	357	4 (1.1%)	0 (0.0%)	0 (0.0%)
NM	Sandia National Laboratories, NM	34	1 (2.9%)	0 (0.0%)	1 (2.9%)
NV	Nevada National Security Site	955	5 (0.5%)	5 (0.5%)	1 (0.1%)
NY	Brookhaven National Laboratory (Construction Workers)	168	3 (1.8%)	2 (1.2%)	1 (0.6%)
OH	Feed Materials Production Center (Construction Workers)	539	4 (0.7%)	0 (0.0%)	0 (0.0%)
OH	Feed Materials Production Center (Production Workers)	343	0 (0.0%)	5 (1.5%)	1 (0.3%)
OH	Mound Plant (Construction Workers)	84	0 (0.0%)	0 (0.0%)	0 (0.0%)
OH	Mound Plant (Production Workers)	518	1 (0.2%)	9 (1.7%)	3 (0.6%)
OH	Portsmouth GDP (Construction Workers)	331	1 (0.3%)	0 (0.0%)	0 (0.0%)
OH	Portsmouth GDP (Production Workers)	1,441	4 (0.3%)	6 (0.4%)	3 (0.2%)
SC	Savannah River Site (Construction Workers)	942	10 (1.1%)	3 (0.3%)	2 (0.2%)
SC	Savannah River Site (Production Workers)	6	0 (0.0%)	0 (0.0%)	0 (0.0%)
TN	Oak Ridge K-25 (Production Workers)	1,300	14 (1.1%)	12 (0.9%)	7 (0.5%)
TN	Oak Ridge National Laboratory (Production Workers)	503	5 (1.0%)	13 (2.6%)	5 (1.0%)
TN	Oak Ridge Reservation <sup>28</sup> (Construction Workers)	814	5 (0.6%)	6 (0.7%)	2 (0.2%)
TN	Y-12 National Security Complex (Production Workers)	909	11 (1.2%)	22 (2.4%)	6 (0.7%)
TX	Pantex Plant <sup>29</sup>	178	3 (1.7%)	2 (1.1%)	0 (0.0%)

28 Includes Oak Ridge K-25, Oak Ridge National Laboratory, and Y-12 National Security Site.

29 The site-specific project does not offer confirmatory tests for participants with an abnormal test. Those workers are referred to the Energy Employees Occupational Illness Compensation Program for further testing. However, workers referred to the National Supplemental Screening Program for exams are provided confirmatory tests.

WA	Hanford Site (Construction Workers)	701	4 (0.6%)	3 (0.4%)	0 (0.0%)
WA	Hanford Site (Production Workers)	463	5 (1.1%)	0 (0.0%)	2 (0.4%)
	Other Sites <sup>30</sup> (Construction Workers)	135	2 (1.5%)	1 (0.7%)	1 (0.7%)
	Other Sites <sup>31</sup> (Production Workers)	8	0 (0.0%)	0 (0.0%)	0 (0.0%)
<b>Grand Total</b>		<b>16,175</b>	<b>114 (0.7%)</b>	<b>111 (0.7%)</b>	<b>50 (0.3%)</b>

Table 13 illustrates audiometry (hearing test) findings on initial exams to date.

**Table 13. Audiometry Findings on Initial Screening  
(through September 2012)**

State	Sites	Workers Screened	Noise Induced Hearing Loss (NIHL)
AK	Amchitka Island Test Site	1,048	693 (66.1%)
CA	Lawrence Berkeley National Laboratory	256	102 (39.8%)
CA	Lawrence Livermore National Laboratory	855	378 (44.2%)
CA	Sandia National Laboratories, CA	94	45 (47.9%)
CO	Rocky Flats Plant (Construction Workers)	572	373 (65.2%)
CO	Rocky Flats Plant (Production Workers)	3,074	1,886 (61.4%)
FL	Pinellas (Production Workers)	578	220 (38.1%)
IA	Ames Laboratory <sup>32</sup>	132	40 (30.3%)
IA	Iowa Army Ammunition Plant <sup>33</sup>	101	84 (83.2%)
ID	Idaho National Laboratory (Construction Workers)	770	491 (63.8%)
ID	Idaho National Laboratory (Production Workers)	4,202	2,273 (54.1%)
IL	Argonne National Laboratory	415	166 (40.0%)

30 Sites where the number of individuals screened by the Building Trades National Medical Screening Program to date is less than 100.

31 Sites where the number of individuals screened by the National Supplemental Screening Program to date is less than 100.

32 The site-specific project does not offer audiograms. However, workers referred to the National Supplemental Screening Program are provided audiograms.

33 The site-specific project does not offer audiograms. However, workers referred to the National Supplemental Screening Program are provided audiograms.

KY	Paducah GDP (Construction Workers)	752	585 (77.8%)
KY	Paducah GDP (Production Workers)	3,209	1,834 (57.2%)
MO	Kansas City Plant (Construction Workers)	541	316 (58.4%)
MO	Kansas City Plant (Production Workers)	2,235	1,060 (47.4%)
NM	Los Alamos National Laboratory	2,317	1,395 (60.2%)
NM	Sandia National Laboratories, NM	295	167 (56.6%)
NV	Nevada National Security Site	3,758	2,977 (79.2%)
NY	Brookhaven National Laboratory (Construction Workers)	493	317 (64.3%)
NY	Brookhaven National Laboratory (Production Workers)	325	202 (62.2%)
OH	Feed Materials Production Center (Construction Workers)	1,587	794 (50.0%)
OH	Feed Materials Production Center (Production Workers)	1,177	404 (34.3%)
OH	Mound Plant (Construction Workers)	282	184 (65.2%)
OH	Mound Plant (Production Workers)	1,409	721 (51.2%)
OH	Portsmouth GDP (Construction Workers)	998	717 (71.8%)
OH	Portsmouth GDP (Production Workers)	3,474	1,812 (52.2%)
SC	Savannah River Site (Construction Workers)	3,622	2,132 (58.9%)
SC	Savannah River Site (Production Workers)	2,069	1,415 (68.4%)
TN	Oak Ridge K-25 (Production Workers)	4,109	2,687 (65.4%)
TN	Oak Ridge National Laboratory (Production Workers)	1,621	1,065 (65.7%)
TN	Oak Ridge Reservation <sup>34</sup> (Construction Workers)	2,425	1,742 (71.8%)
TN	Y-12 National Security Complex (Production Workers)	3,357	2,419 (72.1%)

34 Includes Oak Ridge K-25, Oak Ridge National Laboratory, and Y-12 National Security Site.

TX	Pantex Plant <sup>35</sup>	25	8 (32.0%)
WA	Hanford Site (Construction Workers)	1,770	1,245 (70.3%)
WA	Hanford Site (Production Workers)	3,067	1,507 (49.1%)
	Other Sites <sup>36</sup> (Construction Workers)	770	475 (61.7%)
	Other Sites <sup>37</sup> (Production Workers)	191	87 (45.5%)
<b>Grand Total</b>		<b>57,975</b>	<b>35,018 (60.4%)</b>

35 The site-specific project does not offer audiograms. However, workers referred to the National Supplemental Screening Program are provided audiograms.

36 Sites where the number of individuals screened by the Building Trades National Medical Screening Program to date is less than 100.

37 Sites where the number of individuals screened by the National Supplemental Screening Program to date is less than 100.

## Appendix D: Resources

DOE Former Worker Medical Screening Program Website

<http://www.hss.energy.gov/HealthSafety/FWSP/formerworkermed/>

FWP Medical Protocol

[http://www.hss.energy.gov/HealthSafety/FWSP/formerworkermed/Medical\\_Protocol.pdf](http://www.hss.energy.gov/HealthSafety/FWSP/formerworkermed/Medical_Protocol.pdf)

FWP Summary of Services

[http://www.hss.doe.gov/healthsafety/fwsp/formerworkermed/Summary\\_of\\_Services.pdf](http://www.hss.doe.gov/healthsafety/fwsp/formerworkermed/Summary_of_Services.pdf)

A Basic Overview of the Former Worker Medical Screening Program (Brochure)

[http://www.hss.energy.gov/HealthSafety/FWSP/formerworkermed/FWP\\_pamphlet.pdf](http://www.hss.energy.gov/HealthSafety/FWSP/formerworkermed/FWP_pamphlet.pdf)

A Basic Overview of the Energy Employees Occupational Illness Compensation Program (Brochure)

[http://www.hss.energy.gov/HealthSafety/FWSP/advocacy/EEOICP\\_brochure.pdf](http://www.hss.energy.gov/HealthSafety/FWSP/advocacy/EEOICP_brochure.pdf)

DOE Chronic Beryllium Disease Awareness Website

<http://hss.doe.gov/healthsafety/fwsp/advocacy/cbd/>

Outreach Event Calendar for DOE Workers

[http://www.hss.energy.gov/healthsafety/FWSP/Formerworkermed/events\\_calendars.html](http://www.hss.energy.gov/healthsafety/FWSP/Formerworkermed/events_calendars.html)

Building Trades National Medical Screening Program

<http://www.btmed.org/default.cfm>

1-800-866-9663

Former Worker Medical Screening Program for Burlington Atomic Energy Commission Plant (otherwise known as the Iowa Army Ammunition Plant) and Ames Laboratory

<http://www.iowafwp.org>

1-866-282-5818

Medical Exam Program for Los Alamos National Laboratory Former Workers

<http://www.jhsph.edu/LANLFW/index.html>

1-877-500-8615

National Supplemental Screening Program

<http://www.ornl.gov/nssp/>

1-866-812-6703

Pantex Former Worker Medical Screening Program

1-888-378-8939

Worker Health Protection Program

<http://www.worker-health.org/>

<http://www.worker-health.org/formerworker/> (for Nevada National Security Site (NNSS), formerly

Nevada Test Site, and Lawrence Berkeley, Lawrence Livermore, and Sandia National Laboratories, CA, former workers)  
1-888-241-1199  
1-877-771-7977 (for former NNSS workers)

Medical Facilities with Experience Evaluating Chronic Beryllium Disease  
[http://www.hss.energy.gov/HealthSafety/FWSP/formerworkermed/Medical\\_Facilities.pdf](http://www.hss.energy.gov/HealthSafety/FWSP/formerworkermed/Medical_Facilities.pdf)

DOE Human Subjects Protection Program  
<http://humansubjects.energy.gov/>

DOL Energy Employees Occupational Illness Compensation Program  
<http://www.dol.gov/owcp/energy/index.htm>

DOL Resource Centers  
<http://www.dol.gov/owcp/energy/regs/compliance/ResourceMeetings/ResourceCenters.htm>

NIOSH Dose Reconstruction  
<http://www.cdc.gov/niosh/ocas/ocasdose.html>

DOL Office of the Ombudsman for the Energy Employees Occupational Illness Compensation Program  
<http://www.dol.gov/eeombd/>



