



OFFICE OF INSPECTOR GENERAL

U.S. Department of Energy

# AUDIT REPORT

OAI-L-16-15

September 2016

**FOLLOWUP AUDIT ON  
CHRONIC BERYLLIUM DISEASE  
PREVENTION PROGRAMS  
AT OAK RIDGE SITES**



**Department of Energy**  
Washington, DC 20585

September 28, 2016

MEMORANDUM FOR THE ASSOCIATE UNDER SECRETARY FOR ENVIRONMENT,  
HEALTH, SAFETY, AND SECURITY  
MANAGER, NNSA PRODUCTION OFFICE  
MANAGER, OAK RIDGE NATIONAL LABORATORY SITE OFFICE  
MANAGER, OAK RIDGE OFFICE OF ENVIRONMENTAL  
MANAGEMENT

*April Stephenson*

FROM: April Stephenson  
Assistant Inspector General  
for Audits and Inspections  
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on the "Followup Audit on Chronic Beryllium Disease Prevention Programs at Oak Ridge Sites"

BACKGROUND

Department of Energy sites in Oak Ridge, Tennessee, have a long history of beryllium use due to the element's broad application in nuclear weapons and reactor operations and processes. Beryllium processing has been an important part of the mission of the Y-12 National Security Complex (Y-12) since the 1950s, and Y-12 continues to conduct beryllium operations. While the Oak Ridge National Laboratory (ORNL) and the East Tennessee Technology Park (ETTP) no longer perform beryllium operations, they continue to maintain buildings in which beryllium contamination has been detected from legacy beryllium activities. According to the Department, exposure to beryllium can cause beryllium sensitization or chronic beryllium disease, an often debilitating, and sometimes fatal, lung condition. Further, the Department has recognized the possibility that beryllium remains in buildings, as well as on equipment and other surfaces. Thus, to help ensure that worker exposure to beryllium is limited, the contractors operating Y-12, ORNL, and ETTP are required to implement Chronic Beryllium Disease Prevention Programs (CBDPPs) that comply with Federal regulations.

We previously conducted audits of beryllium controls at ORNL and Y-12 that concluded that the potential for employee exposure to beryllium was not minimized. As such, we initiated a followup audit to determine whether our recommendations during our prior audits were successfully implemented and whether the CBDPPs at Oak Ridge sites are managed effectively.

RESULTS OF AUDIT

Although we did not identify any material weaknesses with the CBDPPs at Oak Ridge sites, we noted that implementation of some corrective actions from our previous reports were either initially ineffective or incomplete:

- ORNL's enhanced procedures to control beryllium exposure from excessed equipment were not initially fully effective. However, a procedure change made in 2010 adequately addressed this issue.
- Y-12's beryllium information database had not been maintained, and the Web site replacement for the database did not contain maps of all beryllium-associated facilities.
- Revisions to the Department's regulation governing CBDPPs, 10 Code of Federal Regulations 850, *Chronic Beryllium Disease Prevention Program* (10 CFR 850), were not complete more than 8 years after our initial report was issued. A notice of proposed rulemaking for the 10 CFR 850 was published in the *Federal Register* in June 2016.

Additionally, we noted that two Oak Ridge sites had lapses in required periodic beryllium training.

### **Excessed Equipment**

Although ORNL adopted enhanced procedures to control beryllium exposure, as recommended in our report on *Beryllium Controls at the Oak Ridge National Laboratory* (DOE/IG-0737, September 2006), its initial actions were not fully effective. The previous report's recommendations were based, in part, on an incident in which beryllium-contaminated equipment was improperly transferred from ORNL to a third party. In response, ORNL updated its CBDPP to no longer allow the release of beryllium-contaminated equipment to the public, even after it has been decontaminated. ORNL also implemented a requirement to sample metalworking equipment for beryllium prior to disposal as excess. However, we learned that subsequent to implementing these requirements in 2007, a grinder was excessed and sold to a third party without being sampled. Specifically, in February 2010, when an industrial hygiene technician attempted to collect samples from the grinder, he discovered that it had been sold at public auction 11 days earlier.

This situation occurred because, although the excess property custodian contacted industrial hygiene to perform the testing, technicians did not perform the required testing prior to the time it was disposed of. ORNL's excess property forms also did not include a section regarding the need to test for industrial hygiene hazards, such as beryllium, or to document the results of such tests. As a result, the property was excessed before the sampling process was completed. Once the error was discovered, ORNL personnel collected samples from the grinder at the purchaser's house, the truck used to transport the grinder, and the floor where the grinder was stored. Six of the 13 samples collected from the grinder detected beryllium above the analytical laboratory reporting limit. One of those samples exceeded the 10 CFR 850 release criteria by more than four times the allowable amount. The truck and floor were determined not to be contaminated, as those sample levels were below the analytical laboratory reporting limit. The grinder was returned to ORNL, and the purchaser was compensated for the expenses associated with the incident.

Following the beryllium-contaminated equipment release, ORNL implemented an operating procedure in 2010 that included an Excess Equipment Checklist, which specifies that a beryllium

test must be completed. We did not identify any equipment that had been released to the public after this additional procedure was adopted.

### **Beryllium Database**

Our 2007 report on *Beryllium Surface Contamination at the Y-12 National Security Complex* (DOE/IG-0783, December 2007) recommended that Y-12 personnel complete and maintain its beryllium information database, which was under development at that time. The database was intended to provide a single repository of beryllium information to identify contaminated locations for management and workers. Although the database was completed as recommended, Y-12 personnel told us that due to decreased usage, it was eventually shut down and replaced with a Web site. While the Web site contained information for employees such as beryllium support group meeting dates, contacts for the beryllium program, and beryllium annual reports, we found that maps for only 6 of 32 beryllium-associated facilities were included. While not required, these maps are important because they allow workers diagnosed with beryllium sensitivity, chronic beryllium disease, or those who wish to minimize the possibility of beryllium exposure, to know which areas to avoid. The maps could also potentially help minimize beryllium exposure for personnel responding to an emergency by alerting them to the need to wear personal protective equipment. Y-12 personnel told us they planned to add the rest of the beryllium-associated facilities maps to the Web site.

### **Regulation Revision**

Our 2007 report regarding Y-12 also recommended that the Department revise 10 CFR 850 governing CBDPPs. In particular, we recommended a revision to require posting signs when surface beryllium contamination occurs in non-operational areas. However, as of June 2016, more than 8 years following our prior report's release, 10 CFR 850 had not been revised. Federal officials told us that they are working to complete the revision, which is a multistep process. According to the Department, the Office of Management and Budget approved the rulemaking package on January 25, 2016, and the Secretary of Energy signed it on May 16, 2016. The notice of proposed rulemaking was published in the *Federal Register* for public comment on June 7, 2016. Four public meetings were held from June–August 2016, to give the public the opportunity to provide comments on the proposed amendments to 10 CFR 850. The 90-day comment period ended on September 6, 2016. According to the Department, the comments received are being reviewed and will be used to develop the final rule.

### **Other Observations**

In addition to the observations identified above, we noted lapses in training existed at two Oak Ridge sites. Specifically, although 10 CFR 850 requires beryllium-associated workers to complete training before or at the time of initial assignment and at least every 2 years thereafter, we found required training at ORNL and ETTP was not completed. We analyzed 23 beryllium-associated employee training records from ORNL. Of those 23, we noted 16 employees exceeded the 2-year training requirement. In two instances, beryllium-associated workers exceeded the training requirement by more than 5 years. ORNL personnel stated that the lapses

occurred due to various reasons including scheduling issues and incomplete follow-through by division training officers. ORNL management stated that controls were in place to prevent staff from conducting beryllium activities if their training is not current.

We also identified two ETPP employees who were added as beryllium-associated workers during the course of the audit and exceeded the initial training requirement by 83 days. In this case, ETPP personnel stated they neglected to ensure the new employees received the required training, but they told us they had instituted controls to prevent this from occurring in the future. ETPP personnel also reported that the two employees have now received the required training. Federal regulations note that training helps ensure worker safety by periodically reminding workers of the best techniques and practices to use when working with beryllium and is designed to help minimize exposure.

### IMPACT AND PATH FORWARD

Although we did not identify any adverse consequences as a result of the items discussed above, a strong CBDPP is important to ensure worker safety and minimize exposure to beryllium. Therefore, to further improve the effectiveness of CBDPPs at Oak Ridge sites, we suggest that Y-12 consider updating and maintaining its beryllium information Web site to include maps of all unclassified beryllium-associated facilities. We also suggest that the Associate Under Secretary for Environment, Health, Safety, and Security continue to take action to ensure that the 10 CFR 850 revision is completed in accordance with our prior recommendation. Further, we suggest that ORNL consider taking additional action to ensure beryllium-associated workers receive training as required by 10 CFR 850.

Attachment

cc: Deputy Secretary  
Chief of Staff  
Assistant Secretary for Environmental Management  
Director, Office of Science

## OBJECTIVE, SCOPE, AND METHODOLOGY

### OBJECTIVE

The objective of this audit was to determine whether our prior recommendations were successfully implemented and whether the Chronic Beryllium Disease Prevention Programs (CBDPPs) at Oak Ridge sites are managed effectively.

### SCOPE

This audit was conducted between September 2015 and September 2016, at the Y-12 National Security Complex (Y-12), Oak Ridge National Laboratory (ORNL), and East Tennessee Technology Park (ETTP) in Oak Ridge, Tennessee. The audit scope included resolution of prior audit findings and site implementation of CBDPPs. The audit was conducted under Office of Inspector General project number A15OR058.

### METHODOLOGY

To accomplish our audit objective, we:

- Reviewed applicable laws, regulations, policies, and procedures pertaining to CBDPP management;
- Reviewed prior reports issued by the Office of Inspector General;
- Toured various buildings at the sites to observe implementation of CBDPP requirements;
- Analyzed Y-12, ORNL, and ETTP documentation regarding worker training, facility management, and resolution of prior audit findings; and
- Held discussions with officials from Department of Energy Headquarters, Y-12, ORNL, and ETTP concerning CBDPP management.

We conducted this performance audit in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. Accordingly, the audit included tests of controls and compliance with laws and regulations necessary to satisfy the audit objective. In particular, we assessed compliance with the *GPR Modernization Act of 2010* and found that the Department had not established specific performance measures related to CBDPPs ; however, measures were in place regarding environment, safety, and health that would include beryllium. We did not rely on computer-processed data to achieve our audit objective. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit.

An exit conference was held with Department and contractor management on September 13, 2016.

## **FEEDBACK**

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