

## Beryllium Awareness

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**Special Operations Reports** are issued to initiate management actions in response to events whose subject matter represents significant departmental safety or health concerns.

**Safety Alerts** are issued to initiate immediate action on potentially significant safety or health issues.

**Safety Bulletins** are issued to share information and recommend actions on potential safety or health issues.

**Safety Advisories** are issued to provide information to the DOE Complex on potentially significant safety or health issues.

### PURPOSE

This Bulletin provides information on a safety concern that may impact operations at Department of Energy (DOE) facilities. Specifically, the concern is the safe handling of beryllium and beryllium compounds during use and disposal.

### BACKGROUND

Beryllium is a silver-gray metallic element that occurs naturally in many minerals. It is lighter than aluminum and stiffer than steel.

DOE records show 32 safety incidents involving beryllium over the past 5 years. Most involved surface or airborne contamination. Nine percent resulted in personnel exposures, and 13 percent involved the release or transfer of contaminated material and equipment.

Use of beryllium-containing materials may generate hazardous wastes, as defined in title 40, Code of Federal Regulations (CFR), [part 261](#), requiring special handling and worker training. Furthermore, unpermitted releases of beryllium powder, beryllium chloride, beryllium fluoride, and beryllium nitrate ([40 CFR 302](#)) may trigger requirements to notify government agencies.

### WHAT ARE THE HAZARDS?

Beryllium can enter the body by inhalation, ingestion, skin absorption, or via cuts and wounds. The most serious health effects occur when beryllium particles travel deep into the lungs, which may cause sensitivity to beryllium over time. Sensitized individuals may experience chronic beryllium disease (CBD) many years after the exposure. Symptoms of CBD include: persistent coughing, shortness of breath with physical exertion, fevers, night sweats, and/or chest pain. Other symptoms include fatigue, weight loss, pain in the joints, and loss of appetite.

**If you believe you have been exposed to beryllium by any route, talk to your supervisor.**

### CHRONIC BERYLLIUM DISEASE PREVENTION PROGRAM

Federal and contractor personnel working or visiting a site where beryllium activities are conducted must have beryllium training. Workers exposed or potentially exposed to beryllium at a DOE facility are considered Beryllium-Associated Workers and must have beryllium training and be offered medical surveillance.

DOE published 10 CFR 850, *Chronic Beryllium Disease Prevention Program* (CBDPP), and issued DOE G 440.1-7A,

*Implementation Guide for use with 10 CFR 850*, to assist in implementing the CBDPP. DOE is presently developing guidance (DOE Technical Standard SAFT-0103, *Management of Items and Areas Containing Low Levels of Beryllium*) to cover situations not included in the implementation guide.

### CONTROLLING THE HAZARDS

Operational assessments should be routinely scheduled to determine if the use of beryllium can be eliminated or minimized. In addition, the following should be considered:

Engineering controls, offering the most effective protection, include:

- Enclosing beryllium work;
- Using local exhaust ventilation with High Efficiency Particulate Air filters; and
- Using wet machining techniques.

Administrative controls used to minimize employee exposure include:

- Providing training to individuals exposed to beryllium;
- Posting warning signs and labels in beryllium areas;
- Cleaning active beryllium areas after every shift; and
- Treating beryllium cleanup material as contaminated.

Personal Protective Equipment (PPE) includes:

- Respirators; Gloves; and Protective clothing.

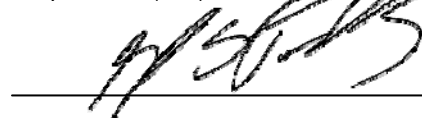
### ADDITIONAL SOURCES OF INFORMATION

- Your Safety and Health Office
- Training information on the Web:  
<http://www.eh.doe.gov/be/training.html>

### SUMMARY

- Exposure to beryllium can be avoided.
- Beryllium exposure could cause chronic beryllium disease.
- Beryllium-containing wastes may be subject to hazardous waste regulations, and certain spills may require reporting.

If you have any questions, please contact Dr. Bill McArthur by telephone at (301) 903-9674 or at [billmcarthur@hq.doe.gov](mailto:billmcarthur@hq.doe.gov).



Glenn S. Podonsky  
Chief Health, Safety and Security Officer  
Office of Health, Safety and Security



## PREVENT EVENTS

### Learning from Industry Experience

**PREVENT EVENTS is intended for use by personnel during morning meetings, pre-job briefings, and work unit meetings to communicate key industry experience.**

#### Management:

1. What are we doing to determine if those older facilities, with an uncertain history of use, are free of beryllium contamination?
2. Have we developed statistical survey methods and plans to assess suspect facilities for beryllium contamination?
3. Is there an inventory of beryllium-contaminated facilities and equipment?
4. Do we have a CBDPP that conforms to 10 CFR 850?
5. What training have we provided our workers on working with beryllium?
6. Does the site CBDPP address handling beryllium and beryllium compounds?
7. Are our safety and health people keeping informed of the latest developments in beryllium safety and guidance?
8. Have we made available to our workforce the engineering and administrative controls and personal protective equipment to do the work safely?
9. Have we evaluated opportunities to remove beryllium from ongoing operations or to reduce the number of operations in which beryllium is used, in order to reduce the need for engineering and administrative controls?
10. What training have we provided our workers on characterization of beryllium-containing wastes and reporting of unpermitted beryllium releases?

#### Supervisors and Workers:

1. Do we need respiratory and other PPE for the job?
2. Could we use PPE, regardless of measured exposure levels, if it is determined not to introduce new hazards?
3. Are there separate segregated and sealed containers for nondisposable company-issued protective clothing for transfer to the laundry?
4. Is the air in the work area being sampled to confirm an acceptable air quality for work?
5. Have surface swipes been taken to assure a controlled work environment?
6. How do we know if beryllium dust or particles are not hidden in equipment or crevices in formerly contaminated areas?
7. Under what conditions equipment and material from contaminated areas be transferred or declared excess and therefore available for re-use?
8. Have all employees been properly trained?

