

Physics Division

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Physics Beryllium Protection Program

A recent Office of Inspector General (IG) report found that ORNL did not properly manage activities relating to beryllium contamination relative to equipment transferred from Building 9201-2. A copy of the IG report can be found at:

<http://www.ig.energy.gov/documents/IG-0737.pdf>

As a result of this incident, ORNL has filed a Noncompliance Tracking System (NTS) report under the new DOE Worker Safety & Health Rule (10 CFR 851). A copy of the NTS report can be viewed at:

http://home.ornl.gov/directorates/audit_assessment/paaa/NTS%20Reports/2006%20NTS%20Rpts/NTS-ORNL-SANDH-2006-0001.pdf

ORNL Safety Services Division (SSD) management has decided that all areas previously identified as contaminated with beryllium be re-investigated to assure proper controls are in place and individuals are not being placed at undue risk. Physics Division has already responded to SSD, providing information on four areas in our facilities that were evaluated during the ORNL beryllium baseline inventory conducted in 2001. For your information, the four Physics Division areas identified in the baseline assessment are:

Bldg	Room	Beryllium	Baseline Survey Results*	Current Status
6000	107 Storage cabinet	Thin Be foils	Be containers = 0.262 µg Cabinet shelves, door handle = 0.311µg	Cleaned
6000	T201	Solid Be sputter cathode for stable beam	Be containers = 0.201 µg Cabinet shelves, door handle = 0.0406 µg	Cleaned and resampled to confirm
6000	C106 Waste cage	Bagged Be waste	Bag of Be waste = 5.05 µg Workbench = 0.165 µg	Rebagged all Be waste, workbench cleaned
6000	C112	Legacy contamination	Cable tray, light fixture, outside of 2 gloveboxes were > 0.2 µg/100 cm ² , (but <1)	Room decontaminated by Be workers and demolished for facility upgrade

*Note: Swipe samples of three 100/cm² areas were submitted as one composite sample.

Note: The free release limit for beryllium is 0.2 µg/100 cm². Anything above that limit needs to be cleaned or controlled. (10 CFR 850)

Physics Division conducts research with both stable and radioactive beryllium beams. For this reason, we have a Division-specific Beryllium Protection Program that is more conservative than the current ORNL Program.

You can view the Physics Division Beryllium Protection Program Plan at:
<http://www.phy.ornl.gov/divops/procedures/BerylProtPlan.pdf>

Key elements of the Physics Division Beryllium Protection Program Plan include:

- A “beryllium activity” is defined as an activity with any potential for beryllium exposure, even below the administrative action limit. One must be a Beryllium Worker to do any work with a potential for beryllium exposure.
- A “Beryllium-Regulated Area” is an area where beryllium is processed or handled and airborne concentrations exceed, or can reasonably be expected to exceed, the action level of 0.2 $\mu\text{g}/\text{m}^3$ calculated as an 8-hour time weighted average.
- Physics Division’s Beryllium Protection Program implements use of “Beryllium Areas” (not defined in 10 CFR 850 or ORNL procedures) to establish controls for beryllium activities that do not result in airborne exposures or surface contamination levels above administrative action limits. Beryllium Areas are used to control beryllium activities with the potential for exposure *below* administrative action limits.
- Work that has the potential to generate airborne concentrations of beryllium shall be conducted in a Beryllium Area or a Beryllium-Regulated Area by Beryllium Workers.
- A Safety Work Permit shall be used to control work that has potential to generate airborne concentrations of beryllium. The Safety Work Permit shall specify requirements for PPE and exposure monitoring, as determined by a Certified Industrial Hygienist. The Safety Work Permit shall include a sign-in sheet. Records (task-specific plans and permits) shall be kept (for 75 years).
- “Beryllium articles” are defined as manufactured items formed to a specific shape or design during manufacture that has end-use functions dependent in whole or in part on its shape or design during end-use, and *that does not release or otherwise result in exposure to airborne concentrations of beryllium under normal conditions of use.*
- **Some beryllium articles present a potential for exposure – therefore, all activities involving beryllium in Physics Division are to be evaluated under our program.** There may be times when only Beryllium Workers will be allowed to handle beryllium articles. There may be times when we want to take surface smears to ensure that beryllium articles do not present the potential for exposure.

**Help us keep the Physics Division Beryllium Protection Program strong.
Please identify all beryllium activities for evaluation!
Contact Sandra Kennedy 576-0240**