

Hanford Facility Beryllium Fact Sheet

Building Number/Name: 231Z Materials Engineering Laboratory (Plutonium Metallurgy Lab)
Date prepared: February 23, 2004
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Responsible Contractor: CHPRC
Contact: Kristy Kimmerle, CIH

PAST OPERATIONS

Beryllium brought in facility: YES
Form of beryllium: SOLID
Period of beryllium operations (dates): Start: 1967 End: 1980

Location(s) in facility that contained beryllium materials: PNNL conducted various beryllium operations in this facility from 1967 to 1980. Confirmed rooms with past beryllium activities include 23, 24, 34, 39, and 49. No beryllium contamination areas were noted during the 1999 assessment.

Description of beryllium activities: Welding of pure beryllium in an exhaust hood was conducted in 1967. Grinding and buffing took place in Room 23. A lathe and polishing operation occurred in the upstairs machine shop. An acid dip was in Room 24. A Lamellar rotating blade sputtering operation was in Room 39 and some machining activities occurred in Room 49.

Building monitoring data summary: Breathing zone samples were taken in most areas noted above. Wipe samples were recorded through April 1980 with readings all below $0.1 \mu\text{g}/100\text{cm}^2$. Surface wipe samples were collected from 88 sites throughout the building on 8/4/99. Results reported for these samples were below the MDL of $0.5 \mu\text{g}/100 \text{cm}^2$.

Personnel monitoring data summary: Wipe samples were taken in most areas noted above. Most of the air samples were below limits in the range of detectable to $0.08 \mu\text{g}/\text{m}^3$. Two general room air samples were analyzed in 1976 with reported results of $33.5 \mu\text{g}/\text{m}^3$ (upstairs grinding and buffing area) and $11.6 \mu\text{g}/\text{m}^3$. Records were found of four individuals having personal monitoring. Some of these had results that exceeded limits and the operation was then moved into hoods for proper control. Results of the four samples were: 1) 1976 at the upstairs grinding and buffing station - $19.1 \mu\text{g}/\text{m}^3$; 2) 1976, Room 23 hand sanding area - $11.6 \mu\text{g}/\text{m}^3$; 3) 1978, upstairs machine shop lathe - $1.39 \mu\text{g}/\text{m}^3$; and 4) 1979, Room 34 near a lab hood - $1.2 \mu\text{g}/\text{m}^3$. Ambient air samples were collected on 8/4/99 in the hall between Rooms 72 and 73, in Corridor D outside Room 39, near the south wall of Room 34, and in the hall between Rooms 89 and 99. A personal air sample was also collected on 8/4/99 in the breathing zone of a technician while wipe sampling surfaces for beryllium. Results reported for these samples were below the Method Detection Limit (MDL) of 0.004 and $0.005 \mu\text{g}/\text{m}^3$, respectively.

Specify Engineering/Administrative controls used during operations: As noted above, when samples indicated that limits were being exceeded, the activity was relocated into a ventilated hood. No other information was identified regarding other protective measures.

Comments, including any additional information needed (specify): There may be some residual beryllium in the exhaust ductwork. Areas that were unable to be sampled but should be considered as potentially contaminated with beryllium include the process exhaust ducts and filter boxes in Room 202 (duct level), especially those serving Rooms 23, 24, 34, 39, and 49. Most smear samples taken in 1979 and 1980 were just above the detectable limits. If any work in this building would involve breaking into the abandoned systems (including the exhaust ducts) appropriate controls to protect workers and beryllium

sampling should be implemented. A review of the building was made by an industrial hygienist in December 1997 who concluded that other special precautions would not be needed for routine building operations. This conclusion was confirmed by the results of the 1999 FDH report.

Maximum Estimated Past Be exposure: HIGH

CURRENT OPERATIONS

Building still present: YES

Beryllium present: Unknown – Assumed to be contaminated until fully characterized.

Current building occupancy/activity: The building has been vacant for a number of years with the associated equipment also removed. This building is inactive and is a BCA except on the South Office Wing which was characterized and down posted in 2011. Access to this building is currently only to conduct surveillance and various maintenance tasks resulting from surveillances.

Maximum Estimated Current Be Exposure from Routine Operations: NONE

Basis for above information: 231Z Beryllium Characterization Report 2/8/2011 and Beryllium Facility Assessment Form 6/30/2010.

For questions or comments, please send email to Kristy_J_Kimmerle@rl.gov