Hanford Facility Beryllium Fact Sheet

Building Number/Name:	272W Machine Shop Building
Date prepared:	September 23, 1999
Date revised:	January 26, 2012
Responsible Contractor:	CHPRC
Contact:	Kristy Kimmerle, CIH

PAST OPERATIONS

Beryllium brought in facility: YES
Form of beryllium: SOLID
Period of beryllium operations (dates): Start: 1955 End: 1980s
Location(s) in facility that contained beryllium materials: Machine shop, tool and die shop

Description of beryllium activities: Fabrication of electrical connectors using 0.61% beryllium alloy using a machining process and subsequent drilling of the alloy. This building was used for site fabrication services (machine shops) with a few offices. Previous information indicated that beryllium might have been present in the form of a beryllium-copper alloy wire (1.85% beryllium). After purchase of this wire, a decision was made to use a non-beryllium substitute and the manufacturer would not accept the return of the unused wire, which is supposedly stored in its original plastic packaging. However, according to the building point-of-contact Lorin Carrell, there was no beryllium-copper wire present when the initial Beryllium Fact Sheet was written.

Building monitoring data summary: Extensive sampling was performed in this building prior to removal of the equipment. Additional sampling was conducted in 2009 on surfaces above 8 feet to characterize the entire facility. The building was determined to be beryllium clean at the conclusion of this sampling campaign.

A 1968 study attempted to duplicate past conditions by performing past activities (wearing lab jacket, gloves, shoe covers, and respiratory protection) and collecting air and swipe samples to estimate past exposures. Swipe samples from the 1968 study ranged from 0.0002 to 6.7 $\mu g/in^2$. Swipe samples were collected from the rod stock (0.04 $\mu g/in^2$), lathe compound after cleaning (1.0 $\mu g/in^2$), lathe bed after cleaning (0.0002 $\mu g/in^2$), floor in front of lathe (0.005 $\mu g/in^2$), and lathe chuck (6.7 $\mu g/in^2$). Surface samples were collected from 59 sites throughout the building on 7/6/99. Results reported for these samples were below the MDL of 0.5 $\mu g/100\ cm^2$. Areas that were unable to be sampled but should be considered as potentially contaminated with beryllium include the interiors of two exhaust ducts on the north wall in the northwest corner of the main shop that were reportedly used to vent emissions from beryllium metal processing machinery.

Personnel monitoring data summary: Air samples collected during the 1968 study ranged from 0.08 to 346 $\mu g/m^3$. Total time of event was approximately 7 minutes. The first two air samples were collected while machining at 684 and 250 rpm and had reported concentrations of 0.08 $\mu g/m^3$. The third and fourth machining cuts at 1500 and 1140 rpm had reported results of 1.04 and 1.6 $\mu g/m^3$ respectively. Samples collected while polishing with a metal cloth had reported results of 208 and 346 $\mu g/m^3$. The general room air concentration was 19.7 $\mu g/m^3$. Ambient air samples were collected on 7/6/99 in the northwest section of 272-W immediately south of the flammable storage cabinets, and in the southwest machining area. A personal air sample was also collected on 7/6/99 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 $\mu g/m^3$ and 0.01 $\mu g/m^3$, respectively.

Specify Engineering/Administrative controls used during operations: No historic controls were identified prior to the 1968 study.

Comments, including any additional information needed (specify): During the creation of this Beryllium Fact Sheet the beryllium exposure in the facility was likely none. However, because of the past machining of beryllium with documented high exposures and a lack of data to document cleanup measures, a low exposure could potentially have occurred during activities that disturb the building structure or ventilation system.

Maximum Estimated Past Be exposure: HIGH prior to 1968, LOW after 1968

CURRENT OPERATIONS
Building still present: NO
Beryllium present: NO

Current building occupancy/activity: Completed building demolition on 6/15/2009.

Maximum Estimated Current Be Exposure from Routine Operations: NONE

Basis for above information: These results are documented by the Beryllium Characterization Report 272W 3/27/2009 and the CareTaker Reporting.

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