Key Findings of CDC's LAHARD Project: Early Airborne Beryllium Releases
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Uses of Beryllium at Los Alamos
Los Alamos scientists and engineers conducted experiments on radiation before the health hazards of the material were fully appreciated (Momsen et al., 2014; Strohman, 1954). Two instances of exposure at LANL: machining and firing tests—have resulted in releases of beryllium to the environment. The machining, firing, blending, and general handling of the脆(material) caused beryllium dust to be generated in the laboratory settings. Figure 1 shows the “Old Beryllium Shop” at 140-262 Hall, a beryllium building at Technical Area 31 (TA-31) Building 3B-80 became operational in 1953. Dynamic testing was involved in use of beryllium and other materials in explosive tests in the production of subsonic and supersonic forms of contamination or confinement at facilities such as the Savannah River Site. The result of the exposure was the CSHB Hardcore Incident in 1969. In addition, several illnesses involving beryllium were performed at 20 Technical Areas between 1943-1955.

Release Estimator to Support Scoping-Level Assessment of Beryllium Exposures
A screening assessment of beryllium concentrations in public areas was performed based on historical documents, and the atmosphere dispersion screening methods of National Council on Radiation Protection and Measurement (NCRP) Report No. 122 (NCRP, 1996).

New Beryllium Shops:
- Peak releases of airborne beryllium from the SM-38 Building (53Continental Air Facility at 120-01 Building 120) were estimated based on measured annual releases for 1948-1949 and 1950-1953, within which the highest values were for 1953. Peak SM-38 Beryllium Shop (SB) peak releases were estimated based on a combination of direct sampling of beryllium-containing material, dusting, and beryllium decontamination. The releases were estimated for material and water handlings and for the release of beryllium-containing material to the atmosphere for the period 1948 and 1950-1953.

Beryllium Contamination Screening
- Releases from the Korean peninsula, Beryllium (Be) powder (A) in Building 113 were estimated based on a single release event that occurred in 1960.

Conclusion: The total amount of beryllium released into the atmosphere for the period 1960-1994 was estimated to be less than 0.001 kg.

Results of Preliminary Screening
The results of the screening of airborne beryllium exposures from the building operations are presented in Table 1. The release rate and concentration values include B-beryllium powder, V-beryllium, and SM-38 B-beryllium powder releases. The releases were estimated for the release of airborne material from the building operations and for the periods 1890 and 1948-1953. The releases were estimated for the periods 1890 and 1948-1953.

Comparison of Concentrations to Exposure Limits and Guidelines
The exposure limits summarized in Figures 2 and 3 indicate that the 8-hr weighted average permissible exposure limit of 2 mg/m³ for “Fumed” beryllium is adopted for airborne material contaminated with 0.05 mg/m³ or more of beryllium. The exposure limits at the LAHARD project were developed and are based on a 10-year average concentration of 0.05 mg/m³ for “Fumed” beryllium-contaminated material at 0.05 mg/m³ for “Fumed” beryllium-contaminated material at greater than 0.05 mg/m³. The exposure limits for 8-hr average concentrations for “Fumed” beryllium-contaminated material at greater than 0.05 mg/m³. The exposure limits for 8-hr average concentrations for “Fumed” beryllium-contaminated material at greater than 0.05 mg/m³. The exposure limits for 8-hr average concentrations for “Fumed” beryllium-contaminated material at greater than 0.05 mg/m³. The exposure limits for 8-hr average concentrations for “Fumed” beryllium-contaminated material at greater than 0.05 mg/m³.