pennsylvania
DEPARTMENT OF HEALTH

BERYLLIUM

Beryllium is a lightweight metal that occurs naturally in rocks, coal, soil, and volcanic dust. Commercially, bertrandite and beryl ore are mined for the extraction of beryllium. Because beryllium is light and rigid, it has many uses in the electronics, aerospace, and defense industries. Beryllium is released into the atmosphere by windblown dust, volcanic particles, and the combustion of coal and fuel oil. As an element, beryllium does not degrade in the environment; it only changes form.

HOW DOES BERYLLIUM GET INTO MY BODY?

Although beryllium is found in water and soil, most human exposure to beryllium and its compounds occurs in the workplace. People who work in beryllium manufacturing, fabricating, and reclaiming industries have greater probability of inhalation exposure than non-occupational groups. The public can be exposed to trace amounts of beryllium through inhalation of air, consumption of food, water and incidental soil ingestion, and skin contact with air, water, or soil that contains beryllium. Individuals living near sources of beryllium emissions, such as beryllium manufacturing facilities or municipal waste sites, are potentially at risk of exposure to beryllium levels above background. Dental technicians are at risk of inhalation exposure of beryllium. In addition, people working in aeronautics and aircraft industries risk exposure to beryllium through altimeters, braking systems, bushings, and bearings for landing gear.

WHAT CAN BERYLLIUM DO TO ME?

Exposure to beryllium can affect the lungs and/or skin. However, not everyone will develop health effects from beryllium exposure, although dermal exposure can result in beryllium sensitization. Also, oral exposures result in beryllium accumulation in the bone or liver and inhalation exposure may lead to respiratory effects and lung cancer.

WHAT ARE THE ENVIRONMENTAL REGULATIONS FOR BERYLLIUM?

Regarding workplace standards, the Occupational Health and Safety Administration's regulation for beryllium and its compounds in air is an 8-hour time-weighted average (TWA) permissible exposure limit (PEL) of 0.2 micrograms (as beryllium) per cubic meter of air (0.2 $\mu g/m^3$). An employee should not be exposed to a concentration of beryllium and beryllium compounds exceeding 5 $\mu g/m^3$. The 30-minute maximum peak level is 25 $\mu g/m^3$. Furthermore, the National Institute for Occupational Safety and Health recommends that beryllium be treated as a potential human carcinogen and advises a 10-hour TWA not to exceed 0.5 $\mu g/m^3$.

Beryllium has been designated a hazardous air pollutant under the Clean Air Act. According to regulations set by the Environmental Protection Agency (EPA), beryllium emissions into the air from stationary sources cannot exceed 10 g (0.022 lbs) over a 24-hour period. Ambient air concentrations averaged over a 30-day period near stationary sources must not exceed 0.01 $\mu g/m^3$. Additionally, EPA limits beryllium in public drinking water to 0.004 mg/L or 4 parts per billion.

WHAT CAN I DO TO MINIMIZE EXPOSURE?

If you live near a hazardous waste site:

- Washing hands frequently, especially before eating.
- Discouraging children from eating dirt or engaging in other hand-to-mouth activities.
- Avoid outdoor activities on windy, dusty days.

If you are exposed to beryllium at work:

- Change your clothes and clean your hair and skin before leaving your job and returning home.
- Do not bring objects home such as work tools that may be contaminated with beryllium.
- Wash work clothing at the workplace, if possible. Alternatively, wash clothing worn while working with beryllium separately from other family clothing to avoid cross-contamination.

If you have questions or concerns about beryllium, please contact the
Division of Environmental Health Epidemiology at dehe@pa.gov or 717-787-3350.

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1. https://www.atsdr.cdc.gov/csem/beryllium/patient_education.html
2. https://wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=1441&tid=33