Berkelium - Bk

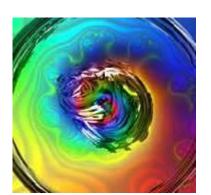|	
Atomic number	97
Atomic mass	(247) g.mol^{-1}
Electronegativity according to Pauling	unknown
Density	14 g.cm^3 at 20°C
Melting point	unknown
Boiling point	unknown
Vanderwaals radius	unknown
Ionic radius	unknown
Isotopes	8
Discovered by	G.T. Seaborg 1949.

Berkelium

Berkelium is a radioactive metallic element that is a member of the actinide group of elements. It is silvery in colour and its chemistry has been investigated to a limited extent and several compounds have been made. Berkelim metal is attacked by oxygen, steam and acids, but not by alkalis.

Berkelium was synthesized at and is named after the University of California, Berkeley.

The eighth member of the actinide transition series, berkelium was discovered in December 1949 by Thompson, Albert Ghiorso, and Glenn Seaborg, and was the fifth transuranium element synthesized. It was produced by cyclotron bombardment of milligram amounts of 241Am with helium ions at the Berkeley Radiation Laboratory. The first isotope produced had a mass of 243 and decayed with a half-life of 4.5 hours. Ten isotopes are now known and have been synthesized. The evidence of 249Bk with a half-life of 314 days, makes it feasible to isolate berkelium in weighable amounts so that its properties can be investigated with macroscopic quantities. One of the first visible amounts of a pure berkelium compound, berkelium chloride, was produced in 1962. It weighed 1 billionth of a gram. Berkelium probably has not yet been prepared in elemental form, but is expected to be a silvery metal, easily soluble in dilute mineral acids, and readily oxidized by air or oxygen at elevated temperatures to form the oxide. X-ray diffraction methods have been used to identify various compounds. As with other actinide elements, berkelium tends to accumulate in the skeletal system. Because of its rarity, berkelium presently has no commercial or technological use.

Applications

No practical use of berkelium has do far emerged.

Berkelium in the environment

The 10 isotopes of berkelium that are known are all radioactive; the element has not been found in the earth's crust. Berkelium does not occur naturally on Earth.

Health effects of berkelium

Berkelium doesn't occur naturally, and has not been found in the earth's crust, so there is no reason to consider its health hazards. However, all its known isotopes are radioactive, and although they are only produced

artificially in laboratories and managed by experts, here are some health hazards of radioactivity that should be considered:

The development of nuclear technology has been accompanied by gross as well as minute releases of radioactivity into the atmosphere, the soil, the oceans, seas, and water table, showing up worldwide in animal, vegetable, and inert matter. Radiation crosses species and concentrates through the food chain, subjecting other animals and humans to its damaging effects.

The greatest threat of radioactivity to life as we know it is damage to the gene pool, the genetic make-up of all living species. Genetic damage from radiation exposure is cumulative over lifetimes and generations.

Even low-dose exposures are carcinogenic after extended exposure. The current generation, the one in utero, and all that follow may suffer cancers, immune system damage, leukemias, miscarriages, stillbirths, deformities, and fertility problems. While many of these health problems are on the rise, individuals cannot prove either increase in "background" radiation or specific exposure as the cause. Only epidemiological evidence is scientifically acceptable to impute cause. Perhaps the most extreme outcome over time would be simply the wholesale cessation of the ability to reproduce. Radiation is a known cause of sterility.

Environmental effects of berkelium

Berkelium doesn't occur naturally, and has not been found in the earth's crust, so there is no reason to consider its environmental effects.