

Molybdenum-99



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Fact Sheet #32

Division of Environmental Health
Office of Radiation Protection



WHO DISCOVERED MOLYBDENUM?

Molybdenum is a silvery-white, hard, transition metal. Scheele discovered it in 1778. It was often confused with graphite and lead ore. Molybdenum is used in alloys, electrodes and catalysts. The World War 2 German artillery piece called "Big Bertha" contains molybdenum as an essential component of its steel.

WHAT IS MOLYBDENUM-99 USED FOR?

The most widely used isotope in nuclear medicine is technetium-99m. Molybdenum-99 is used as the 'parent' in a generator to produce technetium-99m.

WHERE DOES MOLYBDENUM-99 COME FROM?

Molybdenum-99 is artificially produced by irradiating U-235 foil with neutrons and then separating the molybdenum from the other fission products in a hot cell.

PROPERTIES OF MOLYBDENUM-99 (⁹⁹Mo)

Half-Life:

Physical: 66.02 hours

Principal Modes of Decay (MeV):

Beta-average 0.133, maximum 0.436 (17.3 %)

Beta-average 0.442, maximum 1.214 (82.7 %)

Gamma 0.739 (12.8%)

Sources

Environmental Radioactivity, Disembody, Merrill & Gesell, Thomas, 1997

Web Elements, <http://www.webelements.com/webelements/elements/text/Mo/key.html>

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