

Facts About Exposure to Polonium-210 from Naturally-Occurring Sources

What is Polonium-210?

Polonium-210 (Po-210) is a radioactive material that occurs naturally in the earth's crust at very low levels. Po-210 is a product of the radioactive decay of uranium-238, which decays to radon-222 and then to polonium. Polonium 210 has a half-life of 138 days (). Po-210 emits alpha particles, which carry high amounts of energy that can damage or destroy genetic material in cells inside the body.

Po-210 is naturally present in soil at very low concentrations which are not harmful to humans or animals. It can be emitted into the atmosphere since it is a product of the decay of radon gas, or during the production of phosphorus, but is generally also in very small quantities. Although uptake by plants is usually small, Po-210 can be deposited on broad-leaved plants and can be concentrated if those plants are consumed or particularly smoked (such as tobacco).

Polonium has been found in groundwater sources in varying amounts throughout the world. The Po-210 in groundwater comes from the geological structure around the underground aquifer.

Is Po-210 harmful to humans?

Po-210 is a radiation hazard only if it is taken into the body through breathing or eating or by entering a wound. If large quantities are inhaled or consumed in a fairly short period of time, this "internal contamination" can cause radiation exposure of internal organs, which can result in serious medical symptoms or death. Much of Po-210 is passed through feces, although the remaining amounts that enter the bloodstream can concentrate in organs such as the spleen, kidneys, and liver.

If the exposure is significant but not extremely high, and if it occurs over a period of time, there is a long-term risk of cancer. Exposure through inhaling Po-210, such as in cigarette smoking, can increase risk of lung cancer.

Po-210 is not a hazard to the outside of the body—neither polonium nor its radiation will go through unbroken skin or membranes. Careful washing will remove most external traces of Po-210. For more information about contamination and irradiation, see CDC's fact sheet "Radiological Contamination and Radiation Exposure" (www.bt.cdc.gov/radiation/contamination.asp).

What should you do if you are concerned about exposure to Po-210?

If you have specific concerns about your health related to Po-210 exposure, you should contact your state health department for additional information on assessing your Po-210 exposure or contamination. Some laboratories in the United States can conduct Po-210 testing on urine, and your state health department can help you assess whether this is appropriate for you.