

Frequently Asked Questions: Health Effects of Radium Radiation Exposure

What is radium?

Radium is a radioactive substance found in nature that can have adverse health effects under certain conditions.

How was radium commonly used?

At the beginning of the 20th century, radium was thought to have beneficial health properties and was often added to consumer products such as toothpaste, hair creams, and even food. Radium was also used until the early 1970s in "glow-in-the-dark" paints, e.g., for dials on clocks, and in other industrial applications such as instrument calibration. Radium was even used in medical applications during the 20th century.

How can people be exposed to radium?

Everyone is exposed to low levels of radium because it occurs naturally in the environment. It is present in soil, water, rocks, coal, plants, and even food. High levels of radium are typically found in waste from former radium processing and manufacturing facilities, or at former manufacturing facilities that used radium and have been improperly cleaned. You may be exposed to higher levels of radium if you work in a specific job using these materials.

It is important to note that radon, a byproduct of radium, can be present in buildings, particularly in basements. The majority of radon exposures in buildings are from radon coming up from the ground.

How can radium affect my health?

The potential for health effects depends on the amount of radiation a person is exposed to. In general, the greater the total amount of your exposure to radiation from radium, the more likely you are to develop an adverse health effect. Exposure to radium over a period of many years may result in an increased risk of some types of cancer, particularly lung and bone cancer. Higher doses of radium have been shown to cause effects on the blood (anemia), eyes (cataracts), teeth (broken teeth), and bones (reduced bone growth).

The presence of radium does not mean that adverse health effects are occurring or could occur. Low levels of exposure to radium are normal, and there is no evidence that exposure to low levels is harmful. The potential for health effects depends on several factors including the amount of radium present, amount of time spent near contamination, proximity to the source of radiation, and whether any shielding (e.g., concrete or lead that blocks radiation) is in place.

How does radium get into the body?

Radium can enter the body when it is inhaled or swallowed, and in rare cases through emitted radiation. It is not known if radium can be absorbed through your skin. Radium dust or gas breathed into the lungs may remain there for months, but it will gradually enter the blood stream and will be carried to all parts of the body, with a portion accumulating in the bones. In radium that is swallowed in water or with food, most of it will promptly leave the body in the feces. A small amount will

enter the blood stream and will be carried to all parts of the body.

Some of this radium will then leave the body in a person's feces and urine on a daily basis and some may remain in the bones throughout the person's lifetime.

Is there a medical test to determine exposure to radium?

There is no medical test that can tell you how much radium you were exposed to, or predict whether you will develop harmful health effects. Some tests can be used to help determine if an individual has ever ingested radium, or determine the total amount of radioactivity in the body. Radon, a byproduct of radium, can also be measured in air that is exhaled from the body. Both types of tests require special equipment and cannot be done by most medical offices.

Who can I contact if I have additional questions or concerns about indoor air exposure and my health?

If you have health questions about exposure to radium you can contact the Environmental Toxicology Program at the Massachusetts Department of Public Health **(617) 624-5757**.

If you are experiencing any symptoms or have medical care questions, you should consult your health care provider and/or a specialist at an occupational and environmental medicine clinic (AOEC).

You may visit <http://www.aoec.org/> to search for an AOEC clinic in your area, or call Toll Free: (888) 347-AOEC (2632).

To reach a pediatric specialist in environmental health you may contact the Pediatric Environmental Health Specialty Unit (PEHSU) located at Boston Children's Hospital by calling (888) 244-5314.

Additional Information about the health effects of Radium:

CDC Agency for Toxic Substances and Disease Registry, Toxic Substances Portal
<https://www.atsdr.cdc.gov/toxfaqs/faq.asp?id=790&tid=154>

CDC Agency for Toxic Substances and Disease Registry, Public Health Statement
<https://www.atsdr.cdc.gov/ToxProfiles/tp144-c1-b.pdf>

CDC National Environmental Public Health Tracking, Radium and Your Health
<https://www.epa.gov/radiation/radionuclide-basics-radium#tab-3>

Bureau of Environmental Health
Massachusetts Department of Public Health
250 Washington Street, 7th Floor
Boston, MA 02108
Phone: 617-624-5757 | Fax: 617-624-5183 | TTY: 617-624-5286
www.mass.gov/dph/environmental_health

March 2017

