



RADIOISOTOPE BRIEF

Radioisotope Brief: Iridium-192 (Ir-192)

Half-life: 73.83 days

Mode of decay: [Beta particles](#) and [gamma radiation](#).

Chemical Properties: Dense metal. Metallic Ir-192 will react with fluorine gas to form iridium fluoride (IV), IrF₆.

What is it used for?

Ir-192 is used in industrial gauges that inspect welding seams and in medicine to treat certain cancers.

Where does it come from?

Ir-192 is a manmade radioactive element that is formed from nonradioactive iridium metal in a nuclear reactor.

What form is it in?

Ir-192 used in medicine is in the form of tiny seeds, each about the size of a grain of rice. Industrial gauges hold pencil-like metal sticks of solid Ir-192 or small pencil-like tubes that contain pellets of Ir-192.

What does it look like?

Ir-192 is a shiny, silvery-white, very dense metal that will not rust when exposed to natural elements.

How can it hurt me?

Exposure to Ir-192 can increase the risk for cancer because of its high-energy gamma radiation. [External exposure](#) to Ir-192 can cause burns, [acute radiation sickness](#), and even death. [Internal exposure](#) could occur only if a person were to swallow one of the Ir-192 seeds or pellets. Internal exposure from Ir-192 could cause burns in the stomach and intestines if the high-energy industrial pellets are swallowed. Ir-192 seeds and pellets would be excreted in the feces. Long-term health effects of internal exposure would depend on how strong the seeds or pellets were and how long they stayed in the body.

For more information on protecting yourself before or during a radiologic emergency, see CDC's fact sheet titled "Frequently Asked Questions (FAQs) About a Radiation Emergency" at <http://www.bt.cdc.gov/radiation/emergencyfaq.asp>, and "Sheltering in Place During a Radiation Emergency," at <http://www.bt.cdc.gov/radiation/shelter.asp>.

The Centers for Disease Control and Prevention (CDC) protects people's health and safety by preventing and controlling diseases and injuries; enhances health decisions by providing credible information on critical health issues; and promotes healthy living through strong partnerships with local, national, and international organizations.

Beta particles: electrons ejected from the nucleus of a decaying atom. Although they can be stopped by a thin sheet of aluminum, beta particles can penetrate the dead skin layer, potentially causing burns. They can pose a serious direct or external radiation threat and can be lethal depending on the amount received. They also pose a serious internal radiation threat if beta-emitting atoms are ingested or inhaled.

Gamma radiation: high-energy electromagnetic radiation emitted by certain radionuclides when their nuclei transition from a higher to a lower energy state. These rays have high energy and a short wave length. Gamma rays penetrate tissue farther than do beta or alpha particles, but leave a lower concentration of ions in their path to potentially cause cell damage. Gamma rays are very similar to x-rays.

For more information, visit www.bt.cdc.gov/radiation, or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).

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