



RADIATION FROM IODINE (I) RADIOISOTOPES

Agent information:	Iodine radioisotopes are a class of volatile and unstable chemicals. The most commonly used iodine radioisotope, iodine-131, emits radiation in the form of gamma rays and beta particles, which cause tissue damage. Iodine-131 is used for diagnostic and therapeutic purposes in nuclear medicine and oncology. Iodine-131 is a product of nuclear fission. In the event of a serious nuclear power plant incident, iodine-131 and other iodine radioisotopes could be released into the air.
Route of exposure:	Inhalation and ingestion are the most likely routes for internal contamination from iodine radioisotopes. External exposure stops when the person leaves the impacted area and is decontaminated (to remove dust or residue from clothing, skin, and hair). Internal exposure continues until the radioactive material is eliminated from the body by a combination of primarily renal excretion and radioactive decay. When a person inhales or ingests iodine radioisotopes, there is selective uptake by the thyroid gland during the hours immediately following exposure. Individuals exposed to high levels without timely prophylaxis, especially infants, children, and pregnant women, are at elevated risk of thyroid cancer. Once internalized, iodine radioisotopes most significantly affect the thyroid, salivary glands, and gastric mucosa.
Signs and symptoms:	Exposure to ionizing radiation can cause two kinds of health effects. Observable health effects occurring soon after receiving very large doses include hair loss, skin burns, nausea, gastrointestinal distress, or death (Acute Radiation Syndrome). Long term health risks, including increased risk of cancer, are a function of the specific radioisotopes involved, and the route, magnitude, and duration of exposure.
Protective measures:	Emergency medical care to save lives is the first priority. Ensuring effective patient decontamination is important to limit the spread of radioactive materials in the hospital, and to protect other patients and staff from exposure. Reduce exposure by limiting the amount of time people are exposed, avoiding direct contact, maintaining distance from the source, and using shielding. Use respiratory protection to prevent ingesting or inhaling airborne contamination.
Evaluation:	CBC with absolute lymphocyte count. Repeat measurements for at least 48 hours.

Emergency Medical Services and Preparedness Section
24/7 Emergency Contact Number: 1-888-295-5156
Contact Number: 302-223-2999



Prophylaxis: Potassium iodide (KI) can be effective as a thyroid-blocking agent when taken prior to or up to four hours after exposed to radioiodine isotopes only. Use appropriate Personal Protective Equipment (PPE) to avoid secondary contamination.

Treatment: Emergency medical care to save lives is the first priority. Supportive care and decontamination are indicated. Removing clothing greatly reduces contamination on the body; contaminated clothing and items should be collected and placed in a labeled plastic bag. Wrapping the patient in two plastic or cotton sheets can help reduce contamination to transport vehicles. Supportive care may include pain medication or topical preparations to relieve skin itching. Expert guidance on medical treatment of internalized radioisotopes is available from REAC/TS at: 1-865-576-1005 (24/7 coverage).

Reporting: Immediately report any suspect cases to the Division of Public Health, 1-888-295-5156 (24/7 coverage).

Additional information: Visit the Centers for Disease Control and Prevention website: <https://www.cdc.gov/nceh/radiation/emergencies/isotopes/iodine/index.htm>.