



RADIATION FROM IODINE (I) RADIOISOTOPES

Agent Information:

Iodine radioisotopes are a class of volatile and unstable chemicals whose radioactivity is measured by the number of atoms disintegrating per unit time. The most widely used iodine radioisotope, iodine-131, emits radiation in the form of medium energy gamma rays, and beta particles, which disrupt molecules in cells and deposits energy in tissues, causing damage. Iodine-131 is used for diagnostic and therapeutic purposes in nuclear medicine and oncology. Used widely in biomedical research, iodine-131 is a product of nuclear power reactor operations. In the event of a serious nuclear power plant incident, iodine-131 and other iodine radioisotopes could potentially be released into the air.

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.

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 body flushes the radioactive material naturally, or until it decays. 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.

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 or respiratory protection. Deceased victims from a radiological event may be contaminated with radioactive material.

24/7 Emergency Contact Number: 1-888-295-5156

Revised: 05/2007

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**Lab Samples Requested
for Evaluation:**

CBC with absolute lymphocyte count. Repeat measurements for at least 48 hours.

Prophylaxis:

Potassium iodide is effective in reducing the amount of radioactive iodine taken up by the thyroid gland, following exposure to Iodine radioisotopes, only. It must be administered as soon as possible after exposure to be effective (within hours). Appropriate PPE to avoid secondary contamination.

Treatment:

Supportive care and decontamination are indicated. 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, Epidemiology Branch: 1-888-295-5156 (24/7 coverage).

Contact Information:

Division of Public Health: 1-888-295-5156. For more information on forms of acute radiation syndrome, go to: <http://www.bt.cdc.gov/radiation/arsphysicianfactsheet.asp>.