



## **RADIATION FROM URANIUM (U)**

- Agent Information:** Uranium radioisotopes are a class of highly toxic and unstable chemicals whose radioactivity is measured by the number of atoms disintegrating per unit time. Uranium radioisotopes emit radiation primarily in the form of high-energy alpha particles and medium-energy x-rays. This ionizing radiation disrupts molecules in cells and deposits energy in tissues, causing damage. A naturally occurring radioisotope, uranium is enriched to fuel nuclear power reactors and for use in some nuclear weapons.
- Route of Exposure:** Inhalation and ingestion are the most likely routes for internal contamination from uranium 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 flushed from the body by natural processes, or decays. When a person inhales or ingests a radionuclide, it is distributed to different organs, remaining there for days, months, or years until it decays or is excreted. Once internalized, uranium radioisotopes can most significantly affect bone and the kidneys as target organs.
- Signs and Symptoms:** Exposure to ionizing radiation from uranium causes immediate or delayed health effects. Observable effects occurring soon after receiving very large doses include hair loss, skin burns, nausea, gastrointestinal distress, or death (Acute Radiation Syndrome). Long-term risks, including increased cancer risk, 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. Effective patient decontamination is important to limit the spread of radioactive materials in the hospital, and prevent exposure to other patients and staff. Dose reduction can be achieved by limiting the time people are exposed, avoiding direct contact, maintaining distance from the source, and using shielding or respiratory protection. Deceased victims from a radiological event involving release of airborne uranium radioisotopes could be contaminated both internally and externally, and should be handled using reverse isolation.
- Lab Samples Requested for Evaluation:** CBC with absolute lymphocyte count. Repeat measurements for at least 48 hours.

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

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- Prophylaxis:** Appropriate Personal Protective Equipment (PPE) to avoid secondary decontamination.
- Treatment:** Supportive care and decontamination. Treatment is indicated for known uptake of uranium radioisotopes, by administering sodium bicarbonate in saline, or oral tablets until urine reaches a pH of 8-9, to reduce risk of acute renal tubular necrosis. Expert guidance on medical treatment is available from REAC/TS at: 1-865-576-1005 (24/7 coverage).
- Reporting:** Immediately report suspect cases to the Division of Public Health, 1-888-295-5156 (24/7 coverage).
- For Additional Information:** Visit the CDC website: <https://emergency.cdc.gov/>.