



RADIATION FROM CESIUM-137 (Cs-137)
(*Treatments are similar for thallium and rubidium)

Agent information:	Cesium-137 (Cs-137) is a radioisotope that emits radiation in the form of gamma rays and beta particles. It is both an external and internal radiation hazard. Cs-137 is used in medical radiation therapy devices for treating cancer; in industrial gauges that detect the flow of liquid through pipes; and in other industrial devices to measure the thickness of materials. Cs-137 is a fission product that could be released during a serious nuclear power plant accident or an act of terror like an exploding radioactive bomb or nuclear device.
Route of exposure:	Significant external exposure results from prolonged, close proximity to a Cs-137 source, or being immersed in a plume of airborne radioactivity from a nuclear power plant release. External exposure stops when the person leaves the impacted area and is decontaminated. Inhalation and ingestion are the most likely routes for internal exposure. Internal exposure continues until the radioactive material is eliminated from the body by a combination of renal excretion and radioactive decay.
Signs and symptoms:	Very large doses of ionizing radiation in a short period of time can cause observable health effects: hair loss, skin burns, nausea, gastrointestinal distress, or death (Acute Radiation Syndrome). Internal exposure to Cs-137, through ingestion or inhalation, allows the radioactive material to be distributed in the soft tissues, especially muscle tissue, exposing these tissues to the beta particles and gamma radiation and increasing cancer risk.
Protective measures:	Emergency medical care to save lives is the first priority. Effective patient decontamination prevents exposure to other patients and staff. Limit the amount of exposure time to the radioactive source. They should avoid direct contact, maintain distance, and use shielding. If airborne Cs-137 is present from external contamination, use 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.

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



- Evaluation:** CBC with absolute lymphocyte count. Repeat measurements for at least 48 hours.
- Prophylaxis:** Appropriate PPE to avoid secondary contamination.
- Treatment:** Emergency medical care to save lives is the first priority. Treatment is supportive care and decontamination. Reducing internal dose is indicated for known uptake of cesium, thallium, and rubidium radioisotopes. Prussian blue can be administered to block absorption of these radioisotopes from the GI tract and prevent recycling. 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).
- Additional information:** Visit the Centers for Disease Control and Prevention website: <https://www.cdc.gov/nceh/radiation/emergencies/isotopes/cesium.htm>