

**RSNA Statement on the Health Effects of Radiation from a Nuclear Accident**  
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*The Radiological Society of North America (RSNA) is committed to excellence in patient care through education and research.*

- People are normally exposed to low levels of environmental radiation (e.g., sunlight, radon). When circumstances arise that expose people to high levels of radiation, there is a risk of tissue or organ injury.
- Radiation disperses and dilutes over distance, meaning people outside the immediate vicinity of the source of radiation are likely to be at minimal, if any, risk.
- The type and severity of any adverse health effects caused by excessive radiation exposure depend on several factors, including the radiation dose absorbed by different parts of the body, the rate at which it is delivered, the type of radiation and the route of exposure.
- In a radiation emergency stemming from an accident at a nuclear reactor, acute radiation syndrome (ARS), also called radiation sickness, may occur among some exposed individuals.
  - Early signs of ARS include nausea, vomiting, headache, fatigue and low-grade fever. At higher levels of exposure, diarrhea may develop.
  - Except in cases of exposure to extremely high radiation doses, the early symptoms of ARS typically are followed by a latent period lasting days to weeks, where no symptoms are present, and the patient may appear and feel relatively normal.
  - The latent stage is followed by the illness stage, where symptoms reappear. The types of symptoms an individual experiences depend upon which body systems were most affected by the radiation.
  - Recovery time depends on a number of factors including age, prior state of health, and the extent and timing of medical care delivered. Recovery can occur within weeks or may take up to several years.
  - In order to develop ARS, a person typically would need to be exposed to a single dose of at least 1,000 to 2,000 millisieverts (mSv).
- People exposed to high levels of radiation may benefit from ingesting potassium iodide tablets to protect the thyroid gland. People who have not experienced high levels of radiation exposure should avoid taking potassium iodide. The RSNA recommends that people follow recommendations of local, state and federal radiation safety agencies regarding potassium iodide or other protective measures.
- The young and the very old are more susceptible to radiation-induced injuries and illnesses. Children have special medical needs during a radiation emergency, because their organs and tissues are still developing, making them more sensitive to radiation, and they breathe more rapidly, thereby inhaling radioactive dust at a greater rate. The American Academy of Pediatrics has prepared a [policy statement on radiation disasters and children](#).

*Through its peer-reviewed journals and education programs, RSNA continually informs radiologists, medical physicists, radiation oncologists and other radiology professionals of the latest technologies and research developments designed to optimize dose and improve patient safety.*

*The RSNA Scientific Assembly and Annual Meeting, one of the world's largest annual medical meetings, provides a forum for the exhibition of state-of-the-art medical imaging equipment, the presentation of radiologic research findings and the exchange of knowledge in education courses and plenary sessions.*