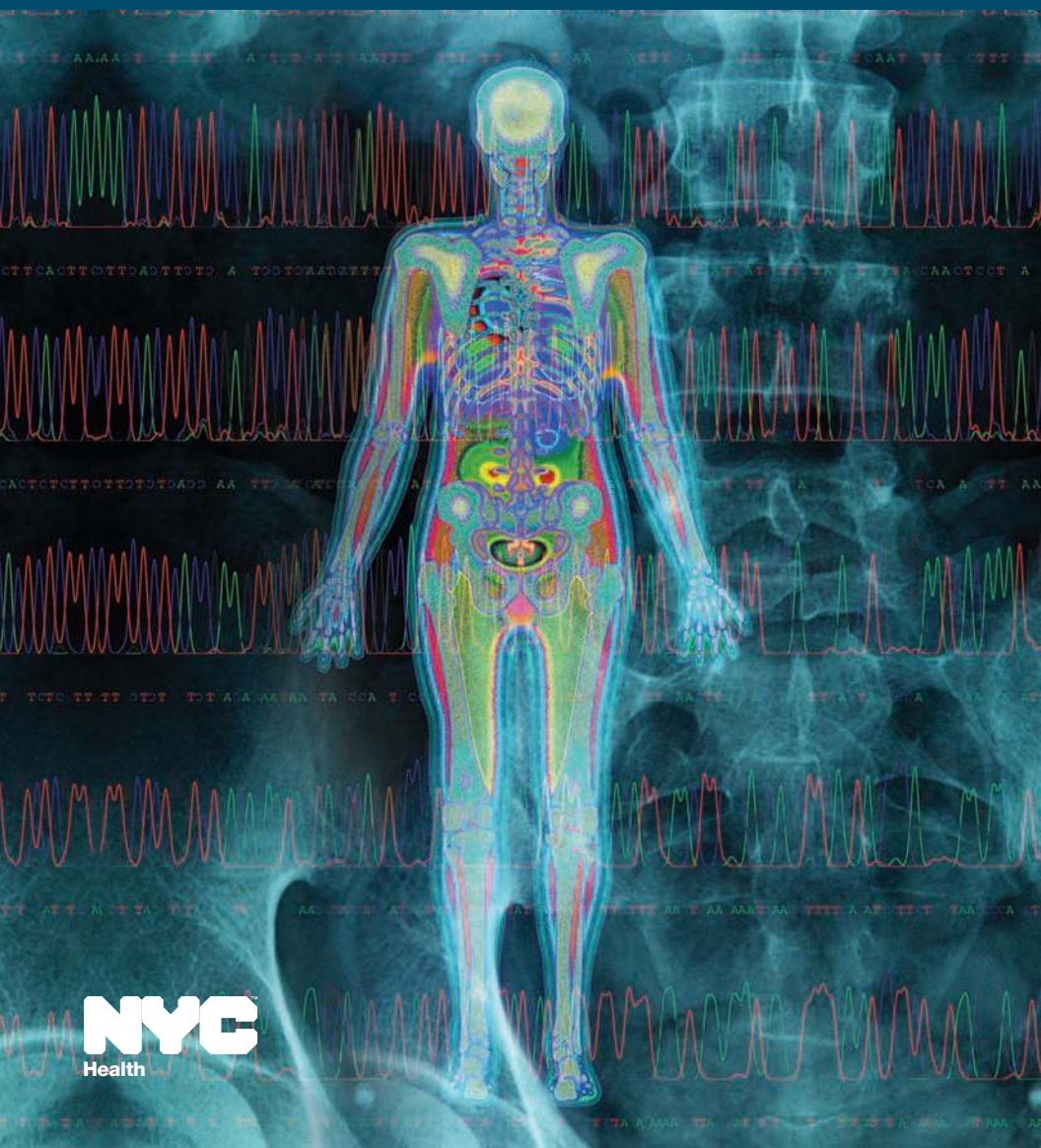


How Nuclear Medicine Patients Can Trigger a Radiation Alarm

Information for Police and Security Officers



This pamphlet was developed to help police and security officers understand how patients undergoing certain nuclear medicine procedures may trigger a radiation detector. It is not a guide on how to interpret readings.

Almost 20 million Americans have nuclear medicine procedures each year. During these procedures, patients receive a tiny amount of a radioactive substance called a radionuclide. It is not enough to hurt them or anyone else, but it is enough to activate a radiation alarm.

What are radionuclides?

- Radionuclides are used to diagnose and treat certain cancers and thyroid problems, to analyze heart function or to scan bones and lungs.
- Most radionuclides used in medical procedures emit gamma radiation. Since most portable detectors screen for gamma emissions, patients who've had radionuclide treatment could trigger a radiation alarm.
- Depending on the procedure, the radionuclide is either swallowed, inhaled or injected.
- About 90% of nuclear medicine procedures use technetium. Other common radionuclides are radioactive iodine, fluorine and thallium.

Are there tests or treatments involving radiation that would *not* set off a radiation detector?

Yes. People who've had X-rays, CAT scans or external beam therapy, a type of cancer treatment, would not trip a radiation detector. This is because the radiation passes through the body during the procedure and doesn't remain in the body after. In addition, MRI patients would not set off a radiation alarm because the exam does not use radiation.



What affects radiation levels?

The amount of radiation detected may vary based on:

- **Time:** Patients can emit radiation several weeks after certain nuclear medicine procedures. The longer it is since the procedure, the less radiation a patient will emit.
- **Distance:** The closer the device is to the source, the higher the radiation level, and vice versa. For instance, radiation rates will be higher when the device is close to the body area treated with radionuclides. In addition, doubling the distance the detector is from the radioactive source will decrease the radiation level four-fold.
- **Shielding:** If there is a barrier between the device and the radiation source, radiation levels will be lower. With gamma rays, the body or substantial material, such as steel or concrete can block the amount of radiation detected.
- **Dose:** The type and amount of radionuclide used in the procedure will affect the radiation level emitted.



What are the hospital discharge recommendations?

According to U.S. Nuclear Regulatory Commission (NRC) and New York City Health Code regulations, a patient's radiation level must be at a safe level (below 58 millirem/hour at three feet) before he or she can be discharged from a hospital or medical facility. The NRC and the New York City Health Department also recommend that doctors let nuclear medicine patients know that they may set off radiation detectors, and that they give patients a letter explaining what radionuclides were used and when they were given.

More Information and Help

- **New York City Health Department**
nyc.gov/health or call 311 and ask for Radiation
 - **U.S. Nuclear Regulatory Commission**
www.nrc.gov/about-nrc/radiation/protects-you/nuclear-medicine.html
 - **Health Physics Society**
hps.org/documents/meddiagimaging.pdf
 - **Centers for Disease Control and Prevention**
<http://emergency.cdc.gov/radiation/>
- Always call 911 in an emergency.**