



## *Uses of Radioisotopes*

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- In the United States, 13 million medical procedures involving radioactive isotopes are performed every year.
- One out of every three U.S. hospital patients undergoes procedures involving radioactive materials.
- At least 80 percent of prescription drugs are tested with radioactive materials.
- Radioactive materials are used to sterilize hospital instruments and bandages to prevent the spread of infection.
- Ten out of the last 15 Nobel prizes in medicine and physiology involved research using radioactive materials.
- Radioactive materials are used in indicator lights in kitchen appliances.
- Radioactive materials are used to gauge the thickness of thin plastic and sheet metal, rubber, textiles, and paper during manufacturing.
- The rubber in tires is toughened by treatment with radiation; radioactive materials were used to assure that steel belts in radial tires are properly aligned.
- Radioactive materials are used by the road construction and building industries to gauge moisture content of soil.
- Radioactive materials are used to sterilize packaging for medication, contact lenses and contact lens solution, hair products, and cosmetics.
- Radioactive materials are used in the manufacturing of writing paper to gauge its thickness.
- Airlines use radioactive sensors to detect explosives hidden in the baggage.
- Radioactive materials are used in animal nutrition research.
- Radioactive materials are used in forestry research.
- Commercial, medical and research activities that use radioactive isotopes account for thousands of jobs in Texas. The use of radioactive materials generates billions in tax revenues in the state.
- Many of the radioisotopes used by scientists, doctors, and researchers in their work, as well as in consumer products, are also found in the byproducts of nuclear power production. Here are some examples:
  - Technetium-99M—the most widely used radioactive pharmaceutical. Doctors use it to diagnose problems with the brain, bones, liver, spleen, and kidneys.
  - Americium-141—used in smoke detectors to protect homes and businesses.
  - Carbon-14—needed to test drugs so doctors can be sure of no harmful side effects.
  - Cesium-137—used to treat cancer tumors, measure drug dosages, control the flow of oil in pipelines, and check the proper fill level for packaged foods.
  - Cobalt-60—used in sterilizing medical equipment and improving the reliability of industrial oil burners.
  - Nickel-63—used as a voltage regulator, and to detect explosives.
  - Plutonium-238—used to power more than 20 NASA spacecraft since 1972.

No matter the source, once these radioisotopes have performed their purpose, they all become low-level waste. The only safe way to handle the waste is by disposing of it a permanent low-level radioactive waste facility.