

Isotopes – choose one isotope and one use for that isotope

Americium-241 Used in many smoke detectors for homes and businesses, to measure levels of toxic lead in dried paint samples, to ensure uniform thickness in rolling processes like steel and paper production, and to help determine where oil wells should be drilled.

Calcium-47 Important aid to biomedical researchers studying the cell function and bone formation of mammals.

Californium-252 Used to inspect airline luggage for hidden explosives, to gauge the moisture content of soil in the road construction and building industries, and to measure the moisture of materials stored in silos.

Carbon-14 Helps in research to ensure that potential new drugs are metabolised without forming harmful by-products.

Cesium-137 Used to treat cancers...to measure correct patient dosages of radioactive pharmaceuticals...to measure and control the liquid flow in oil pipelines...it tell researchers whether oil wells are plugged by sand...and to ensure the right fill level for packages of food, drugs and other products. (The products in these packages do not become radioactive.)

Chromium-51 Used in research in red blood cell survival studies.

Cobalt-57 Used in nuclear medicine to help physicians interpret diagnose scans for patients' organs, and to diagnose pernicious anaemia.

Cobalt-60 Used to sterilise surgical instruments, to improve the safety and reliability of industrial fuel oil burners, and to preserve poultry, fruits and spices.

Copper-67 When injected with monoclonal antibodies into a cancer patient, helps the antibodies bind to and destroy the tumour.

Curium-244 Used in mining to analyse material excavated from pits and slurries from drilling operations.

Iodine-123 Widely used to diagnose thyroid disorders.

Iodine-129 Used to check some radioactivity counters in *in vitro* diagnostic testing laboratories.

Iodine-131 Used to diagnose and treat thyroid disorders. (Former President George Bush and Mrs. Bush were both successfully treated for Grave's disease, a thyroid disease, with radioactive iodine.)

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Iron-55 Used to analyse electroplating solutions.

Krypton-85 Used in indicator lights in appliances like clothes washers and dryers, stereos and coffeemakers to gauge the thickness of thin plastics and sheet metal, rubber, textiles and paper...and to measure dust and pollutant levels.

Nickel-63 Used to detect explosives...and as voltage regulators and current surge protectors in electronic devices.

Phosphorus-32 Used in molecular biology and genetics research.

Plutonium-238 Has safely powered at least 20 NASA spacecraft since 1972.

Polonium-210 Reduces the static charge in production of photographic film and phonograph records.

Promethium-147 Used in electric blanket thermostats...and to gauge the thickness of thin plastics, thin sheet metal, rubber, textiles and paper.

Radium-226 Makes lightning rods more effective.

Selenium-75 used in protein studies in life science research.

Sodium-24 Used to locate leaks in industrial pipelines...and in oil well studies.

Strontium-85 Used to study bone formation and metabolism.

Strontium-90 Used in survey meters by schools, the military and emergency management authorities.

Technetium-99m The most widely used radioactive isotope for diagnostic studies in nuclear medicine. Different chemical forms are used for brain, bone, liver, spleen and kidney imaging and also for blood flow studies.

Thallium-204 Measures the dust and pollutant levels on filter paper...and gauges the thickness of plastics, sheet metal, rubber, textiles and paper.

Thorium-229 Helps fluorescent lights to last longer.

Thorium-230 Provides colouring and fluorescence in coloured glazes and glassware.

Tritium Used for life science anti drug metabolism studies to ensure the safety of potential new drugs for self luminous aircraft and commercial exit signs...for luminous dials, gauges and wrist watches...and to produce luminous paint.

Uranium-234 Used in dental fixtures like crowns and dentures to provide a natural colour and brightness.

Uranium-235 Fuel for nuclear power plants and naval nuclear propulsion systems...also used to produce fluorescent glassware, a variety of coloured glazes and wall tiles.

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Promethium-147 Used in electric blanket thermostats...and to gauge the thickness of thin plastics, thin sheet metal, rubber, textiles and paper.

Radium-226 Makes lightning rods more effective.

Selenium-75 used in protein studies in life science research.

Sodium-24 Used to locate leaks in industrial pipelines...and in oil well studies.

Strontium-85 Used to study bone formation and metabolism.

Strontium-90 Used in survey meters by schools, the military and emergency management authorities.

Technetium-99m The most widely used radioactive isotope for diagnostic studies in nuclear medicine. Different chemical forms are used for brain, bone, liver, spleen and kidney imaging and also for blood flow studies.

Thallium-204 Measures the dust and pollutant levels on filter paper...and gauges the thickness of plastics, sheet metal, rubber, textiles and paper.

Thorium-229 Helps fluorescent lights to last longer.

Thorium-230 Provides colouring and fluorescence in coloured glazes and glassware.

Tritium Used for life science anti drug metabolism studies to ensure the safety of potential new drugs for self luminous aircraft and commercial exit signs...for luminous dials, gauges and wrist watches...and to produce luminous paint.

Uranium-234 Used in dental fixtures like crowns and dentures to provide a natural colour and brightness.

Uranium-235 Fuel for nuclear power plants and naval nuclear propulsion systems...also used to produce fluorescent glassware, a variety of coloured glazes and wall tiles.

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Isotopes – choose one isotope and one use for that isotope

Americium-241 Used in many smoke detectors for homes and businesses, to measure levels of toxic lead in dried paint samples, to ensure uniform thickness in rolling processes like steel and paper production, and to help determine where oil wells should be drilled.

Calcium-47 Important aid to biomedical researchers studying the cell function and bone formation of mammals.

Californium-252 Used to inspect airline luggage for hidden explosives, to gauge the moisture content of soil in the road construction and building industries, and to measure the moisture of materials stored in silos.

Carbon-14 Helps in research to ensure that potential new drugs are metabolised without forming harmful by-products.

Cesium-137 Used to treat cancers...to measure correct patient dosages of radioactive pharmaceuticals...to measure and control the liquid flow in oil pipelines...it tell researchers whether oil wells are plugged by sand...and to ensure the right fill level for packages of food, drugs and other products. (The products in these packages do not become radioactive.)

Chromium-51 Used in research in red blood cell survival studies.

Cobalt-57 Used in nuclear medicine to help physicians interpret diagnose scans for patients' organs, and to diagnose pernicious anaemia.

Cobalt-60 Used to sterilise surgical instruments, to improve the safety and reliability of industrial fuel oil burners, and to preserve poultry, fruits and spices.

Copper-67 When injected with monoclonal antibodies into a cancer patient, helps the antibodies bind to and destroy the tumour.

Curium-244 Used in mining to analyse material excavated from pits and slurries from drilling operations.

Iodine-123 Widely used to diagnose thyroid disorders.

Iodine-129 Used to check some radioactivity counters in *in vitro* diagnostic testing laboratories.

Iodine-131 Used to diagnose and treat thyroid disorders. (Former President George Bush and Mrs. Bush were both successfully treated for Grave's disease, a thyroid disease, with radioactive iodine.)

Iridium-192 Used to test the integrity of pipeline welds, boilers and aircraft parts.

Iron-55 Used to analyse electroplating solutions.

Krypton-85 Used in indicator lights in appliances like clothes washers and dryers, stereos and coffeemakers to gauge the thickness of thin plastics and sheet metal, rubber, textiles and paper...and to measure dust and pollutant levels.

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