

New York State Department of Health
Environmental Radiation Program
Environmental Radiation Surveillance Site Readings

Glossary

This glossary has been added in order to define technical terms that are used in the various supporting documents for this data set. Please refer to the Data Dictionary for explanation of the meaning of the column headings in the data set.

1. **Alpha particles-** a positively charged particle made up of two neutrons and two protons emitted by certain radioactive nuclei.
 - a. **Gross alpha radioactivity-** a measurement of all alpha activity present, regardless of specific radionuclide source.
2. **Americium (chemical symbol Am)** - is a man-made radioactive metal, with Atomic Number 95. The most important isotope of Americium is Am-241.
3. **Background radiation-** is radiation that results from natural sources such as cosmic radiation and naturally-occurring radioactive materials in the ground and the earth's atmosphere including radon.
4. **Beta particles-** an electron or positron emitted by certain radioactive nuclei. Beta particles can be stopped by aluminum.
 - a. **Gross beta radioactivity-** measurement of all beta activity present, regardless of specific radionuclide source.
5. **Cerium (chemical symbol Ce)** - an iron-gray, lustrous metal. Cerium-141, -143, and -144 are radioisotopes of cerium.
6. **Cesium (chemical symbol Cs)** - is a metal that may be stable (nonradioactive) or unstable (radioactive). The most common radioactive form of cesium is cesium-137. Another fairly common radioisotope is cesium-134.
7. **Cobalt (chemical symbol Co)** - is a metal that may be stable (non-radioactive, as found in nature), or unstable (radioactive, man-made). The most common radioactive isotope of cobalt is cobalt-60.
8. **Cosmic radiation-** is radiation that originates in outer space and filters through the earth's atmosphere.
9. **Curie-** a measure of radioactivity based on the observed decay rate of approximately one gram of radium.
 - a. Pico-curie: one-trillionth (1/1,000,000,000,000) of a curie.
10. **Fallout-** the slow descent of minute particles of radioactive debris in the atmosphere following a nuclear explosion.

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11. **HTO (tritium)** - tritiated water that is formed when tritium readily binds to hydroxyl radicals.
12. **Gamma rays**- electromagnetic energy that is emitted by a radioactive material.
13. **Iodine (chemical symbol I)** - is a nonmetallic solid element. There are both radioactive and non-radioactive isotopes of iodine. Iodine-129 and -131 are the most important radioactive isotopes in the environment.
14. **Ionizing radiation**- is radiation that removes electrons from the atoms it meets, causing them to become electrically charged ions.
15. **Isotope**- A nuclide of an element having the same number of protons but a different number of neutrons.
16. **Nonionizing radiation**- is radiation that is not capable of removing electrons from the atoms it encounters.
17. **Nuclear Power Plant**- An electrical generating facility using a nuclear reactor as its power (heat) source.
18. **Nuclear fission**- is a process where a large atomic nucleus (such as uranium) is split into two smaller particles.
19. **Plutonium (chemical symbol Pu)** - is a radioactive metal with Atomic Number 94. Plutonium is considered a man-made element, although scientists have found trace amounts of naturally occurring plutonium produced under highly unusual geologic circumstances. The most common radioisotopes of plutonium are plutonium-238, plutonium-239, and plutonium-240.
20. **Radioactivity material**- is material that contains an unstable atomic nucleus and releases radiation in the process of changing to a stable form.
21. **Radionuclide**- is an atom with an unstable nucleus, which is a nucleus characterized by excess energy which is available to be imparted either to a newly-created radiation particle within the nucleus, or else to an atomic electron.
22. **Radium (chemical symbol Ra)** - is a naturally-occurring radioactive metal. Its most common isotopes are radium-226, radium 224, and radium-228. Radium is a radionuclide formed by the decay of uranium and thorium in the environment.

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23. **Radon (chemical symbol Rn)** - is a naturally occurring radioactive gas found in soils, rock, and water throughout the U.S. It has numerous different isotopes, but radon-220, and -222 are the most common.
24. **Strontium (chemical symbol Sr)** - is a silvery metal that rapidly turns yellowish in air. Strontium is found naturally as a non-radioactive element. Strontium has 16 known isotopes. Naturally occurring strontium is found as four stable isotopes Sr-84, -86, -87, and -88. Twelve other isotopes are radioactive. Strontium-90 is the most important radioactive isotope in the environment.
25. **Technetium-99 (chemical symbol Tc-99)** - is a silver-gray, radioactive metal. The most commonly available isotope is Tc-99m (called metastable Tc-99) and is the shorter-lived parent of Tc-99.
26. **Thermoluminescent dosimeter (TLD)** - a type of radiation detection device that is used to measure level of dose to ionizing radiation in an area. It is characteristic of TLDs that radiation produces internal changes that cause the material, when subsequently heated, to give off a measurable amount of light directly proportional to the radiation dose. TLDs cannot be read directly; they must be analyzed by a laboratory.
27. **Tritium (chemical symbol H-3)** - is a radioactive isotope of the element hydrogen (chemical symbol H).
28. **Thorium (chemical symbol Th)** - is a naturally-occurring radioactive metal found at very low levels in soil, rocks, and water. The most common form of thorium is thorium-232, found naturally.
29. **Uranium (chemical symbol U)** - is a naturally-occurring radioactive element, with atomic number 92.
30. **Zirconium (chemical symbol Zr)** - is a very strong, malleable, ductile, lustrous silver-gray metal.