**Isotope**

An isotope is a form of a chemical element whose atomic nucleus contains a specific number of neutrons, in addition to the number of protons that uniquely defines the element. The nuclei of most atoms contain neutrons as well as protons. (An exception is the common form of hydrogen, whose nucleus consists of a lone proton.) Every chemical element has more than one isotope. For any element, one of the isotopes is more abundant in nature than any of the others, although often multiple isotopes of a single element are mixed.

The isotope of an element is defined by the nucleon number, which is the sum of the number of protons and the number of neutrons in the atomic nucleus. The nucleon number is customarily written as a superscript preceding the chemical symbol for the element. For example, 16 O represents oxygen-16, which has 8 protons and 8 neutrons, while 12 C represents carbon-12, with 6 protons and 6 neutrons. These are the most common naturally occurring isotopes of oxygen and carbon, respectively. Some carbon-14 is found in nature. An atom of carbon-14 contains 6 protons and 8 neutrons and is denoted 14 C. Over time, 14 C decays into 12 C.

Sometimes the isotope of an element is denoted by writing the nucleon number after the chemical symbol, and not as a superscript. Thus, some texts will denote carbon-14 as C-14 or C14 instead of 14 C.

Certain isotopes of elements are unstable, giving off ionizing radiation, also known as radioactivity. Such an isotope is called a radioisotope. Carbon-14 is a radioisotope of carbon. In the case of an element that is radioactive in all its known forms, such as uranium (U), certain isotopes are more radioactive than others, and/or give off different proportions of the various types of ionizing radiation.