Success 24/7 Chemistry Notes: Types of Nuclear Radiation

Radioactivity – the particles, commonly called radiation, which are emitted from nuclei as a result of nuclear instability.

Discovered in 1896 by Antoine Becquerel and his graduate assistants, Marie and Pierre Curie. Awarded Nobel Prize in Physics (1903).

Reminder about isotopes:

$$^{X}_{Y}Z$$

X: Mass Number (Protons + Neutrons)
Y: # of Protons (Atomic Number)
Z: Element Symbol

To name an isotope:

Element Name - Mass Number

Example: $^{14}_{6}C$ would be named Carbon-14.

Radioisotopes: Unstable isotopes that give off radiation.

Radiation Table:

Type of Radiation	What is it?	Symbol for Equation	Other symbol	Can be blocked by:
Alpha	A helium nucleus	$^{4}_{2}He$	α	Skin
Beta	High speed electron	$^{0}_{-1}e$	β	Aluminum foil or thin pieces of wood
Gamma	High energy photon	$^{0}_{0}\gamma$	γ	(Partially by) several feet of concrete or several inches of lead.
Neutron	Uncharged Particle	$^{1}_{0}n$	n	Many feet of water
Positron	Antimatter	$^{0}_{+1}e$	e^{+}	
Proton	Hydrogen-1	$^{1}_{1}H$	p	