Activity: The rate of decay of the radioactive nuclei in a given isotope. It is proportional to the total number of nuclei in the sample and is measured in Becquerels.

Alpha Decay: The emission of an alpha particle (2 protons and 2 neutrons) from an unstable nucleus (usually one with too much mass) to make it more stable. Alpha radiation is strongly ionising and is stopped by a few centimetres of air or a sheet of paper.

Atomic Mass Unit: A unit used to express atomic masses. One AMU is equal to the one twelfth of the mass of a carbon atom.

Background Radiation: Radiation that is found in small quantities all around us. It originates from natural sources such as rocks and cosmic rays as well as man-made sources such as nuclear accidents and medical sources.

Beta Decay: The emission of a beta particle when a proton turns into a neutron (or vice versa) in an unstable nucleus. Beta minus radiation is weakly ionising. Beta plus radiation is immediately annihilated by electrons.

Binding Energy: The amount of energy required to split a nucleus into all its separate constituent nucleons. It is equivalent to the mass defect.

Chain Reaction: The process of the neutrons released by a fission reaction inducing further fissile nuclei to undergo fission.

Closest Approach: A method of estimating a nuclear radius by firing a alpha particle at it. It involves calculating the distance at which all the alpha particle's kinetic energy is converted to electric potential energy.

Contamination: The introduction of radioactive material to another object. The object is consequently radioactive.

Control Rods: Rods found in nuclear reactors to absorb neutrons and control the rate of reaction. They can be raised or lowered depending on the rate required.

Coolant: A substance that passes through nuclear reactors and is responsible for removing heat from the core. This heat is then used to generate energy.

Critical Mass: The smallest mass of fissile material required in a fission reactor for a chain reaction to be sustained.

Electron Capture: A process that occurs in proton-heavy nuclei, in which an electron is drawn into the nucleus, causing a proton to transition into a neutron. An electron neutrino is also produced.

Fission: The splitting a nucleus, to form two smaller daughter nuclei, neutrons and energy.

Fusion: The joining of two smaller nuclei to form a larger nucleus and to release energy.

Gamma Decay: The emission of gamma rays from an unstable nucleus that has too much energy. Gamma radiation is only very weakly ionising but requires several centimetres of lead to be stopped.

Half-Life: The average time it takes for the number of radioactive nuclei in a sample to halve.

Inverse Square-Law: A law that governs the intensity of gamma radiation. It means that the intensity of radiation at any point is inversely proportional to the square of the distance from its source.

Irradiation: The exposure of an object to radiation. The exposed object does not become radioactive.

Mass Defect: The difference in mass between a nucleus and the sum of the masses of its constituent nucleons.

Moderator: A material in nuclear reactors that absorbs energy from fast moving neutrons, to slow them down to speeds that can be absorbed by fissile neutrons to induce fission.

Radioactive Dating: The use of radioactive isotopes with known half-lives to date objects. The isotope that is usually used is Carbon-14.

Radioactive Waste: The waste produced from the products of fission reactions. Since the waste is unstable and radioactive, it must be stored and handled carefully.

Random Nature of Radioactive Decay: Radioactive decay is random - you cannot predict when a nucleus will decay or which nucleus will decay next.