

Physics: Waves and Radiation



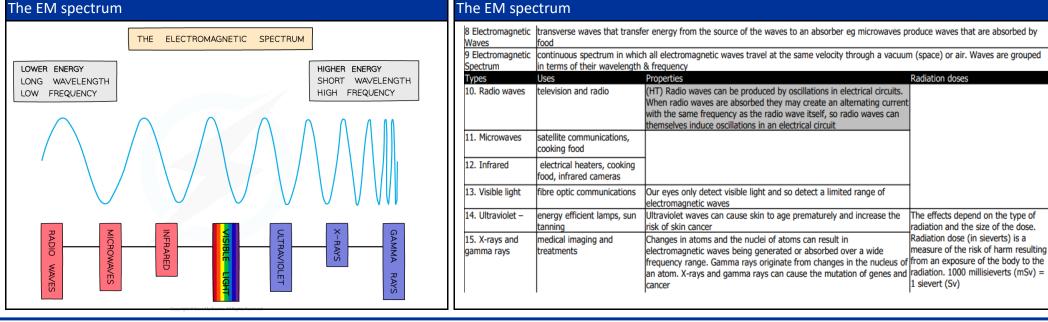
Waves		Atomic St
1 Transverse wave	Oscillates (moves between two points) perpendicular (at right angles) to direction of movement eg ripples on a water surface	Key Term Size of the a
2 Longitudinal waves	Oscillates parallel to the direction of wave movement. Areas of compression (squashing) and rarefaction (spreading) eg sound waves travelling through air	Nucleus
2 Amplitudo	Maximum displacement of a point on a ways away from its undisturbed	Electrons
3 Amplitude	Maximum displacement of a point on a wave away from its undisturbed position. Bigger amplitude means more energy	Mass numb
4 Wave Length (λ)	Distance from a point on one wave to the equivalent point on the adjacent	Atomic nun
	wave. Measured in metres (m)	Isotopes
5 Frequency (f)	Number of waves passing a point each second. Measured in hertz (Hz)	bn
6 Period (7)	Time taken for each wave to pass a fixed. Calculated using equation	
	period, T (seconds, s) = $\frac{1}{\text{frequency, } f$ (hertz, Hz)	lo nisation
	frequency, f (hertz, Hz)	Atom
7 Wave speed (m/s)	Speed at which the energy is transferred (or wave moves) through a medium. Calculated using equation wave speed, $v = \frac{\text{frequency}, f \times \text{wavelength}, \lambda}{(\text{metres per second, m/s})}$	Electron arr radiation or Losing elect Gaining elect

omic Structure (Chemistry Link) ev Term ze of the atom 1x10⁻¹⁰ m lucleus A positively charged basic structure of the atom composed of both protons and neutrons. The radius of the nucleus is 1/10000 the radius size of an atom. Where most the mass of an atom is. A negatively charged particle which orbits around the nucleus of an atom. lectrons The number of protons and neutrons in a nucleus lass number The number of protons in an atom. Sometimes called the proton number tomic number Atoms with the same number of protons and different numbers of neutrons otopes A charged atom or molecule

A particle with the same number of protons and electrons to give it no overall charge.

m. Electron arrangements may change with the absorption of electromagnetic radiation or by the emission of electromagnetic radiation. Losing electrons makes an ion positive. Gaining electrons makes an ion negative. M spectrum

A process in which atoms become charged.



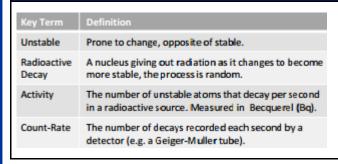


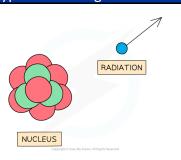
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Radioactivity key terms

Types of ionising radiation

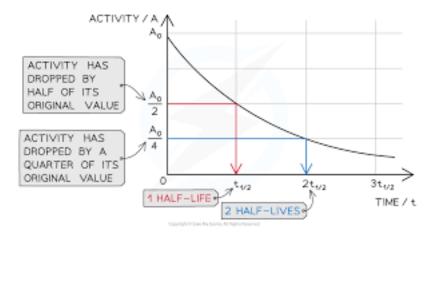




Particle	What is it	Charge	Range in air	Penetration	lonisation
Alpha (d.)	2 protons + 2 neutrons	+2	Few cm	Stopped by paper	High
Beta (ß)	Electron	-1	Few 10s of cm	Stopped by few mm Aluminium	Medium
Gamma (y)	Electromagnetic wave	0	Infinite	Reduced by few mm Lead	Low

Half life

Key Term	Description
Half-life	The time it takes for the number of nuclei of the isotope in a sample to half.
	The time it takes for the count-rate (or activity) from a sample containing the isotope to fall to half it's initial level.



Dangers of Radiation

Radioactive Contamination	The unwanted presence of materials containing radioactive atoms or other materials.				
Irradiation	Exposure of an object to ionising radiation.				
Radiation Dose	Amount of ionising radiation a person receives.				
Hazards	A danger or risk. This is due to the decay of contaminating atoms.				
Hazards of radia	ation:				
-	ion Poisoning Seizures Internal bleeding Inflammation of organs Loss of white blood cells				
 Spending a Shielding the second second	radiation: far away from the radiation source as possible. s little time as possible in at-risk areas. nemselves using thick concrete barriers or thick lead plates. ioactive materials in thick, lead-lined boxes.				