Youth Education & Interpretation

It's in Our Nature

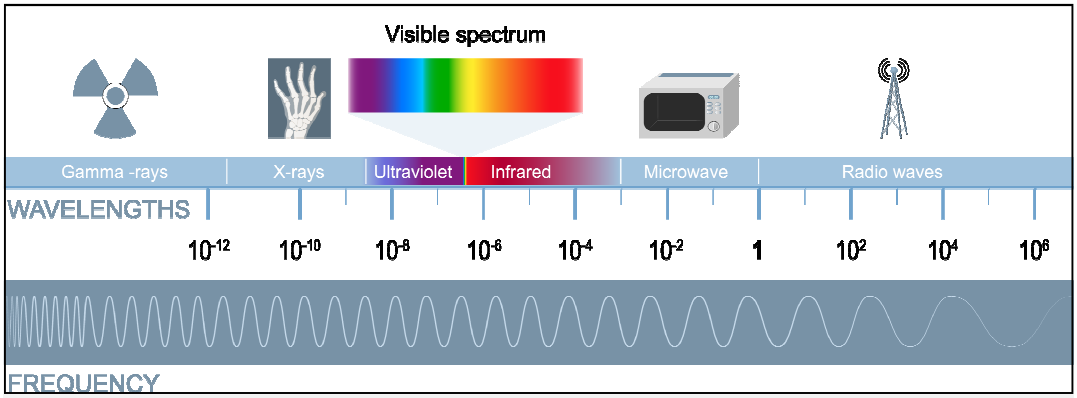
Forms of Energy: Radiant Energy

Energy in the form of light

The Sun is the Earth's primary source of **radiant energy**. A significant portion of the radiant energy from the Sun actually gets converted to other forms of energy once it reaches the Earth. For example, the process of **photosynthesis** by plants converts the radiant energy from the Sun to **chemical energy**. Both the atmosphere and the surface of the Earth absorb large portions of the Sun's radiant energy and convert it to heat. The resulting heat contributes to the formation of winds in our atmosphere. Both these winds and the heat of the Sun play a critical role in the Earth's hydrologic cycle.

The light we can see with our eyes is only a portion of the radiant energy that travels in waves towards the Earth from the Sun. These various types of radiant energy are part of the **electromagnetic spectrum** and includes gamma-rays, x-rays, ultraviolet waves (UV), infrared (IR), radio waves, etc. A very small fraction of the spectrum is actually visible to the human eye.

We often use **electrical power** to generate radiant energy in the form of light using a light bulb. However, a significant portion (90%) of the **electrical energy** converted by a common light bulb is actually converted to heat (IR) and only a small fraction to light energy.



The electromagnetic spectrum includes wavelengths of light energy that we can see and those we cannot.

Glossary

Chemical energy: The potential energy released by breaking the bonds in molecules

Electrical energy: Kinetic energy as a result of moving electrons

Electrical power: Electrical energy used to conduct work; the measure of the rate of electrical energy used by a circuit. This is usually measured using a unit called a Watt (W)

Electromagnetic spectrum: The entire range of frequencies of electromagnetic radiation including visible light in the middle of the spectrum, radio waves, microwaves, infrared waves, ultraviolet waves, x-rays, and gamma rays

Photosynthesis: The biological process by which certain organisms (primarily plants) convert light energy (primarily from the Sun) into stored chemical energy

Radiant energy/Radiation: Transmission or emission of kinetic energy as waves through space. Light is one type of radiant energy. Electromagnetic radiation can be classified by the electromagnetic spectrum

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