

# How things work – flashlight essay sample



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A flashlight is a portable battery-powered device that emits light when the switch is turned on. A flashlight emits light by converting chemical energy stored in the batteries into electrical energy and then to heat and light in the light bulb itself. The processes happening in a flashlight is a good demonstration of the conversion of one type of energy to another. To understand how the flashlight works we should first understand its components and the processes that happen within each one.

A typical flashlight is basically an electrical circuit which is composed of a light bulb connected to conducting wires and switches and to batteries. While the switch is turned off, the electrical circuit is not complete, hence there is no flow of current and the electric charges (or packets of electricity) that are stored in the batteries remain there. Thus the bulb does not light up because there is nothing to power it.

The process starts when the circuit is completed when the switch is turned on. The first phase takes place in the batteries. A battery is composed of certain chemicals whose reactions with each other move electric charges within the battery and its circuit. In a complete circuit, the electric charges move from the positive terminal to negative terminal of the battery. It is in the batteries where the chemical energy is converted to electrical energy.

When the switch is turned on, the electrical circuit is completed which allows the electric energy from the batteries to flow through the wires and to the light bulb. The last phase occurs in the light bulb, where the conversion of electrical energy to heat and light takes place.

A light bulb is composed of a filament coil which is covered by a transparent or translucent glass. The filament is just a coil of very thin conducting wire usually made from tungsten. The filament has a property that allows it to glow when heated to some extent.

When the electrical energy goes inside the bulb, it passes through the filament which converts the electric energy to heat. While turned on, the filament becomes hotter and hotter and until it glows. This glow is the light that is radiated by the flashlight when we use it.

This flow of energy (from chemical energy to electric energy to heat and light) continues on and on as long as the switch is turned and as long there is still electric energy left in the batteries.

The flashlight works because of the existence of the different forms of energy. Chemical energy (which is stored in the battery) is the energy which is due to the reactions and processes happening within the composition of matter such as atoms or molecules. Electric energy (which flows through the wires) is brought about by the moving charges in the circuit. These two forms of energy can be manipulated to produce heat and light (which is emitted in the light bulb).

The flashlight is a very good example to show various types of energy and the ways of converting them from one form to another. The processes that were explained in this simple device can be used as a representation of the processes happening in other machines that are on a larger scale such as nuclear power plants (which convert nuclear energy to electric energy), car engines (which convert chemical energy to kinetic energy) and others.

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