

Acid and Alkalis

Acids and **Alkalis** are common substances found in homes and labs. They can be **corrosive** (they can attack certain materials, including human tissue) and **irritant** when diluted.

When planning an experience we must complete a **risk assessment** which involves identifying potential **hazards** (e.g. damage to the eyes) and placing procedures to prevent/reduce the risk of the hazard(s) happening (e.g. wear goggles).

Indicators are solutions used to identify if another solution is acid or alkali. Many indicators that can be extracted from plants:

Red cabbage solution indicator – turns red in acid and yellow/green in alkali solutions

Litmus paper (extracted from lichens) – turn red in acid and blue in alkali solutions

We can measure how acidic or alkaline a solution is for this we use a **pH scale**. pH scale varies from 1 (very acidic; e.g. stomach acid and vinegar) to 14 (very alkali; e.g. oven cleaner, hair dye). Substances with pH 7 are said to be **neutral** (e.g. sea water).

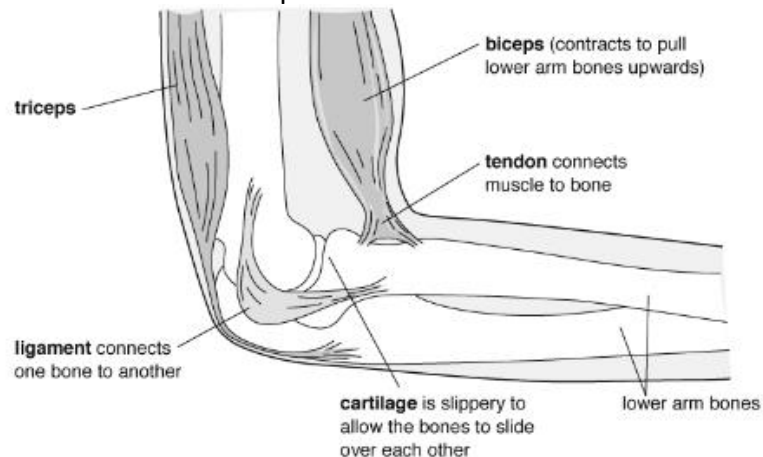
Neutralization is a chemical reaction between an acid and an alkali. These two substances are called **reactants** and they form **products**: Acid + Alkali → Salt + Water. Indigestions remedies (antacids) are used to treat stomach burn caused by the stomach's acid.

Muscles and Bones

The locomotor system consists of bones and muscles and lets you move. Bones are organs that form the skeleton, which:

- protects some organs (e.g. the ribs and sternum protect the lungs; the skull protects the brain)
- supports your body (e.g. the vertebrae in your 'backbone' hold you up straight)
- allows you to move (using muscles at your joints).

Muscles cannot push and so bones need pairs of muscles (antagonistic pairs) to pull them in opposite directions. One muscle contracts (gets shorter and fatter) to pull a bone. At the same time, the other muscle in the pair relaxes.



Breathing is the movement of the muscles in your diaphragm and between the ribs, which cause the changes in the volume of the lungs. Ventilation is the movement of air into and out of the lungs as breathing occurs.

Circulation: Blood is carried to the heart by veins. The blood is then forced back out when the heart muscle tissue contracts. The pumping of the heart can be felt in arteries as a pulse. Drugs are chemicals that affect how the body works.

Key vocabulary:

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Hazard – Something that could cause harm

Acid – A substance that turns litmus red. pH less than 7.

Alkali – A substance that turns litmus blue. pH more than 7

Corrosive – A corrosive substance that can destroy metals, stone work and skin

Diluted – A substance that has had water added to it to make it less concentrated

Irritants – a substance that causes skin and eyes to be sore or sting

Risk – The chance that a hazard will actually cause harm

Precaution – Action taken to reduce the risk of harm

Indicators – A dye that changes to different colours in acids and alkalis

Neutral – A substance that is neither acid or alkali. pH of 7

pH scale – Scale from 1 to 14 showing how acidic or alkaline a substance is.

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Organ – A part of a plant or animal that does a very important job. Different tissues working together.

Organ system – Collection of organs working together to do a very important job.

Gas exchange – When one gas is swapped

Diaphragm – Organ that contracts and moves downwards to increase the volume of the lungs.

Ventilation – Movement of air in and out of the lungs.

Artery – blood vessel that carries blood away from the heart

Capillary – Thin walled blood vessel that carries blood from arteries to veins

Haemoglobin – Substance that carries oxygen in red blood cells

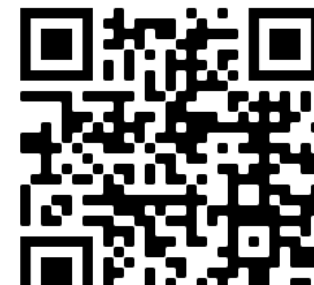
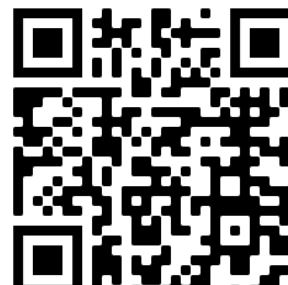
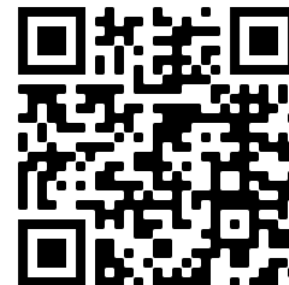
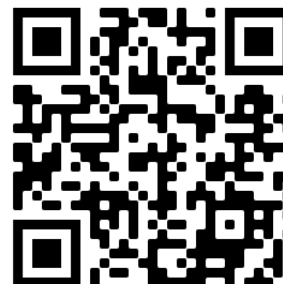
Cartilage – Slippery substance that is found on the ends of some bones and used to help form some body parts.

Ligament – Band of tissue that connects bones together

Tendon – A cord of tissue that connects a muscle to a bone

Antagonistic pair – Two muscles that work a joint by pulling a bone in opposite directions.

Videos



Quizzes

