

## Acids and alkalis

**Indicators** are coloured dyes which often come from plants such as red cabbage and beetroot. **Acids** make indicators change colour. **Litmus** is an indicator which turns red in acids. Common acids include vinegar and lemon juice. Fizzy drinks, pickles and spicy sauces also contain acids. Stronger acids such as sulphuric and nitric acids can be more dangerous. Often they are **corrosive**.

**Alkalis** have a different effect on indicators to acids. Litmus turns blue in alkalis. Alkalis can also be corrosive. Weak alkalis include soap and toothpaste.

Bottles in the laboratory and tankers carrying chemicals on the road all have to carry hazard warning labels to show when there is a chemical hazard. Some of the common warning signs are:



toxic (poisonous)



harmful (irritant)



corrosive



flammable

The strengths of acids and alkalis can be measured on the **pH scale**, which runs from 1 to 14. pH numbers **1 to 6** are acids, **7** is neutral, and **8 to 14** are alkalis. You can find out the pH number using a **universal indicator**, or by using a pH meter.

strong acid			weak acid			neutral	weak alkali			strong alkali			
1	2	3	4	5	6	7	8	9	10	11	12	13	14

stomach acid

vinegar

skin

pure water

indigestion powders

washing powder

oven cleaner

lemon juice

fizzy drinks

milk

blood

toothpaste

Alkalis can cancel out acids, making them **neutral**.

Neutralising reactions can be important:

- in gardening and agriculture, to make sure the soil is the correct pH
- when dealing with insect stings and bites
- to control indigestion caused by excess acid in the stomach
- to keep foods such as jam at the correct pH.