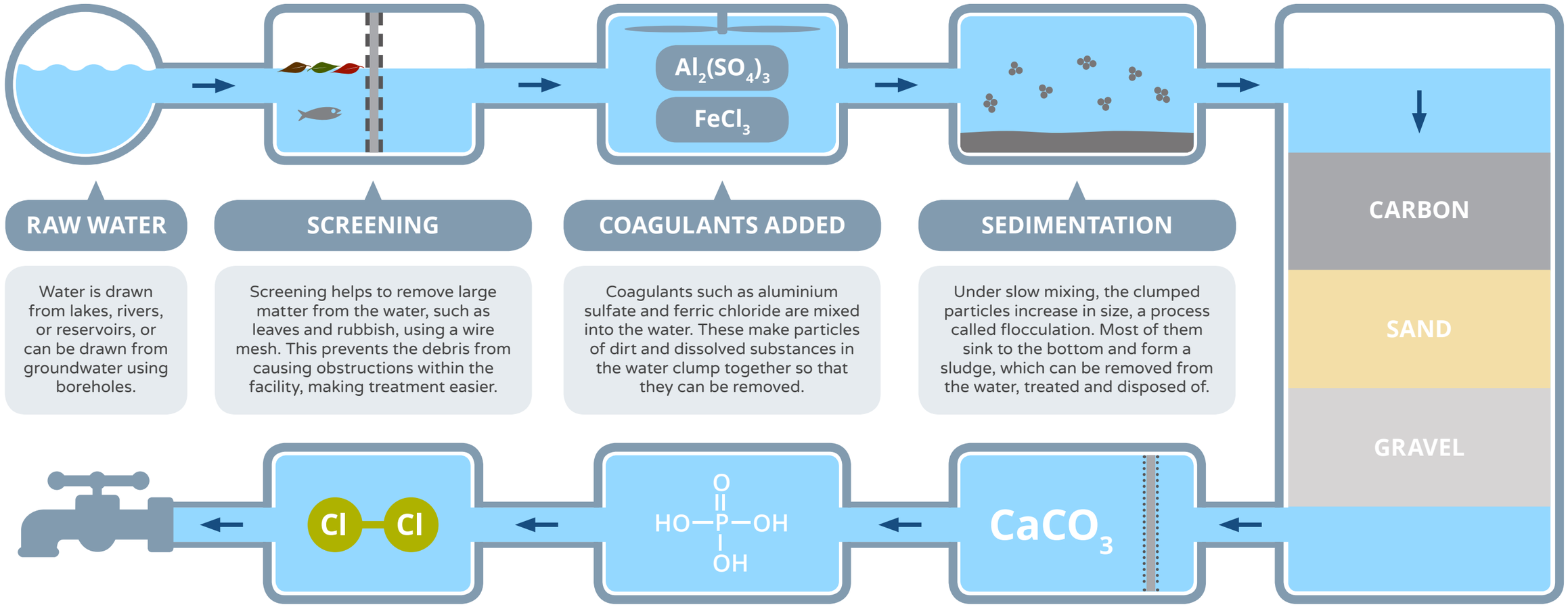
WATER TREATMENT – FROM RESERVOIR TO HOME

We take the water coming from our taps for granted – but what happens to it before it gets there? Here's how chemistry helps!



RAW WATER

Water is drawn from lakes, rivers, or reservoirs, or can be drawn from groundwater using boreholes.

SCREENING

Screening helps to remove large matter from the water, such as leaves and rubbish, using a wire mesh. This prevents the debris from causing obstructions within the facility, making treatment easier.

COAGULANTS ADDED

Coagulants such as aluminium sulfate and ferric chloride are mixed into the water. These make particles of dirt and dissolved substances in the water clump together so that they can be removed.

SEDIMENTATION

Under slow mixing, the clumped particles increase in size, a process called flocculation. Most of them sink to the bottom and form a sludge, which can be removed from the water, treated and disposed of.

TO HOMES

Residual chlorine in the water safeguards against pathogens. Fluoride can be added after chlorination to help to prevent tooth decay.

CHLORINATION

Chlorine is added to water to kill bacteria and viruses, preventing water-borne diseases like cholera and typhoid. Ozone can be used instead of chlorine, and avoids disinfection byproducts.

ANTI-CORROSION AGENTS

Agents such as orthophosphates can be added to the water, particularly in areas with lead pipes. These agents form lead-phosphate complexes on the inside of the pipes, stopping lead getting into the water.

pH CORRECTION

Water that is too acidic can lead to water pipe corrosion. It can be passed through a filter containing crushed limestone (mainly calcium carbonate) to raise pH. Acids can be added if the pH is too high.

FILTRATION

Some particles remain in the water after sedimentation; these are removed by filtration through coal, sand, and gravel beds. They are cleaned by pumping air and water backwards through them.