Part 3

Water treatment

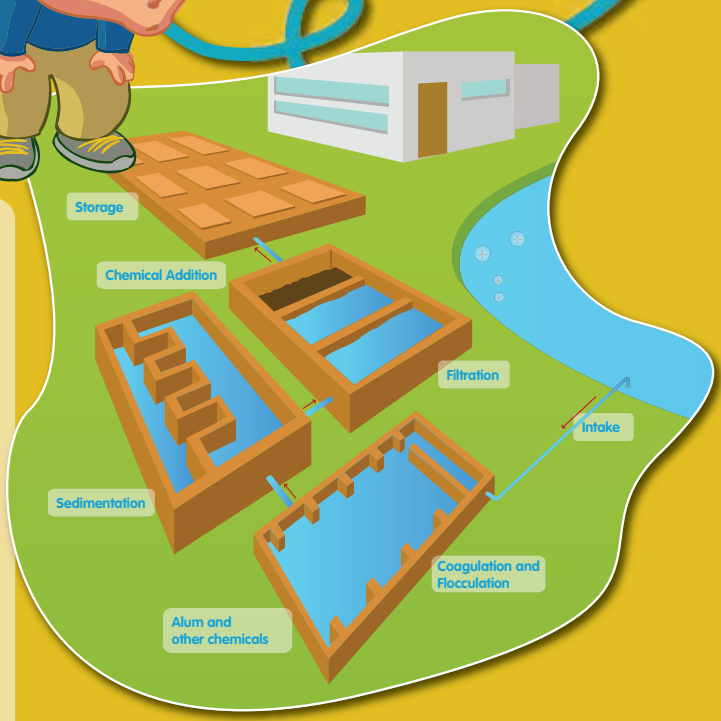
Life in aqualibrium

How does water from dams and rivers become safe for us to use?

The water that you and I use in our homes, at school and in our gardens may come from nature, but before it reaches us, it has to undergo a process of water filtration. Let's take a look at the steps involved in this process…

Did you know?

The coagulation and flocculation process has been used since ancient times. As early as 2000 BC, Egyptians used almonds smeared around vessels to clarify river water.



14 Fresh water from rivers, dams, lakes and the ground are collected to form the first part of the water treatment process, known as **intake**. Next the water moves along various other channels, each contributing to the ultimate "cleansing" of the water to make it safe for us to use.

15 Coagulation and flocculation

Coagulation removes dirt and other particles suspended in water. Alum and other chemicals are added to water to form tiny sticky particles called "floc" which attract the dirt particles. The combined weight of the dirt and the alum (floc) become heavy enough to sink to the bottom during sedimentation.

16 Sedimentation

When water has little or no movement, suspended solids sink to the bottom under the force of gravity and form sediment. In water treatment sedimentation is used to remove solids from waters, including particles that have been reduced in the coagulation and flocculation process. Due to the large size of the tank and the slow flow slow of the water through the tank, the heavy particles (floc) settle to the bottom and the clear water moves to filtration.

17 Filtration

The water passes through filters, made of layers of sand, gravel or charcoal, to help trap even smaller particles.

18 Chemical Addition

A small amount of chlorine is added to kill any bacteria or microorganisms that may be in the water.

19 Storage

The water is moved into a closed tank or reservoir, where disinfection takes place, before the purified water is pimped through pipes to homes, businesses and power stations.

Saving tip

Use ceiling fans rather than air conditioning to keep cool in summer. Fans use electricity, but need much less energy than air conditioners.

Fast Fact

Local authorities supply 11 million people in homes, schools, and businesses in Gauteng and parts of Mpumalanga, North West, Free State and Limpopo Provinces with clean water that they buy from Rand Water. This accounts for 45% of the South African population and 60% of the economy.