Most water is **not pure** but **is a mixture** of H2O and other chemicals. Examples:

* **Seawater** - H2O, salt, sand, microscopic bacteria - large organisms, dissolved oxygen
* **Water in rivers & lakes** - H2O, dirt, dissolved oxygen, fish, yabbies, bacteria etc.
* **Swimming Pool water** - H2O, dissolved chlorine, treatment chemicals
* **Tap water** - H2O, materials from rock & soil, water treatment chemical

**Sources of Water:**

1. Dams, lakes & Rivers - Contain materials from rocks & soil that include:

* Metals - magnesium, calcium, iron, copper, zinc
* Chemicals - chloride, fluoride, carbonate, nitrate
* Solid soil particles - clay, minerals, sand
* Living organisms - microscopic bacteria, algae, water snails, crustaceans (e.g. yabbies), fish
* Rubbish - household & industrial waste
* Toxic chemicals and pollutants from factories & drains

2. Groundwater - water below the ground from rainwater soaking into the rock layers known as **aquifers**
 - water trapped by impervious rock underground is called
 artesian water. The top layer is called the water table.
 Where it reaches the surface it forms a lake or river.
 - **Desalination** is the process of removing salts from water.
 The most efficient method is Reverse Osmosis, which uses
 a very fine membrane as a filter (as shown in the diagram)

**Water Treatment**

Water fit to drink is called **potable water**. The stages of water treatment are:

* Flocculation - separation of fine solid particles by adding flocculants (chemicals) that makes them form clumps
* Filtration - water is pumped through filters to remove the remaining particles
* Sterilization - chlorine is added to kill micro-organisms like bacteria
* Balancing pH - pH is a measure of acidity, and is adjusted so the water is not acid or alkaline (Neutral)
* Fluoridation - Fluoride is added to reduce the chance of tooth decay

**Sewage and Recycled Water Protecting our Water**

Ways of conserving water:

\* Reducing usage

\* Avoiding toxic materials such as oils, fats, paints, medicines, pesticides from entering drains, gutters and waterways

\* Reducing the use of detergents or using phosphate-free detergents