

## Water purification

Water purification is the process of removing undesirable chemicals, biological contaminants, suspended solids, and gases from water. The goal is to produce water fit for specific purposes. Most water is purified and disinfected for human consumption (drinking water), but water purification may also be carried out for a variety of other purposes, including medical, pharmacological, chemical and industrial applications.

Importance of water purification - Water purification may reduce the concentration of particulate matter including suspended particles, parasites, bacteria, algae, viruses and fungi as well as reduce the concentration of a range of dissolved and particulate matter. One major purpose of water purification is to provide clean drinking water.

methods of water purification - The methods used include physical processes such as filtration, sedimentation and distillation; biological processes such as slow sand filters or biologically active carbon; chemical processes such as flocculation and chlorination; and the use of electromagnetic radiation such as Ultraviolet light.

Boiling Boiling water is the cheapest and safest method of water purification. Water sources and or channels of distribution may render your water unsafe. In this method, clean water should be brought to boil and left at rolling-boil for 1-3 minutes. Boiled water should be covered and left to cool before drinking.

Filtration - This method uses chemical and physical processes to purify water and make it safe for human consumption. Filtration eliminates both large compounds and small, dangerous contaminants that cause diseases with a simple and quick filtration process. This method is less costly and economic as it does not require a lot of energy needed in distillation and reverse osmosis and little water is lost during purification.

Distillation - This method utilizes heat to collect pure water in the form of vapour. This method is effective in removing bacteria, germs, salts and other heavy metals such as lead, mercury and arsenic. The disadvantage of this method is that it is a slow process of water purification and it requires a heat source for purification process. This method is only ideal for purifying small quantities and not ideal for large scale, commercial or industrial purification.

Chlorination - Chlorine is an effective water purification method that kills germs, parasites and other disease-causing organisms found in ground or tap water. Water can be purified using chlorine tablets or liquid chlorine. This method is cheap and effective.

Ultraviolet rays - The use of UV rays plays a vital role in the water purification system.

UV rays have high penetration capacity, which kills or suspend the growth of the microbes present in drinking water. This method is suitable for eliminating different types of biological contamination.

ion-exchanger - In this process, a charged ion in a solution is exchanged with the similarly charged ions, which is electrostatically attached to an immobile solid particle. The best example of ion exchanger is a water softener system.