# How to Purify Water

## Why Do We Need to Purify Water?

97% of the world's water is salty or undrinkable. 2% is frozen in ice caps and glaciers. Only 1% of water is available for human use.

**Clean water is essential for:**

- Drinking
- Cooking
- Cleaning
- Other daily needs

## What is Water Purification?

Water purification is the process of removing harmful substances, germs, and impurities from water to make it safe for drinking. Even after removing insoluble and soluble impurities, water may still contain germs. Purification ensures that water is clean, safe, and healthy.

## Methods of Water Purification

### i. Boiling :

Boiling is the simplest and most effective method of purifying water.

#### Water is boiled for 10-15 minutes to:

- Kill most germs and bacteria.
- Remove dissolved gases.

#### How to do it:

- Boil water in a clean vessel.
- Let it cool.
- Store it in a clean, covered container.

#### Effectiveness:

- Kills germs.
- Makes water safe for drinking.

## ii. Chlorination :

Chlorination is the process of purifying water using chlorine tablets or chemicals.

### Chlorine:

- Kills bacteria and viruses.
- Prevents the spread of waterborne diseases.

### How to do it:

- Add 1 chlorine tablet to 1 liter of water.
- Stir well and let it sit for 30 minutes.

### Effectiveness:

- Destroys harmful microorganisms.
- Prevents diseases like cholera, dysentery, and typhoid.

## iii. Filtration :

Filtration is the process of removing insoluble impurities from water using a filter.

### How to do it:

- Pour water through a cloth, coffee filter, or water filter.
- The filter traps dirt, sand, and other impurities.

### Effectiveness:

- Removes large particles.
- Improves water clarity.

## iv. Sedimentation and Decantation :

Used to separate insoluble impurities from water.

### Sedimentation:

- Let the water sit undisturbed.
- Heavy impurities settle at the bottom.

### Decantation:

- Carefully pour the clean water into another container.
- Leave the sediments behind.

### Effectiveness:

- Removes heavy particles.
- Water becomes clearer.

### v. Using Water Purifiers :

Water purifiers use advanced technologies like:

- UV (Ultraviolet) → Kills germs.
- RO (Reverse Osmosis) → Removes dissolved salts and chemicals.

### How to do it:

- Install a water purifier at home.
- Regularly clean and maintain it.

### Effectiveness:

- Provides pure and safe drinking water.

## Activity: Water Purification Experiment

## Materials Needed:

- Dirty water (water with sand or mud)
- Chlorine tablet
- Stove or kettle
- Coffee filter or cotton cloth
- Two clear glasses

## Instructions:

### i. Filtration:

- Pour the dirty water through a cotton cloth or coffee filter into a glass.
- The filter removes large impurities.

### ii. Sedimentation and Decantation:

- Let the water sit for 15 minutes.
- The heavy particles will settle at the bottom.
- Gently pour the clear water into another glass.

### iii. Boiling:

- Boil the clear water for 10-15 minutes.
- Let it cool.

### iv. Chlorination:

- Add a chlorine tablet and stir well.

### Observation:

- The water becomes clear and safe for drinking.

### Importance of Water Purification

- Prevents waterborne diseases → Keeps us healthy.
- Removes impurities → Makes water safe for drinking.
- Ensures good hygiene → Pure water is used for cooking and cleaning.
- Protects the environment → Clean water reduces pollution.

### Conclusion

Water purification makes water safe, clean, and healthy. Boiling, chlorination, filtration, and sedimentation are effective methods of purifying water. Using water purifiers at home ensures a continuous supply of safe water.