DISINFECTION OF WATER:

The process of killing the infective bacteria from the water and making it safe to the user is called disinfection. The water which comes out from the filter may contain some disease – causing bacteria in addition to the useful bacteria. Before the water is supplied to the public it is utmost necessary to kill all the disease causing bacteria. The chemicals or substances which are used for killing the bacteria are known as disinfectants.

REQUIREMENTS OF GOOD DISINFECTANTS

1. They should destroy all the harmful pathogens and make it safe for use.
2. They should not take more time in killing bacteria.
3. They should be economical and easily available.
4. They should not require high skill for their application.
5. After treatment the water should not become toxic and objectionable to the user.
6. The concentration should be determined by simply and quickly.

METHODS OF DISINFECTION

Disinfection of water by different physical and chemical methods

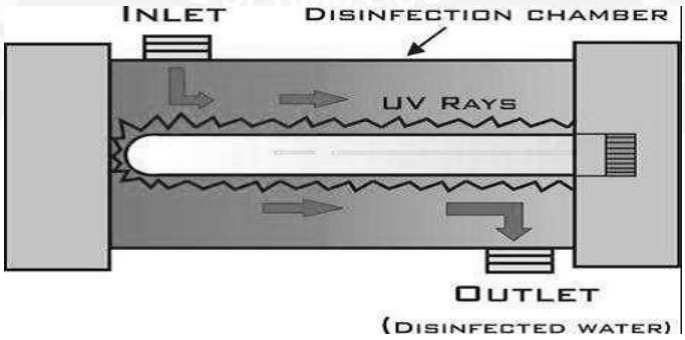
I. PHYSICAL METHODS

1. Boiling:

Boil the water for 15 to 20 minutes and kills the disease causing bacteria. This process is applicable for individual homes.

2. Ultra-violet rays:

Water is allowed to pass about 10cm thickness by ultraviolet rays. This process is very costly and not used at water works. Suitable for institutions.



II. CHEMICAL METHODS

1. Treatment with Excess Lime:

Lime is used in water treatment plant for softening. But if excess lime is added to the water, it can in addition, kill the bacteria also. Lime when added raises the pH value of

water making it extremely alkaline. This extreme alkalinity has been found detrimental to the survival of bacteria. This method needs the removal of excess lime from the water before it can be supplied to the general public. Treatment like recarbonation for lime removal should be used after disinfection.

2. Chlorination:

The germicidal action of chlorine is explained by the recent theory of *Enzymatic hypothesis*, according to which the chlorine enters the cell walls of bacteria and kill the enzymes which are essential for the metabolic processes of living organisms.

3. Bromine and Iodine:

Use of iodine or bromine is limited to small water supplies such as swimming pools, troops of army, private plants, etc.

- Dosage of iodine or bromine is about 8 p.p.m.
- Contact period with water is 5 minutes.
- Available in the form of pellets or small pills.

4. POTASSIUM PERMANGANATE TREATMENT ($KMnO_4$)

- It is a powerful oxidising agent, effective in killing cholera bacteria
- Restricted to disinfection of water of village wells and ponds
- Dosage is about 2.1 ppm
- Contact period of 3 to 4 hours
- The treated water produces a dark brown coating on porcelain vessels and this is difficult to remove except with scratching or rubbing

5. **SILVER TREATMENT**

- Colloidal silver is used to preserve the quality of water stored in jars.
- Metallic silver is placed as filter media. Water get purified while passing through these filters.
- Dosage of silver varies from 0.05 to 1 p.p.m.
- Contact period is about 15 minutes to 3 hours.
- It is costly and limited to private individual houses only.