

# Sanitary of water for Aquaculture

# Natural water Supplies

## Surface water

River & lakes

Easily polluted so needs purification.

## Underground water

2 layers: shallow & deep

Sterile if sanitary precautions are followed

## Rain water

Pick impurities

## Spring

Pure if protected

## Sea water

Desalination is expensive

- **Large scale Small scale:**

- ✓ Water intake
- ✓ Coagulation-sedimentation
- ✓ Filtration
- ✓ Disinfection “Chlorination”
- ✓ Distribution

- **Small scale:**

- ✓ Filtration
- ✓ Disinfection

## Water intake

- Place selected in the course of river or (canal) to draw water for purification
- Must be protected & away from any source of pollution especially fecal materials.

## Coagulation-sedimentation

- Water is pumped from intake to sedimentation tanks & left for some hours so that greater part of suspended matter settles down.
- For better sedimentation in a shorter period of time, a coagulant (commonly alum) is added

## Filtration

- Mechanical sand filter made of layers of sand on top of gravel.
- Alum & rest of impurities form a surface film, which is responsible for the filtration process. Water gets filtered on passing through the surface film. Removes all bacteria, cysts and suspended matter but virus can pass through the filter. Max. efficiency of filtration for micro-organism removal is 95%.
- Frequent washing of the filter is needed by passing a reverse current of water under high velocity.

## Disinfection

- Necessary to destroy the remaining 5% pathogenic organisms that may be found in filtered water. Chlorine is the gas commonly used in disinfection.
- Chlorine is added to filtered water in a proper dose “0.6 ppm” & left for  $\frac{1}{2}$  an hour.
- Residual chlorine “0.2 ppm” is to safe guard against pollution during distribution of water to final consumers.
- Super chlorination of water occur in cases of water borne epidemic.

## Distribution

- Through a network of pipes, water is distributed to the different parts of the areas to be supplied. Presence of residual chlorine in water is a safeguard against contamination from breaking or leaking through pipes

- **Small Scale purification:**

- used in villages, small confined areas.
- It is used for water supply at the individual levels in case of absence of large-scale purification.

- **Filtration:**

- Domestic filter is the simplest.
- Water passes through a candle, which is made of clay, porcelain.
- Requires regular cleaning & if not properly cared for, it may become a source of infection itself.

- **Disinfection:**
- Chlorine of lime (bleaching powder).
- It contains 20-35 % of its weight available chlorine.
- Destroys most of microorganisms if proper dose & contact time are allowed.