Pollution lab 9

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Free Chlorine Measurement part 2

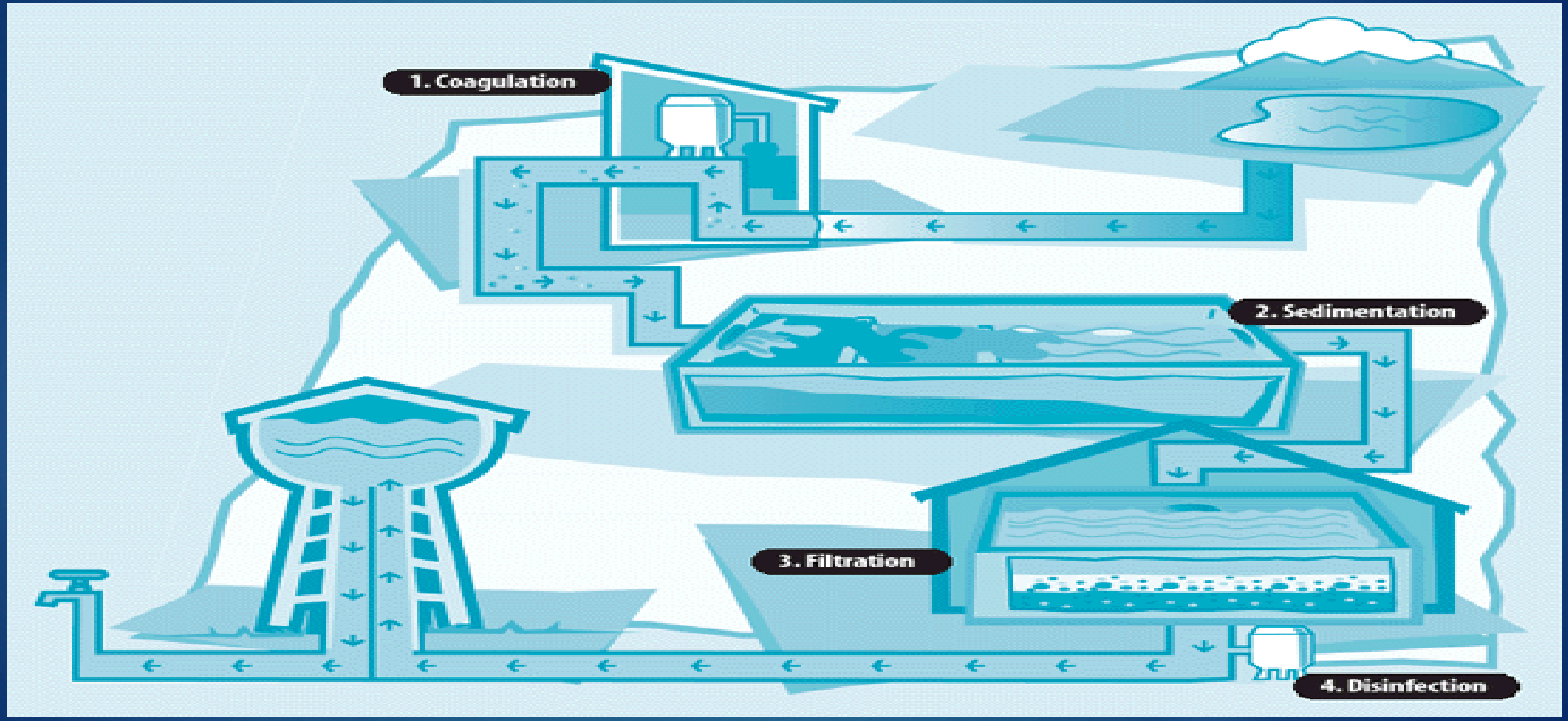
Disinfectant strength comparison:

- The strength of different forms of chlorine in water are ranked germicidal as follows:

  HClO>ClO> inorganic chloramines >organic chloramines

- HClO is 100 times more powerful an oxidant and disinfectant than is the hypochlorite ion consequently, free chlorine is most effective at a PH of (5 to 7) where HClO is the predominant form. The effectiveness declines with increased PH

Water cleaning steps



Chlorine residual

Note: Water requires 2.0 mg l of chlorine to destroy all organisms.

The chlorine residual is usually tested at the following points:

- 1- When chlorine added as 1 mg/l water not disinfected.
- 2- When chlorine added as 2.0 mg l all organisms destroyed but no chlorine left for future contamination.
- 3- When chlorine added as 2.5 mg l all organisms destroyed and 0.5 mg 1 residual chlorine remaining.

Test procedure

- 1- Take 250 ml of water sample and add 1gm of KI then add 5ml of HCl to reach pH (3-4)
- 2- Titrate with Sodium thiosulfate solution (0.01 M) to give pale yellow color because the I be free.
- 3- Then add 1 ml of starch solution and titrate with thiosulfate in until disappear blue Color
- 4- The same procedure work for blank D.W
- 5- Calculate Chlorine:
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$$Cl\ (mg/L)\ = \frac{Tit.thio.\ Sample\ (ml) - \ Tit.thio.\ blank\ (ml) * M\ (thio) * M.wt\ (Cl)}{Volume\ of\ Sample\ (ml)}$$