## **Technical Information:**

Date:February 2006Subject:Water Treatment – Terms and DefinitionsCategory:Colloids, Coagulation and Flocculation

## <u>Colloids</u>

Colloids are defined as small particles ( usually negatively charged ) in solution which are too small to settle out under the influence of gravity. In water treatment it is important to remove them as they are able to transport / hide bacteria. They contribute to the colour / turbidity of water.

Coagulation and Flocculation are terms that are normally used interchangeably, but there is a difference.

**<u>Coagulation</u>** is a fast mix process where a chemical is added to the water to reduce the charge associated with the colloid.

Typical chemicals used as coagulants are :

Aluminum Sulphate (Alum) Ferric Chloride Ferric Sulphate Polyaluminum Chloride Polymers

These normally use the +ve charge of the Al or Fe to neutralize the -ve charge on the colloid.

**<u>Flocculation</u>** is a low sheer mixing process to help the neutralized colloidal particulate to combine with others forming larger floc's.

Essentially, adding a chemical to water, the chemical neutralizes the colloidal charge and makes a larger particle. With slow mixing, these larger particles combine together forming an even larger particle which are easily filtered out or can be removed by gravity settling (sedimentation process).

The colloidal particles are able to scatter light, so the effectiveness of this coagulation and flocculation process can be determined by measurement of the turbidity before and after the treatment.