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Laboratory Worksheet P7 : **Sludge Volume Index (SVI)**.

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Objective : To determine the settling characteristics of sludge sample.

Introduction

Sludge concentration is the process of reducing sludge volume and hence increasing its solid content. Because of its very high water content (usually more then 90% water), sludge behaves like liquid but not solid. It is very important that the volume of sludge can be significantly reduced before disposal, mainly due to economic reasons.

Sludge Volume Index (SVI) has been the indicator of sludge settling property for many years. It is a very important index for maintaining good quality of sludge in the activated sludge process. A low SVI is desirable and generally denotes that the sludge is settling well in the sedimentation tank and give rise to a clear effluent. Sludge with SVI of less then 100 usually considered to have good settling behavior, while SVI larger then 200 may indicate an ill-conditioned sludge.

Apparatus and Materials

- Sludge sample
- Stop watch
- 1 L measuring cylinder
- Pre-treated filter paper for suspended solid determination
- Filter set
- Oven at 103^{o}C

Procedure

1. Thoroughly mix the sludge sample.
2. Measure 1L mixed liquor and pour it into a 1L graduated measuring cylinder.
3. Wait 30 minutes.
4. Record the volume of the settled sludge.
5. Stopper the cylinder and remix the settled sludge again.
6. Collect 25 mL of the mixed liquor and determine its suspended solids.

Calculation

Calculate the SVI as follows :

$$SVI = \frac{Settled\ volume\ of\ \ sludge\ after\ 30\ mins.(mL) \times 1000}{MLSS\ (mg\ /\ L)}$$

Discussion

1. Calculate the SVI. What do the value of SVI indicate ?
2. How is it related to the observations made as the sludge was settling ?
3. When does SVI not reflect the real settling property of a sludge ?
   Name an example such that a sludge can has a small SVI value but at the same time would not settle well.