



MOHANLAL
SUKHADIA
UNIVERSITY
UDAIPUR



DEPARTMENT
OF
ZOOLOGY

Topic

Water Analysis (Chloride and transparency)

*B.Sc. 3rd
Practical of Zoology*

By

Pradeep Kumar Jangir

Department of Zoology

University College of Science

Mohanlal Sukhadia University, Udaipur (Raj.)

Water Transparency or Turbidity:

The turbidity of a body of water is related to the cleanliness of the water.

Waters with low concentrations of total suspended solids (TSS) are clearer and less turbid than those with high TSS concentrations. Turbidity can be caused by high concentrations of biota such as phytoplankton, or by loading of abiotic matter such as sediments.

Turbidity is important in aquatic systems as it can alter light intensities through the water column, thus potentially affecting rates of photosynthesis and the distribution of organisms within the water column.

Lowered rates of photosynthesis may in turn affect the levels of dissolved oxygen available in a given body of water, thus affecting larger populations such as fish. High turbidity can also cause infilling of lakes and ponds if the suspended sediments settle out of the water column and are deposited.

$$\text{Transparency of Water} \propto \frac{1}{\text{Turbidity}}$$

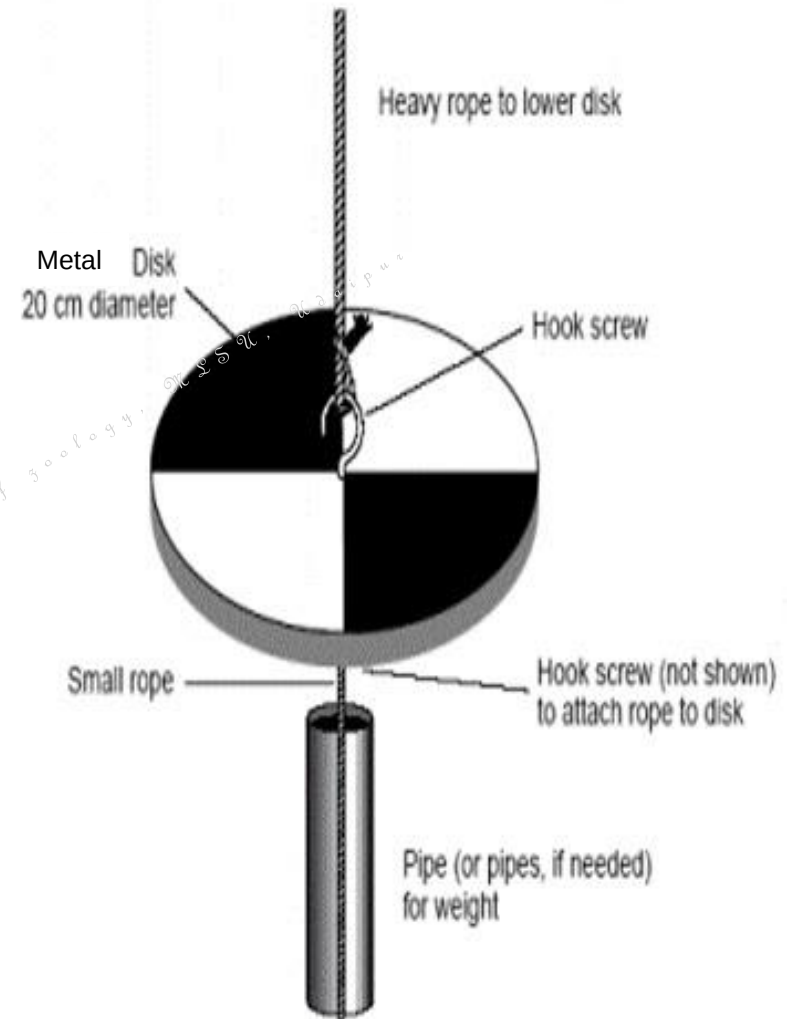
Secchi disk:

Pietro Angelo Secchi developed the disk to measure the transparency of water in 1865. A Secchi disk is an 8-inch (20 cm) diameter disk with alternating black and white quadrants that is lowered into the water column until it can no longer be seen from the surface. The point at which the disk disappears is a function of the lake turbidity.

Generally the more turbid a lake is, the less biota it will be able to support. Turbid waters inhibit light from penetrating deeply into water column and therefore negatively affect primary productivity and dissolved oxygen available to support other organisms.



Secchi Disk



Aim: To measure the transparency of a water body.

Material required: Secchi disk, measuring tape,

Procedure:

1. Slowly lower the Secchi disk into the water on the shady side until it
2. is no longer visible or disappear and Record this depth.
3. Slowly raise the disk until it just becomes visible once again and Record this depth.
4. Average the depths from steps 1 and 2 to get the Secchi depth.
5. This may be repeated for a measurement of precision.

Calculation:

$$\text{Transparency of Wate} = \frac{(\text{Depth of secchi disk Disappearing} + \text{Depth of secchi disk Reappearing})}{2}$$

Result:.....

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Praadeep Kumar Gangti (Research Scholar)
(Research Scholar)
Department of Zoology, UCoS, MLSU, Udaipur

Chloride content

Aim:

Determination of Chloride content in Water

Material Required:

0.02N AgNO_3 , 5% $\text{K}_2\text{Cr}_2\text{O}_7$, Burette, Pipette, Flask, Beaker Funnel

Principle:

Chlorine is present in form of NaCl , KCl and CaCl_2 . The silver nitrate reacts with chloride ion according to:



The titration is performed in an acidic solution. The results are expressed in mg/L of chloride (Cl with a molar weight of 35.453 g/mol).

Procedure:

1. Take 50ml water in a Conical flask.
2. Add 2-3 drop of 5% $\text{K}_2\text{Cr}_2\text{O}_7$ in the flask.
3. Now titrate with AgNO_3 and note the reading at the point where water change in Brick red.
4. Repeat the procedure 3-5 times and note the average value of titrate AgNO_3 .

Observation Table:

S.No.	Water sample (in ml)	Burette Reading (in ml)		Relevant Reading (in ml)
		Initial	Final	
1.	50	00	15	14 ml
2.	50	00	14	
3.	50	00	13	
4.	50	00	14	

Calculation:

$$\text{Chloride (mg} \cdot \text{l)} = \frac{\text{Relevant Reading of AgNO}_3 \text{ (in ml)} * \text{Normality of AgNO}_3 * 35.5 * 1000}{\text{Volume of water sample (in ml)}}$$

$$\text{Chloride (mg} \cdot \text{l)} = \frac{14 * 0.02 * 35.5 * 1000}{50}$$

$$\text{Chloride (mg} \cdot \text{l)} = \frac{9940}{50}$$

$$\text{Chloride (mg/l)} = 198.80 \text{ mg/l}$$

Result:.....

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Thank
You
So
Much