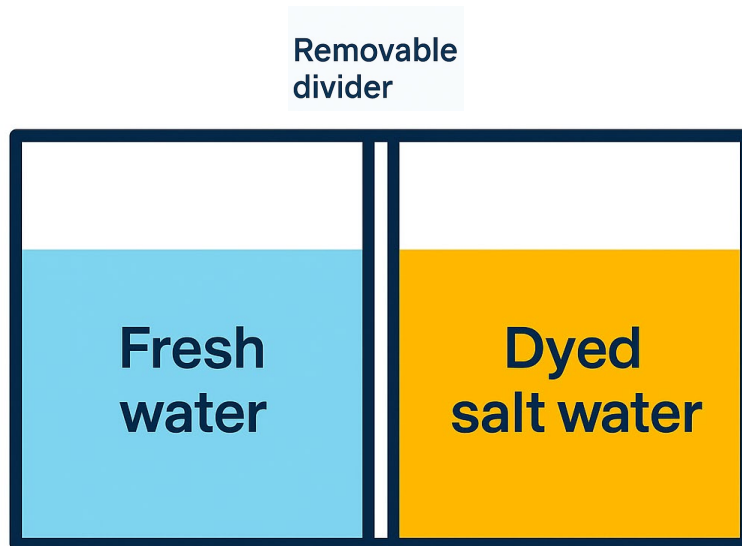


Water Tank Stratification Demonstration

Objective

To visually demonstrate the principle of stratification caused by differences in water density, using fresh water and salt water in a controlled tank setup.



Materials

- Clear rectangular tank (aquarium or plastic container)
- Vertical removable divider (acrylic or laminated cardboard)
- Table salt
- Food coloring (two distinct colors)
- Water (room temperature)
- Measuring cups or beakers
- Stirring sticks

Setup Steps

- Prepare Salt Water:
 - Mix approximately 5 tablespoons of table salt into 1 liter of water.
 - Add food coloring (e.g., orange or red) to this salt water for visual contrast.
- Prepare Fresh Water:
 - Use plain tap water and optionally add a different food coloring (e.g. blue).
- Set Up the Tank:
 - Place the vertical divider in the center of the tank to split it into two equal compartments.
 - Slowly pour the salt water into one side of the divider.

- Pour the fresh water into the other side carefully to avoid splashing or mixing.
 - Ensure both water levels are equal.
- Remove the Divider:
 - Once both sides are settled, gently and vertically remove the divider to allow the waters to meet.

Observation

- The salt water (denser) will remain on the bottom.
- The fresh water (less dense) will flow over the salt water.
- A visible boundary (interface) forms between the two layers, illustrating stratification. There will likely be wave patterns visible at the interface.

Scientific Principle

This demonstration showcases how water of different densities naturally arranges itself in layers. Salt increases water's density, causing it to settle below less dense freshwater. This principle is observed in ocean stratification and estuarine environments.

Conclusion

This experiment offers a clear and effective visual representation of how density differences drive water stratification, a fundamental concept in oceanography and environmental science.