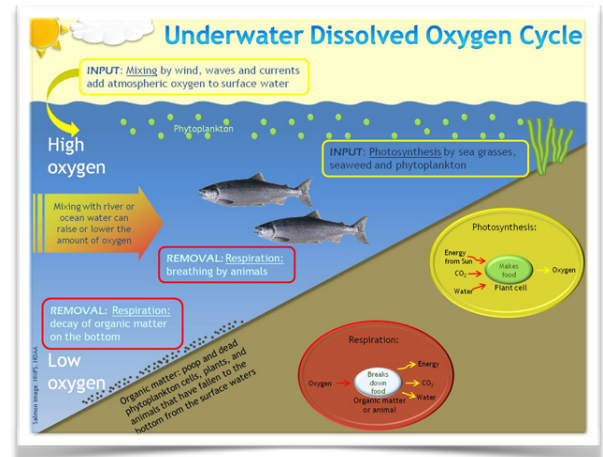


# CHEMICAL TEST

## Dissolved Oxygen

*Dissolved Oxygen is the amount of gaseous oxygen (O<sub>2</sub>) dissolved in the water.*

- Good water quality is necessary to all forms of life. Cold water can hold more dissolved oxygen than warm water. If Dissolved oxygen levels drop to low it causes stress to aquatic life.
- Dissolved Oxygen is important to the health of aquatic ecosystems such as fish, invertebrates, bacteria and plants. All aquatic animals need oxygen to survive. Natural waters with consistently high dissolved oxygen levels are most likely healthy and stable environments, and are capable of supporting a diversity of aquatic organisms.



## Fecal Coliform

*Fecal coliform bacteria are the most common microbiological contaminants of natural waters.*

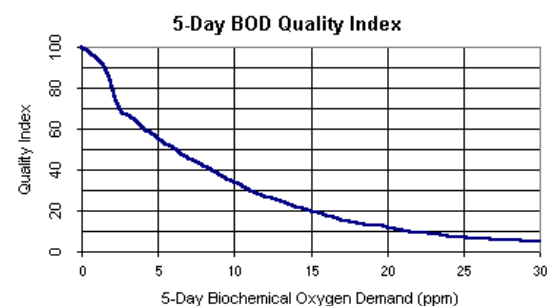
- A fecal coliform is used to determine whether water has been contaminated with fecal matter. The presence of fecal coliform indicates the possible presence of organisms that can cause illness.
- The presence of fecal coliform bacteria in aquatic environments indicates that the water has been contaminated with the fecal material of man or other animals.



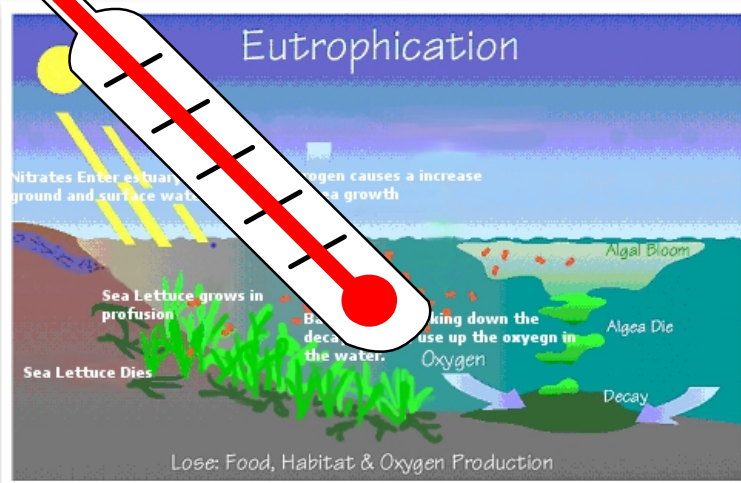
## B.O.D

*B.O.D stands for Biochemical Oxygen Demand*

- B.O.D measures the quantity of dissolved oxygen used by bacteria as they break down organic wastes
- Depending on the BOD levels discharged into a stream or river, will accelerate bacterial growth in the river and consume the oxygen levels in the river. The oxygen may drop to levels that are deadly for most fish and aquatic insects. B.O.D can either make or break a good aquatic ecosystems



## Eutrophication



## Nitrate

Nitrate is a nutrient needed by all aquatic plants and animals to build protein.

•2. Nitrates are essential plant nutrients, but in excess amounts they can cause significant water quality problems.

•3. Nitrogen is essential for all living things: animals and plants. Nitrogen forms a part of the proteins and DNA that are found in cells. Animals

get nitrogen by eating plants and other animals. Nitrates are not utilized by aquatic organisms such as fish and aquatic insects, but nitrates are used by aquatic plants

## pH

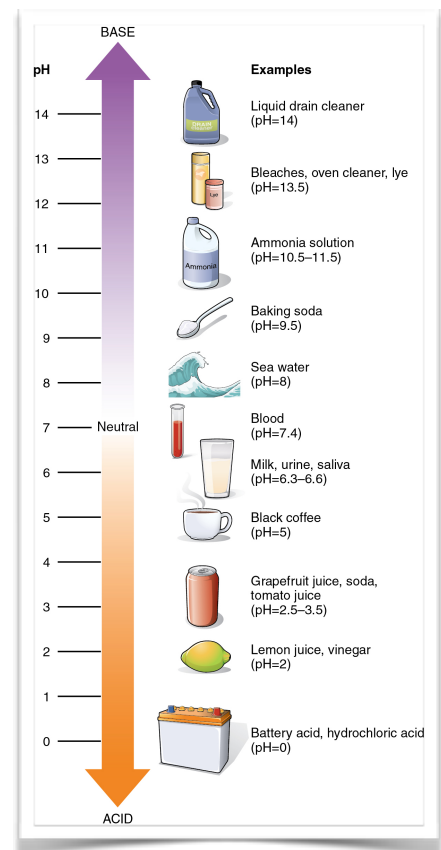
*pH stands for the "power of hydrogen"*

- pH is a determined value based on a defined scale of acidic/basic water is. The range goes from 0 - 14, with 7 being neutral. pHs of less than 7 indicate acidity. pH is really a measure of the relative amount of free hydrogen and hydroxyl ions in the water.
- If the pH of water is too high or too low, the aquatic organisms living within it will die. pH can also affect the solubility and toxicity of chemicals and heavy metals in the water

## Phosphate

*Phosphate is a mineral that comes from several sources including human and animal waste, industrial pollution and agricultural runoff*

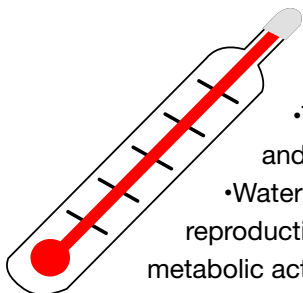
- Phosphate is a nutrient needed for plant and animal growth and is also a fundamental element in metabolic reactions.
- 
- High levels of phosphate can lead to overgrowth of plants, increased bacterial activity and decreased dissolved oxygen levels



## Temperature

*Temperature is the degree or intensity of heat present in the lake*

- Temperature determines the kinds of organisms that can live in rivers and lakes. Fish, insects, and other aquatic species all have a preferred temperature range.
- Water Temperature is a controlling factor for aquatic life: it controls the rate of metabolic activities, reproductive activities and therefore, life cycles. If temperatures increase, decrease or fluctuate, metabolic activities may speed up, slow down, malfunction, or stop altogether.





## Turbidity

*Turbidity is a measure of water clarity how much the material suspended in water decreases the passage of light through the water.*

- Turbidity can be useful as an indicator of the effects of runoff from construction, agricultural practices, logging activity, discharges, and other sources.

- Turbidity many negative effects on aquatic life. The suspended sediments that cause turbidity can block light to aquatic plants, smother aquatic organisms, and carry contaminants and pathogens, such as lead, mercury, and bacteria.

## Total Solids

*Total solids is a measure of the suspended and dissolved solids in water.*

- The concentration of total dissolved solids affects the water balance in the cells of aquatic organisms
- Total solids are important to aquatic life by keeping cell density balanced. In distilled or deionized water, water will flow into an organism's cells, causing them to swell. In water with a very high total dissolved solid concentration, cells will shrink.

