

Indicators of Water Quality



Turbidity

- The measure of the degree to which water loses its transparency due to the presence of suspended sediment.
- **The Mississippi River is an example of a high turbidity body of water**



Turbidity (NTU)

Water Samples:



250

100

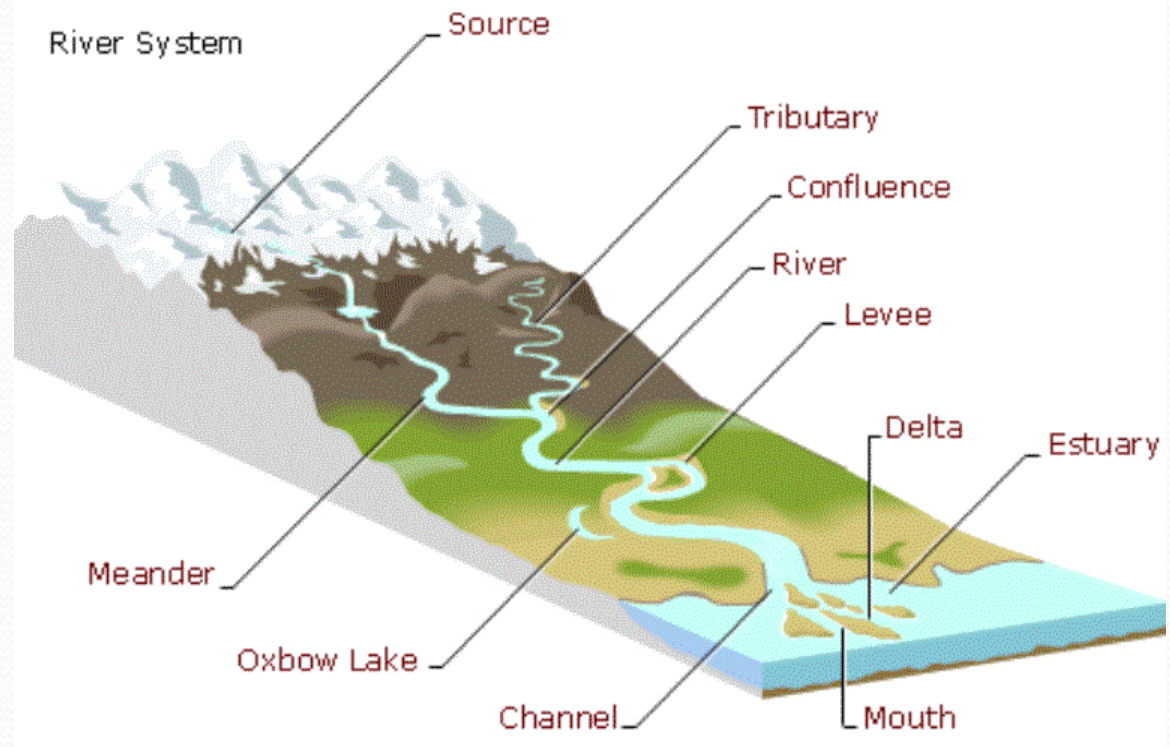
50

25

10

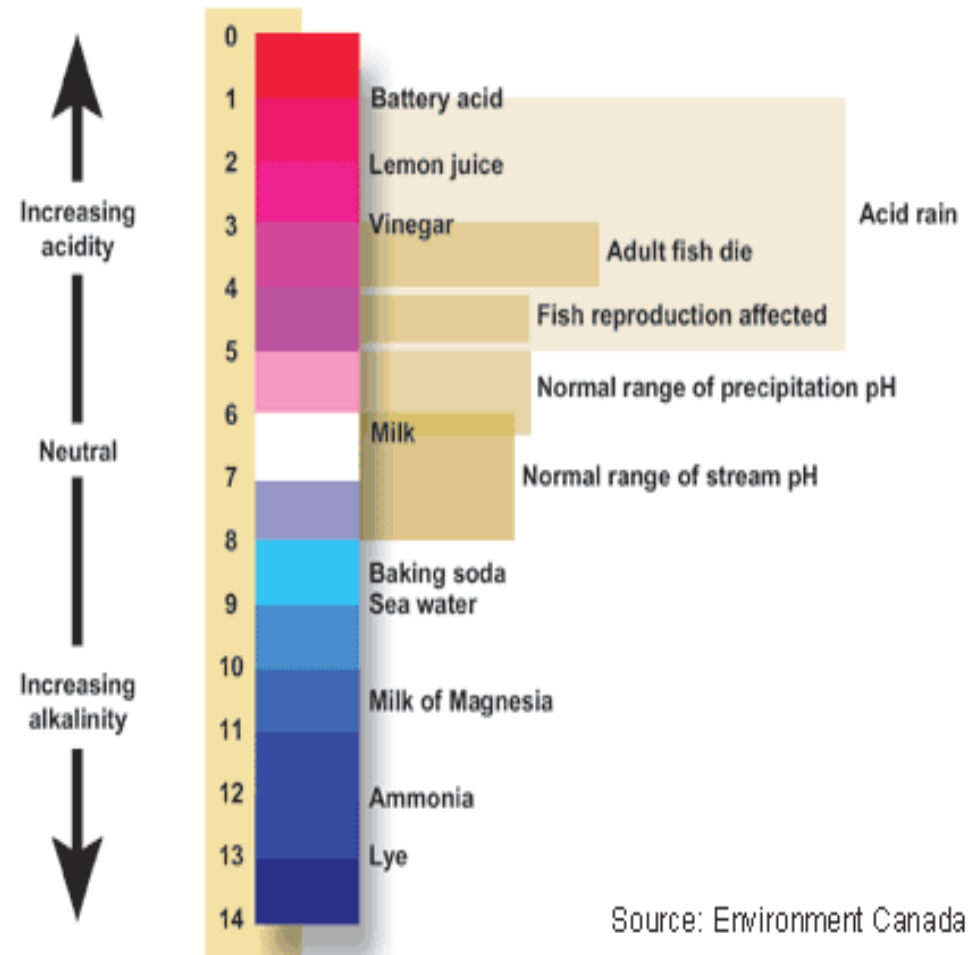
Causes of turbidity

- Sediments from erosion
- Re-suspended sediments from the bottom
- Waste discharge
- Algae growth
- Urban runoff



pH

- pH: the acidity of the water
 - 0→7 is acidic
 - 7→14 is basic
- Surface freshwater is usually 6.5-8
 - Swamps: acidic
 - Salt water: basic
- Changing pH in a stream can be an indicator of increasing pollution



Source: Environment Canada

pH

- Causes of changes in pH:
 - Natural conditions
 - Dumping of waste
 - Farm run off
- Results of changes in pH:
 - Most aquatic life cannot withstand water outside of the usual pH range, thus resulting in death.



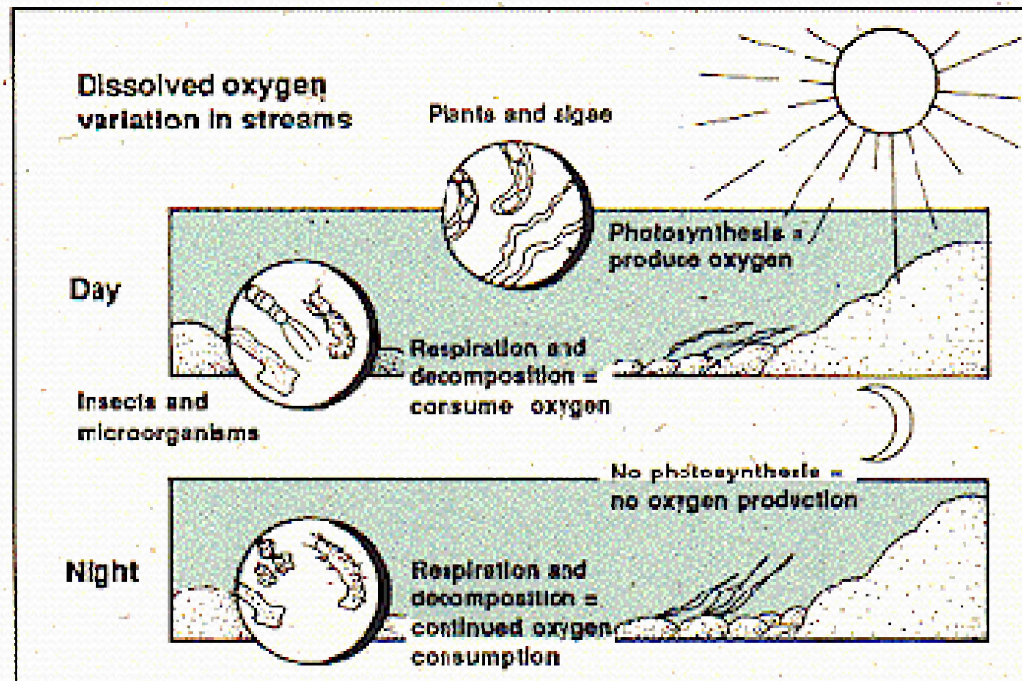
Dissolved Oxygen

- Dissolved oxygen is the amount of oxygen in water.
- Changes in D.O. occur due to:
 - Rapidly moving water (increase)
 - Increased temperature (decrease)
 - Discharge from sewer pipes (decrease)
 - Causes an increase in bacteria



Dissolved Oxygen

- When D.O. drops too low, fish die. When DO is high, the water tastes better but can damage water pipes.



Temperature

- Temperature measures how hot or cold something is.
- Extreme low or high temperatures are only tolerated by hardy fish!



- Changes in temperature occur due to
 - Source of water
 - Depth of water
 - Shade from shoreline
 - **Factory thermal pollution by dumping heated water into lakes and rivers – decreases species in body of water**

Nitrates

- Nitrates – fertilizer ingredient used in agriculture
- Algae and other plants use nitrates as a source of food. If algae have an unlimited source of nitrates, an algae bloom begins to grow
- **This algae bloom reduces dissolved oxygen in water leading to aquatic insects and fish death**



Which river has excess nitrates?



IMPROPER USE OF FERTILIZER CAN LEAD TO ALGAE BLOOMS!!!

Bio-indicators

- Biological indicators are species that are used to monitor the health of an environment or ecosystem.
 - Population
 - Individual health
- Example: Amphibians



The food pyramid in balance

