Indicators of Water Quality

Unit 4 – Ch 6

PHYSICAL

Indicators

1) Turbidity

- ***Measure*** of **suspended** ***solid*** sediment (particles) in water

Turbidity (NTU)

Water Samples:

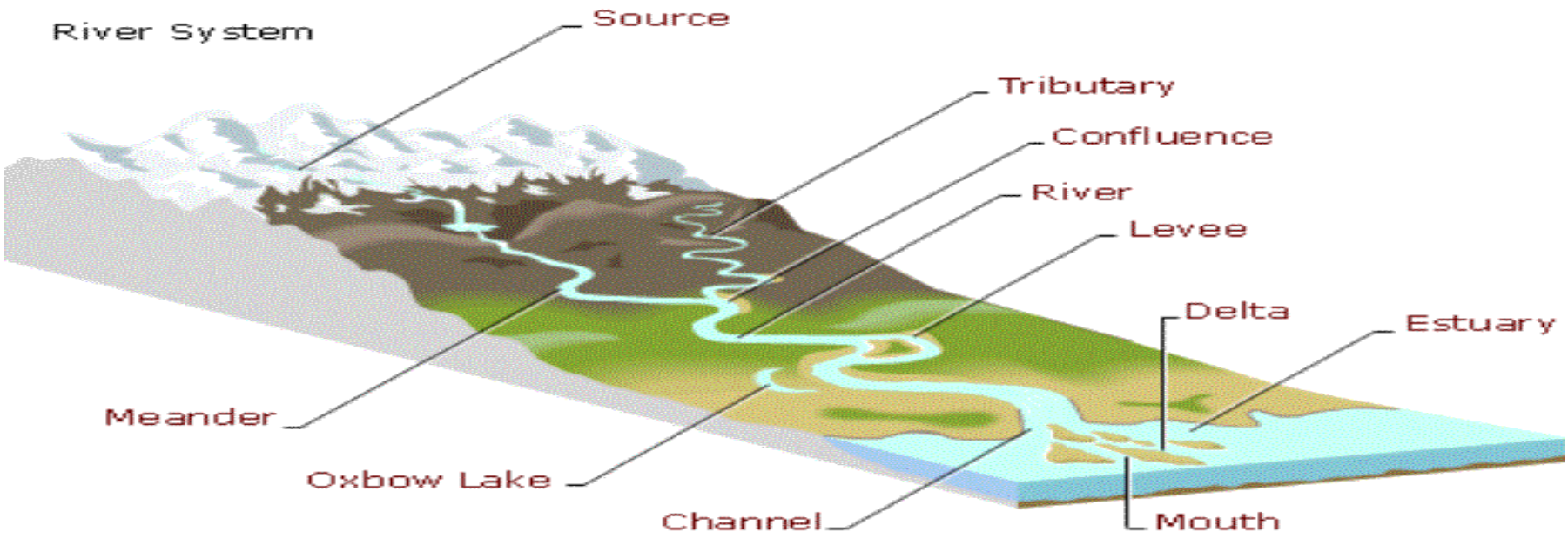
Nephelometric/Jackson Turbidity Units

Ideal Level: 1 NTU/JTU

High Level: >5 NTU/JTU

Causes of Turbidity

- **1.** ***Erosion***
- **2.** ***Waste*** discharge
- **3.** ***Algae*** growth
- **4.** Urban ***runoff***



Measuring **Turbidity**

- Measured with a ***Secchi*** disk

Effects **of Turbidity**

- **Absorption** of more ***sunlight***
  - ***Warmer*** water = ***Less*** oxygen→
    - Fish **die**

2) Temperature

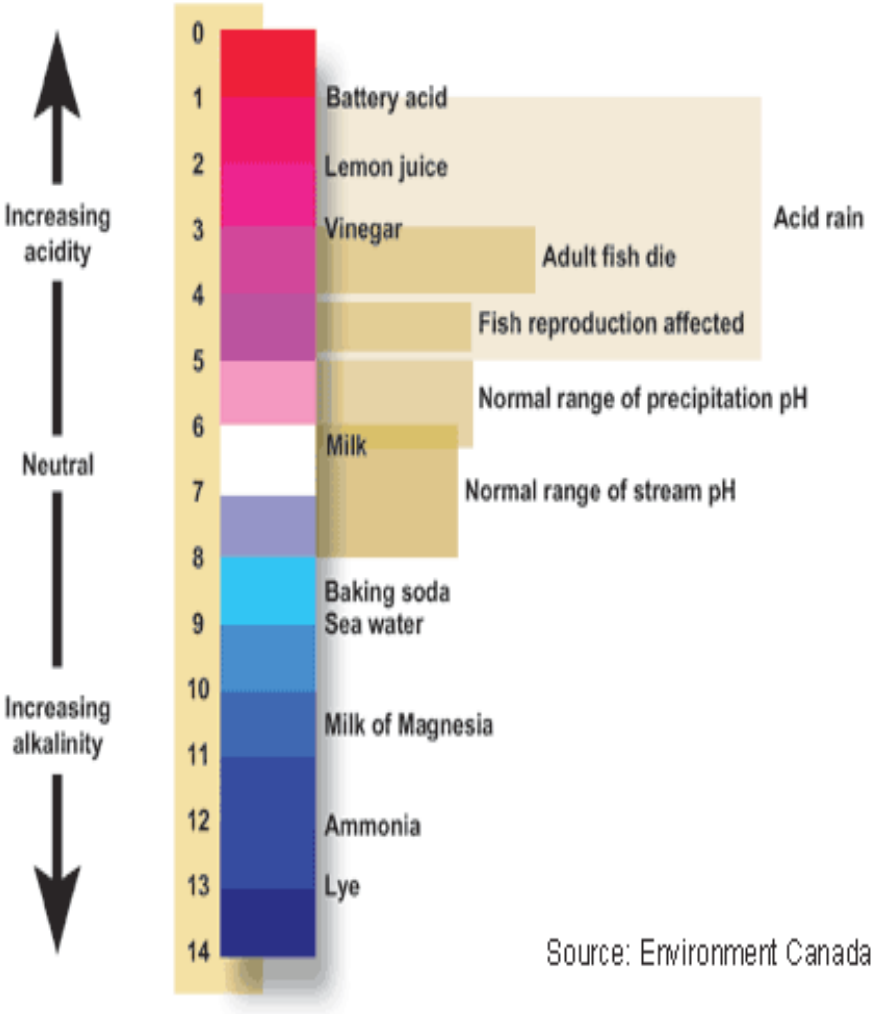
- **<u>Changes Due To</u>:**
  - –Water ***source***
  - –***Time*** of year
  - –***Suspended*** particles
  - –Water ***depth***

CHEMICAL

Indicators

1) pH

- Measure of ***hydrogen ions***
  - **0-7** is ***acidic***
  - **7-14** is ***basic***
- ***Change*** water pH = ***increase*** pollution



Causes of pH Change

- **1.** ***Natural*** conditions
- **2.** Waste ***Dumping***
- **3.** Farm ***runoff***

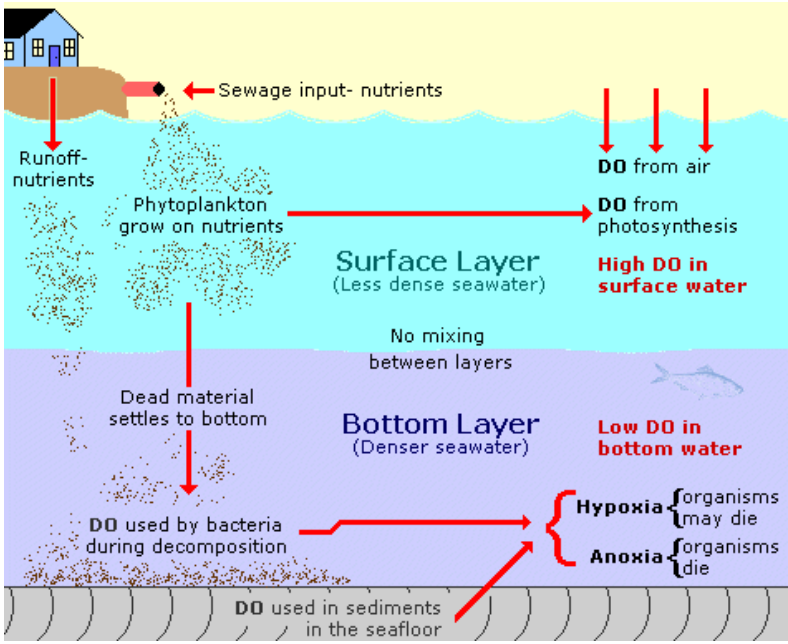
- **Effects:**
  - Outside **normal** pH =
    - Fish **die**

2) Dissolved Oxygen

- Amount of ***oxygen*** in water
- **Changes in D.O. due to:**
  - **Fast moving** water ***(increase)***
  - **Bacteria/organic** decay ***(decrease)***
  - **Increased** temp ***(decrease)***

Dissolved Oxygen

- D.O. too ***low*** =
  - Fish **die**
- D.O. too ***high*** =
  - **Damage** water pipes as metal ***reacts*** with oxygen in water
- **NOT** high health risk when found in ***drinking water***



3) Nitrates

- ***Nutrient*** used by **algae** and **plants** to build ***protein*** **(food)**

4) Phosphates

- ***Nutrient*** required for **plant** and **animal** ***growth***

Sources of Nitrates/Phosphates

- Fertilizer
- Runoff (farms/homes)
- Septic tank Leaks
- Animal wastes
- Car exhausts

BIOLOGICAL

Indicators

1) Coliform Bacteria

- ***Feces*** of animals
- ***Disease-causing*** organisms if found in water **system**

2) Other Lifeforms

- Organisms present in freshwater may provide viable ***food source*** to other organisms
- May also suggest relative ***health*** of water to ***support*** other organisms