LIMNOLOGY 8

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Dissolved Oxygen

- Oxygen has two main sources. These are: a) Atmosphere; b) metabolism in plants (photosynthesis). The hydro-mechanical distribution of oxygen in lakes and its presence in a biotic level depend on the balance between source (atmosphere-photosynthesis) and consumption. If consumption with resources is equal, there is biological balance in water (biotic waters).

- If the source (K) is low and consumption (T) is high, there is no oxygen balance in the water (abiotic waters). Biotic waters, K = T; abiotic waters, K <T.

Factors affecting (increasing) the dissolution of oxygen in water:

a) Surface size of the water body;
b) The heat of water (melting increases as the temperature drops);
c) Atmospheric pressure (melting increases as pressure increases).

- Where the temperature stays stationary, the melt oxygen density may rise above the saturation level. (supersaturation-over satureated).
- For this; a) Increasing atmospheric pressure above water in closed containers; b) Venting the water with the help of a compressor; c) Water rinse-drain from a container into a container.

- In stagnant waters, it appears that some gas bubbles rise towards the surface of the water (especially plant-rich waters). These are usually oxygen (photosynthesis) and methane (anaerobic disintegration) bubbles.

- Salts: salinity reduces the rate of oxygen solubility in water. For example, oxygen saturation in sea waters is 20% lower compared to saturation in freshwater.

- During spring circulation in an ideal lake, the condition is saturated at 4°C. The amount of O2 varies between 12-13 mg/L depending on the depth.

- Diffusion and mixing also have a great effect on the formation of this ideal table, 100% saturated light. If photosynthesis is intense in these lakes, excessive saturation occurs; Over time, oxygen passes from the water to the atmosphere in the form of gas, and balance is formed again.