

Biochemical oxygen demand (BOD)

- What is BOD?

--- A measure of how much dissolved oxygen is being consumed as microbes break down organic matters.

--- Generally, used for assessing the quality of water; wastewater quality indicator

- Procedures

--- Unit "mg/L" is used. Larger the number, filthier the water is.

Ex. Below 1mg/L--- pristine rivers

2-8mg/L--- moderately polluted rivers

200mg/L--- untreated sewage in U.S.

--- Materials: sealable bottles, water(oxygen, microbes, organic matter)

1. The sample bottle should be placed in the dark and incubated for five days at 20 degrees Celsius (room temp.)

2. Determine the level of dissolved oxygen (in mg/L) of this sample.

3. The BOD level is determined by subtracting this DO level from the DO level found in the original sample taken five days previously.

--- $BOD = mg/LDO(\text{original sample}) - mg/LDO(\text{after incubation})$

- Importance

--- A high oxygen demand would eventually lead to the loss of biodiversity. In the rivers with too much organic matter, microbes need great amount of dissolved oxygen to break them down. As a result, other organisms requiring much oxygen such as fish would all die while organisms like sewage worms are still capable of survival with low oxygen level. As organic pollution increases, the ecologically stable and complex relationships present in waters containing a high diversity of organisms is replaced by a low diversity of pollution-tolerant organisms.

- Difference between BOD and COD

--- Chemical Oxygen Demand(COD) is another standardized test based on oxygen demand. It is less specific, as it measures everything that can be chemically oxidised, rather than just levels of biologically active organic matter.

--- For testing the water of lakes and oceans, COD is used since they don't flow as rivers do.

- Questions

--- What is BOD? And what can you determine by using BOD?

--- What can cause the high BOD?

--- What is the difference between BOD and COD?