

Learn About: Biochemical Oxygen Demand

By ecologixsystems December 17, 2012

learn about:



BOD

biochemical oxygen demand

BOD?

Biochemical oxygen demand, commonly referred to as BOD, is a measure of the amount of biodegradable organic chemicals in waste. Sewage effluent contains a vast array of organic chemicals which are biodegradable to varying degrees under various conditions. Organic compounds are bio-degradable when common soil or water bacteria can utilize them as a source of energy or "food". When these chemicals are discharged into ground or surface water, the bacteria will bio-chemically combine them with oxygen dissolved in the water to produce bacterial cells. This reduces the amount of dissolved oxygen in the water. The amount of dissolved oxygen removed from the water is in direct proportion to the amount of biodegradable organic chemicals present, and this is the way they are measured. The BOD5 test is a measurement of how much dissolved oxygen is removed from aerated water inoculated with bacteria, mixed with a sample of the sewage and held under standard conditions for a period of five days. This measure is of great environmental significance because of the undesirable effects which it can cause, like killing off living organisms in bodies of water.

How does BOD affect ground water?

Ground water is said to be polluted when it contains potentially harmful bacteria or bacteria producing undesirable physical characteristics such as taste or odor. Removal or depletion of the dissolved oxygen in the ground water also can produce undesirable chemical changes. Certain minerals normally present in soils, such as iron and manganese, are chemically reduced to more soluble forms and readily dissolved by oxygen deficient ground water. Rust colored deposits occasionally are found in streams draining built-up areas containing many subsurface sewage disposal systems crowded together in a small area. These deposits do not result directly from biodegradable organic chemicals in the water itself, but rather are due to the leaching of inorganic iron caused by oxygen deficient ground water. The soluble iron in the water is oxidized upon contact with the air producing the undesirable deposits.

How do septic tanks help reduce BOD?

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A properly functioning septic tank will reduce the BOD of an effluent by about 25 to 30 percent. Greater reductions occur when the septic tank is compartmentalized. Further reduction occurs as the effluent comes in contact with bacterial growth in the leaching system and the aerated soil zone above the ground water table. The amount of reduction depends on the volume of bacterial growth in the leaching system, the manner in which the effluent is distributed throughout the system, the availability of oxygen and the contact time. A large leaching system constructed in moderately permeable soils and effectively dosed is quite efficient in reducing BOD, and is unlikely to cause any significant ground water pollution. On the other hand, leaching systems constructed in highly permeable soils, particularly where the ground water is shallow, may have an adverse affect on ground water, since in this case the amount of bacterial growth in the leaching system would be relatively small, distribution through the system might be quite irregular and movement of the effluent through the soil would be rapid.

Where can you find BOD?

Bio-chemical Oxygen Demand is a key parameter when designing wastewater treatment programs. In industrial applications like food processing plants, BOD is frequently measured in thousands of parts per million, which necessitates the installation of waste water treatment equipment to reduce this parameter within discharge requirements.

Applications with high levels of BOD in their wastewater:

- Beef Slaughterhouse
- Pig Slaughterhouse
- Poultry Processing
- Meat Rendering
- Fish Processing
- Fruit & Vegetable Cook Plants
- Dairy Processing

If you would like to learn more about how to remove Biochemical Oxygen Demand (BOD) in a particular wastewater stream, visit our website at www.EcologixSystems.com (<http://ecologixsystems.com/>)

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