



Microbes Role in Sewage Treatment

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DESCRIPTION

Untreated wastewater can be harmful to the environment. This is because human and pet excrement is responsible for various types of water-borne diseases and bacterial contamination. The role of microorganisms in wastewater treatment helps to treat and purify wastewater and reduce pollution. Although various microorganisms are used in wastewater treatment, there are three well-known microorganisms that play an important role in keeping wastewater clean. Each of these bacterial species supports the processing process in a unique way to ensure that it has little or no environmental impact. Aerobic respiration is the most efficient way to break down organic matter, but some compounds in wastewater are not completely broken down. Tanks often contain porous solids from which biofilms can form, increasing the number of microorganisms and improving the efficiency of the decomposition process. During this process, a fairly solid material known as activated sludge is created. It contains a mixture of microorganisms and undigested substances. It contains all the microorganisms needed to break down the incoming waste, some of which will be added to the new wastewater batch. After this aerobic digestion and various other purification processes, the liquid portion of the wastewater can usually be safely discharged into a river or sea. The remaining activated sludge material is subjected to various other biological processes to further reduce the amount of organic matter contained. Anaerobic bacteria are often used in this next step due to their slow growth, but they can use aerobic respiratory microorganisms to break down more complex and difficult-to-break substances. The gases produced by this anaerobic process are carbon dioxide and methane, a mixture called biogas, which can be collected and then burned to produce energy. Wastewater treatment reduces the concentration of potentially harmful bacteria such as *E.coli*. The original wastewater stiffness and *Salmonella* die during processing due to improper conditions. It is also important to reduce the amount of organic compounds in the wastewater discharged from sewage treatment plants into rivers. If this does not happen, naturally occurring microorganisms in rivers will use organic compounds as an energy source and grow in large numbers. Because they breathe aerobically, they consume much of the dissolved oxygen in the water, leaving little to other organisms such as invertebrates and fish, many of which die. Therefore, wastewater reduces the amount of organic matter and thus the

biochemical oxygen demand or BOD defined as the amount of oxygen required by aerobic microorganisms to decompose organic compounds in water samples must be processed. The process of wastewater treatment can be seen as a complex form of composting. The pile of compost you may have in your backyard is like a small sewage treatment plant. When the available oxygen is consumed, the center usually becomes anaerobic. As you approach the top of the heap, an aerobic process occurs. Apart from the raw materials, another major difference between the sewage treatment facility and the compost pile is that the temperature of the compost pile is high (well above 60°C), which is harmful to most types of microorganisms but can reproduce.

Aerobic bacteria

Aerobic bacteria are mainly used in new sewage treatment plants in so-called aerated environments. The bacterium uses free oxygen in the water to break down pollutants in wastewater and convert them into energy for use in growth and reproduction. Proper use of this type of bacterium requires mechanical oxygenation. This ensures that the bacteria can do their job properly and continue to grow and grow on their food sources.

Anaerobic bacteria

Anaerobic bacteria are commonly used for wastewater treatment. The main task of these bacteria in wastewater treatment is to reduce the amount of sludge and produce methane gas from it. The great thing about this type of bacterium and why it is more commonly used than aerobic bacteria is that methane gas can be used as an alternative energy source if properly cleaned and managed. This is a great advantage given the already high energy consumption of wastewater treatment. Unlike aerobic bacteria, this type of bacterium can get enough oxygen from food sources and does not need to be supplemented with oxygen to do its job. Removal of phosphorus from wastewater is another advantage of anaerobic microorganisms used in wastewater treatment.

Common microorganisms in wastewater treatment are bacteria that can switch between aerobic and anaerobic depending on the environment. Keep in mind that these bacteria usually prefer an aerobic state. Final thoughts on the role of microorganisms in water treatment

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Received: 03-Jan-2022, Manuscript No. JMBT-22-480; **Editor assigned:** 05-Jan-2022, Pre QC No JMBT-22-480 (PQ); **Reviewed:** 20-Jan-2022, QC No JMBT-22-480; **Revised:** 24-Jan-2022, Manuscript No. JMBT-22-480(R); **Published:** 31-Jan-2022, DOI: 10.35248/1948-5948.22.14.480.

Citation: Willam J (2022) Microbes Role in Sewage Treatment. J Microb Biochem Technol. 14:480.

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Many industrial and municipal wastewater treatment plants use bacteria and other microorganisms to support wastewater treatment processes. Choosing the right bacteria can be difficult,

as your choice depends on the condition of your area for effective use. With proper management of anaerobic bacteria, wastewater treatment is also an excellent source of alternative energy.