



EBAC 2000[®]
Wastewater Treatment

Is A Microbial Consortium

A microbial consortium is a group of different species of microorganisms that act together as a community. Examples of microbial consortia are found in activated sludge basins, biofilms such as found on trickling filters, and in various soil ecosystems. In a microbial consortium the organisms work together in a complex system where all benefit from the activities of others in the community. It has long been known that microbial consortia are much more efficient at degrading complex organic wastes than single strains of organisms or even blended mixtures of microorganisms with a diversity of metabolic capabilities. Blended microbial mixtures are not able to maintain a stable community structure when introduced into environmental situations.

In a microbial consortium one might find any number of organisms with different metabolic capabilities. This could include organisms that are proteolytic (are able to degrade proteins and amino acids); organisms that are saccharolytic (able to degrade various sugars); organisms that are lipolytic (able to digest lipids or fats); and organisms that are cellulolytic (able to degrade cellulose or plant matter). These different metabolic capabilities allow the consortium to work together in degrading a variety of complex waste streams.

Petroleum hydrocarbon degradation offers a good example of the efficiency of microbial consortia. Many petroleum products, such as gasoline, diesel fuel, kerosene, etc., are not actually single chemicals, but may contain hundreds of different hydrocarbons. Single strains of microorganisms are not capable of degrading all of these compounds, therefore microbial consortia are essential in the complete mineralization of these fuels to carbon dioxide and water.

A microbial consortium is more resistant to environmental shock, and can better compete and survive in the environment than single microorganisms. Microbial consortia are capable of handling a wide variety of complex wastes.