Bacteria and Enzymes –

GREEN Treatment for Industrial Applications

Bacteria are living organisms and are found everywhere in nature. In industrial applications, they are used in cleaners, degreasers, remediation, water and waste treatment, odor control, and much more. Bacteria act by producing enzymes.

NXC Technologies uses bacteria and enzymes to bring effective and economical products to the market place. Products that reduce costs AND replace chemicals that may negatively impact the environment.

What are They

Bacteria are found everywhere in nature and they have lived with us since our beginning. They live around us, on us and in us; in fact bacteria were the first living organisms on earth and are still the most abundant today.

Though we know that some bacteria can cause disease and pose a danger to our health; a majority play a key role in maintaining the processes that contribute to life. In fact, most are beneficial to us in many ways we are aware of - consider the ones in our stomachs that aid in digestion; and in ways, we have not yet begun to understand.

Bacteria act by producing enzymes. Enzymes are proteins produced in living cells that accelerate or catalyze the metabolic processes of the organism.

Enzymes are the key to many natural processes that keep us and our environment healthy. *They are the key to clean and efficient biological alternatives to chemicals.*

Enzymes are Catalysts

Usually used in very small amounts compared to the components in a reaction, a catalyst is a substance that modifies and increases the rate of a reaction without being a direct part of it. The enzymes used as catalysts are consumed in the reaction.

Enzymes can catalyze a reaction and speed it up by as much as a million times thus making a process very efficient. For example, the enzyme that catalyzes the removal of CO2 from our blood can process 1 million molecules of CO_2 per second. It enables the red blood cells to transport the carbon dioxide from the body tissue to our lungs.

However, enzymes also have limitations. They only function within a narrow temperature and pH range. They are also very selective in the reactions they take place in and often will react only with a single molecule or certain molecule types.

An example of an enzyme as a catalyst in a reaction – digestion. Enzymes act in the break down of large protein, starch and fat molecules into smaller molecules during digestion. It is these reactions that make food energy available to organisms.

Those same types of reactions make enzymes exceptional replacements for chemicals in many industrial and institutional applications.

Enzymes in Industrial Applications

Most industries produce waste as part of their production process. The waste that is produced often needs to be treated to remove undesirable components prior to discharge. Many industrial applications may require the use of strong solvents or cleaners in the process. Strong detergents are needed in the laundering of clothes or treatment of fabrics. Wastewater plants may require the use of strong reactive chemicals to destroy organics or prevent odor. In all these applications, the use chemicals can be very costly, present a threat to people and the environment. Enzymes can do the same job more economically without being a threat to human health, safety or the environment.

Processes that are Clean and GREEN

Bacteria are very efficient and *safe* producers of enzymes. Bacteria and the enzymes they produce are the driving force in the biological processes that both build up and breakdown different kinds of organic material in the environment.

NXC Technologies manufactures products using the biotechnology of bacteria and enzymes for applications that would normally use chemicals. The use of bacteria and enzymes in industrial applications ranging from cleaners, degreasers, odor control agents, composting additives, sludge remediation and much more have alleviated the costs and hazards associated with using chemicals

Enzymes are biodegradable because they are a part of the natural world. Because they can only survive in a suitable environment, the spent bacteria and enzymes do not last long in the environment, nature reclaims them. In fact nature is full of organisms that will break enzymes down into the building blocks of life around us.

Industrial bacteria and enzyme products have no hazardous waste products. That makes their use in industrial applications the most environmentally friendly solution to most industrial problems. When the bacteria and enzymes have done their job, they can be disposed of *safely* with the waste.

Genetically Modified Organisms (GMO)

Since our inception, NXC has had a non-GMO policy, and we only source non-GMO ingredients (bacteria and enzymes) for all our biological based products.