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**KOENDERS**  
WATER SOLUTIONS, INC.  
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# The Science Behind Nature's Pond Conditioner

## Understanding Differences Between Bacteria, Enzymes and Chemicals in the Treatment of Ponds

Bacteria are microscopic living organisms that are found in all matter, some are beneficial and some are not. The ones that have been tested and proven in our Nature's Pond blend are beneficial in the decomposition process of organic matter found in ponds and lakes. Note that not all blends of bacteria are created equal! Our blend of both anaerobic (extremely low oxygen levels required) and aerobic (requiring oxygen) bacteria have been proven to work and field tested in tens of thousands of ponds in all regions and climates of the world.

### What are Bacteria?

Bacteria replicate at different rates depending on the selection of bacteria being used and the environments where they are exposed. Bacteria are essentially the makers of enzymes; as they consume various kinds of organic matter and different forms of waste they excrete enzymes. They also convert consumed organic matter into non-toxic by-products such as CO<sub>2</sub> (carbon dioxide) and H<sub>2</sub>O (water), leaving no toxic residues in their wake.

Nature's Pond Conditioner's blends of bacteria are 100% natural, safe and non-pathogenic. They consume the muck and sludge at the bottom of the ponds, lakes as well as the suspended nutrients in the water resulting in healthy, clean and clear water. A natural, sustainable approach to pond and lake care.

Enzymes are NOT living organisms, they are biological molecules (typically in the form of proteins) that help speed up almost all chemical reactions. Some enzymes help bind molecules to make new ones, while others break down larger molecules to help in the digestion process or decomposition process.

Having the right enzyme mix already present in any formulation can dramatically speed up the decomposition process of organic matter. Unlike bacteria, enzymes cannot reproduce themselves and they do not actually consume the waste. They are, however, essential in breaking down organic waste so that bacteria can consume it.

### What are Enzymes?

Nature's Pond Conditioner has a formulation of enzymes already present in its blend to ensure bacteria has a readily available food source for its never-ending appetite for organic waste.

Chemicals are not living organisms, they are any substances that are either liquid, solid or gas. The chemicals we are trying to avoid in our ponds, lakes and water ways come in the form of detergents, pesticides, algacides, corrosive acids and metals.

### What are Chemicals?

Chemicals cannot reproduce themselves and have a one-time impact with immediate and sometimes detrimental effects. Pond chemicals are widely used and are mostly promoted as magical remedies for pond care problems. Chemicals cannot take the place of bacteria and enzymes, they are short lived, not sustainable, environmentally harmful, and not nearly as effective leaving toxic residue in its path.

Harsh and Dangerous Chemicals are promoted to reduce sludge and muck, though their usage increases health risks to the users, water, environment and wildlife. There are less toxic chemicals that are also promoted to do this same function, but they are not as effective at oxidizing the sludge and muck as natural bacteria and enzymes.

Other harsh chemicals are promoted to get water clean and clear however in doing this they are leaving toxic residue behind. This toxic residue has harmful impacts on the water and everything in it or that comes in contact with it such as crops, livestock, and wildlife.

***“ Between 1930 and 2000 global production of man-made chemicals increased from 1 million to 400 million tonnes each year.” WWF Federation***

Some chemicals have brought significant benefits to society in such cases as healthcare. Unfortunately, the majority of chemicals are damaging people, wildlife, our food and water. We still don't know the long-term impacts that using chemicals will have on anything including ponds, lakes, ground water and oceans. There is a growing body of scientific research that is indicating that chemical contamination is going to end our world. Wherever scientists research, the coldest, warmest, wettest and driest areas of the world - they find the impact of toxic chemicals.

To learn more about our all-natural, 3-Step Pond Care Program, please see:

[www.naturespondcare.com](http://www.naturespondcare.com)

