



## INTRODUCTION TO POND & AQUARIUM *TREATMENT* FORMULATED FOR HOME & COMMERCIAL USE

- BIO-PURE eliminates odors by breaking down the organic bottom solids where gas is created and released. Specialized bacteria and enzymes also break down ammonia before it causes a problem.
- Reduce Bottom Solids. Bio Pure bacteria and enzymes will accelerate the degradation of the dead organic matter on your pond bottom. \*Stops aeration equipment fouling due to organic build up.
- Irrigation Pond Safe, BIO-PURE Aquaculture will not damage grass like algicides. Your grass actually benefits from the bacteria applied during watering. \* Improves Water Clarity and Quality by digesting suspended organics in the water column and degrading ammonia, hydrogen sulfide, and other contaminants that are harmful to your ecosystem.
- No Permits or Licenses required because BIO-PURE is not an algicide. The bacteria only attack dead organic matter. Therefore, it does not fall under FIFRA review and does not require a permit license to apply. Costs less than a fraction of a penny per gallon of water treated.

There is a clear need for a safe, effective means to reduce or eliminate organic waste build-up, toxic ammonia concentrations, and algae blooms in commercial aquaculture, aquariums, decorative fountains and pond situations. Although a variety of chemicals are currently available to reduce algae blooms, the algicides themselves are often highly toxic to aquatic life including fish. Many of these chemicals are not environmentally safe to use. In addition, although a variety of water filtration systems are currently available, all biological systems, regardless of the particular design, require frequent maintenance and upgrading in order for them to work efficiently. An inefficient filtration system is a serious problem for all aquaculture situations since the filtration system can actually increase the amount of available nutrient and organic matter in the system, thereby compounding an already serious problem. A product such as BIO-PURE which can potentially extend the life of a filtration system, would mean lower maintenance costs and more effective optimization of water quality conditions. The BIO-PURE proprietary blend of all natural biocultures and enzymes have been selected for their ability to effectively digest / degrade extremely heavy concentrations of organic mass within an aquatic system. Reducing those hostile factors that have been determined to be detrimental to the health and life cycle of both fin and shell fish. BIO-PURE can successfully attack - degrade - liquefy fecal mass, undigested food and other organics that contribute to a build-up of ammonia and bottom solids. BIO-PURE conditions the marine environment to an ecology close to nature's own. BIO-PURE will colonize the tank / pond, multiply by a factor up to *1,000 times within a few hours*, take away the nutrients that encourage organic buildup, thus eliminating unsightly growth on walls and surfaces, but liberates carbon dioxide for the oxygenating plants. BIO-PURE microbes are reliable scavengers that thrive on organic mass (waste). As supplied they are in suspended animation (Micro-encapsulated) but are revived when added to the tank / pond water. Shortly thereafter, they begin to digest excreta, excess food, oxidize ammonia, reduce nitrites, and other N-Compounds and reduce odors. BIO-PURE will effectively control the high accumulation of surface scum and bottom sludge (which produces methane and hydrogen sulfide also harmful to marine life). By removing the heavy concentrations of organic pollutants, almost as soon as they are formed, BIO-PURE ensures a healthy environment for the fish stock, which being under less stress from the N containing substances, are more resistant to disease. BIO-PURE is a living system of aerobic and anaerobic microbial strains and enzymes including mixed bacillus subtilis species, very selective proprietary microbial strains grown with the specific purpose to accelerate organic waste degradation even under anaerobic conditions in an aquatic environment. Proven effective in both salt and fresh water. BIO-PURE uses all natural microorganisms which are non-toxic and ecologically acceptable.

### Commonly Asked Questions:

1. What causes algae blooms? - Excess nutrients in the water. Most ponds and lakes become overloaded with nutrients, nitrogen, phosphorus and organic carbon which overcome the pond's ability to naturally clean itself up. This upset of nature's balance creates an environment for organic buildup.
2. How does BIO-PURE remove odors? Pond odors are caused by hydrogen sulfide, sulfur, and ammonia. BIO-PURE bacteria and enzyme formula break down bottom solids where sulfur-producing bacteria thrive.

3. Will BIO-PURE remove bottom sludge? - Our formulation is designed to supply bacteria and enzymes which work on nutrient sources throughout the complete water column, including the pond bottom. BIO-PURE contains two strains of non-hydrogen sulfide producing bacteria specifically targeted for bottom solid digestion.

4. How does BIO-PURE improve water clarity?

Water clarity is affected by floating organic matter. Within 1 to 2 weeks the bacteria's break down of carbon leads to a reduction in total suspended solids which is evidenced by improved clarity. BIO-PURE will have a significant impact on clarity issues caused by mineral (turbidity, silt, iron, etc).

5. Ponds where BIO-PURE will not be used?

Any pond or lake which loses 45% or more of its liquid volume in any given day.

6. What about aeration? BIO-PURE depends upon adequate amounts of dissolved oxygen in the water. Microorganism's decomposition rates are 5 - 6 times faster in the presence of oxygen.

The following physical & chemical parameters have been proven best for accelerated growth:

**DISSOLVED OXYGEN (DO):** DO levels of at least 2 mg/L are required. If an aeration system is used this will normally fulfill this requirement. BIO-PURE formulas contain facultative bacterial strains that will function with or without oxygen but will metabolize or biodegrade the targeted substance 5 to 7 times faster in the presence of oxygen.

**pH LEVELS:** A range of 6.0 to 9.0 is the minimum and maximum levels. Optimum level is from 6.6 to 7.4.

**TEMPERATURE:** A range of 50°F [10°C] to 140°F [60°C] is the limiting range, with 80°F [26°C] to 90°F [32°C] being the optimum. Temperatures above 140°F [60°C] will cause cell death. Below 50°F [10°C] cell growth will slow and stop but this will not kill the cells.

**NITROGEN:** BIO-PURE cultures require at least 5 ppm nitrogen for growth. Doubling time will be most effective at a nitrogen content of about 20 ppm. **SALINITY:** BIO-PURE cultures have been proven effective in both marine and fresh water.

## Introduction To Microbiology

Bacteria reproduce by a process called binary fission - one cell divides and becomes two. Some can reproduce at a very rapid rate under proper conditions. If food and moisture are adequate and the temperature is right, certain bacteria can reproduce in as little as twenty minutes. In only eight hours, the original cell will have multiplied to nearly 17 million new bacteria.

Enzymes are proteins that are produced naturally by plants, animals, bacteria, fungi and all other living things, and are absolutely necessary for life. They are catalysts that accelerate the rate of chemical reactions without changing themselves. Enzymes work by breaking apart large complex compounds (substrates) into smaller, more absorbable nutrients that the bacteria can utilize.

A crash course in microbiology shows that all bacteria produce their own specific enzymes to aid in the digestion of the food source that Mother Nature created them to eat. Enzymes break down a food source into a form that the bacteria can eat. By using a "bacteria only" or "enzyme producing bacteria" (remember that all bacteria produce enzymes), you are counting on the bacteria to produce their own enzymes to do the job that they were bought to do. The majority of competitor products are not stabilized, asking the ineffective strains to perform a task that they can't handle. By using an enzyme only product, you are not "finishing" the job. Enzyme only products convert food sources into simpler forms without digesting them completely.



THE BACTERIA AND ENZYMES IN BIO-PURE WERE SELECTED #1 OUT OF  
132 ENTRIES IN UNITED NATIONS FUNDED STUDY  
STORE IN A COOL, DRY LOCATION OUT OF DIRECT SUNLIGHT

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