

## How to Select an Environmental Bioaugmentation Product © 2011

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*ECOPROBIOTICS®*, of the Bacta-Pur® System, are beneficial communities of natural bacteria, which have been on earth for millions of years and have been selected for their synergistic ability to biodegrade pollutants and to improve water quality. *ECOPROBIOTICS®* increase biodiversity. Just as people take probiotic yogurt for its' ability to assure the presence of the optimal community for digestion and immunity, *ECOPROBIOTICS®* improve ecosystem health. *EVERY PRODUCTION* of Bacta-Pur® products is analyzed and cleared for shipment *ONLY* after passing all performance tests and being *CERTIFIED PATHOGEN FREE* using techniques from the food industry. *ECOPROBIOTICS®* are purely natural and beneficial; they *NEVER* contain added chemicals such as surfactants, emulsifiers or enzymes..., nor do they contain genetically modified (GMO) or deliberately mutated organisms. *ECOPROBIOTICS®* are safe and beneficial. Bacta-Pur® microorganisms are not subject to TOSCA (USEPA) and are listed on the DSL of Environment Canada.

There are four critical factors in the design of bioaugmentation products for environmental use  
 THE FOUR Cs):

the community, the concentration, the condition, and the consistency batch to batch to batch — the quality control for performance and SAFETY.

**Community** — An optimal community includes complex communities capable of accomplishing the targeted task in the available hydraulic retention time and over the range of expected environmental conditions. Most bioaugmentation products contain virtually only spore forming bacteria (bacilli), which have limited ability and can cause settling problems, but they are the easiest to grow and package. *ECOPROBIOTICS®* contain very complex communities. Opportunistic pathogens, genetically modified or deliberately mutated strains are never be allowed to be part of Bacta-Pur® cultured organisms this is not the case for many other products.

**Concentration** — *ECOPROBIOTICS®* are very concentrated. Visual cell counts, at time of bottling, are at least  $10^{11}$  cells/mL. Use of the *BACTIVATOR®<sup>®</sup>* in wastewater treatment adds over five million beneficial cells per teaspoon (5 ml) of sewage.

**Condition** — Any product with a shelf life requires the cultures to be dormant rather than active. Efficient treatment, however, particularly in systems with short hydraulic retention times (eg sewers), requires the cells to be not only active but also famished. The *BACTIVATOR®<sup>®</sup>* family of on-site growing systems takes the cultures out of dormancy, activates & grows them and then puts them in the optimal physiological condition to accomplish the targeted task even in situations such as sewers where the hydraulic retention is virtually zero. Different models of equipment are available for specific applications: e.g. grease and sludge reduction, nitrification, hydrocarbon biodegradation...

**Consistency** — Product excellence requires consistency of every batch. The product must be effective and safe. Every batch should be certified for performance and for absence of undesirable microbes, prior to its release. *ECOPROBIOTICS®* are purely biological without added surfactants, emulsifiers, soaps, enzymes *etc.* Most others cannot say this. Every batch of Bacta-Pur® products undergo state-of-the-art quality control to assure performance and absence of



undesirable microbes; **compare the Bacta-Pur® Quality Control brochure to that of any other brand.** If someone claims that their fishes, pets or children got sick from their pond, how will you defend yourself, if you have no assurance as to what is in every container? Bacta-Pur® Quality Control assures safety and provides protection for you and your clients. Every container of Bacta-Pur® has a lot number and BEST BEFORE date.

Well designed bioaugmentation products are powerful tools in environmental management, but there are vast differences in quality between suppliers. Here are some simple steps to be sure that you will be getting what you need and not something ineffective or even dangerous.

1. Ask questions of the supplier to see if they understand your field of activity. There are no miracle products; water quality management is a complex issue.
2. Demand documentation on the quality control and assurance program to see what guarantees are made with respect to concentration, performance and that pathogens (disease causing organisms) are not specifically mass produced as part of their process. Stating that products contain only “natural” organisms is not a guarantee of safety. *Pseudomonas aeruginosa*, *P. putida* and *Bacillus cereus* among others are natural but are major causes of secondary infections to man and animals. Ask your family doctor about these dangerous microbes, which some suppliers use.
3. Ask to visit the production facility, even if you cannot go. If the producer invites you, that is a good sign; they are probably proud of their system.
4. Ask about the background of the company and for reports — what is their experience and how many years have they been in the field? The performance of a product cannot be optimized without extensive knowledge of the field into which it will be applied.
5. Inquire if theoretical and practical training programs are offered for distributors and key users. If they do, in what fields do they offer training?

You are intelligent; if you are satisfied with the answers to the above questions and are looking for cost-effective solutions to specific problems go ahead; welcome to the biological era.

