Bacta-Pur®

Biodegradation of Phenols & Hydrocarbons© 2010

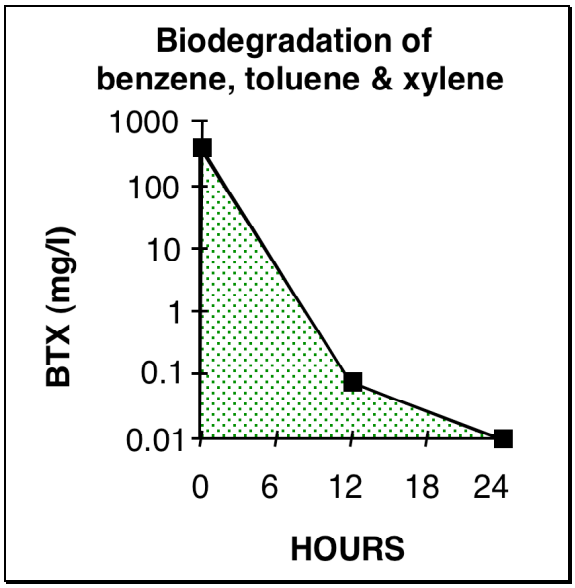
ECOPROBIOTICS®, of the Bacta-Pur® System, are beneficial communities of natural bacteria, which have been on earth for millions of years and have been selected for their synergistic ability to biodegrade pollutants and to improve water quality. ECOPROBIOTICS® increase biodiversity. Just as people take 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 etc., nor do they contain genetically modified (GMO) or deliberately mutated organisms. ECOPROBIOTICS® are safe and beneficial. Disease causing organisms are never used, as others do or permit. All bacterial cultures in the Bacta-Pur® product are listed on the Canadian DSL.

Summary

SYMPTOMS	TREATMENT BENEFITS
• effluent concentrations exceed permitted levels	• meet target concentrations in effluent
• slow to recover from toxic shocks & loadings	• rapid recovery from toxic shocks & loadings
• loss of biomass during plant shutdowns	• maintain biomass during plant shut downs
• no or poor treatment of refractory compounds	• accelerate biodegradation
• plant near pollutants loading capacity	• increase pollutant loading capacity
• plant difficult and expensive to manage	• facilitate and improve operational efficiency
• toxic BTX gases being released to atmosphere and/or water	• rapidly biodegrade the toxic chemicals

Requirements for Efficient Biodegradation of Hydrocarbons

Efficient and complete biodegradation requires a community of microorganisms working together where the by-products of one's metabolism serve as food for another organism. Many hydrocarbon degrading bacteria form no flock and do not settle in clarifiers. This continual loss, of many essential strains, in the effluent is why many petrochemical wastewater treatment plants (WWTPs) have very little sludge to recycle and performance is not stable. Lack of even one member of the essential microbial team decreases treatment efficiency. Bacta-Pur® H2000 is the community of ECOPROBIOTICS® selected specifically to biodegrade complex hydrocarbons including phenol(S), mono and polycyclic hydrocarbons.



Even a balanced microbial community must have adequate time to develop the internal enzymes necessary to degrade the targeted hydrocarbons. The BACTIVATOR® is on onsite incubator that automatically preconditions the ECOPROBIOTICS® to recognize the often changing site-specific mixture of hydrocarbons to be biodegraded.

Hydrocarbons are only a source of carbon for the microorganisms; nitrogen, phosphorous and many minor elements are also essential for the hydrocarbons to be biodegraded. Sufficient oxygen and/or an alternative electron receptor and pH 6.0-8.5 are also necessary. Adequate equalization is important to minimize fluctuations. ECOPROBIOTICS® have been used to reduce BTX from 400 ppm to 10 ppb in less than 24 hours, which is a reduction of 40,000 times or elimination of over 99.99% in less than a day (see graph above), by a purely biological and beneficial process.

Bacta-Pur / IET-Aquaresearch Ltd.
P.O. Box 689, Derby Line, VT 05830 USA

IET-Aquaresearch Ltd.
P.O. Box 2680, North Hatley, QC, J0B 2C0 Canada

Phone: (877) bactapur [222-8278], (819) 842-2494, Fax: (819) 842-2414
Email: info@bactapur.com website: www.bactapur.com

Bacta-Pur®

Why the Bacta-Pur® System is Effective

Every wastewater treatment system or treatment site has a unique combination of equipment, influent quality and operational procedures. Use of the Bacta-Pur® System, for WWTPs, starts by defining certain physico-chemical and biological realities of the existing system by filling out the Bacta-Pur® WWTP questionnaire. This information is then analyzed by the biological and engineering staff of Bacta-Pur / IET-Aquaresearch Ltd to select the most cost-effective physico-chemical and/or biological means to optimize treatment efficiency.

Bacta-Pur® H2000 contains a community of non-pathogenic microorganisms selected for their synergistic ability to biodegrade hydrocarbons from phenols and oils to polycyclic aromatics and halogenated compounds. The cultures used are purely beneficial; they can be used in aquaculture sites and wildlife refuges. Our on-site preconditioning techniques with the BACTIVATOR® model H assure that:

- the microorganisms are preconditioned to the specific combination of hydrocarbons entering the WWTP each day,
- the microorganisms are in exponential growth upon addition, and
- the concentration of the preconditioned microorganisms is up to a million times more concentrated than background levels of microorganisms in untreated WWTPs.

The BACTIVATOR® model H automatically and continuously grows and adapts Bacta-Pur® H2000 to the site-specific combination of hydrocarbons entering the wastewater treatment plant. BACTIVATOR® models for a wide range of flows are available.

When necessary Bacta-Pur® INDUSTRIAL NUTRIENT PACKAGE can be used to assure the presence of essential minor nutrients for efficient biodegradation. Contact IET-Aquaresearch Ltd. or one of our authorized representatives for site-specific dose rates.

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