



# Clean Waste Practices

## Economical Solutions for Dairy Waste

### The Problem

Livestock operations worldwide face difficult challenges in handling animal waste. High ammonia levels inside the livestock facilities and in the waste stream contribute to odors, respiratory disease, increased mortality rates and poor working conditions. These problems generate environmental complaints, regulatory issues and disposal headaches. The build-up of organic waste also results in crusting and sedimentation in pits, basins and lagoons and renders them much less effective. The Micro-Bac line of animal waste products was developed to effectively handle all these problems and more.

### The Solution

Micro-Bac International Inc., a twenty year pioneer in environmental biotechnology, has developed a treatment system that is both simple and cost-effective. Through pioneering research and microbial enhancement, Micro-Bac has developed proprietary formulations of biologicals and biochemicals that knock down hydrogen sulfide and ammonia, eliminate other malodorous compounds, digest wastes and sludge, and increase the efficiency and output of anaerobic/methane digesters.

**TESTING** - The results below are indicative of the effectiveness and cost benefits that can be achieved.

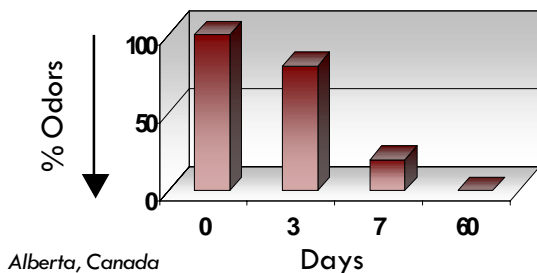
#### PRODUCT LINE

**GUARD-BAC™** - liquid formulation for odor and animal waste control. Used in automatic system.

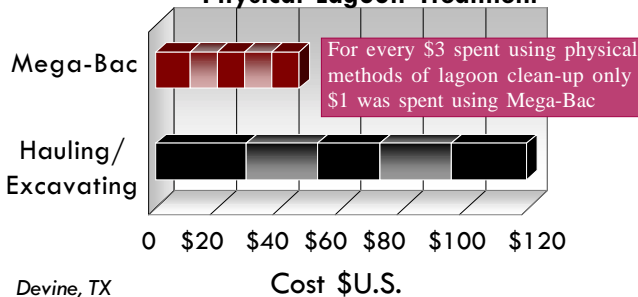
**MEGA-BAC® D-** dry formulation also used to control animal waste, solids and odors. Recommended as starter treatment in lagoons, tanks and waste ponds.

**Methano-BAC™** - liquid formulation for anaerobic digesters, to increase efficiency and biogas production.

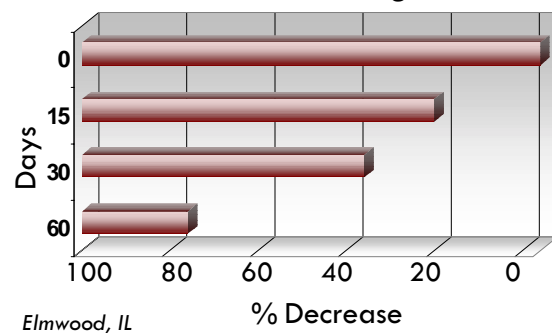
**Ammonia Control - Guard-Bac**



**Cost Comparison of Mega-Bac vs Physical Lagoon Treatment**



**Solids Control - Mega-Bac D**



## The System

When used in combination, Guard-Bac and Mega-Bac D make up the **Micro-Bac Clean Waste System**, a powerful force against animal waste problems. The system involves a shock dose of Mega-Bac D to treat "yesterday's waste" and an automatic metered dose of Guard-Bac for hands-free control of day-to-day waste problems. The program is as follows:

<b>One Time Initial Shock Dose</b>			
<b>Mega-Bac D</b>	1 container (11 lbs)/250,000 gallons of manure slurry * or 3-4 lbs per 100,000 gallons		
<b>Weekly Maintenance Dose</b>			
<b>Number of Cows</b>	100	500	1000
<b>Guard-Bac</b>	15 oz	75 oz	150 oz

\* lagoon width x length x depth x 7.5 = number of gallons

## The Benefits

- Products work under aerobic or anerobic conditions
- Lower dosages & longer effects
- Improved animal health
- Better employee conditions
- Reduced ammonia and other malodorous compounds
- Reduced risk of regulatory action
- Decreased community complaints
- Improved farm production system
- No special clothing or equipment needed
- Cleared for use in USDA regulated facilities
- Stops the need for more expensive systems
- More efficient land application

## Testimonials

"My lagoon (55 million gallons) had been cited 3 times for odor by the EPA. After instituting this system I couldn't believe the improvement. No solids, no sediment, and even during the 100 degree temperature, very little odor. We've invited the U. of Illinois over to review our progress." - *Dairy Operation, Illinois*

"Let me put it this way - my wife and my mother-in-law are both happy with the odor reduction; how could I be anything but happy." - *Idaho*

"It's nice to walk into a restaurant and not have people get up and move because you "smell like manure" .  
*Iowa*

"We saw a significant drop in plant-available nitrogen as well as ammonia nitrogen and a good drop in BOD, too." *North Carolina*

## The Difference

**Micro-Bac products continue to set themselves apart:**

- Proprietary, protected technologies
- Products are customized blends of biochemicals and digesters for superior control
- Uses a two phase automated system for hands-off waste control
- Analytical, technical and operational support staff
- Certified quality control guarantee
- We maintain one of the foremost environmental culture collections



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