

# ***BIO-Lair Media for Water Treatment***

## **Clean Water Efficiently**

- Increase Bacteria Concentrations  
BIO-Lair Media Accelerates Cleanup
- Control Nitrogen & Phosphorus  
to manage water quality
- Natural Approach  
no chemicals
- Media Can Last for years



# BIO-Lair Media

## Bacteria Multiplier

- ❖ **Surface Area >2,000,000 m<sup>2</sup>/m<sup>3</sup>**  
*7 Times more Bacteria in water*
- ❖ **Hierarchical Pore Structure**  
*Easy water flow at low pressure*
- ❖ **Cost-effective**  
*Less media Needed*
- ❖ **Better than Other Media**  
*Over 8,000 m<sup>2</sup>/Kg*

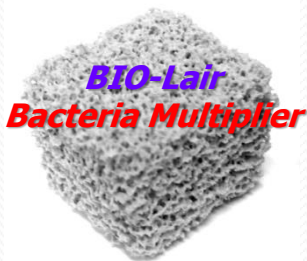


					Comparision	
Pentair - Aquatic Ecosystems Catalog		Ship Weight			1 Kg BIO	1/4 Kg BIO
Product	Description	M <sup>2</sup> /M <sup>3</sup>	Kg	M <sup>2</sup> /Kg	Kg Needed	
Sporax	porous ceramic	268,990	0.5	21	14	3.5
BIO-FILL	shredded PVC ribbon	820	1.8	13	640	160.0
BIO-BALL	Plastic Ball Shape	321	5.4	2	4898	1224
BIO-BARREL	Polyproplene open barrel	210	2.7	2	3750	938
BIO-STRATA	Black PVC sheets in block form	361	2.3	18	455	114
<b>Meta BIO Media</b>	BIO - porous ceramic (Ca,DN)	2,296,257	6.8	8,192		
			1.7	2,048		



# ***MetaMateria Media***

- **Improve Waste Water Treatment**
  - Industrial & Municipal waste water
- **Aquaculture Yields Increased**
  - More shrimp and fish from existing ponds
- **Manage Cyanobacteria**
  - Harmful Algae Blooms Broken Down
- **Remove Harmful Ions from Water**
  - Arsenic & Metal Ions, Vegetable Pathogens  
Trace compounds: pharmaceuticals, insecticides; antibiotics



# BACTERIA

## Natural Removal of Contaminants

- **Bacteria Present in Every Environment**  
**Most are Beneficial Bacteria**
- **Nature's Way to Control Contaminants**
  - Excess Contaminants Cleaned
    - Proteins, Oils, Carbohydrates, Pathogens
  - Extra Help Needed to Clean Water
- **Bacteria Blends for Aquaculture**
  - Non-pathogenic bacteria, including multiple *Bacillus* & *Phenibacillus* strains
  - High number of active colonizable units
  - Enzymes to target Breakdown of fats, proteins, cellulose to small molecules

# ***Waste Water***

***Fixed Film, MBBR,  
Lagoons, Retention Tanks***



- **Biomass Immobilized**  
**Submerged High Surface Area Media**  
*2,000,000 m<sup>2</sup>/m<sup>3</sup> with Bio-Lair products*  
*Cut Treatment Time by Half or more*
- **Expand Plant Capacity with Bio-Lair**  
*Improve waste treatment – Stabilize Process*  
*Bio-Lair has less clogging*
- **Phosphorus & Nitrates Removal Higher**  
*Bio-Lair sustains aerobic & anoxic bacteria*
- **Enzymatic and Other Bacteria**  
*Enhance Rapid Breakdown of Organics*
- **Bio-Lair packaged in Durable Plastic**  
*for submerged water circulation*
- **Considerably Less Media needed**  
*higher performance than other approaches*



# Benefits of Bio-Lair for Waste Treatment

- **Higher Effective Biomass**  
*Has >50 kg/M<sup>3</sup> in single microbe layer*  
*Provides over 60,000 mg/L bacteria*
- **Less Media to Treat same Water**
- **Contaminants Drop to Low Levels**  
*BOD, TKN, Phosphorus < 3mg/L typical*  
*simultaneously at wider temperatures*
- **Larger Bacteria Population**  
*Stabilizes process against load changes*  
*Resistant to hydraulic or organic shocks*
- **Reduced Sludge Production**  
*Bacteria is retained longer by media*
- **Improves Sludge Volume Index (SVI)**  
*More concentrated sludge in clarifier*

# ***Eliminate Cyanobacteria Blue-Green Algae***

- Maintains High Density of Bacillus Bacteria
- Use Bio-Lair & Enzymatic Bacillus Bacteria
- Bio-Lair provides more than 8,000 m<sup>2</sup>/Kg to have large Bacteria Colonies
- Bacteria quickly breaks down existing blooms of Cyanobacteria and stops new formation
- Only 12 Kg of BIO-Lair/Hectare is needed. It is Inoculated with Bacteria to continually multiply Bacteria and send it into water
- Additional Bacteria may be needed from time to time to replace Bacteria

**BEFORE**



**AFTER**