

# ***BIO-Lair for Water Cleanup***

## **Porous Ceramic & Bacteria**

- Increases Bacteria Concentrations with BIO Media to Accelerate Cleanup
- Use strong Bacteria Blends
- Breakdown of Nitrogen & Organics
  - Natural Approach – No Chemicals
  - Media Can Last for years



# BIO - Porous Media Bacteria Multiplier

- ❖ **Surface Area >2,000,000 m<sup>2</sup>/m<sup>3</sup>**  
*Support Large Colonies of Bacteria*
- ❖ **Hierarchical Pore Structure**  
*Easy water flow at low pressure*
- ❖ **Cost-effective**  
*Less media Needed*
- ❖ **Better than Other Media**



					Comparison	
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	
Spiorax	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	Polypropylene 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		

# Benefits of BIO-Media for Waste Water

- **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*

# BACTERIA

## Natural Removal of Contaminants

- **Bacteria Present in Every Environment**  
Most are Beneficial - Nature's Way to Control Contaminants
- **Bacteria Blends Accelerate Breakdown**
  - Non-pathogenic bacteria:  
*Bacillus & Phenibacillus* strains  
Heterotrophs hungry for organics
  - Large concentrations of active bacteria
  - Enzymes target breakdown of fats, proteins, cellulose to small molecules
  - Excellent at Removing Nitrogen
    - Higher carbon uptake also requires nitrogen
    - Utilize nitrite/nitrate oxygen when levels low
    - Can assimilate nitrites when ammonia low



# **BIO-Lair + Bacteria**

## **Special Blends of Bacteria**

*microbial and probiotic water treatment*

- Fast Growing Bacteria Lowers Ammonia
- Enzymatic Bacteria breaks down Proteins, Oils, Organics and most Disease Pathogens
- Probiotic Bacteria Strengthen Digestive Track in fish & shrimp to Fight Diseases
- Environmentally Safe Formula

## **BIO-Lair Porous Ceramics**

- Sustains High Concentration of Bacteria that is 5 times higher or more
- Surface for Bacteria Multiplication is over 8,000 m<sup>2</sup>/Kg or 40,000 ft<sup>2</sup>/lb – 100 x higher
- Holds weight in water to protect bacteria
- Less Needed than other products

# Healthy Lakes

## Blue-Green Algae

### Bacteria + BioLair

#### ➤ Bacteria Breaks Down Cyanobacteria (*blue-green algae*)

- *Microcystin Toxins are not created*  
*- health risk avoided*
- *Eutrophication (oxygen depletion) reduced*
- *Compounds affecting taste of fish do not form*

#### ➤ BIO-Lair Sustains High Bacteria

- *This reduces Nutrient Levels*
- *Out-Competes Cyanobacteria*

*Over 15,000 mg/L (versus norm of 2,500 mg/L)*  
*Biologically Ties Up Nitrogen and Phosphorus*

