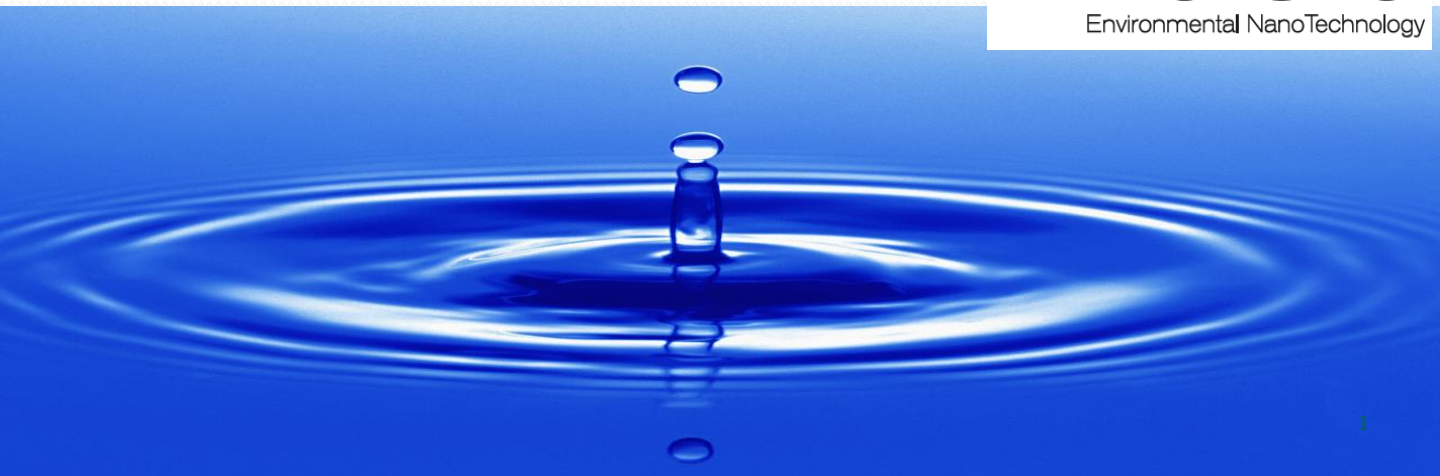


BIO-Lair Media for Water Treatment

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 m²/m³**
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 m²/Kg

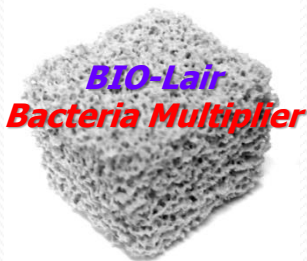


					Comparision	
Pentair - Aquatic Ecosystems Catalog		Ship Weight			1 Kg BIO	1/4 Kg BIO
Product	Description	M ² /M ³	Kg	M ² /Kg	Kg Needed	
Sporax	porous ceramic	268,990	0.5	21	14	3.5
BIO-FILL	shredded PVC ribbon	820	1.8	13	640	160.0
BIO-BALL	Plastic Ball Shape	321	5.4	2	4898	1224
BIO-BARREL	Polyproplene open barrel	210	2.7	2	3750	938
BIO-STRATA	Black PVC sheets in block form	361	2.3	18	455	114
Meta BIO Media	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 m²/m³ 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/M³ 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 m²/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