



ALBATROS BROKER, s.r.o.

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821 07 Bratislava
Slovak Republic

***Rapid
Enhanced
Effective
Microorganism***

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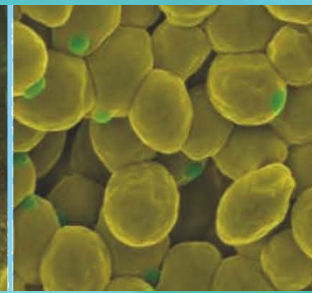
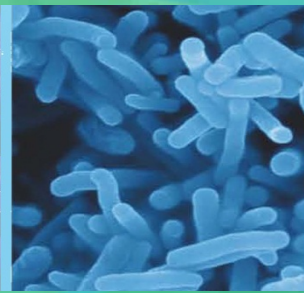
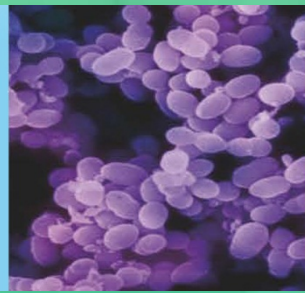
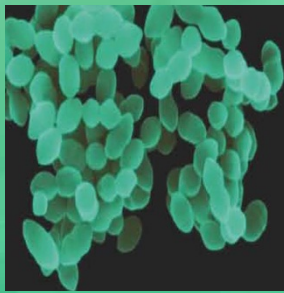
IČO: 35 924 519, SK: 2021985658

Obchodný register Okresného súdu Bratislava I, oddiel Sro, vložka číslo 35175/B



*We use many kinds of chemicals
In our daily lives
Putting our health and lives into
Danger*





Consists of group of Beneficial Microorganisms

Highly concentrate, Effective Acting

Mainly 5 microorganisms

3 Bacteria

2 Yeasts



What is BIO TOM?

BIO TOM Enzymes are a revolutionary combination of human and environmentally friendly active micro-organisms creating a powerful cocktail of beneficial enzymes, super catalyzing enzymes and co-factors with remarkable ability to fully digest a wide range of compounds and sanitize the environment.

It is a natural 100% organic, bio-degradable culture without harsh chemicals or residues.

BIO TOM rapidly digests fats, protein, carbohydrate, cellulose and a wide range of pollutants leaving the environment in natural balance.



What makes BIO TOM so unique?

BIO TOM's superior performance across its many applications can be summarized as follows:

1. Very High Speed

"Super Catalase" the proprietary enzyme makes products formulated with our technology thousand of times faster than what was previously possible.

2. Broad Functionality

The 4 core capabilities of rapidly braking down organic waste, anti-microbial, anti-fungal and toxin neutralization, with the speed enhancement makes BIO TOM a truly unique technology.

3. Broad Spectrum

BIO TOM is formulated to created a very diverse group of catabolic hydrolyzing enzymes. This provides an ability to rapidly and fully digest all non-living matter that is organic in origin.

4. Broad Operative Range

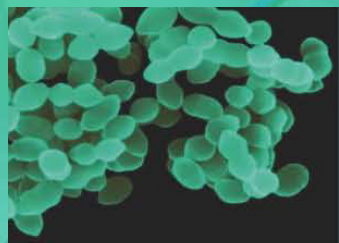
Due to its kinetic rate enhancement technology, BIO TOM is able to operate in a much broader range of environmental conditions than previously available technologies.



1. *Pediococcus acidilactici*

(Lactic Acid Bacteria [5.0×10^7])

- Produce Lactic acid and Pediocins
- Inhibit growth of gram negative bacteria as: *Vibrio cholerae*, *E.coli*, *Salmonella sp.* Etc.
- and inhibit growth of gram positive bacteria as: *Clostridium botulinum*, *C.perfiengens*, *Staphylococcus aureus* etc.



Digest Organic matter

Lactic acid

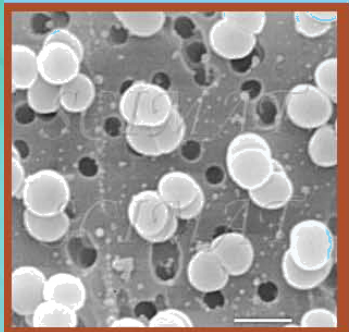
Gram-negative

- *Salmonella*
- *E. coli*
- *Pseudomonas*
- *Vibrio cholerae*

Bacteriocin
(Pediocins)

Gram-Positive

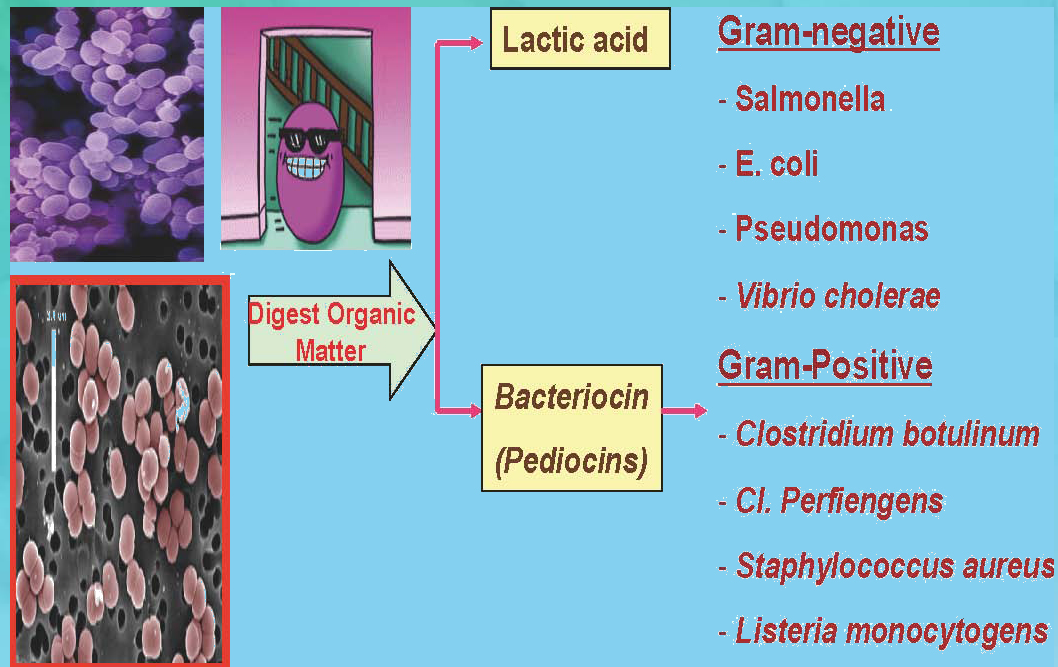
- *Clostridium botulinum*
- *Cl. Perfiengens*
- *Staphylococcus aureus*
- *Listeria monocytogens*





2. *Pediococcus pentosaceus* (Lactic Acid Bacteria [4.0×10^7])

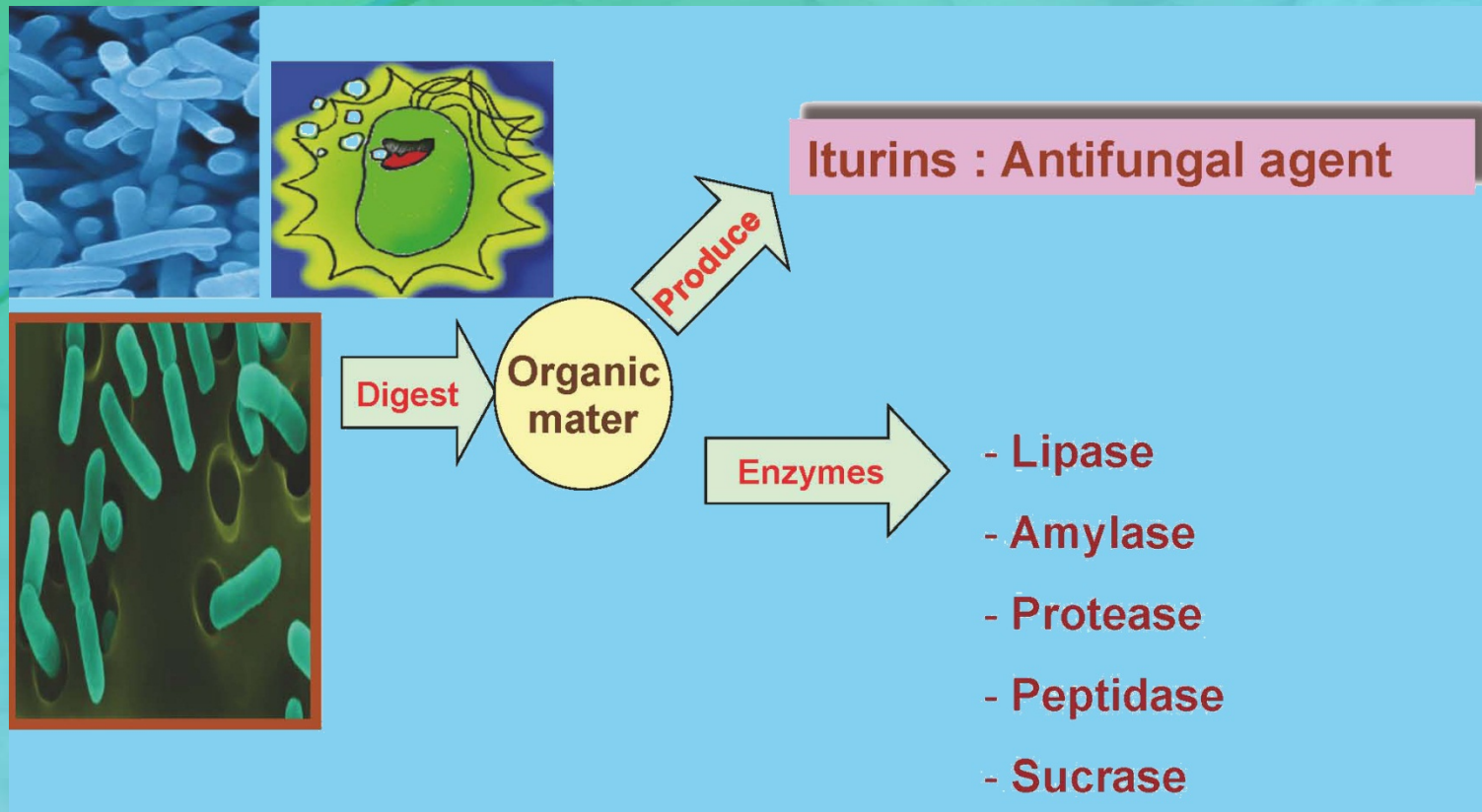
- Produce Lactic acid and Pediocins
- Inhibit growth of gram negative bacteria as: *Vibrio cholerae*, *E.coli*, *Salmonella sp.* Etc.
- and inhibit growth of gram positive bacteria as: *Clostridium botulinum*, *C.perfiengens*, *Staphylococcus aureus* etc.





3. *Bacillus amyloliquefaciens* [6.2×10^7 cfu/g]

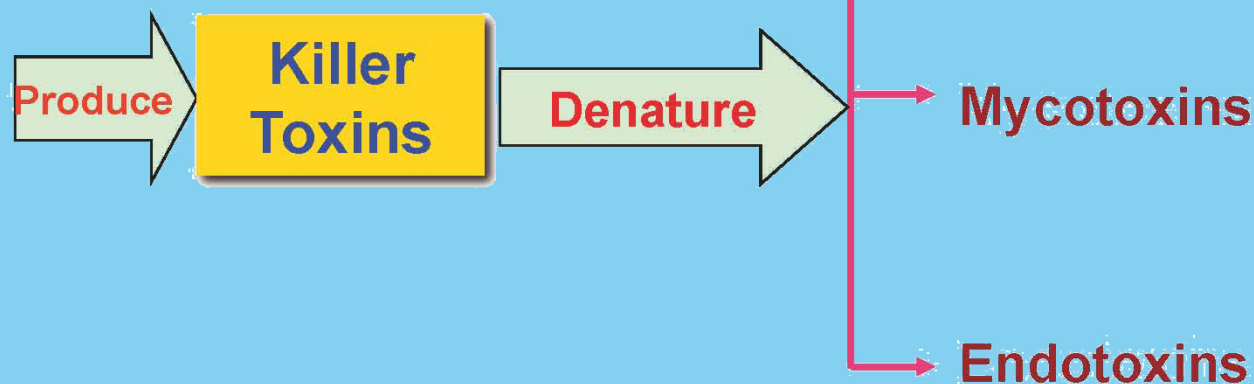
Bacteria that produces Iturins (Antifungal Agent) to inhibit growth of fungi as: Aspergillus, Fusarium, Candida, Colletotrichum, Rhizoctonia, Phytophthora, etc. and produces enzymes as: Amylase, Lipase, Protease, Peptidase, Sucrase





4. *Pichia farinosa* [$8.2 \cdot 10^7$]

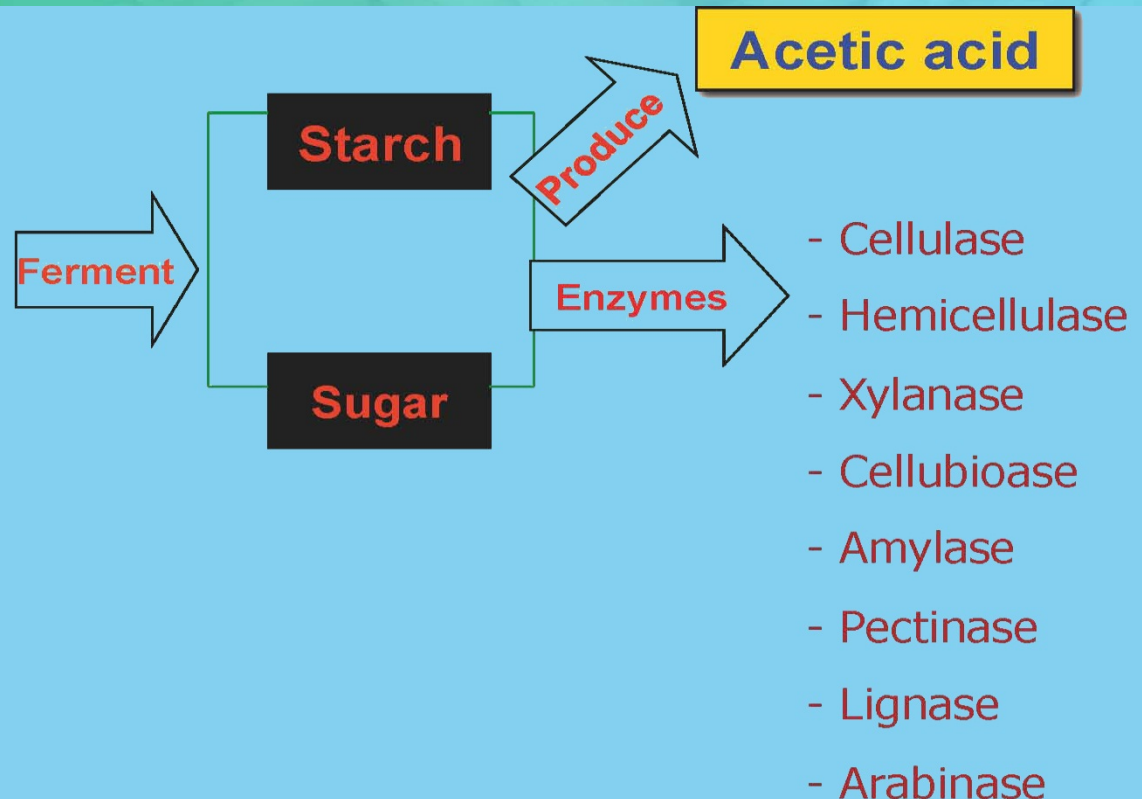
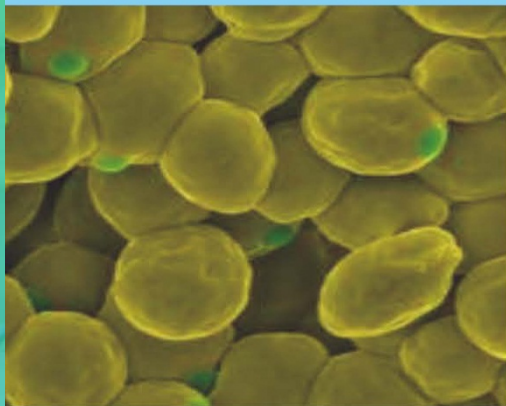
Rarely yeast found in the nature, produces Toxins Killer to inhibit the growth of yeasts and neutralizes toxins as: aflatoxins, mycotoxins and endotoxins





5. *Dekkera anomala* [$7.0 \cdot 10^7$]

Spoilage Beer Yeast – ferments carbohydrate, starch and sugar into Acetic Acid without alcohol and produces enzymes as: Cellulase, Cellubioase, Pectinase, Lignase, Amylase, Hemicellulase and Xylanase





BIO TOM works effectively in..

Eliminate unpleasant odor

Reduce and inhibit harmful bacteria

Digest organic matters effectively

Toxin killer (Detoxification)

Chemical free

Truly Natural

Save Energy



BIO TOM working parameters

REEM working parameters

Parameter	Range	Benefit
Alkalinity	pH 1.5 – 9.6	Wide range of operative conditions
Oxygen Content	0.5ppm +	Facultative Anaerobe / Aerobic
Salinity	Up to 65,000 ppm	Effective in Saline conditions
Temperature	0-65°C	Wide temperature range
Chlorine	Up to 3ppm	Operative in moderate chlorine



Product safety

Japan food Research Center Foundation:

Product Safety

- **Japan Food Research Center Foundation:**
Tested on toxicity level (LD50). There were no abnormal symptom to any essential organs and Zero dead animal, the 21,000 mg. per kilogram of weight has been fed. (LD50 limit > 21,000 mg/kg BW)
- **Thailand Institute of Scientific and Technological Research (TISTR) :**
Tested on the Acute Oral Toxicity Level (LD50). After ad libitum dosing 14 days, all rats appear normal and zero mortality. Necropsy finding at the termination showed no gross pathological lesions.
- **National Institute of Health, Department of Medical Sciences, Ministry of Public Health of Thailand:**
Detection and Isolation of Microorganisms > result > Pathogenic Bacteria and Fungi were not found.
- **Overseas Merchandise Inspection Company :**
Tests show bactericide effect against the prevention and growth of Salmonella bacteria
- **Neutron and LCFA :**
Test result of Aflatoxins and Insecticides contamination
- **Laboratory Biosafety Manual, Global Health Security, World Health Organization, Geneva 2003 :**
This group classification is BIO SAFETY LEVEL 1 (no or very low individual and community risk)



Product Test at BP-Ayudhaya (Odor & Degreaser)

Product Test at BP-Ayudhaya /Odor & Degreaser/





Product Test at BP-Ayudhaya (Odor & Degreaser)



Floor Cleaning, proven results

- Degrease***
- Odor elimination in a few minutes***



Product Test at BP-Ayudhaya (Waste Odor)



Waste Odpor elimination in a few minutes



Air Quality Emmission

Eliminate and control wide range of volatile organic odors including

- mercaptans***
- amines***
- ammonia***
- hydrogen sulfide***

Benefits:

- 1. Rapid reduction of odor emissions “Green air quality”***
- 2. Elimination of odors molecules upon contact***
- 3. Effective on wide range of VOC’s***
- 4. Effective in high volume air stream***
- 5. Simple continuous application***
- 6. Decrease scum accumulate in smoke stack and decrease cleansing cost***
- 7. Safe to use***
- 8. Highly cost effective***





Carbon Credit



Kyoto Protocol 2004 Air quality emission

Lowering *carbon footprint* on a voluntary basis

= measure of the impact human activities have on the environment in terms of the amount of greenhouse gases produced, measured in units of carbon dioxide

Minimize several pollutants e.g. acid rain and nitrous oxide

Clean technologies, clean air quality emission

The Carbon Credit is this new currency and

one Carbon Credit is equal to one Ton of CO₂ and is called a CO₂e (CO₂ equivalent)

Costs are between USD 10 – 40 per credit



CPF-Sriracha, Chonburi

Wet Scrubber Water Quality Improvement



Before using BIO TOM enzymes and microbes





Odor Control – Wet Scrubber No.1

Odor control and waste water in Wet scrubber No.1 at CPF-Srirach, Chonburi, on May 2010 by added BIO TOM.

Wet Scrubber No.2 had not been tested, to be used for compare the result

- ***Dilute 1,000 grams BIO TOM into 50 l water***
- ***Pour into the wet scrubber***
- ***Stir with stick for mixed enzymes and microbe with water inside the pond***





Odor Control – Wet Scrubber No.1 & 2

Results

After **One month**, the water taken out from the wet scrubber No.1 & No.2 by visual observation, **the water color in No.1 is more clear, less polluted and much better in unpleasant odor**

Wet
Scrubber no.
1

Water
Color after
Using BIO



Wet Scrubber no. 2
Water Color



Cooling tower system

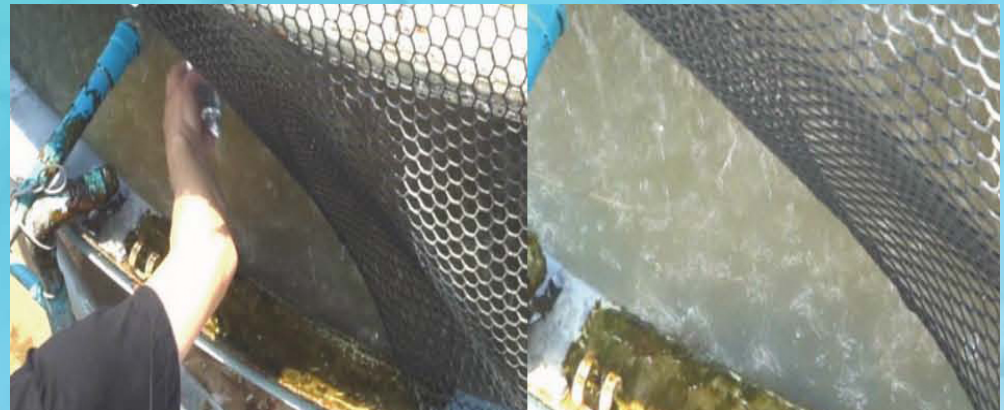
Water treatment, Generate fresh clean air

Solve problem in cooling tower system:

- *Eliminate blue green algae*
- *Inhibit **Legionaire Fungi Contamination***
- *Digest Bio-film sticker on pipeline, AHU system*
- *Eliminate unpleasant smell in central system*
- *Increase low temperature exchange and more cooler air flow by decreasing shield guard from Bio-film*
- *Decrease electricity power usage sustainable*

*Inhibit **Legionaire fungi Contamination** in cooling system which cause of respiratory diseases*

Certify from clean fresh air in building





Waste water treatment plant

Before treat

AT 1



AT 1





Waste water treatment plant After treatment with BIO TOM





Bio-gas Production

*Tested Result – Biogas
Pig Manure Substrate in Anaerobic Digester Units:
(4 tested units, 4 control units)*

Biogas	Increase	Up to	Decrease	Down to
CH_4	35-40%	60-65	-	-
NH_3	-	-	2-3%	0.1%
H_2S	-	-	0.5-1.0%	0.01%
CO_2	-	-	50-55%	30-35%



ANIMAL HUSBANDRY *(pig, cattle & poultry farms)*

- *Reduced death & intestinal diseases*
- *Treat food poisoning diarrhea*
- *Eliminates bad odor from manure, waste water & garbage*



Existing Problems

Diarrhea & intestinal pain from food poisoning bacteria:

Clostridium botulinum

Vibrio cholerae

Staphylococcus aureus

Salmonella typhi

Campylobacter Jejuni/coli

Clostridium perfringens

Vibro parahaemolyticus

Escherichia coli

Listeria monocytogens

Aeromonas hydrophila





Reduce Urine Smell, Livestock's house

By mixing with feed:

Use 500 – 1,000 g/ ton feed





Reduce Urine Smell, Livestock's house

By mixing with feed: use 500 – 1000 gm/ton





ANIMAL FARM

- ***Control diarrhea, Intestinal pain from food poisoning bacteria***

Apply 1-2 gm/ 10 kg body weight.

Diarrhea will stop within 15 minutes

- ***Better healthy, significantly decrease urine & feces smell and prevent diarrhea & intestine diseases dead***

mix 0.5 gm/ 10 kg body weight (50 ppm) with feed everyday



Manure no smell in Livestock's house

Pig Farms

Cattle Farms

Poultry Farms



***Control hatching of
housefly eggs,
larva, chrysalis & speed up the decay process***

By mixing with feed:

- ***Use 500 – 1000 gm/ ton***
- ***Use 1,000 – 2000 gm/ ton, for extra security***



Proven Results: Smell Reduced (90%) after 15 minutes



***Mix 1 kg in 2000 liter of water
Pour cover 50 cubic meters waste volume
or 400-1000 square meters space every 3-7 days***



Waste water from farm

Use 2 kg per 1000 cubic meters, by hanging the 1 kg microbes at the water inflow into the pond. Change every month.



Before

BOD↑ more organic waste and more bacteria in water, more oxygen needed, more electricity needed = waste water

After

BOD↓ organic waste has been eliminated and less oxygen needed

Reduce BOD in water

BOD (Biological Oxygen Demand)



Waste water treatment



Before

BOD↑ more organic waste and more bacteria in water, more oxygen needed, more electricity needed = waste water



After

BOD↓ organic waste has been eliminated and less oxygen needed

Reduce BOD in water BOD (Biological Oxygen Demand)



AQUACULTURE

Shrimp, fish, frog & turtle aquaculture farming



- *Control blooming of blue green algae and toxic planktons*
 - *Reduce Ammonia, Hydrogen Sulfide & Nitrite level*
 - *Natural & ecologically harmless method of maintains proper pond chemistry & environments for marine-life*
 - *Stabilze water pH by controlling blue green algae and toxic planktons especially Oscillatoria, Microcystis, Noctiluca.*
-
- *Build up Phyto- & Zoo- planktons during pond preparation*
 - *Decrease death from Pathogen Microorganisms*



AQUACULTURE

Existing Problems:

- *Excessive ammonia, nitrate & Hydrogen sulfide levels*
- *Disease, low oxygen level, poor water quality, reduced growth rates, stressful environment, etc.*
- *Excessive algae, scum, sludge, etc.*





- *Natural water treatment*
- *Eliminate blue green algae and increase plankton*



**Blue green
algae
elimination**





Eliminate smell and gas in drainage



Immediate eliminate smell

Digest sludge

Safe to human and environment

Without chemicals



Mix with water

And spray on wanted areas



Day 1 before add BIO TOM





1 Week after added BIO TOM





Grease trap digest in 2 weeks



Before



After Week 1



After Week 2



Odor Control – Garbage and Leachate

Air quality analysis was conducted on garbage fermenting tanks at the On Nut Garbage Disposal Plant operated by the Department of Public Cleaning of Bangkok Metropolitan Administration.

Sampling was undertaken prior to application of Enzymes and microbes and then again 10 minutes following the application

Parameter	Sampling Method
Hydrogen Sulfide	Impinger / Titration
Methyl Mercaptan	Sampling Bag / G.C.
Total VOC's	Photo Ionization Detector

Bangkok Metropolitan, Ongnoot Dumping Site





Garbage treatment



Odor Removal

Mix 1 kilogram into 1000 to 2000 liters of water. Spray coverage 500 to 1000 ton of solid waste







The Tsunami Incident in Thailand & Indonesia



Phuket



Bandar Aceh

Compare electricity consumption using Biowish in Waster Water Treatment

Controlled points	Using REEM	No REEM	Remark
Power consumption In oxidation pond	Reduce electricity 30-50% (switch on the oxidation pump reduced from 24 hours to 12-18 hours, or less)	Electricity consumption 100% (switch on the oxidation pump from 24 hours)	REEM microbes are facultative-with oxygen or without (start with oxidation to speed up the work)
Chemical usage	No chemical usage	Use chemical	REEM Microbes help reduce chemical usage and protect environment
Antibiotic usage in last Pond before releasing out	No antibiotic needed, e.g. chlorine, phenol	Necessary to use chlorine, phenol	REEM microbes produce Pediocins That have antiseptic properties.
Maintenance cost	Reduce maintenance cost 30-70%	Normal maintenance cost	Save cost and time

Compare electricity consumption using Biowish in Waster Water Treatment

Controlled points	Using Biowish	No Biowish	Remark
Grease pump out cost	No need to take out grease floating on the surface and safe cost in pumping grease / sludge out if use the product continuously	Regularly need to take out grease floating on the surface and safe cost in pumping grease / sludge out	Biowish microbes can effectively digest grease and fat. If use continuously, problem of excess grease and oil will fade away.
Technical System controlling	No technical technique or expert needed to take care of the system	Need support in term of technical technique or expert to take care of the system	
Budgeting	<p><u>1st month:</u> product cost around 70% of the normal electricity consumption</p> <p><u>Following months:</u> product cost around 30-50% of the normal electricity consumption.</p> <p><u>Electricity expense</u> reduces 30-50% of normal monthly expense. No chemical required.</p> <p><u>Manpower</u> 1 person required</p>	<p><u>Electricity cost:</u> 100% monthly expense</p> <p><u>Added chemicals:</u> 50% of monthly electricity cost</p> <p><u>Manpower:</u> require 2-3 persons</p>	These expenses are estimated from the quantity of waste water flow into the system in cubic meters/day. The variation is possible following the practical system, oxidation pump, type of chemicals use, professional fee and number of manpower needed.



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