Lagoon Life

With and Without Enzymes

Life Span of a Typical Lagoon

The Lagoon itself can last up 40-50 yea
(Very conservative)

Components such as aerators, liners and
sludge capacity is typically 30 years

What can prolong Lagoon Life?

- Aeration can be a huge benefit
- Use of Enzymes/Bacteria to reduce organic sludge in Lagoon and in Collection systems

Note-Around 50-70% of Sludge consists of Organic matter

- Proper Maintenance of Bank Vegetation
- Algae Control

How can I tell if I have too much sludge (25-50 % of Lagoon Capacity)?

- Sludge test (Depth and Consistency)
- Odor
- High water levels but little rain
- Effluent Quality Drops

How Enzymes work

Act as helpers to:

- ✓Breakdown fats, proteins and starches
- ✓Reduces Odors by improving digestions
- ✓Makes lagoon more efficient

HOW ENZYMES BREAK DOWN

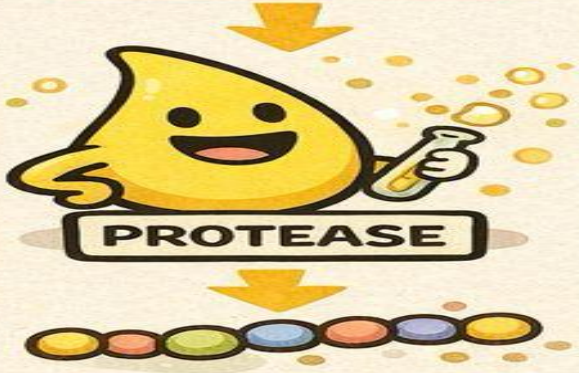
FATS

GREASE & OILS

GLYCEROL

PROTEINS

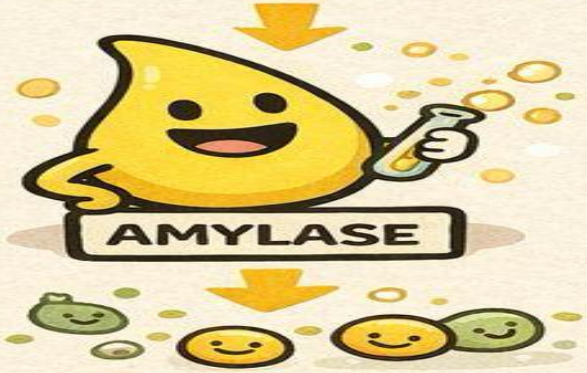
WASTE



SMALL PEPTIDES

STARCHES

BREAD & RICE



SIMPLE SUGARS
(GLUCOSE)

Fats, proteins, and starches are broken down into simpler molecules bacteria can digest.

Inhibitor of Enzyme efficiency- Compacted sludge

- *Sludge compacted due to long-term settling, added weight of new solids, gas release and lack of mixing*
- *Can be addressed by increasing aeration and mixing and applying enzymes after disturbance*
- *Last resort- Sludge removal- more expensive ranges from hundreds of thousands up to millions of dollars depending on size of lagoons*

Sludge Chart

Depth	Condition	Action
0-20%	*Healthy Enzymes levels*	*Use Maintenance*
20-40%	*Warning Zone*	*Prepare for dredging in 1-3 yrs*
40-50%	*High*	*Remove Sludge Soon*

Bottom Line-Proper Maintenance and Enzymes when Lagoon is healthy will p

Dosing Rate Every 10 Days

POND SIZE	INITIAL DOSE	MAINTENANCE DOSE	SEVERELY EUTROPHIC
1/4 Acre	1.5 lbs	.5 lbs	1.5 lbs
1/2 Acre	3 lbs	1 lb	3 lbs
3/4 Acre	4.5 lbs	1.5 lbs	4.5 lbs
1 Acre	6 lbs	2 lbs	6 lbs
3 Acres	18 lbs	6 lbs	18 lbs
5 Acres	30 lbs	10 lbs	30 lbs

Sample of actual customer analysis:

Numerical breakdown (per 100 lb of sludge)

94.2 lb = water

5.8 lb = total solids

- 1.9 lb = organic (volatile)
- 3.9 lb = inorganic (fixed)

Summary

Enzymes *break down Fats, proteins and Starches and turn large waste into small digestible material*

Bacteria *finish the digestion process*

- ✓ *Reduces sludge build up*
- ✓ *Controls odors*
- ✓ *Improves efficiency*
- ✓ *Delays expensive sludge removal*
- ✓ *Safe and environmentally friendly*

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