

The logo consists of a stylized globe on the left and a green leaf on the right, both rendered in a light blue color. The globe is composed of several curved lines representing latitude and longitude. The leaf is a simple, pointed shape with a central vein. The entire logo is set against a blue gradient background.

# **International Bio-Recovery Corporation**



***Presenting The EATAD Process  
To Convert Organic Waste into  
Progressive Agricultural Resources  
For a World of Growth***

***To the Rich-Mac Technology Workshop  
Milan, Italy***

***October 5, 2005***

**Presented by Elmer B. Friesen P. Eng**

**The EATAD Process eliminates most of the problems associated with the disposal of organics and recycles them into high value organic end products.**

**All in less than one week**



# Essence of EATAD

1. **Enhanced Autogenous Thermophilic Aerobic Digestion**
2. **Pre-cleaning – Ensure process is 99% free of contaminants**
3. **Process - in-vessel fermentation**
  - using thermophilic bacterial
  - main input = ambient air
  - through enzymatic and bacteria digestion, rapid breakdown of organic matter into more stable material
4. **Producing**
  - products containing organisms and metabolites that create a unique class of fertility and plant disease suppression products
  - field ready products (liquid concentrate & pelletized solid)



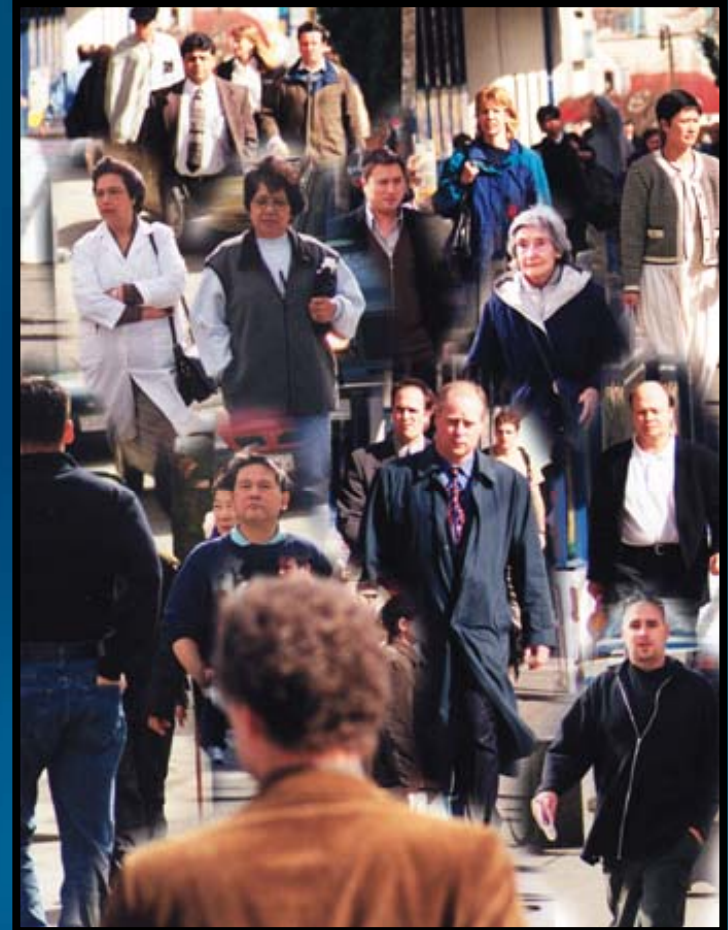
5. **Emissions – surplus water (discharge near drinking water standard - using latest technology**
  - **meet all municipal standards (GVRD, just been approved in New Jersey)**
  - **air cleaned with combination of water, acid scrubbers and a no-maintenance bio-filter**
  - **inorganic diversion (plus cleaned shells and bones) are typically 98% organics-free**
  - **conserve approximately 93% of all solids in original waste (suspended solid and dissolved) – This is our goal!**
6. **End of process – no further composting or handling of residual, no further time for curing, no trucking to other sites**



# Global Over-Population

Which leads to:

- More Garbage
- More Pollution
- More Demand for Food
- Less Arable Land
- Less Soil Nutrients
- More Chemical Fertilizers and Pesticides



# EATAD Treats Volatile Wet Organic Wastes

- 30-50% Of Waste Stream (Municipal Solid Wastes)
- The Biggest Problem for landfills
- Leachate
- Odors
- Greenhouse Gases



# Sources of Organic Waste

- Municipal Organic Wet Wastes

## Agricultural/Livestock Waste

- Municipal Sewage Sludge





# EATAD

**Proven Solution**  
**Closing The Loop**

**Enhanced Autogenous  
Thermophilic Aerobic  
Digestion**

**The EATAD Process uses  
bacteria to consume and convert  
biodegradable materials (wet  
Organic wastes) into valuable  
solid and liquid organic  
fertilizers.**



# EATAD Compared to... Incineration

- Residue Problems
- Air Pollution
- Heavy Metals
- Odour Emissions



# EATAD Compared to... Composting

- Large Area Required
- Long Process Time
- Ineffective Pathogen Removal
- Pest Infestations
- Inconsistent Product
- Low Market Value
- Odour Issues



# EATAD Compared to... Anaerobic Digestion “Waste to Energy”

- Marginal Economics
- 50% of infeed requires further processing
- 3 months time for completion
- Low Market Value



# EATAD PROCESS

Day 1

## Preparation of raw material



- Waste received on tipping floor
- The YUCK STOPS HERE.
- Solid waste converted to slurry form (8-10% solid)
- Equipment is designed to remove inorganic contaminants such as plastic, glass, metals
- pH of slurry is adjusted
- Slurry is transferred to the Primary Digester and heated to thermophilic temperatures 55° C



# EATAD PROCESS

Day 2,3,4

## Digestion stage

- **Innoculation with selected high temperature bacteria**
- **High efficient Aeration with patented equipment**
- **Digestion in 2-4 days depending on feedstock**

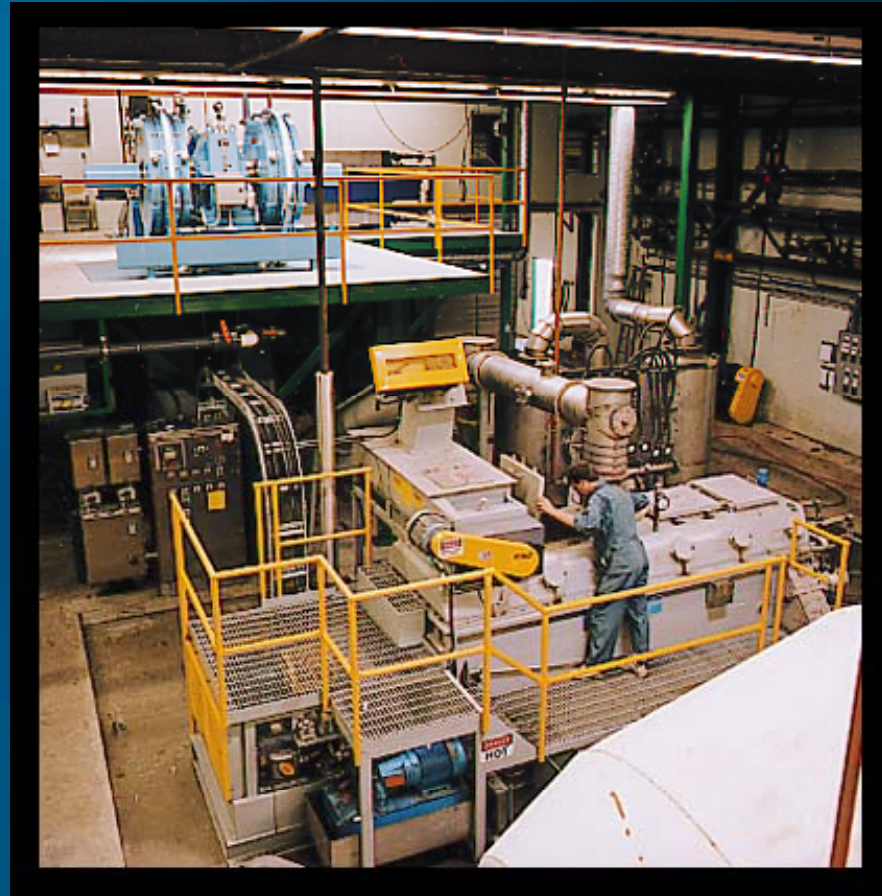


# EATAD PROCESS

Day 5

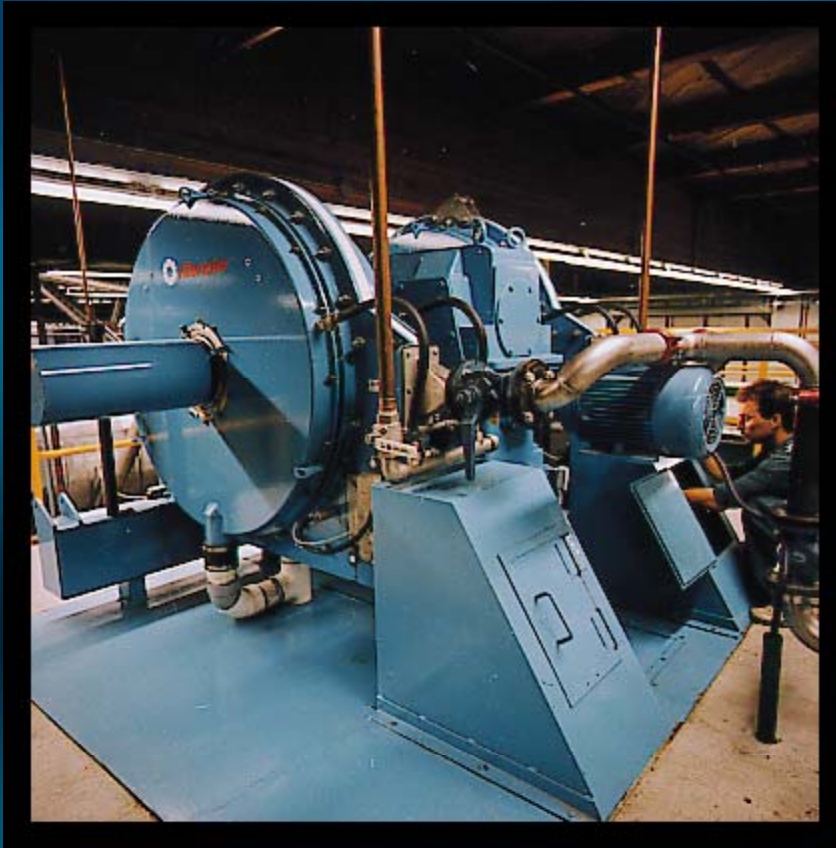
## Solid product

- Dewatering
- Drying
- Pelletizing



# EATAD PROCESS

Day 5



**Liquid product**

- Clarifying
- Concentrating





# A Resource Is Created

Day 6

## EATAD Process Organic Fertilizers are (Branded as Genica)

- Stable
- Organic
- Safe
- High in nutrients
- Free of pathogens
- Easy to use
- Liquid Concentrate and Pellet form

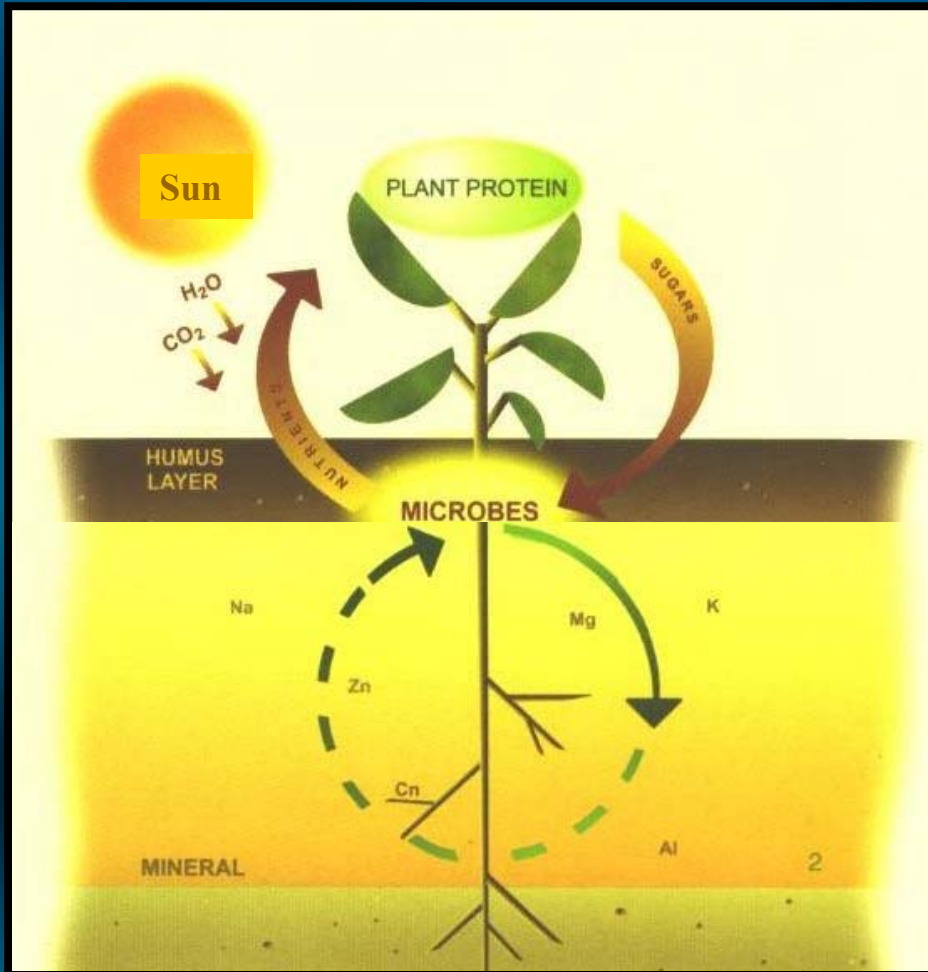


# EATAD Process Organic Fertilizers are

- More effective than chemical fertilizers
- Lower application rates
- Increase microbial activity in soil
- Protect against disease
- Produce healthier plants and larger yields
- Competitively Priced

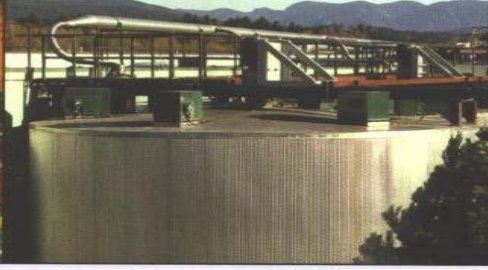


# Benefits of EATAD Process Organic Fertilizers



- Slow release of nitrogen
- Vigorous growth and plant development
- Increased nutrient availability
- Significant reduction of nitrate leaching
- Enhanced chelating process
- Improved soil structure
- Improved drought tolerance
- Increased soil quality every year
- Ideal for commercial agriculture





# Biological platform for soil fertility

**Plant Growth Stimulants (PGRs)**

**Disease Suppressants**

**Humic substances**

**Organic acids**

**Vitamins**

**Amino acids**

**Phytohormones (plant hormones)**



# Quality Assurance

- PGR's & Disease Suppressants
- Nitrogen, phosphorous, potassium (NPK)
- Micronutrients
- Pathogen removal
- Humic substances
- Heavy metals



# EATAD PROCESS

## On-Going Research

- Microbiologist, Agronomist, Plant Pathologist and Process Engineer on staff
- Equipped laboratory
- Commercial demonstration size operating plant
- Academic advisory board of Researchers from leading North American Universities
- Large Scale Commercial Growing Trials



# Air Discharge Control

- All process air is collected and sent through a scrubber & patented biofilter system.
- Ensure complete odor removal
- Able to locate plants in urban areas



# Other Emmission Sources

**Near Drinking Water quality – surplus water**

**Efficient Contaminant removal.**

**Efficient Volatized (Off-Gases) removal.**





# Environmental Technology Verification

- Verified by the Government of Canada
- Verifies claims of innovative technological solutions to problems threatening the environment



# EATAD Process Benefits

- Environmentally Sound
- Proprietary Technology
- Enhanced ATAD Process
- Patented Equipment
- Locate In Urban Settings
- Valuable End Products
- Commercially Viable
- No Harmful Environmental Discharge



# What can EATAD do for Your Community

- **Solve large-scale wet organic waste problem**
  - quickly & completely
  - Economically – 1 Metric Ton wet organic waste = US \$250 organic fertilizer products
  - Fits into existing infrastructure
- **Example application**
  - A typical Western City with a population of 2,000,000 could divert over 25% of its total garbage from land-filling, and produce 40,000 metric tons of organic fertilizers annually.



- Typical household generates 0.5 tpy - kitchen wastes collected at curb-side
  - Food Wastes → EATAD Plant
  - Converts to US \$125.00 of products → growers increase value of crop by \$1,100 to \$2,000

## The Winners are...

- Family feels good—wastes truly recycled into “Best End Use”
- Profitable plant operation...
  - Community value added economic activity.
- Grower increases profitability...
  - more sustainable farming model.
- Population accesses healthier food.
- Environment wins
- Waste generators/managers benefit from reduced tipping fees.

**SOCIETY, ECONOMY, ENVIRONMENT**



# EATAD Applied...

## North Vancouver, BC

- Demonstration and research facility, owned and operated by IBR
- 100 tpd (@ 8% solid content) capacity
- Feedstock is mixed and varying I.C.I (Industrial, Commercial, Institutional) and Hospitality wastes.
- Operating continuously for 6 years, treating wastes fully with zero failure rate
- Producing high value end products
- Research activities – in-house, and with contract research institute



# Baotou, China

- EATAD commissioned April 2005
- Mixed MSW, mechanical and hand-sorting facility
- 400 tpd (@8% solid content)
- City part-owner
- Under territorial license sales
- Subsequent Agreements for plants in Beijing (bio-solids) and Shanghai



# New York City Area

- 1<sup>st</sup> plant permitted and designed
- Construction start scheduled for this year
- 75,000 tpy capacity; expandable to 150,000 tpy
- Feedstock ICI and Hospitality under private supply contract
- Private consortium bought plant license; is developing & operating
- Two plant in neighbouring cities almost through permitting stage



# Tehran and Iran

- Technology sale executed May 2005 (for 2 plants, with exclusive rights to buy licenses for 6 additional plant licenses)
- 300,000 tpy (Tehran) and 125,000 tpy (other city)
- Mechanical sorted MSW (with long history of recycling and composting for safe land-filling)
- Private developer, with supply contract

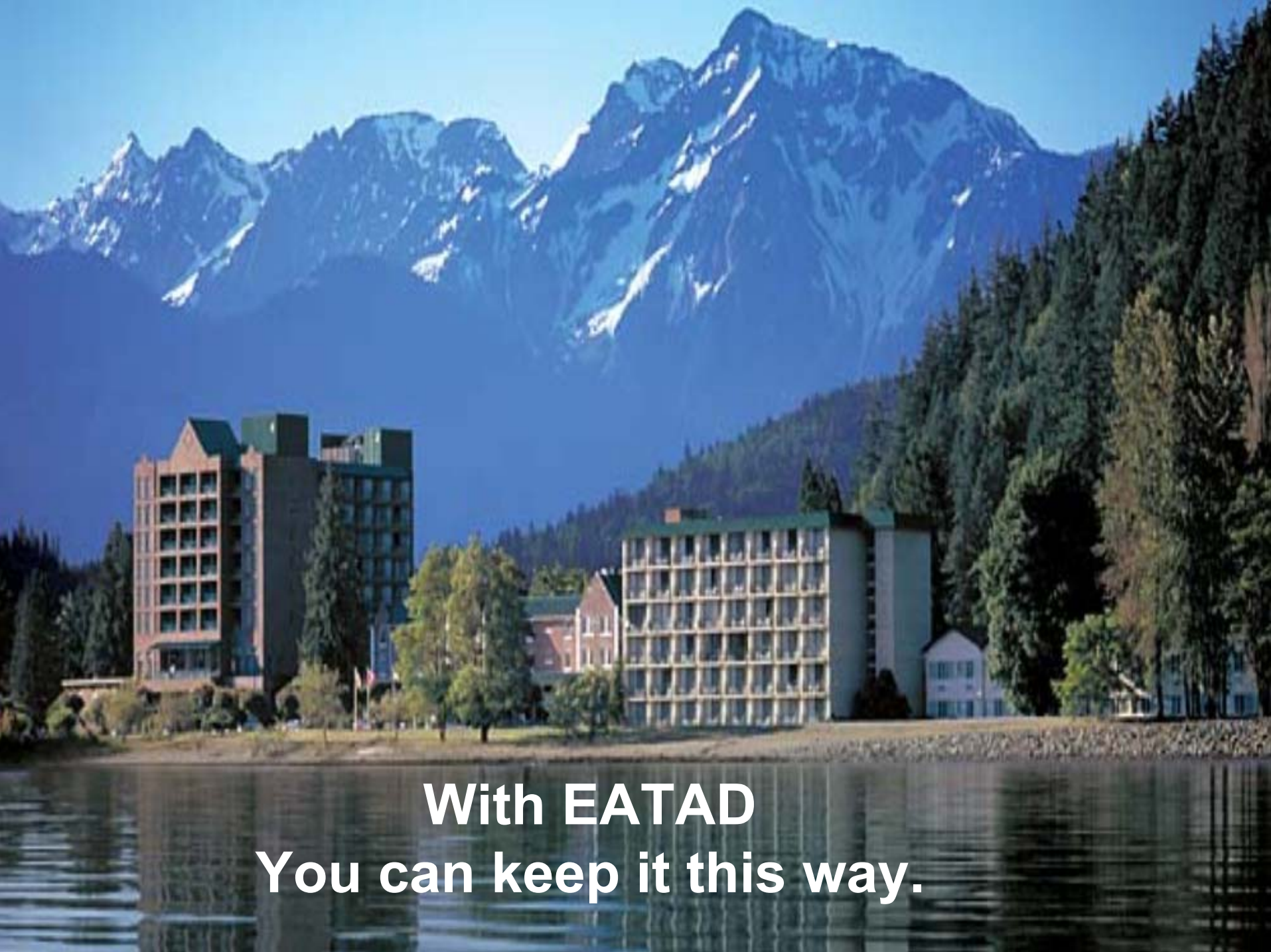




# Lynden, Washington

- In funding process
- Process manure from 3000 head dairy
- 125,000 tpy capacity
- To secure long term sustainability of the operation
- Waste generator minority investor/owner
- Design, build and operate by International Bio Recovery





**With EATAD  
You can keep it this way.**

# International Bio-Recovery Corp.

Private Company Start in 1993

Digestion Breakthrough 1994

University of British Columbia  
and  
National Research Council  
Support



Patented Equipment 1996, 1999, 2000, 2003



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*For a World of Growth*

