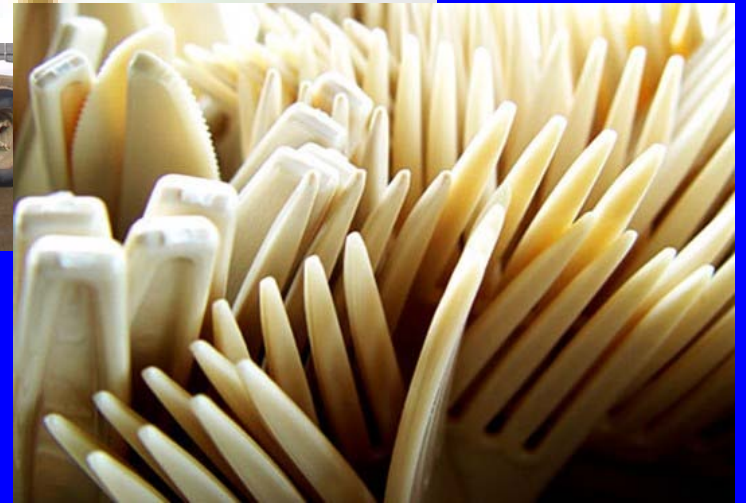


Challenges in Labeling BioPlastics



Steve Mojo-BPI Exec. Director
September, 2011

BioPlastics Today



What is a BioPlastic?

BIOlogically
derived

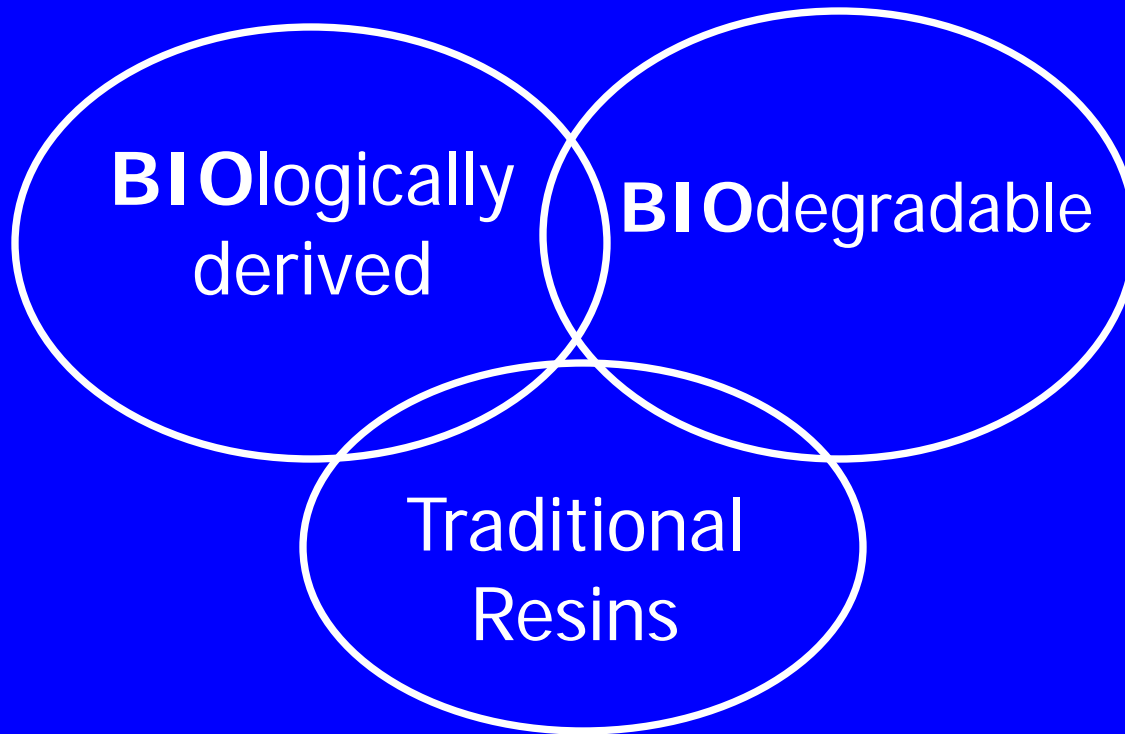
Start of Life
"Feedstock"

BIOdegradable

End of Life



What is a BioPlastic?

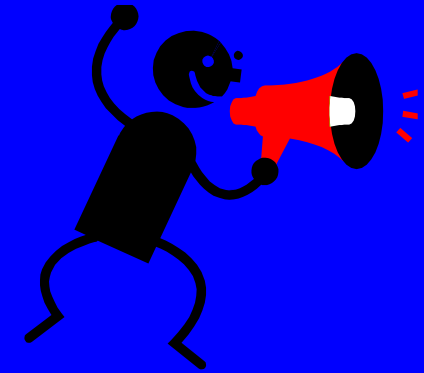


Communication Challenges

- Confusion abounds
 - Biobased/Renewable=Biodegradable
 - Biobased usage increases price of food
 - Etc. etc
- Many claims focus on *Product Features, Not Consumer Benefits*
 - Examples
 - “Made from Corn”
 - “Biodegradable”
 - “Produced from Renewable Feedstocks”

Features ≠ Benefits

- Feature is a factual statement about a product or service.
 - It is not the reason customers buy.
- Benefit adds value to the customer.
 - It is the reason customers will buy.



Features vs. Benefits



Feature

- Contains 30% plant based materials.

Benefits

- Recyclable with PET bottles
- Reduces carbon footprint
- Reduces oil usage, equal to approx 3 million gallons of gasoline

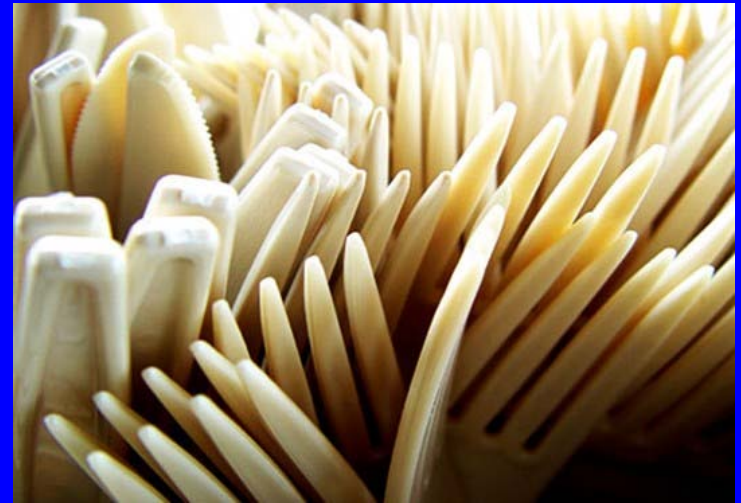
Thoughts on Data

“Trust, but Verify”

Ronald Reagan

Here's Why

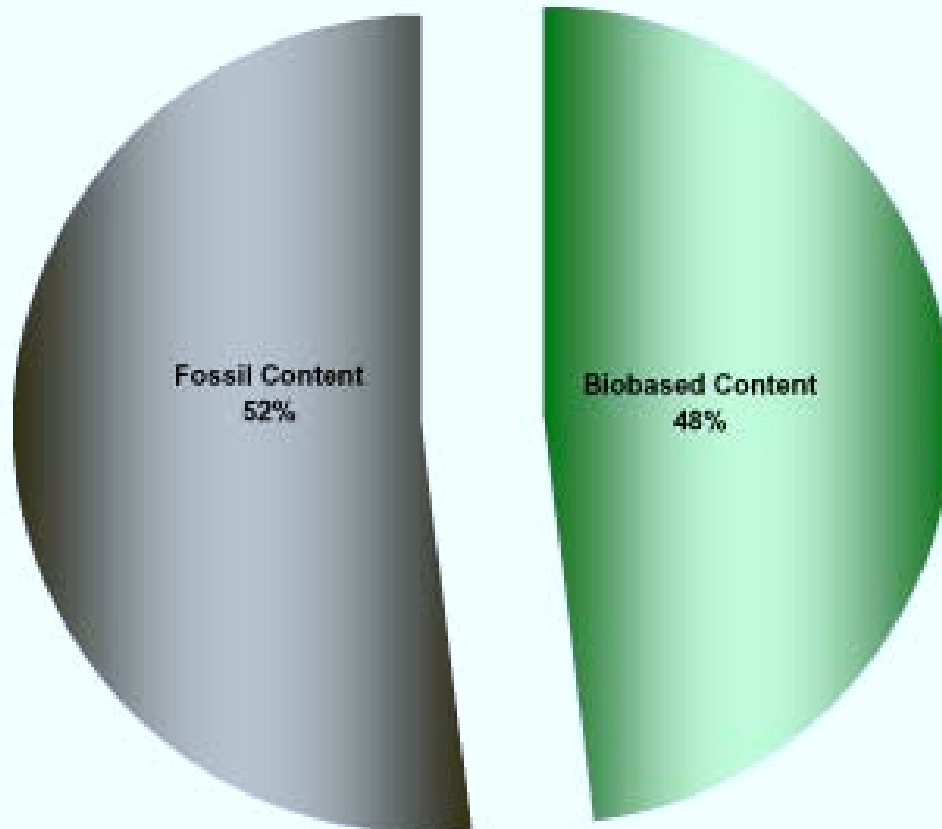
“Our new partyware solves the problem by being 100% compostable! It is high-heat tolerant, biodegradable, compostable and attractive cutlery made from 80% potato or corn starch and 20% soy or other vegetable oils.”



Data Shows

Mean Biobased Result: 48% *

Proportions Biobased vs. Fossil Based
indicated by ^{14}C content



End of Life Claims

Compostable &
Biodegradable

Interested in Compostable Materials

- **ASTM D6400**
 - “Specification for Compostable Plastics”
 - For films and solid plastic products
 - Will be updated shortly as part of ASTM process
- **ASTM D6868**
 - “Specification for Biodegradable Plastic used on Paper and other Compostable Substrates”
 - For packaging and food service items, made of plastic coated paper, board & other fibers

**Similar to specifications Europe, Japan
& ISO Specifications**

Benefits of BPI Certification

- Based on ASTM D6400 & D6868
 1. Testing in approved, independent labs
 2. Results verified by third party reviewers
 3. Recognized by composters and municipalities throughout NA.





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Testing for Bio-Based Content

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[Compostable Bags on Sale in Minnesota](#)

[Directory of Certified Compostable Products](#)

[BPI Approved Testing Labs](#)

[Information about Certified Compostable Products](#)

[All About Composting](#)

[The Science of Biodegradation](#)

Welcome to BPI™ World

We're a not-for-profit association of key individuals and groups from government, industry and academia.

Through our innovative **compostable label** program, we educate manufacturers, legislators and consumers about the importance of **scientifically based standards** for compostable materials which biodegrade in large composting facilities.

We also promote the use and recovery of



COMPOSTABLE BAGS ON SALE IN MINNESOTA

[— click here](#)

From BPI News Center:

USCC Call for Papers; Abstract Submission Deadline: June 25, 2010

19 May 2010 12:10 PM • **Steve Mojo**

Organic Waste Systems (Gent, Belgium) Evaluates a

Find A Composter.com

GROWING THE COMPOSTING INDUSTRY.

Find A Site

Register A Facility

A Free Directory Of Composting Facilities Throughout North America

Welcome to FindAComposter.com; a free directory of composting facilities throughout North America, created and managed by *BioCycle* magazine and sponsored by the Biodegradable Products Institute.

Use this searchable database to:

[Locate a Composting Facility](#) - Search by Zip/Postal Code or Compost Site Name and you'll instantly see a list of all the facilities in your area that accept organic wastes for composting.

[Add Your Facility](#) - Not listed on FindAComposter.com? Take a few minutes to enter your information, and become part of the only searchable database of composting facilities in North America. Each listing is verified by *BioCycle* magazine editors for accuracy.

COMPOSTERS

BioCycle has been a champion of your industry for more than 50 years. Help us grow your business and increase public awareness of why composting make sense, now more than ever. List your facility today!

ORGANIC WASTE GENERATORS

Find local composters to recycle your food waste, wet/soiled paper, compostable products, yard trimmings, manures, biosolids and more. Search by location or feedstock. You may save money on disposal costs.

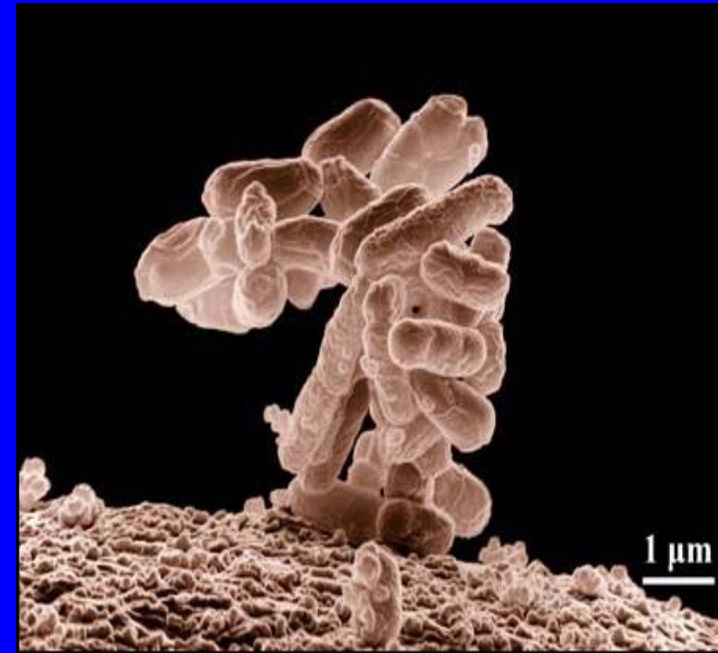
CONSUMERS

Use the directory to buy compost, as well as teach community leaders about local composting facilities in your area. Help boost community recycling rates, reduce greenhouse gas emissions, and build healthy soils.

“Biodegradable” & Additives

Biodegradation?

- Biodegradation is the process that keeps us alive
- Carbon chains are broken down used as a food source and converted into energy
- End results
 - Energy, CO₂ or Methane
 - Water & Biomass

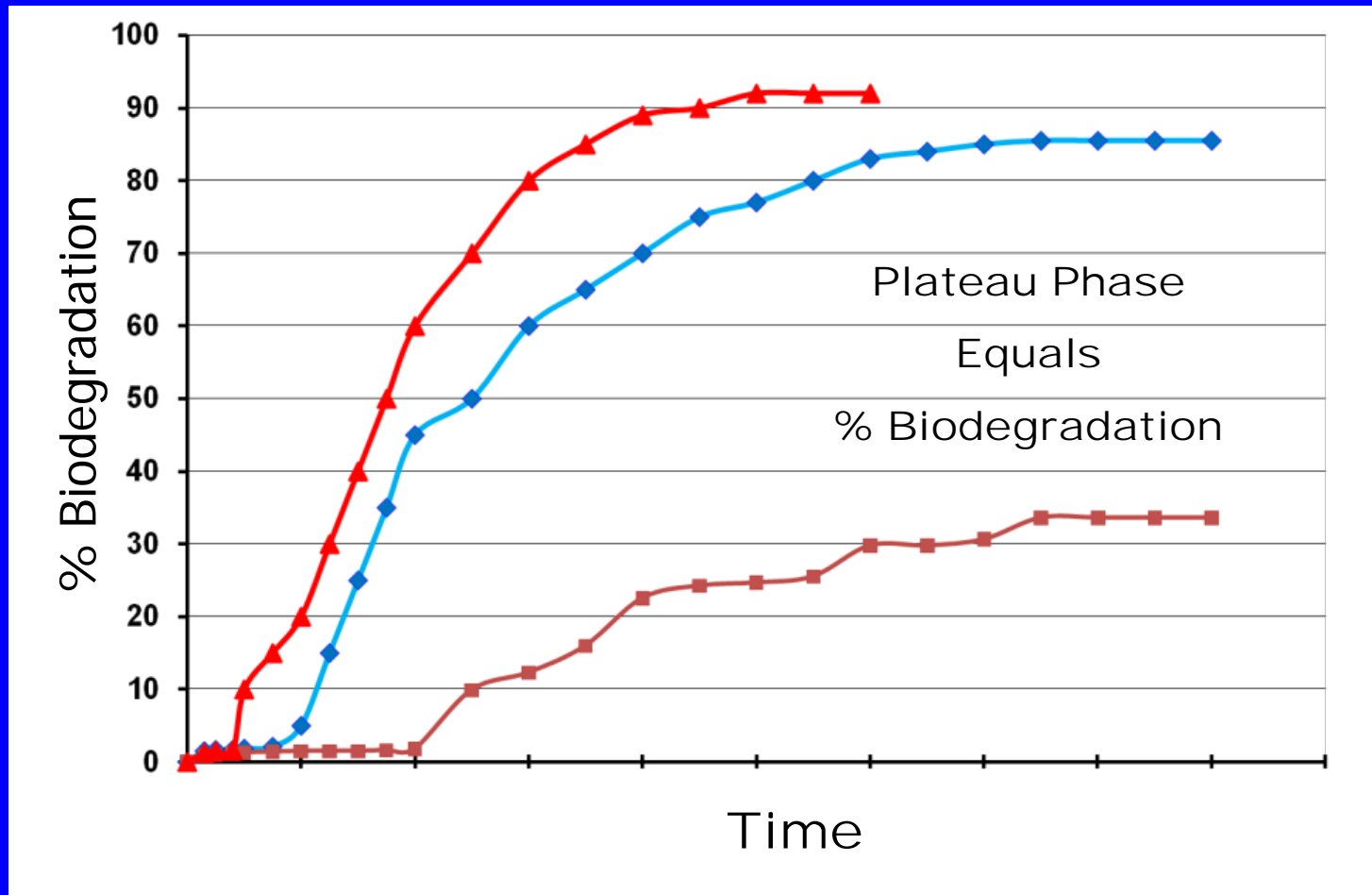


**Ecoli bacteria,
magnified 10,000 times.**

FTC Advertising Guidelines

- *“Degradable/biodegradable/photodegradable:..*
An unqualified claim that a product or package is degradable, biodegradable or photodegradable
 - should be substantiated by competent and reliable scientific evidence
 1. show that the **entire** product or package will completely break down and return to nature, i.e., decompose into elements found in nature
 2. within a **reasonably short** period of time
 3. after **customary disposal.**”

Measuring Biodegradation

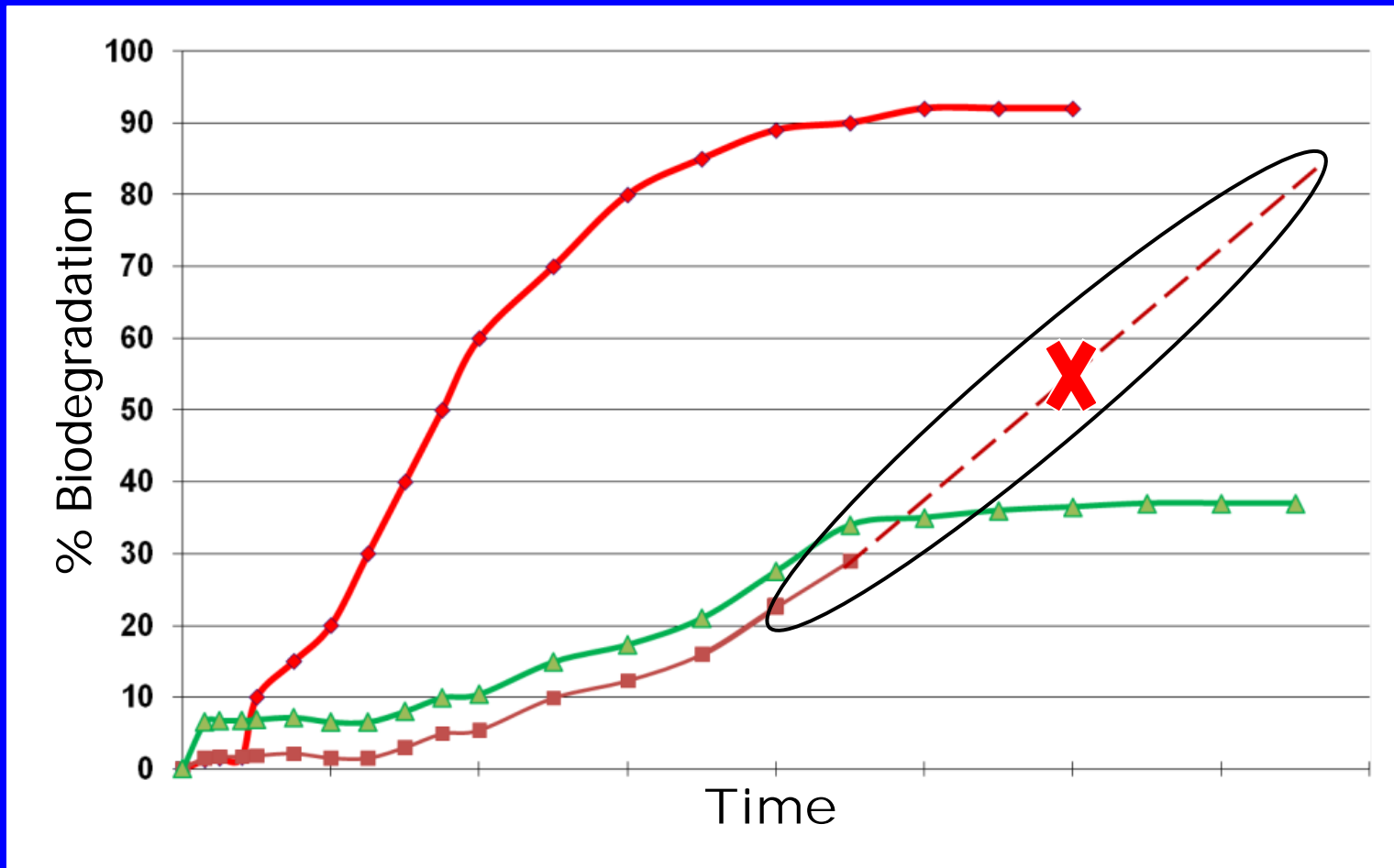


**% Carbon dioxide or Methane =
% Biodegradation**

“Bio-Extrapolation”

- Biodegradation by extrapolation
 - Show small amount of biodegradation, then assume the process will continue to completion.
- All biodegradable claims for additives are based on the theory of “bio-extrapolation”.
- You cannot extrapolate biological processes.
 - Scientifically unsound

Example of Bio-Extrapolation





Bottles for a Healthier Earth

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- ▶ **WHY ENSO BOTTLES?**
- ▶ OUR PRODUCTS
- ▶ BEYOND BOTTLES
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Broadcast Yourself™

ENSO Bottles posts videos of interviews, tradeshows, and much more on YouTube.com. Check out some of our latest videos.

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ENSO Bottles uses [Twitter](#) to connect

Making Plastic Bottles Environmentally Friendly

In an effort to help reduce the tons of discarded plastic bottles that end up in our nation's landfills, ENSO Bottles™, in partnership with Resilux America, has formulated a biodegradable technology to the plastic packaging industry. This technology is a formulated additive, preforms and blown plastic bottles. ENSO is providing earth friendly packaging solutions to customers seeking a more sustainable packaging alternative.

ENSO bottles are not [Oxo biodegradable](#) or [PLA](#) plastic (corn-based). These bottles are plastic containers that biodegrade in anaerobic conditions, breaking down through microbial action into biogases and inorganic nutrients. ENSO bottles are [recyclable](#) and can be recycled along with other plastic bottles.

To learn more about our products check out our Products page or contact our Sales Representatives. We would be happy to assist you.

BUY AQUAMANTRA®

Premium Natural Spring Water

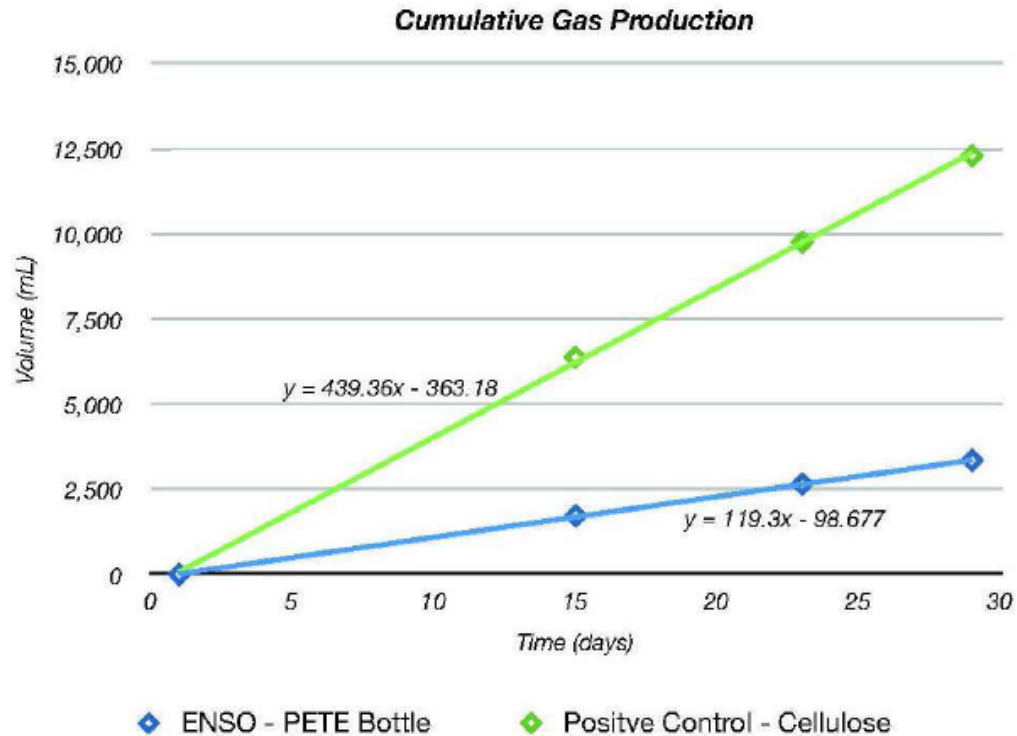
We're doing what's right!



Bio-Extrapolation

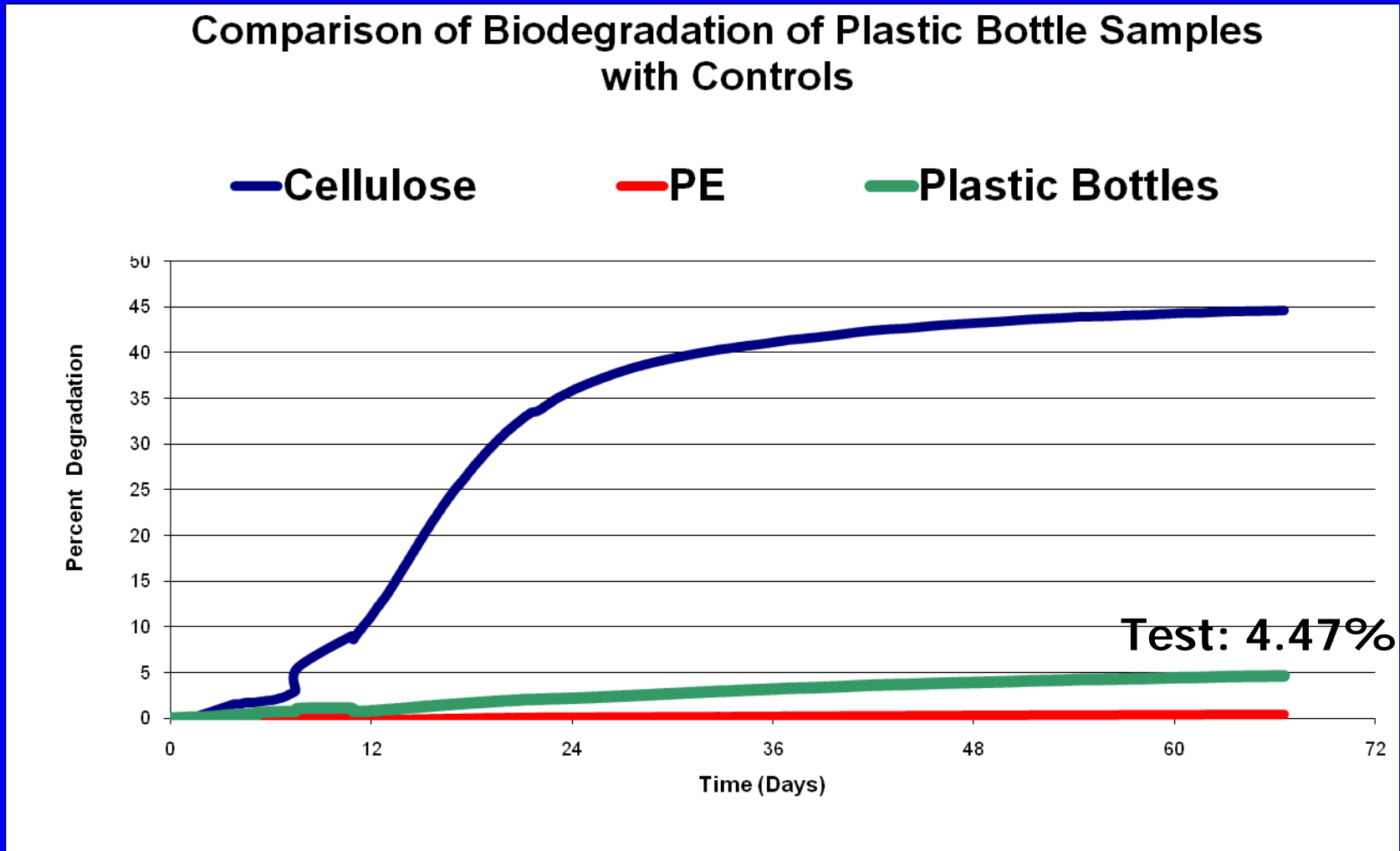
Conclusion & Analysis:

Upon consideration of gas production analysis, it becomes obvious that biodegradation has occurred. Biodegradation appears to be linear. There is no significant deceleration of degradation at the end of the first 15 day test period. The degradation will apparently continue in a linear fashion.



Source: Page 6 "Enso Bottles Technical Datasheet: 22 July, 2009

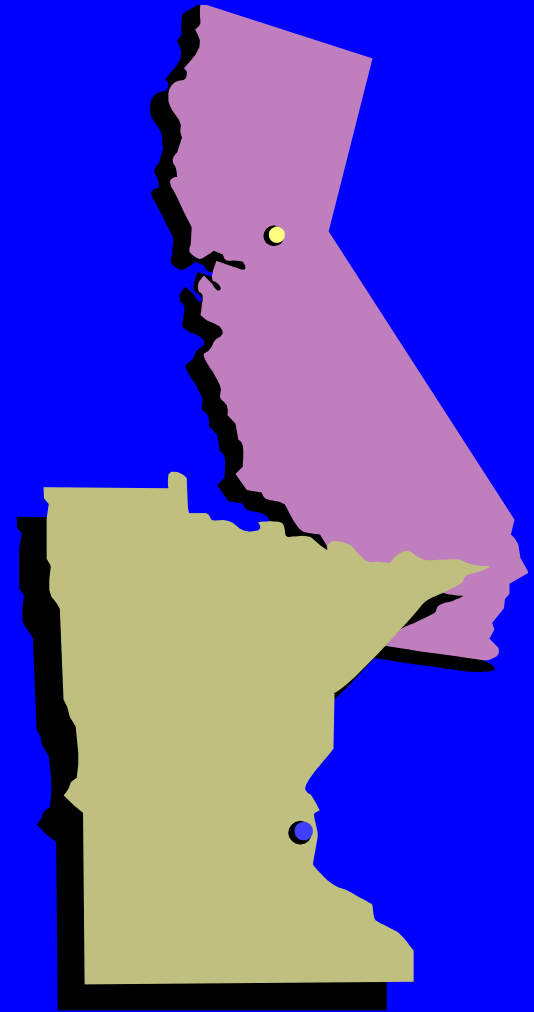
BPI's Aquamantra Bottle Test with Enso Additive



Source: NSF #J-00091962 ; January, 2011: ASTM D5511 Test Method

State Regulations

- California and Minnesota have regulations linking the term “Compostable” to ASTM D6400 and D6868.
- California regulates the use of “biodegradable” on plastic bags and foodservice items



If not biodegradable, then what?

- No end of life “magic additives” exist for products or packaging.
- Diversion programs are preferable to landfilling & incineration
 - Reuse
 - Recycling
 - Composting
 - Anerobic Digestion

Renewable Growth

- Growth of biobased feedstocks in traditional and new resins
- Packaging
- Durable applications
- High performance products

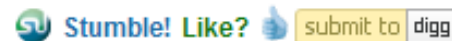


Telles Mirel



Renewable Materials will continue to grow

Algae Tech's Latest Goal: Make Ethanol for Bioplastics



At a Texas industrial site, the vats of chemicals may soon stand adjacent to long tubes filled with algae. Industrial giant Dow Chemical today announced a new partnership with startup company Algenol Biofuels to build a pilot plant, which will use algae to convert carbon dioxide emissions into ethanol. That ethanol could be used either as a biofuel or, eventually, as an ingredient for Dow's

Brazil Braskem may expand green plastics on demand


SAO PAULO | Mon Mar 22, 2010 3:16pm EDT


March 22 (Reuters) - Braskem ([BRKM5.SA](#)), Latin America's largest petrochemicals company, may open a second factory to produce polyethylene from sugar cane-based ethanol, once a first plant starts up around October, a project manager at the firm said on Monday.

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