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Elemental Impact

HOLLY ELMORE, ELEMENTAL IMPACT

STEVE DAVIES, NATUREWORKS

BIOPOLYMERS CONFERENCE

BIOPOLYMERS ROLE IN ZERO WASTE PROGRAMS

SAN ANTONIO, TX

OCTOBER 17, 2012



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Sustainability in ACTION

Work with industry leaders to create best operating practices where the entire value-chain benefits, including corporate bottom lines and the environment. Through education and collaboration, establish the best practices as standard practices.



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A CATALYST

Ei: Creates Corporate | Community Initiatives

- ⊙ What could be done
- ⊙ That is not being done
- ⊙ Ei gets it done

Bring the Possible out of Impossible



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FOCUS AREAS

Initiative Foundations:

- ◎ Product Stewardship
- ◎ Toxin-Free Environments
- ◎ Zero Waste Initiatives



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ZERO WASTE

ZERO WASTE INITIATIVES

- ◎ Recycling Integrity
- ◎ Sustainable Food Court Initiative
- ◎ Zero Waste Zones





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RECYCLING INTEGRITY

*Maintaining maximum Material Value
With Minimal Energy Expended*

Contamination: *an expensive trip to the landfill*



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ZERO WASTE ZONES

Acquired by the
National Restaurant Association
September, 2012





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Sustainable Food Court Initiative

An Integrated Approach to Sustainability





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Mission:

To bring zero waste initiatives to food courts and develop industry, sustainable best practices for Back-of-the-House and Front-of-the-House operations



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Food Court Challenges:

- ❖ Common property waste & recycling contracts
- ❖ Landlord | Tenant Relationships
- ❖ Franchisee | Franchisor Relationships
- ❖ Consumer Disposal of FOH Packaging
- ❖ Third Party Items Brought to Food Court
- ❖ Multiple Packaging Products Used



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Hartsfield-Jackson Atlanta International Airport

*All food vendors must use compostable
food serveware and consumer-facing
packaging and source-separate organics
for composting collection.*

Provision in new airport concessions RFP



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2011 Going Green Airports Award:

Sustainable Food Court Initiative Atlanta Airport Pilot



Michael Cheyne accepted award on October 31



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Additional Pilots:

- ❖ Shopping Mall - Concord Mills (Charlotte)
- ❖ Event Venue - Georgia Dome (Atlanta)
- ❖ Office Complex
- ❖ Government Center
- ❖ College | University

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NEW HORIZONS

Expanded Foodservice Opportunities:

- ◎ **Manufacturing**
- ◎ **Corporate Campuses**



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COMPOSTABLE PACKAGING ROLE

Compostable Packaging Is An Vital Enabler:

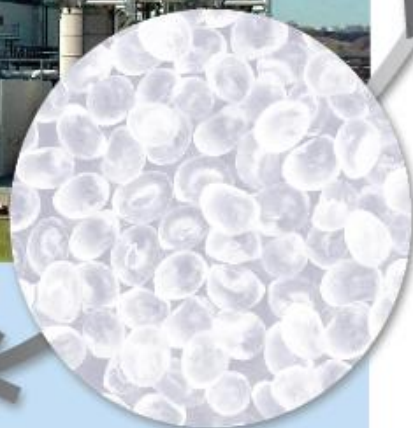
- ⦿ Combine both food and compostable packaging food serviceware wastes into a single waste stream
- ⦿ Results in greater food waste volumes being collected – and ultimately diverted from landfills
- ⦿ Creates “compostable plastic harmonization” within food serviceware packaging
- ⦿ Instead of multiple plastic streams – a portfolio of compostable plastics (and/or paper) waste co-diverted with food waste from landfill
- ⦿ Enhanced carbon footprint through composting food/compostable plastics wastes as one!
 - As renewable plastics have demonstrated - i.e. plastics made from plants vs. made from crude oil (and/or natural gas based) provide a superior carbon footprint



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WHO IS NATUREWORKS



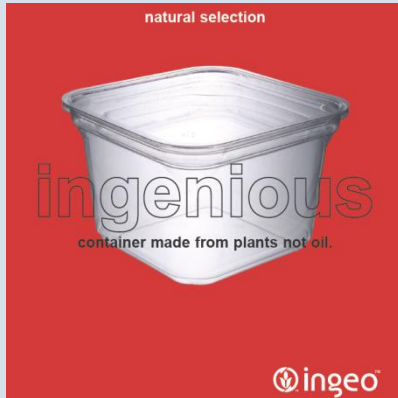
- *In 2002, World's 1st global scale bioplastics producer*
- *50/50 ownership between Cargill and PTTG Global*
- *Economies of scale to*
 - *Proven manufacturing technology*
- *Strong Patent Position*
- *Universally accepted strong eco-profile*
- *Ingeo™ Innovations can be found today on shelves around the globe*

 **ingeo™**

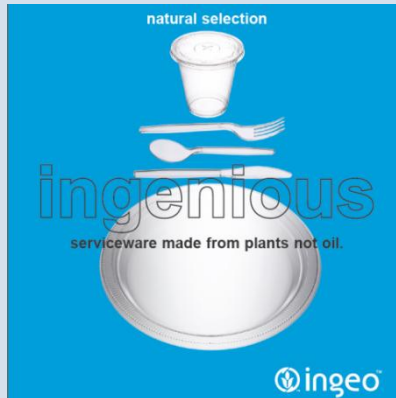


 **ingeo™**
by NatureWorks

Rigids



Food Serviceware



Films



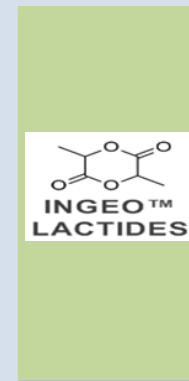
Nonwovens / Fibers



Durables



Lactides



Bus. Dev.

Incubator



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EI PARTNERS FOOD SERVICEWARE INNOVATIONS





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HJAIA FOOD VENDORS

- ◎ Beginning in 2012, food vendors have been required to use compostable service ware to support HJAIA's goal:
 - ◎ divert 50% of its waste from landfill by 2015
- ◎ HJAIA defines 'compostable products' as those that are approved by 3rd parties:
 - ◎ The Biodegradable Products Institute (BPI); or
 - ◎ Cedar Grove Composting.



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ATLANTA HARTSFIELD AIRPORT COMPOSTABLE FOOD SERVICEWARE

- ◎ Types of Compostable Foodservice Ware Products Covered by Contract Restrictions
 - ◎ The following types of foodservice ware used by food vendors should be BPI-certified or Cedar Grove accepted:
 - Cutlery
 - ◎ both individually wrapped and bulk utensils
 - Plates, bowls and cups
 - ◎ for both hot and cold applications
 - Take-out packaging
 - ◎ E.g. clamshells, boxes, deli containers, deli/bakery bags, containers with separate lids
 - Ancillary items such as lids, straws, trays, and coffee stirrers.



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EXEMPTIONS

- ⦿ Branded packaging
 - ⦿ used for food and beverage items manufactured by brand name food companies or by regional or national restaurant companies and supplied to restaurant locations operating at HJAIA are currently excluded from having to comply with the terms of this Compostable Foodservice Ware Packet.
- ⦿ These excluded items relate solely to pre-packaging
 - ⦿ e.g., beverage cans and bottles; snack food packaging such as nut, candy, and chip bags; and pre-packaged condiments). All other foodservice ware packaging/items must comply with this Compostable Foodservice Ware Packet.
- ⦿ Exemptions
 - ⦿ issued by the City of Atlanta's Department of Aviation may be granted, revoked, modified or suspended by DOA from time to time in their entirety or case-by-case basis.



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LOOKING AT ALL THE “WHAT- IFS”

- © What if compostable Ingeo™ based Food Serviceware does inadvertently end up in Landfill ?

Ingeo™ behavior in Anaerobic Conditions . . .

- We've considered two extremes

1

*What happens to
Ingeo Under
Landfill
conditions ?*



2

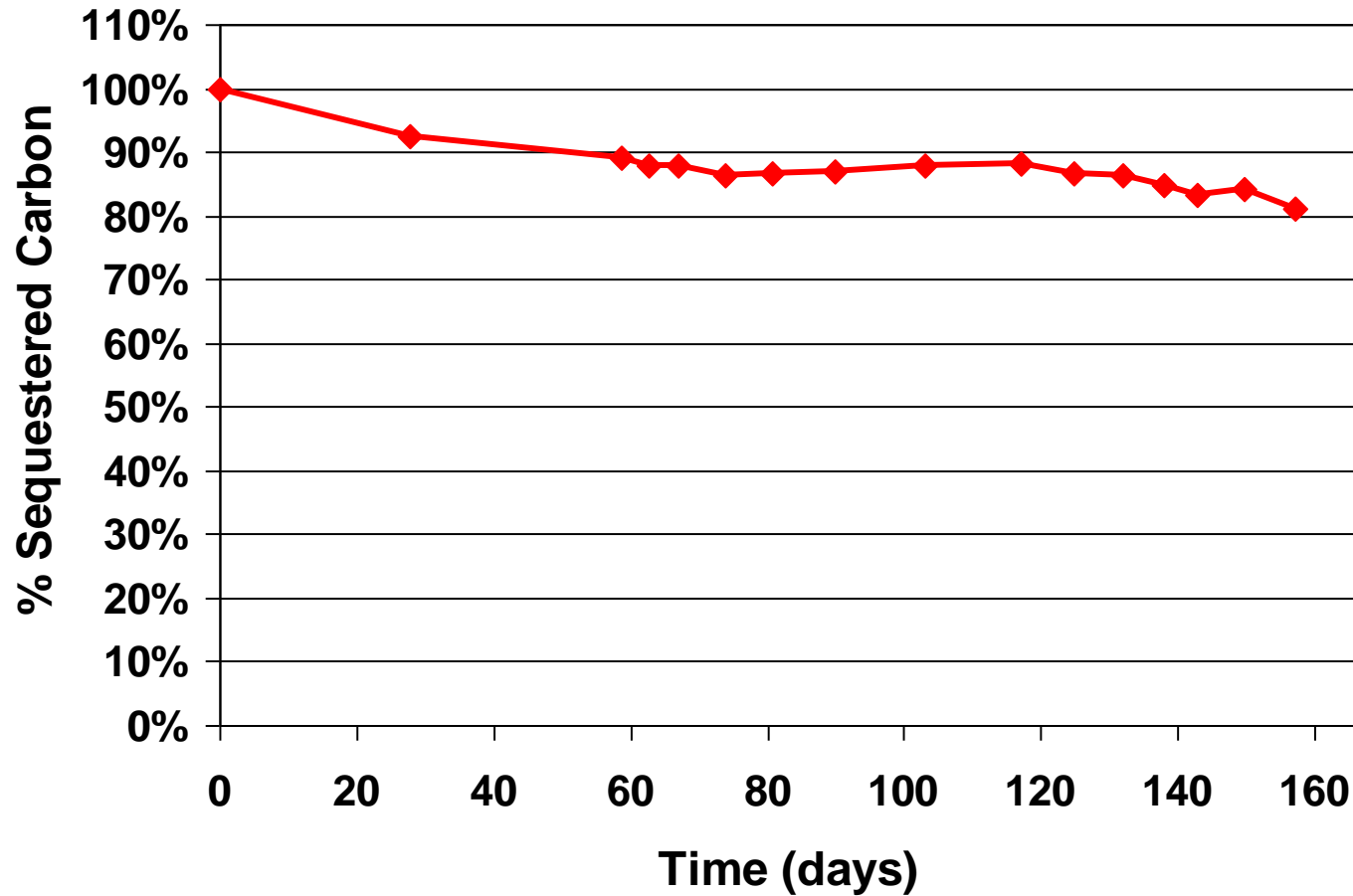
*Can Ingeo
be forced
to generate
methane ?*

- Each case has been assessed quantitatively, by independent 3rd party authority OWS (Belgium)



ASTM D5526:

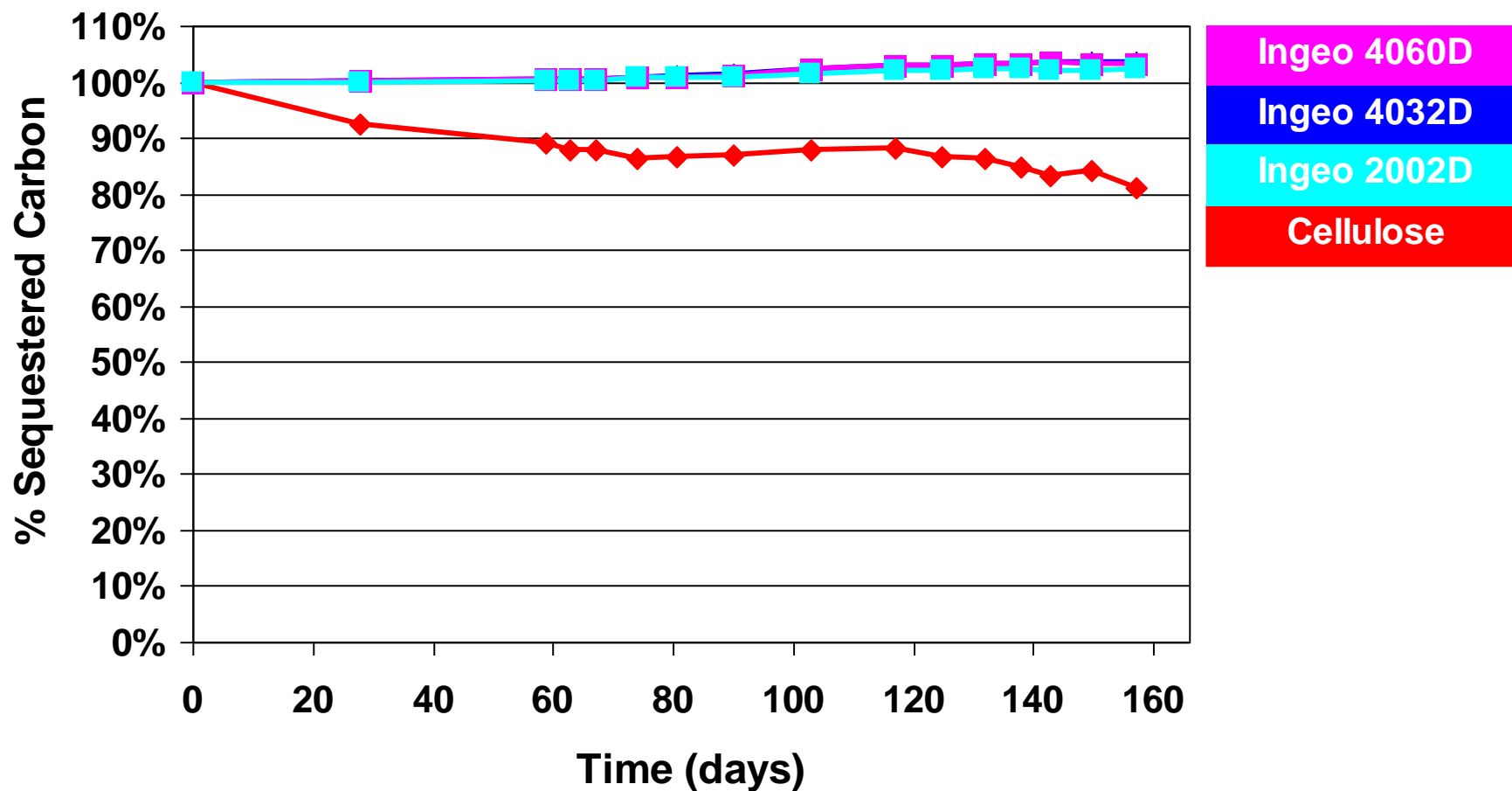
Accelerated Landfill Simulation



Cellulose

ASTM D5526:

Accelerated Landfill Simulation



OWS:

“Biodegradation has not started for any of the Ingeo test samples”

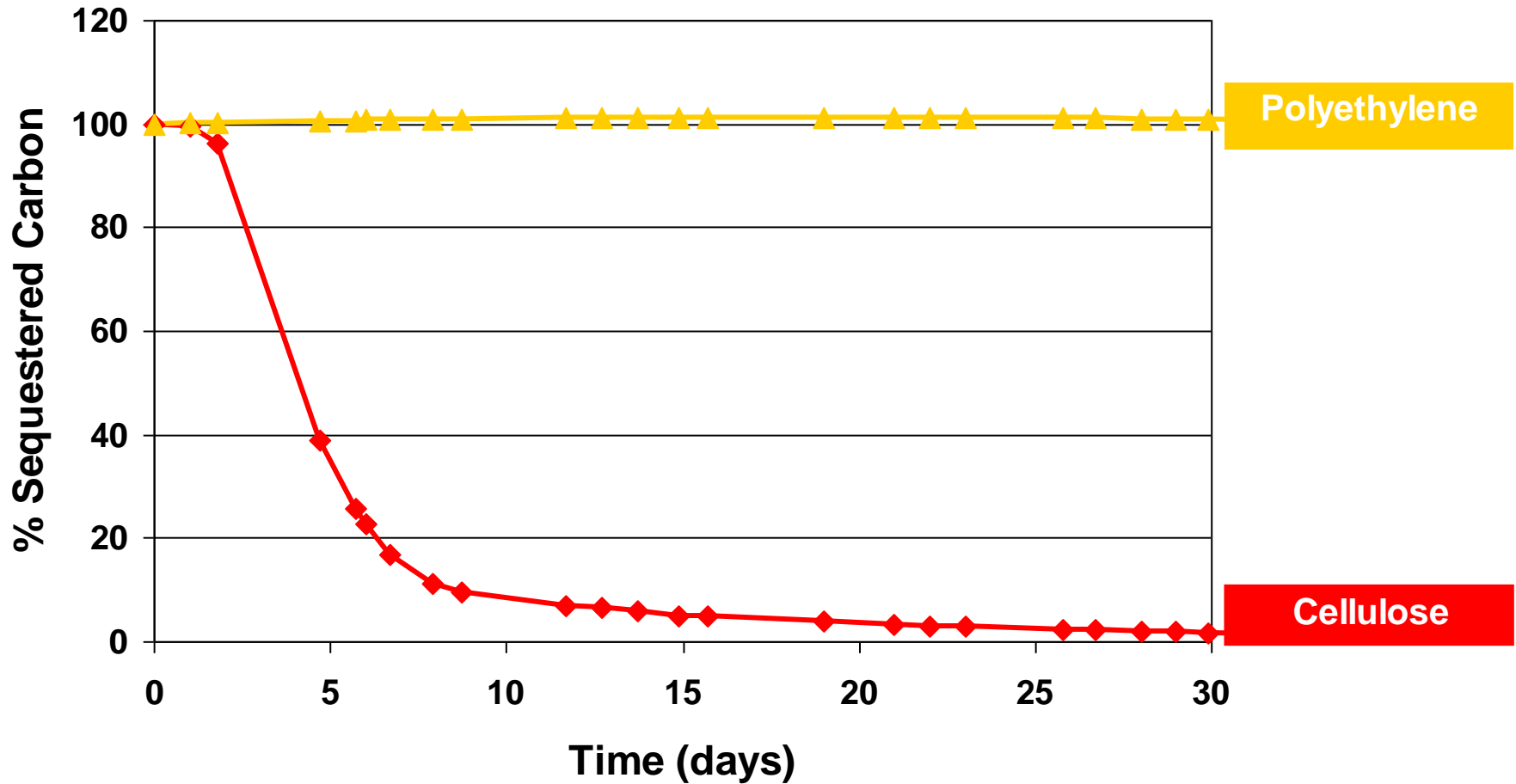
The behavior of Ingeo™ products in landfills

Conclusions

- In Landfill [ASTM D5526]
The carbon in Ingeo
remains sequestered

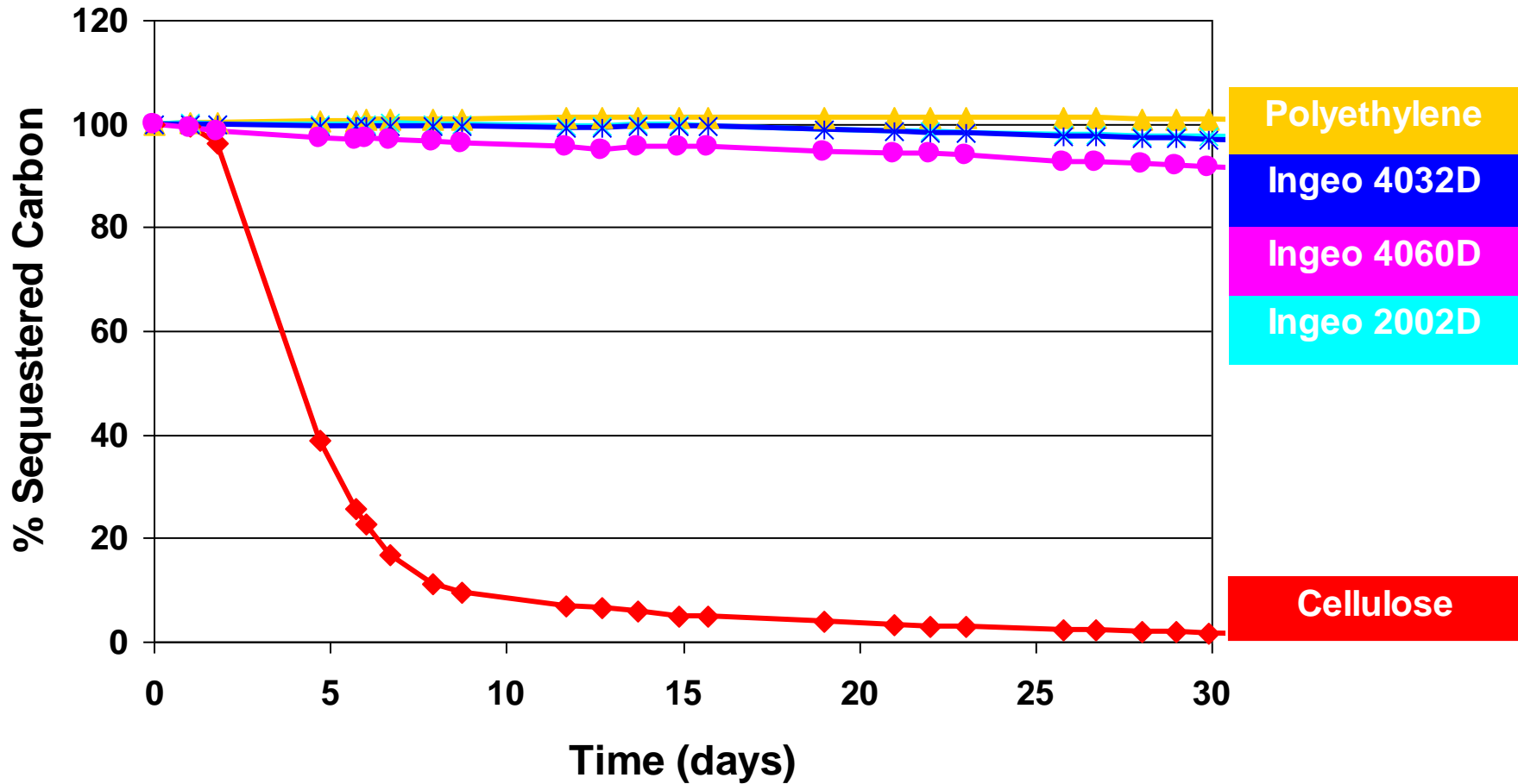


ASTM D5511: Mesophilic Anaerobic Digester Simulation



ASTM D5511:

Mesophilic Anaerobic Digester Simulation



ASTM D5511: Mesophilic Anaerobic Digester Simulation

Just Published in Peer Review

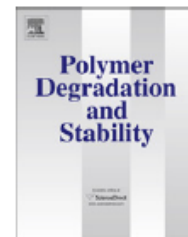


ELSEVIER

Contents lists available at SciVerse ScienceDirect

Polymer Degradation and Stability

journal homepage: www.elsevier.com/locate/polydegstab



Assessment of anaerobic degradation of Ingeo™ polylactides under accelerated landfill conditions

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^c Organic Waste Systems NV, Dok Noord 5, B-9000 Gent, Belgium

Time (days)

OWS:

“The Ingeo grades tested would be poor feedstocks for a mesophilic biogasification facility”

The behavior of Ingeo™ products in landfills

Conclusions

**it's a start
stay tuned ...**

can be marginally degraded

- Not viable feedstocks for mesophilic degradation
- Residuals would be compostable

What Two Elemental Impact Partners Have Accomplished – and It's Applicability to the Sustainable Food Court Initiative!



ingenious materials from plants not oil



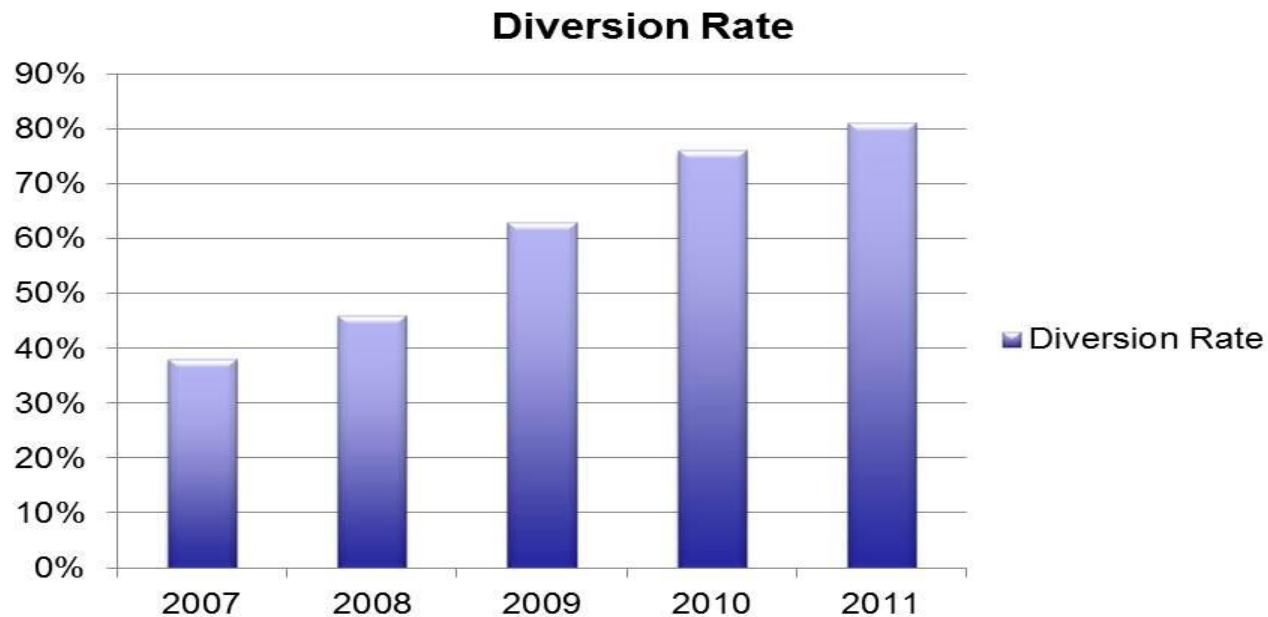
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Portland Trail Blazer (and Elemental Impact) Partners!



Key Focus – Waste Diversion

This Includes Food and Compostable Food Serviceware Waste Diversion



The Portland Trail Blazers Outcomes

business case

Baseline 2008

Energy Savings = \$411,000 (3.5m kWh's / 110,000 therms)

Water Savings = \$165,000 (over 13,000 CCF's)

Waste Diversion Savings: \$260,000

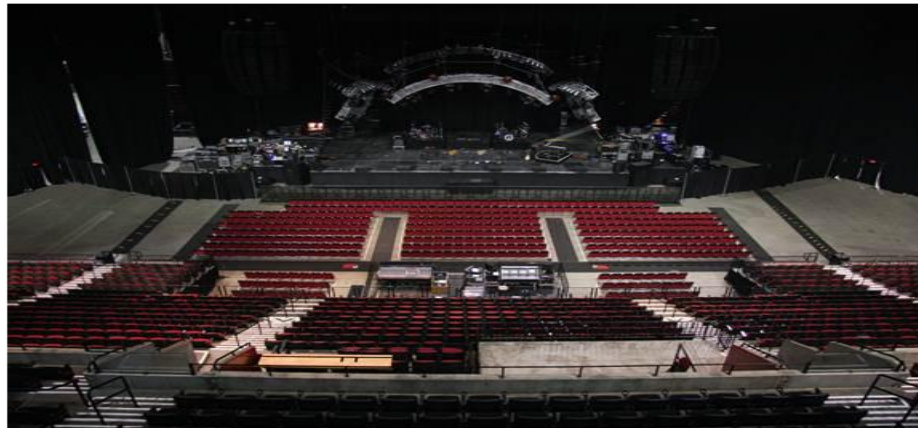
Total Savings = \$836,000
(Cost = \$560,000)



Portland Trail Blazers Benefits Extend Beyond the Environment!



enhance guest/fan experience



QUESTIONS ?