eco·cycle®

Working to Build Zero Waste Communities

Oxo-Biodegradable Products:

Buyers Beware

Oxo-Biodegradable Plastic

Eco-Cycle, Inc.

Boulder, Colorado

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Definitions

- **Degradable:** will fragment into smaller pieces
- **Biodegradable:** can be metabolized by microorganisms, such as bacteria or fungi, over a 'reasonable' period of time
- **Compostable:** biodegradable in a municipal/commercial compost facility

What is "Oxo-Biodegradable" plastic?

- petroleum-based plastic +
  small amounts of metal salts
- metals speed up fragmentation when exposed to oxygen and heat
- shortens degradation from hundreds of years to months/years
- *biodegradation* of remaining fragments debated

Metal catalyst additive

http://en.wikipedia.org/wiki/Oxo_Biodegradable

Oxo-Biodegradable Products

Oxo-biodegradable foam

Gold Standard for Compostable Packaging

Biodegradable Products Institute BPI ™ Certification

- not-for-profit
- members: government, industry, academia
- <u>scientifically-based standards</u> for compostable materials
- meet ASTM D6400 and D6868

ASTM International Standard for Compostable Plastics: D6400

- biodegrade 60-90% within 180 days
- disintegrate 90% to pieces no greater than 2mm
- leave behind no heavy metals beyond that of control

Oxo-biodegradables: Not certified compostable

- 1-5 years to biodegrade (industry claim)
- leave residues and small pellets
- require hot, dry conditions for several weeks, 1 year of warm compost environment
- marketed as "insurance policy against litter"
- plastic fragment pollution concerns apply

"Bio-Extrapolation"

- biodegradable claims for additives based on "bio-extrapolation"
- show small amount of biodegradation, <u>assume</u> the process will continue to completion
- scientifically unsound to extrapolate biological processes

- Steve Mojo, Executive Director, BPI

BPI Biodegradable Products Institute

Testing by Woods End Laboratories

Day 0

Week 12

- after 3 months in hot weather, Oxo bags unchanged
- regular PE bag shredded by wind and sunlight

Woods End Laboratories INCORPORATED

http://www.motherearthnews.com/healthy-people-healthy-planet/oxo-biodegradable-bags-test-1.aspx#ixzz1EdbSfUUB

Other Disposal Options?

- **Reuse** - unsuitable for extended reuse, increased degradability
- **Recycling** - "…claims of recyclability are unfounded, untested and possibly misleading as outlined by the Federal Trade Commission's Green Guide. No third party testing data has confirmed these statements…"

-- Steve Alexander, Executive Director
Association of Post-Consumer Plastic Recyclers

Why are oxo-bags and films being purchased?

- stronger than PLA bags
- 2-3 times less expensive

Oxo

PLA

Other oxo-products commonly marketed to school districts and other institutions:

- disposable gloves
- foam plates
- cups
- cutlery

Recommended Compostable Serviceware Materials

- **PLA** – Polylactic Acid (corn-based), used in cold cups and lining of paper cups, plates, etc.
- **Bagasse** – fibrous byproduct of sugar cane or sorghum juice extraction, looks like paper
- **Paper**
- **Wheat Straw**
- **Bamboo**
- **Palm Fiber**
- **Corn Starch**
- **Soy, Tapioca, Potato Starch** (less common)

Bagasse

Sugar Cane

Caution: avoid composite plastic/starch products

Compostable Serviceware Options

- **Cups:** hot, cold
- **Drink-related:** lids, straws,
  hot cup sleeves, cup carriers
- **Bowls:** various sizes, bowls with lids
- **Plates:** various-sizes, compartmental plates
- **Trays:** various-sizes, compartmental trays
- **Bags:** various sizes, compost collection
- **Hinged containers:** various sizes, compartmental containers
- **Oven containers:** designed to heat and serve (muffins, pastries, etc.), fiber-based (bagasse or paper)
- **Deli containers:** clear with lids, various sizes
- **Cutlery:** forks, spoons, knives, sporks (avoid Plant Starch Cutlery)
- **Miscellaneous:** serving gloves, bags, film, baking sheet liners, aprons

PLA

Purchasing

- difficult to determine which items in distributor's catalogue meet the ASTM Specifications and/or are BPI-approved
- purchasers should specify BPI-approved or meeting ASTM D6400 or D6868
- Products meeting ASTM Specifications can be found on BPI website:

http://www.bpiworld.org/BPI-Public/Approved.html

COMPOSTABLE

Biodegradable Products Institute | US COMPOSTING COUNCIL

When purchasing, look for this label:

“It’s not compostable unless it’s composted.”

“Our definition of ‘compostable’ is not based solely on materials, but on the availability of local composting infrastructures.”

--Elise Chisholm, Starbucks Global Communications Program Manager

The Best Environmental Options

Durable and Reusable

Contact Information

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http://ecocycle.org/microplasticsincompost

New Advances in Manufacturing Plastics from Renewable Resources

chemically equivalent to petroleum-based PET and HDPE

PlantBottle™ by Coca-Cola:

- PET bottles: 70% petro/30% plant-based (on market since 2009)
- HDPE bottles: up to 100% plant-based (on market since 2011)
- made from sugarcane
- recyclable, not compostable

"Green" Bottle by PepsiCo:

- PET bottles:100% plant-based (from food waste)
- recyclable, not compostable
- plans to launch pilot in 2012

False claims of biodegradability

- made from petroleum with organic additives
- Manufacturers Claim: biodegrade in anaerobic (landfill) environments, recyclable
- ASTM D5511 test conducted by BPI: After 60 days, bottle biodegradation total of only 4.47%
- considered a contaminant in recycling, not compostable in a municipal composting facility

EcoPure® from Bio-Tec Environmental

ENSO™ Bottles

Making Plastics Earth Friendly™