Oxo-Biodegradable Products: Buyers Beware

Eco-Cycle, Inc.
Boulder, Colorado

© Copyright 2011 Eco-Cycle, Inc.
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

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
- scientifically-based standards 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, assume the process will continue to completion
- Scientifically unsound to extrapolate biological processes

- Steve Mojo, Executive Director, BPI
Testing by Woods End Laboratories

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

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
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)

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
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
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

Cyndra Dietz

- Phone: 303-444-6634, ext. 122
- Email: cld@ecocycle.org
- Website: www.ecocycle.org
- Address: Eco-Cycle
  P.O. Box 19006
  Boulder, CO 80308

http://ecocycle.org/microplasticsincompost
New Advances in Manufacturing
Plastics from Renewable Resources

PlantBottle™ by Coca-Cola:
- 70% petro/30% plant-based (sugarcane) PET bottles
- recyclable, not compostable
- on market since 2009

“Green” Bottle by PepsiCo:
- 100% plant-based (food waste) PET bottles
- chemically equal to petroleum-based PET
- recyclable, not compostable
- plans to launch in 2012
EcoPure® from Bio-Tec Environmental

- 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 4.47%
- considered a contaminant in recycling

“100% Recyclable and Compostable”