Criteria for Sustainable Biomaterials: Focus on the Specifications for Compostable Foodservice Ware

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Overview

- A Word about the Sustainable Biomaterials Collaborative (SBC)
- Guidelines for sustainable biomaterials
- Criteria for environmentally preferable biobased foodservice ware
- Market-based tools: purchasing specs & Working Landscape Certificates
- Current developments

Sustainable Biomaterials Collaborative

The Sustainable Biomaterials Collaborative is a network of organizations working together to spur the introduction and use of biomaterials that are sustainable from cradle to cradle. The Collaborative is creating sustainability guidelines, engaging markets, and promoting policy initiatives.

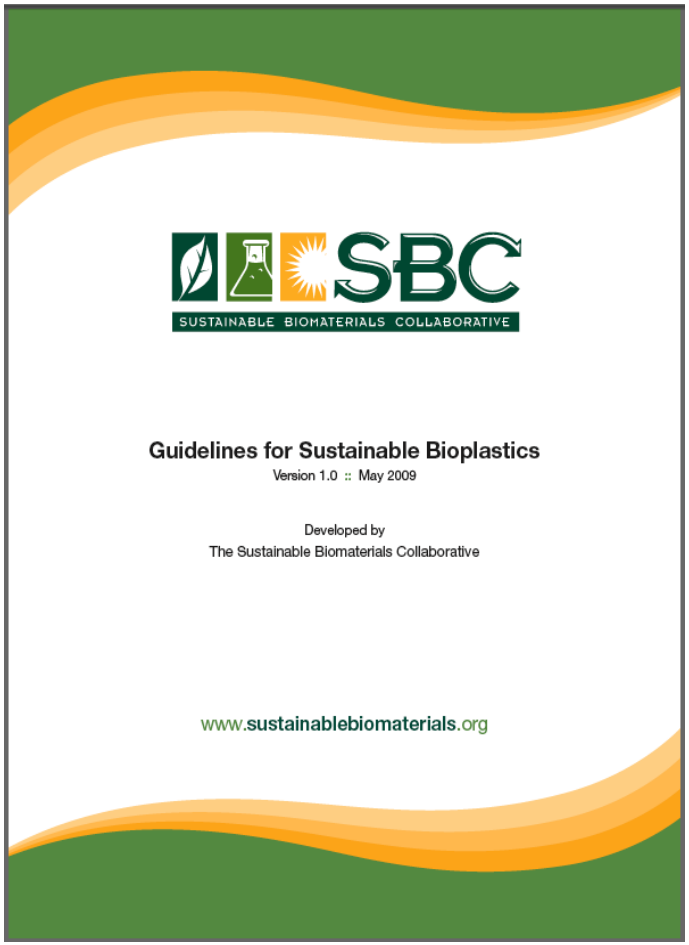
As You Sow
Center for Health, Environment and Justice
Clean Production Action *
Environmental Health Fund
Green Harvest Technologies
Health Care Without Harm
Healthy Building Network
Institute for Agriculture and Trade Policy *
Institute for Local Self-Reliance*
Lowell Center for Sustainable Production *
Sustainable Research Group
Pure Strategies
RecycleWorld Consulting
Science & Environmental Health Network
Seventh Generation
National Campaign for Sustainable Ag.

* Steering committee

Defining Sustainable Life Cycles by Principles

- Sustainable feedstocks / Sustainable agriculture
- Green Chemistry / Clean Production
- Closed Loop Systems / Cradle to Cradle / Zero Waste

"Just because it's biobased, doesn't make it green"



Key Principles for Sustainable Bioplastics

- Reduce the amount of material, product and packaging used
- Eliminate single-use products that can be neither recycled nor composted
- Avoid fossil-fuel-based materials in favor of materials and products derived from renewable feedstocks
- Address sustainability across the life cycle of the material: the growing of the feedstock, manufacturing of the polymer and final product, using the product and reclaiming the material at the end of its original use.
- Define sustainability to include issues of environment, health, and social and economic justice.
- Design and use products that are reusable, recyclable or compostable.
- Encourage agricultural systems that are sustainable for farmers, the environment, farm workers' and communities.
- Support small- to mid-sized family owned and operated farms.
- Do not use genetically modified organisms in agricultural feedstock production.
- Use chemicals that meet the 12 Principles of Green Chemistry.
- Avoid engineered nanomaterials and chemicals that have not been tested for environmental and public health effects across the life cycle.
- Decentralize production and buy local to reduce the environmental footprint of production, transportation, and consumption.

Biomass Feedstock

- Avoid hazardous chemicals
- Avoid GMOs
- Conserve soil & nutrients
- Biological diversity
- Sustainable agriculture plan
- Protect workers

SBC
SUSTAINABLE BIOMATERIALS COLLABORATIVE

PRACTICE Greenhealth

Manufacturing

- Support sustainable feedstock
- Reduce fossil energy use
- Avoid problematic blends & additives
- Avoid untested chemicals and engineered nano particles
- Design for recycling & composting
- Maximize process safety/reduce emissions
- Green chemistry
- Protect workers

End of Life

COMPOSTABLE
Biodegradable Products Institute | US COMPOSTING COUNCIL

- Compostable or recyclable
- Biodegradable in aquatic systems
- Adequate product labeling
- Adequate recovery infrastructure

Blends: Steps to Best Practices

Avoid	Plastics w/POPs in life cycle or manufactured w/high hazard chems (PVC, PS, ABS, PC, PU)
OK	Blend with more preferable plastics (e.g., PE, PP, PET)
Improving	Compostable
Better	Blend only bioplastics
Best	**Pure bioplastic** **Fully compostable & recyclable**

SUSTAINABLE BIOMATERIALS COLLABORATIVE

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Guidelines for Sustainable Bioplastics

To provide a roadmap for the development and continuing improvement of biobased plastics throughout their lifecycle, the Sustainable Biomaterials Collaborative led a collaborative effort to create *The Guidelines for Sustainable Bioplastics* (Version 1.0, released May 2009). *The Guidelines* reflect the current collective wisdom of a wide range of organizations that are addressing the potential benefits and challenges of biobased plastics and will be updated as the biobased plastics industry evolves.

"Bioplastics" are defined as plastics which derive 100% of their carbon from agriculture, forests, or other renewable resources. "Sustainability" encompasses issues of environment, health, and social and economic justice, as well as material resources used throughout the entire life cycle of bioplastics: from feedstock production to management of the bioplastic product after its intended use.

The Guidelines are being used by diverse organizations such as Whole Foods, the Rynel Corp., and the Maine Bioplastics Council to help guide their purchasing and promotion of biobased plastics. They are also the foundation for the development of the *BioSpecs for Food Service Ware*.

The Guidelines for Sustainable Bioplastics (May 2009, 18 pgs)

You can view the *The Guidelines* online using the table of contents on the left.

SUSTAINABILITY CRITERIA

- Overview
- Sustainability Guidelines
- Working Landscape Certificates
- Manufacturing Specifications
- Purchasing Specifications

LIFECYCLE ISSUES

EARLY ADOPTERS

EMERGING MATERIALS AND PRODUCTS

The Good News on Biobased Products

- Variety of resins and products available
- Performance improving
- Experience and R&D growing
- Growth expected
- Programs such as the federal biobased procurement will open up new markets
- Standards in place
- Price competitiveness improving
- Demand increasing







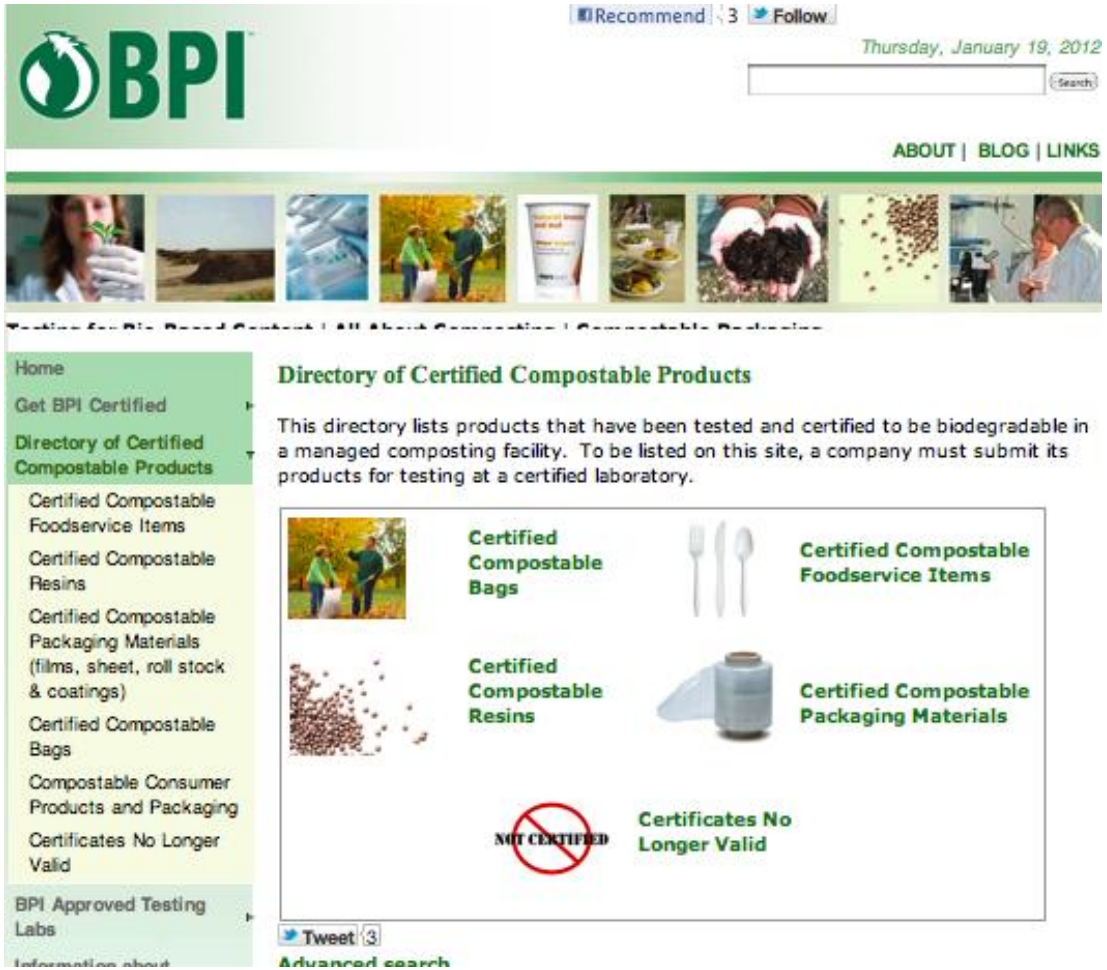
Biodegradable Products Institute

238 certified products

130 global companies

Note:

Some BPI-certified resins have zero biobased content



BPI-certified Products (sample)

Cereplast

innovia FILMS

鑫富药业 XINFU PHARM

TEKNOR APEX

ECOLO™ 漢豐 HANFENG

suPLA™素膠

TORK

BioBag

DINNERWARE FROM FALLEN LEAVES verterra

ingeo™

U.S. Biopolymers

Mater-Bi

Clarifoil

GLAD Compostable Bags

mirel Bioplastics by Telles

HUSKY EcoGuard Lawn & Leaf

FKuR plastics - made by nature!®

BASF The Chemical Company

GRABIO

Multibax MBIO

NaturBag®

EnviroJolt by Pak-Sher

Eco Plastics

Stalk Market EARTH FRIENDLY PRODUCTS

HERITAGE PLASTICS

AL-PACK COMPOST BAGS

MBM

Cardia compostable

SBC SUSTAINABLE BIOMATERIALS COLLABORATIVE

EATWARE®

Biomaterial – Wonder Material?

- “renewable”
- “green
- “eco-friendly”
- “sustainable”
- “environmentally neutral”
- “safe and better”
- “easy on the environment”
- “return to nature without a trace”

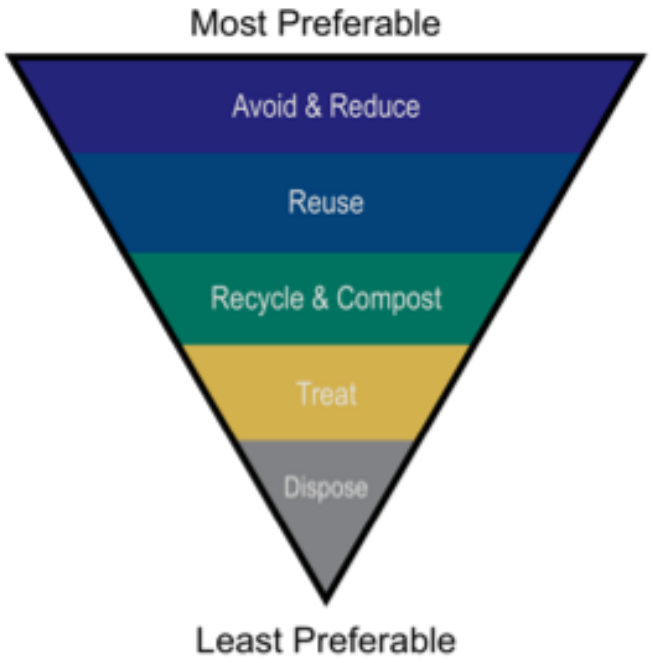
Compostability alone ≠ sustainable

Ultra Green but single-use

Biodegradability, biobased content, or recycled content alone does not = green

Products should be:

- Reusable
- Recyclable
- Compostable



Not All Bioproducts Created Equal

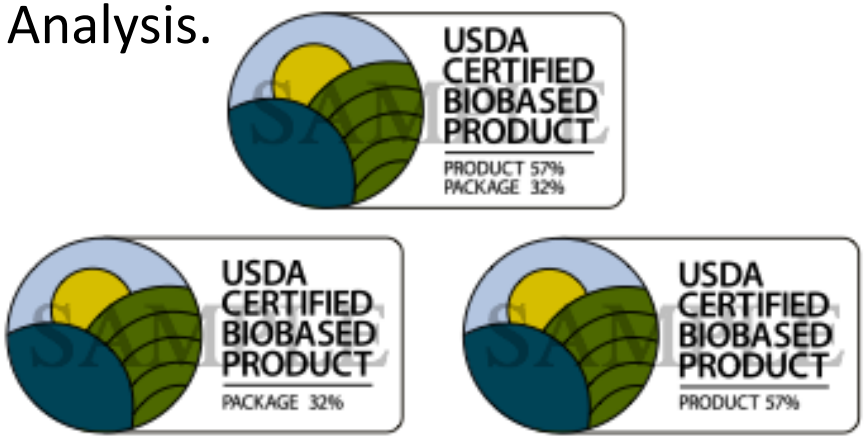
- Biobased content
- Material feedstock type
- Feedstock location
- Biodegradability
  - Commercial compost sites
  - Home composting
  - Marine environment
  - Anaerobic digestion
- Additives and blends
- Recyclability
- Performance
- Products

Biobased content alone ≠ sustainable

USDA Biopreferred Program

Biobased content - The amount of biobased carbon in the material or product expressed as a percent of weight (mass) of the total organic carbon in the material or product.

Biobased content is determined using ASTM Method D6866, Standard Test Methods for Determining the Biobased Content of Natural Range Materials Using Radiocarbon and Isotope Ratio Mass Spectrometry Analysis.



Biobased content of compostable bags

Compostable Bags (3-33 gallon size) Surveyed for Environmental Attributes

Bag Brand (Company)	Composition Resin Blends	Biobased Content (%)[2]	GMO-free?	Certified Compostable? Industrial	Home/Backyard
Bag-to-Nature (Indaco Manufacturing)	Naturework's PLA BASF's EcoFlex	16%	No	BPI Din Certco	
Biobag (Biobag International)	Novamont's Mater-Bi	46%	Yes[3]	BPI Vinçotte Din Certco	
BioSak (W. Ralston)	PCL	27%	N/A	BPI BNQ	OK Compost HOME
Comp-Lete (Fortune Plastics, Inc.)	Novamont's Mater-Bi	26%	Yes	BPI Cedar Grove	OK Compost HOME
Ecosac (IBI Plast Inc)	Novamont's Mater-Bi	47%	Yes	Vinçotte Din Certco	
EcoSafe 6400 (Plastics Solutions)	Naturework's PLA BASF's EcoFlex	9%	No	BPI	
Maximum (CPI Plastics Group Ltd)	Naturework's PLA BASF's EcoFlex	9%	Unsure	BPI	
Nat-UR Bags[3] (Cereplast Inc.)	Cereplast Resin	26%	Yes	BPI Cedar Grove	
Natur-Tec (Northern Technologies International Corp)	Natur-Tec BF703B BASF's EcoFlex	1%	N/A	BPI	
Quikki (El-En Packaging)	BASF Ecoflex and Ecovio	10-15%	Yes[4]	BPI	

Acronym Guide:
PLA = Polylactic acid (biobased)
PCL = Polycaprolactone (petroleum-based)
GMO = Genetically Modified Organism
BPI = Biodegradable Products Institute
BNQ = Bureau de Normalisation du Québec

Biobased content labeling inconsistent & confusing

Biobased content based on ASTM D6866 ~20%

USDA acknowledges biobased is not necessarily better

Q. Are biobased products safer than non-biobased products for me and my family?

A. Not necessarily. Read the label fully. <snip>

Q. Are biobased products better for the environment?

A. They can be. There is an expectation that the increased use of biobased products will reduce petroleum consumption, increase the use of renewable resources, better manage the carbon cycle, and, may contribute to reducing adverse environmental and health impacts.

Q. Does a higher percentage of Biobased content mean a product is "better"?

A. Not necessarily. There is no guarantee that higher content makes the product perform any better (or is safer for humans or the environment).

Q. Why is a life-cycle assessment (LCA) not required for the certification?

A. The purpose of this certification and label is to verify the presence of biobased ingredients, and to be explicit in just how much biobased content is incorporated into labeled products. The label is not meant to impart environmental attributes to biobased products; rather it points to biobased content-- agricultural materials, forestry materials, and marine and animal materials. <snip>

Source: http://www.biopreferred.gov/files/Label_FAQ.pdf

Biobased but not compostable

Biobased ≠ biodegradable

Mass of biobased ***carbon*** in the product

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Mass of total organic ***carbon*** in the product

Non-biodegradable biobased plastics are here

Deceptive Claims

False claims of compostability or biodegradability:

Many available products carry misleading, deceptive or unsubstantiated claims of biodegradability or compostability. Buyer beware!

“Biocompostable” cutlery

Confusion

Making Plastic Bottles Environmentally Friendly

In an effort to help reduce the tons of discarded plastic bottles accumulating in our nation's landfills, ENSO Bottles™, in partnership with Resilux America is bringing a biodegrable technology to the plastic packaging industry available in specially formulated additive, preforms and blown plastic bottles. ENSO Bottles™ is dedicated to providing earth friendly packaging solutions to customers seeking a biodegradable packaging alternative.

ENSO bottles are not Oxo biodegradable or PLA plastic (corn based) bottles. ENSO bottles are plastic containers that biodegrade in anaerobic (landfill) environments, breaking down through microbial action into biogases and inert humus leaving behind no harmful materials. ENSO bottles are recyclable and can be mixed into the recycling stream with other plastic bottles.

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

ENSO Bottles™

Bottles for a Healthier Earth™

Source: www.ensobottles.com

Oxo-degradables

“Biodegradable” PVC

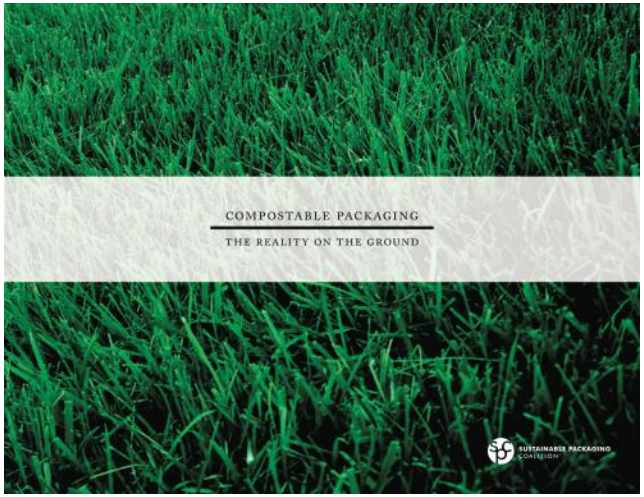
Compostable Plastic

Plastic that undergoes degradation by biological processes during composting to yield CO2, water, inorganic compounds, and biomass at a rate consistent with other known compostable materials and that leaves no visible, distinguishable, or toxic residue.

ASTM Standard D6400, 2004, "Standard Specification for Compostable Plastics," ASTM International, West Conshohocken, PA, 2004, DOI: 10.1520/D6400-04, www.astm.org

Challenges with Biobased Products

- Concern over genetically modified organisms (GMOs)
- Desire for sustainably grown biomass
- Need to develop adequate composting programs
- Concern with nanomaterials and fossil-fuel-plastic blends
- Lack of adequate labeling
- Concern over contamination of recycling systems



Recycling? More challenging

PLA bottle in MD- no recycling option

Tractor-mounted sorting system, Cal. pilot program

Univ. of WI-Stevens Pt.

Brussels closed-venue PLA recycling

Where's Waldo?
Identifying and Sorting Bio-Bottles

Courtesy of Eureka Recycling, Minneapolis, MN (www.eurekarecycling.org)

EUREKA! RECYCLING

Tricky?

At 120 feet per minute on a 30” wide conveyor line – It sure is!

Courtesy of Eureka Recycling, Minneapolis, MN (www.eurekarecycling.org)

Environmentally Preferable Specifications – BioSpecs

BioSpecs for Food Service Ware

(BioSpecs v.1.0)

Environmentally Preferable Specifications for Compostable Biobased Food Service Ware

Prepared by:

SBC
SUSTAINABLE BIOMATERIALS COLLABORATIVE

2011

Criteria: Biomass Production (food service ware)

Criteria	Recognition Level
BIOBASED (ORGANIC) CARBON CONTENT	
Non-cutlery products must be >90%	Bronze
Cutlery products must be >70%	Bronze
Non-cutlery products must be >95%	Silver
Cutlery products must be >85%	Silver
All products must be >99%	Gold
GENETICALLY MODIFIED (GM) PLANTS	
No plastics may be made directly in plants	Bronze
GM crops allowed in field with offsets	Bronze
No GM biomass allowed in field	Silver
SUSTAINABLY GROWN BIOMASS	
Forest and brushland-derived biomass	Bronze
Agricultural biomass	Gold
FEEDSTOCKS ARE FROM PERENNIAL CELLULOSIC CROPS OR AG CO-PRODUCTS	Gold
PROTECTION OF BIOMASS PRODUCTION WORKERS	Gold

Sample detail from BioSpecs

1.b.2 Bronze: Genetically modified crops are allowed in the field with offsets

Product materials derived from biomass that was genetically modified (GM) must be offset through an acceptable GM offset program or a sustainable agriculture program that addresses non-GM biomass.[2]

Intent: In North America, many of the biomass crops currently in production have been genetically modified, primarily for resistance to herbicides or insects. For example, 85% of all field corn planted in the U.S., 91% of the soybeans planted in the U.S., and 85% of the canola planted in Canada in 2009 were genetically modified. This profusion of GM crops on the landscape makes it difficult to directly source non-GM crops for industrial production, despite concern among potential buyers about the potential environmental and health impacts of GM crops. A GM offset program to support non-GM crop production can help address these concerns. Offsets can either be direct or indirect. The direct approach involves the sourcing of non-GM crops by the refinery at some point for processing (without any guarantee that these non-GM crops will be directly processed into the biomaterial). The indirect, or certificate, approach involves the "purchase" of quantified environmental and health benefits of non-GM crop production by biomaterial users, rather than the sourcing of the non-GM crop by the refinery.

This criterion allows for the use of GM organisms but ensures against the irresponsible introduction of additional biotechnology for the purpose of bioplastics production. The widespread use of GM biomass crops has resulted in a documented increase in the use of herbicides and the spread of herbicide-resistant plants. There remain many under-addressed and under-researched environmental, biodiversity, and health concerns about the introduction, use, and dissemination of GM biomass crops.

Verification Requirements: Offset programs for GM organisms include the Working Landscapes Certificate program (www.workinglandscapes.org) and NatureWorks GM Offset program (http://www.natureworksllc.com/the-ingeo-journey/raw-materials/source-options.aspx). The Working Landscapes Certificate program supports farmers growing corn (the current feedstock for most U.S. bioplastics) according to sustainable farming criteria, which include a GM prohibition. The "sustainable production" aspects are quantified and linked to the amount of corn used in the production of a bioplastic product. This approach provides bioplastic customers with an affordable option for supporting more sustainable agriculture and offers bioplastic manufacturers and farmers the financial support needed to utilize more-sustainable farming practices, without the added expense and constraints that direct sourcing of feedstocks would impose on both parties.

WORKING LANDSCAPES CERTIFICATE

WLCs in 2010

- Stonyfield Farm is first major buyer of WLCs
  - Shifted to PLA for multipack yogurt cups
- Supports ~500 acres of more sustainable corn production
  - Equivalent to 200 million cups

Criteria: Manufacturing (food service ware)

Criteria	Recognition Level
NO ORGANOHALOGENS ADDED	Bronze
ADDITIVES AND CONTAMINANTS OF HIGH CONCERN	
Declare whether nanomaterials present	Bronze
Eliminate use of toxic additives	
No Proposition 65 chemicals	Silver
No chemicals of high concern	Gold
All additives must be tested for hazards	Gold
PAPER- OR PAPER-BASED PRODUCTS	
Non-food-contact products: 100% recycled, 40% post-consumer	Bronze
Food-contact products	
Cups: 10% post-consumer recycled content	Gold
Other food-contact products: 45% recycled content	Bronze
NO CHLORINE OR CHLORINE COMPOUNDS	Silver
PROTECTION OF MANUFACTURING PRODUCTION WORKERS	Gold
LOCAL OWNERSHIP AND PRODUCTION	Gold

Sample detail from BioSpecs

2.a Bronze: No organohalogens may be intentionally added to the product or used in coatings
Organohalogens, due to their negative environmental and human health impacts, should not be added to food service ware products.

Intent: The goal is to avoid halogenated organic compounds, which are nonmetallic chemicals that contain a halogen element, such as fluorine, chlorine, bromine, iodine, or astatine bonded to carbon. The organohalogens, especially the organochlorines, organofluorines and organobromines, have been a focus of international concern for many decades, because they are associated with many negative environmental and human health impacts. Organofluorines are used in food service ware to make products grease-resistant. Examples of organohalogens restricted by international treaties, such as the Stockholm Convention on Persistent Organic Pollutants, include polychlorinated biphenyls (PCBs), DDT, dioxins and furans, and pentabromodiphenyl ether (penta-BDE).

In general, organohalogens are persistent and bioaccumulative (see Criterion 2.b.1). Over the course of their life cycle, they can contribute to the formation and dispersion of chemicals of high concern – especially persistent, bioaccumulative, and toxic compounds, such as dioxins and furans – into the environment and humans. Organohalogens are now commonly found in all humans, including newborns, who are exposed when these chemicals cross the placenta.

Verification Requirements: Targeted analysis using XRF spectroscopy technology is available for heavy metals and organohalogens.

Sample detail from BioSpecs

2.b.2 Eliminate use of toxic additives
No chemicals of high concern to human or environmental health may be intentionally added to the product or may constitute part of the product except at levels consistent with background levels in the environment.

Intent: The goal is to protect workers, consumers, the public, and the environment from exposure to hazardous materials that may cause, or are known to cause, adverse health effects and to prevent these substances from further bioaccumulating in the environment.

2.b.2.a Silver: No Proposition 65 chemicals may be used in the product

Verification Requirements: Product manufacturers must verify that no chemicals included in the California Proposition 65 list of chemicals were used in the product.

2.b.2.b Gold option: No chemicals of high concern may be used in the product

Verification Requirements: Product manufacturers must verify that the product is made with no chemicals included in the "Red List of Chemicals" listing on the Green Screen for Safer Chemicals developed by Clean Production Action and Healthy Building Network.

2.b.3 Gold option: All additives must be tested for hazards to human health and the environment
All additives must be comprehensively tested for the hazards they pose to human health and the environment.

Intent: The goal is to prevent the use of hazardous chemicals in a product. Basic toxicity testing is defined as sufficient to qualify under the Organization for Economic Cooperation and Development (OECD) Screening Information Dataset (SIDS) for High Volume Production (HPV) Chemicals.

Verification Requirements: Product manufacturers must have written verification from suppliers that chemicals used have completed the full battery of OECD SIDS testing.

Criteria: End of Life (food service ware)

Criteria	Recognition Level
PRODUCT MUST BE COMMERCIALLY COMPOSTABLE	Bronze
PRODUCT LABELED FOR COMPOSTABILITY "Commercially Compostable" if facility exists Verification agency logo on product Distinguishable labeling Additional labeling if facility does not exist	 Bronze Bronze Bronze Bronze
COMPOSTABLE AT MESOPHILIC TEMPS / IN BACKYARD OR HOME COMPOSTING	Silver
BIODEGRADABLE IN AQUATIC ENVIRONMENT Marine biodegradable Freshwater biodegradable	 Gold Gold

Sample detail from BioSpecs

3.a Bronze: The product must be commercially compostable

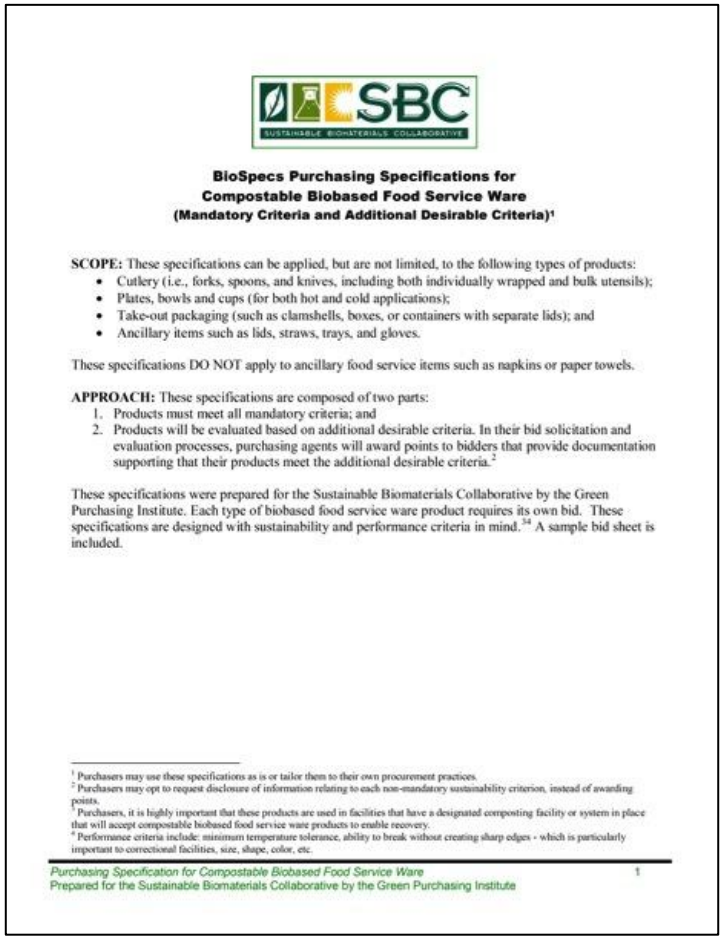
The finished product, in its entirety, must be 100% commercially compostable; composting claims must be substantiated and validated; and product labeling should be qualified. Products labeled simply as "compostable" imply an ability to biodegrade in home composting systems. If the product cannot be home composted, the labeling should be qualified accordingly.

Intent: The goal is to promote the composting of biobased food service ware once it has served its original intended function; to help capture food discards for composting; and to ensure that composting claims are substantiated and qualified with appropriate labeling. Appropriate product labeling is essential to ensure that the product, not just the resin, is certified; to ensure that the product purchasers as well as the users are educated on the proper end-of-life options; and to assure composters that the products they receive are indeed compostable. One benefit of making the transition from disposable products to compostable food service ware is the opportunity to capture discarded food scraps for composting or anaerobic digestion, thereby increasing waste diversion and decreasing methane emissions from landfills. Because used food service ware is contaminated with food residuals, it generally cannot be recycled. These specifications therefore encourage the production and use of compostable biobased food service products. Future specifications for non-food service ware, such as bottles, will include criteria for recycling.

Verification Requirements: The product must be certified as commercially compostable, using either ASTM D6400, ISO 17088, DIN EN 13432, or AS 4736, by a third-party verification agency. The product must meet the full requirements of the standard used. Third-party verification agencies include:

- Biodegradable Products Institute (North America)
- AIB Vinçotte Inter (Belgium)
- Din Certco (European Union)
- Australian Environmental Labeling Association (Australia)
- Japan Bioplastics Association (Japan)

Purchasing Specifications for Biobased Compostable Foodservice Ware



BioSpecs Purchasing Specifications for Compostable Biobased Food Service Ware (Mandatory Criteria and Additional Desirable Criteria)[1]

SCOPE: These specifications can be applied, but are not limited, to the following types of products:

- Cutlery (i.e., forks, spoons, and knives, including both individually wrapped and bulk utensils);
- Plates, bowls and cups (for both hot and cold applications);
- Take-out packaging (such as clamshells, boxes, or containers with separate lids); and
- Ancillary items such as lids, straws, trays, and gloves.

These specifications DO NOT apply to ancillary food service items such as napkins or paper towels.

APPROACH: These specifications are composed of two parts:

1. Products must meet all mandatory criteria; and
2. Products will be evaluated based on additional desirable criteria. In their bid solicitation and evaluation processes, purchasing agents will award points to bidders that provide documentation supporting that their products meet the additional desirable criteria.[2]

These specifications were prepared for the Sustainable Biomaterials Collaborative by the Green Purchasing Institute. Each type of biobased food service ware product requires its own bid. These specifications are designed with sustainability and performance criteria in mind.[3,4] A sample bid sheet is included.

[1] Purchasers may use these specifications as is or tailor them to their own procurement practices.
[2] Purchasers may opt to request disclosure of information relating to each non-mandatory sustainability criterion, instead of awarding points.
[3] Purchasers, it is highly important that these products are used in facilities that have a designated composting facility or system in place that will accept compostable biobased food service ware products to enable recovery.
[4] Performance criteria include: minimum temperature tolerance, ability to break without creating sharp edges - which is particularly important to correctional facilities, size, shape, color, etc.

Purchasing Specification for Compostable Biobased Food Service Ware 1
Prepared for the Sustainable Biomaterials Collaborative by the Green Purchasing Institute

- Bid specs for purchasers
- Presents baseline mandatory criteria
- Bidders can earn points for products meeting beyond baseline desirable criteria.

Purchasing Specs for Food Service Ware

Based on BioSpecs

- For biobased content (max of 10 points):
  - Non-cutlery products receive 1 point per 1% above 90%
  - Cutlery products receive 1 point per 3% above 70%
- Recycled content (max of 4 points):
  - 1 point per 10% post-consumer recycled content
  - 1 point per 25% pre-consumer recycled content

2012-13 Activities (SBC/Institute for Local Self-Reliance)

- Partnered with the Green Purchasing Institute to beta-test purchasing specs for compostable foodservice ware
- Developed guide for manufacturers to assess conformance to our environmentally preferable criteria for biobased compostable foodservice ware
- Pursued partnership with 3rd party certifier for Biospecs
- Partnered with Elemental Impact to assist Atlanta Airport in implementing new concessionaire contract provision
- Documented venues using and composting biobased ware
- Promoted policies to grow composting infrastructure
- Involved in local school project to pilot tray washer in lieu of styrofoam lunch trays

Practice Greenhealth's Greening the Supply Chain® Initiative

PRACTICE Greenhealth

Suggested Environmental Considerations for Disposable Food Ware

The suggested environmental disclosure questions may be used in your RFI/RFP to help inform your purchasing decisions. These questions can be applied to cutlery; plates, bowls and cups (for hot and cold applications); take-out packaging (such as clamshells, boxes or containers with separate lids); and ancillary items such as lids, and straws). These questions would not pertain to other food service items such as paper napkins and paper towels.

#	Topic	Environmental Questions	Preferred Answer	Definition	Rationale
1. (a)	Chemicals	Is this product free of intentionally added engineered nanomaterials? (Yes/No)	Yes	Nanotechnology is the science of manipulating matter at the molecular scale to build structures, tools, or products, known as nanomaterials. Nanomaterials are those whose small scale imparts unique physical properties.	The risks and benefits of this emerging technology are still being discovered; yet the development, use, and manufacturing of nanomaterials are being conducted with little transparency and inadequate regulatory oversight. This is particularly concerning to the food industry where human exposure is virtually guaranteed.[i]
1. (b)	Chemicals	If "no" is the answer to 1(a), has this product been either (1) registered with the EPA or the Project on Emerging Nanotechnologies in the U.S. or, (2) at a minimum, has the product been added to any voluntary reporting programs including, but not limited to, the U.S. EPA's Nanoscale Materials Stewardship Program and the United Kingdom's Department for Environment, Food and Rural Affairs (DEFRA) Voluntary Reporting Scheme for Engineered Nanoscale Materials? (Yes/No)	Yes	The Environmental Protection Agency (EPA) found that approximately 90% of the different nanoscale materials that are likely to be commercially available for industry were not reported under its voluntary reporting program, and nearly two-thirds of the chemical substances from which commercially available nanoscale materials are based were not reported either.[ii] Thus, the government and, in turn, industry does not have full access to either the potential existence of nanomaterials or the risks related to the nanomaterials enhancing products.[iii]	This transparency and disclosing information to stakeholders is important in order to mitigate its exposure to risks related to the use of nanomaterials in food and food packaging.[iv]
2.	Chemicals	Is this product free of fluorine or fluorinated compounds (such as	Yes	Perfluorinated compounds (PFCs) are family of compounds (including Perfluorooctane sulfate	PFCs are extremely persistent and bioaccumulative chemicals.[v] How we

Documenting Early Adopters

Sustainable Plastics?

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Early Adopters Using and Composting Bioproducts

Georgia: Georgia World Congress Center

Location(s): Atlanta, GA

Summary:
The Georgia World Congress Center is the fourth largest convention center in the USA. They are increasingly diverting compostables and educating guests how to properly identify and sort materials.

Products and Brands Composted:
The Georgia World Congress uses compostable products from:

- Greenware
- Ecotainer
- Dispozo

Collection System:
Compostables are collected in 35 gallon toters kept in the kitchen. In the empl
cafeteria, they have one staff member specifically for sorting materials going to
various waste streams.

Compost bins are only made available in events if the client requests it, which
happens approximately 5 times a year. They keep the compost bin alongside th
the compost bins at every event because of the high levels of contamination. T
tents to remind guests about what to compost. These measures have been quit
Dome, composting is available all year round in the party suites and is compler
been collecting in back-of-house since before 2010.

Compostables are collected daily or every other day depending on how busy th

Challenges:
Training back-of-house staff to source separate for compostable is challenging because much of the staff had never had experience of what was compostable or why it is important to separate. The chefs were adamant and it was seamlessly integrated into the process.

Need to have as much signage as possible since it's your best bet for reminding people and getting the message across to separate for composting. Include signage everywhere; at the bins, dining table tops, loading dock area, scraping area, etc.

Educate why you're making the change and have a good message to repeat. Get buy-in from upper management by making the business or economic case that appeals to them. Competition among convention centers has helped, especially since events are increasingly asking for front of house composting which shows that it isn't just a fad.

California: University of California-SF Medical Center

Location(s): San Francisco, CA

Summary:
The University of California–San Francisco (UCSF) Medical Center is one of the first hospitals to use compostable food service ware and ensure it gets composted. They have the unique advantage of regular city-mandated pick-up of organics and a polystyrene ban to eliminate the use of common disposable food service ware. Since their staff does most of the sorting of materials, they have very low contamination in all of their discard streams. Although composting has increasingly become built into the culture of San Francisco, the staff has tremendous pride in separating for composting.

Oregon: Rose Garden Stadium (Portland Trailblazers)

Location(s): Portland, OR

Summary:
The Portland Trail Blazers are certainly blazing their own trail by adding composting to single waste stream management. In 2005, the Trail Blazers, Rose Quarter operations, Ovations Food Service, and City of Portland made a commitment to divert 100% of the venue's solid waste from the landfill. In 2005, 35% of waste generated was recovered through back of house and office recycling and it was determined that 60% could be composted if they switched to compostable food service ware. In 2010, after making changes and a switch to compostable disposables, they achieved a rate of 80% landfill diversion.

Products and Brands Composted:
StalkMarket (local to Portland) – cups and food packaging

Collection System:
The Stadium contains 300 GreenDrop recycling stations for guests, which include signs that indicate how items should be disposed. Once full, the compostable items go through a food waste compactor which was purchased from a grant given by Metro, Portland's tri-county regional government. The City of Portland provided bulk handling containers to manage the large volumes of compostables and recyclables about to be hauled.

GreenDrop Recycling Bin

Compost Process:
Allied Waste processes their organic material at their composting facility.

Size of Operation:
The stadium brings in approximately two million guests and pu
of disposable material each year.

Dollars and Sense:
Cost savings were found throughout the supply chain. From the
(landfill tipping fees, solid waste hauling) to the recycling statio
cleaning since guests get involved in carrying out their own was
no additional cost for switching to compostables since collectively, some petroleum products cost
alternatives.

; but in the medical center cafeteria, they use compostable ware, such as:

er

rtment Clamshell, Bagasse Clamshells, Paper/PLA Container, PLA Cups

Molded Fiber Plates

; liners

Washington: Safeco Stadium (Seattle Mariners)

Location(s): Seattle, WA

Summary:
Back in 2008, when Safeco Field recycled 12% of their waste, Scott Jenkins, the VP of Ballpark Operations for the Seattle Mariners, thought the upper limits for waste diversion for a stadium was about 50%. By auditing the waste stream, the Mariners discovered that a majority of what was being landfilled could be composted. Switching to compostable service ware virtually eliminated the need to provide landfill containers for fans. The diversion rate for 2012 is 85% and they now have their eyes on achieving a 90% diversion rate.

Captain Plastic and Kid Compost

Products and Brands Composted:
Everything used in food operations is Cedar Grove approved compostable. This includes straws, cups, bowls, hot dog trays, food wraps, forks, spoons and knives. There are only rare exceptions to this.

Collection System:

Atlanta Airport direct assistance

SUSTAINABLE FOOD COURT INITIATIVE

Annual HJAIA Foodservice Ware Packaging Usage Form, Detail of All Products Used
Concessionaires Conformance to Contract Provisions for Compostable Consumer-Facing Packaging

Fill out this form for each store location.

Date (mo/day/year):

Name of Master Concessionaire:
Concept/Brand:
Operator/Subtenant:
Store Location:

Contact Name:
Title:
Email:
Phone, work:
Phone, cell:

For each type of consumer-facing packaging used, provide the manufacturer item #, name of manufacturer, whether th
as compostable, and whether or not the product is labeled as compostable.

Alternatively attach the requested information to this form. Items do not need to be listed in the product category orde

Product Category	Product Description	Manu
Cold cups for beverages		
Cold cups for other applications		
Cold cup lids/domes		
Hot cups for beverages		
Hot cups for other applications		
Hot cup lids		
Straws		
Stirrers		
Plates/Platters		
Lids/domes for plates/platters		
Bowls		
Food containers: hinged clamshells		
Food containers: folding cartons/boxes		
Food containers: one piece, without a lid (such as a tray)		
Food containers: two piece, including a lid		
Portion cups (with or without a lid)		
Wraps		
Bags: single portion (such as for fries, sandwiches or hotdogs)		
Bags: carryout		
Beverage carriers		
Cutlery		
Other (please list):		

Hartsfield-Jackson Atlanta International Airport

Compostable Foodservice Ware Packet

Introduction

Many event venues, office buildings, malls, airports and other facilities with food court operat
waste journey. One of the first steps in the journey is back-of-the-house organics collection fo
minimal purchasing changes necessary.

Front-of-the-house collection of food waste and packaging is the next stage in zero was
significant modification to current foodservice packaging used by operators. With recent produ
options available to food service operators.

As a Zero Waste Zones – Atlanta Participant, Hartsfield-Jackson Atlanta International Airport
Sustainable Food Court Initiative (SFCI), an Elemental Impact Task Force in partnership
Association, to bring zero waste practices to the airport operations. The new concessiona
beginning in 2012 include, among others, the following provision:

*"Concessionaire shall use compostable serviceware along with consumer facing packag
food service wastes for direct transport to off-airport composting fa*

This document's intent is to provide clear, concise information:
1) To allow concessionaires to satisfy the contract provisions stipulated in the Requ
2) To ensure effective ongoing communication with product manufacturers and dist

The SFCI Team is available to support concessionaires with education and information on
a solid understanding of the compostable packaging requirements, operators are in a
distributors or discover additional options in the marketplace to satisfy the Compostable Foods
their foodservice packaging.

For more details, please refer to the information provided below:

- **Composting: what is it, why do it, and why it is important at the Atlanta Airport**
- **The importance of packaging in successful composting**
- **Compostable foodservice ware contract requirements**
- **Types of compostable foodservice ware products covered by contract restrictions**
- **Description of compostable foodservice product types**
- **Resources for more information**
- **Frequently Asked Questions**

Hartsfield-Jackson Atlanta International Airport

Compostable Foodservice Ware Packet

FAQs

Why require foodservice ware to be compostable?

Single-use foodservice ware products such as drink cups, take-out containers, and cutlery are thrown away as trash in large volumes at Hartsfield-Jackson Atlanta International Airport (HJAIA). They are not recyclable at HJAIA. Compostable alternatives are now easily sourced and are no longer considered specialty items. Requiring food vendors to use compostable products will reduce overall trash removal needs and costs, enable food residuals recovery, and help avoid contamination of collection bins for compostable materials.

Food residuals commingled with compostable packaging diverts one waste stream from landfills that was previously two waste streams. No cleaning or washing of compostable products is needed for recovery. Unlike traditional recycling of plastics and paper, compostable items do not have to be free of ice, liquids, grease, and other food residues in order to be composted. They can be put straight into the collection bin with any remaining food scraps; they will decompose together at the composting facility. Customer participation is an easy one-step process. Convenient access to properly labeled bins is a critical component to ensure high customer participation levels.

What is the difference between recyclable and compostable products?

"Recyclable Products" include the reuse, reconditioning, and remanufacturing of products or parts in another product. Similarly, "recycled content" includes products and packages that contain reused, reconditioned or remanufactured materials, as well as recycled raw material. "Compostable Products" will break down, or become part of usable compost (for example, soil-conditioning material or mulch), in a safe and timely manner in a commercial composting facility.[1] Composting turns biodegradable materials into usable compost, which is a humus-like material that enriches and returns nutrients to the soil.

Why is HJAIA requiring that food vendors use third-party-approved products?

Unfortunately, there are many available products with misleading, deceptive or unsubstantiated claims of biodegradability or compostability. Buyer beware! Items with simple claims of "biodegradability" or "biobased content" do not mean they are, in fact, compostable. Because the intent of HJAIA's program is to minimize landfilling, products designed to be "biodegradable" in a landfill are not acceptable. Be sure the products you buy are certified as compostable by the Biodegradable Products Institute (BPI) or accepted as compostable by Cedar Grove Composting, which field-tests the compostability of food service items in its state-of-the-art composting facility.

BPI is a third-party certifier of commercially compostable resins, films, foodservice ware and other products. It is recognized by the US Composting Council (the trade association for the composting industry) as the leading industry organization for determining product compostability in North America. BPI-certified compostable products are being used successfully in numerous restaurants as part of diversion efforts throughout the US and Canada.

BPI-certified items have passed rigorous testing at reputable labs under one of two scientifically accepted standards: ASTM 6400 for plastics or ASTM 6868 for plastic-coated paper. To pass these standards, products have to meet thresholds for three basic elements: biodegradation, disintegration, and safety (measured by ability to grow plants and limits on certain regulated heavy metals such as lead). A product that only meets one or two of the elements but not all three will fail the standard.

Parting Thoughts

- Life cycle thinking – taking a "principle-based" approach to sustainable materials
  - Define what we want
  - Set priorities
    - Sustainable feedstocks
    - Green chemistry
    - Cradle to cradle
- Need to expand composting & recycling capacity
  - corporate support for infrastructure and policies

- Transitioning from fossil fuels to renewable, biobased feedstocks
  - Biobased not inherently better
  - Need criteria & standards for defining sustainable biomaterials and plastics across their life cycle
    - No GMOs in field
    - Inherently safer chems
    - Concerns with nano
    - Reuse, recycle, compost

Single use has got to go!

Comments? Questions?

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