



# Compostable Plastic:

## Unraveling the Compostable Food Ware

COMPOSTABLE PLASTIC

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## Terms & Definitions - Plastics Get Confusing

### Compostable Plastic

Materials that undergo degradation by biological processes during composting to yield CO<sub>2</sub>, water, inorganic compounds and biomass at a rate consistent with other compostable materials in **commercial/ industrial composting conditions** and leave no visible, distinguishable or toxic residue. Please note that this material is also referred to as bioplastic.

### Biodegradable Plastic

Materials capable of undergoing biological anaerobic or aerobic decomposition by the action of micro-organisms such as bacteria, fungi and algae under conditions naturally occurring in the biosphere. Please note that there are no requirements regarding toxic residue or the time it takes to degrade.

### Degradable/ Oxo-Biodegradable

Traditional plastic with a chemical or heavy metal additive that causes it to break down at a faster rate when exposed to heat, moisture and/or ultraviolet (UV) radiation. This plastic should not be added to compost or recycling, as it contaminates the end product with toxins. This product should also not be added to recycling as it decreases the longevity of the recycled product.

## Standards & Certification

Compostable plastic is the only plastic that has attained certification for compostability. Degradable and Oxo-degradable do not meet compostable standards. These standards are generally:

1. Biodegrade - break down into carbon dioxide, water, biomass at the same rate as cellulose (ie., paper).
2. Disintegrate - the material is indistinguishable in the compost, that it is not visible and does not need to be screened out
3. Eco-toxicity - the biodegradation does not produce any toxic material and the compost can support plant growth.

### International & Canadian standards for compostability:

- Bureau de Normalisation du Québec - BNQ 9011-911/2007
- American Society for Testing and Materials - ASTM-6400-99. Certification can be acquired through Biodegradable Plastics Institute.
- European Standardization Committee (CEN) - EN13432
- German Institute for Standardization (DIN) - DIN V49000

Note: There is no certification for the compostability of paper and wood because those materials are already understood to be compostable.



### Compostable Food Ware Material Types

**Compostable Plastic**  
-PLA (polylactic acid), made from corn  
-Potato starch

**Paper Products**  
-Wood pulp  
-Bagesse (from sugar cane)

Wood

Bamboo

### Reusable Is Always Better

Go reusable! In almost all circumstances implementing a reusable food ware or bag program is viable if you get creative and consider long term prosperity.

If you have to use disposables, compostable products are an option, but only if they will go to a compost facility for disposal. Compostable products are a problem if you are giving them out to the public as most of these products do not compost in a backyard composter and there is no public facility available yet in Calgary for general organics including these products.

If you are using compostable products within your company ensure you have a collection program and facility to take them to. Please find a list of composting facilities and pick up service on page 4.

# Proper Disposal of Different Plastic Types



Windrow Composting Facility



In Vessel Composting

## Compostable plastic

- **Compost** - This material should only be composted. Most products must be composted in a commercial composting facility where temperatures reach a much higher range.
- **Recycle** - Cannot be recycled with traditional plastic.
- **Landfill** - Will not degrade or will degrade under anaerobic (no oxygen) conditions creating methane, a well known greenhouse gas.

## Oxo-Biodegradable or Degradable Plastic

- **Compost** - Should not be composted as it contaminates the soil and causes bioaccumulation of toxins in the environment.
- **Recycle** - Not accepted at many recycling facilities as it diminishes the quality of the end recycled product.
- **Landfill** - Little to no degradation will occur in the landfill.

Disposal Method	Polyethylene	Certified Compostable	Oxo-Biodegradable
Landfill	Yes	No	No
Composting	No	Yes	No
Dry Recycling	Yes	No	No

*"If it's not in an environment where [it has] the possibility to compost, it's really not worth anything."*

- Michel Huneault,  
National Research  
Council of Canada,  
speaking to compostable  
biomaterials

# Life Cycle Analysis

Industry states that bioplastics reduce carbon dioxide by 30-80% compared to oil based plastics. Critics suggest that too much evidence has been given to carbon savings and not enough to other factors.

## Some Other Factors to Consider

- **Fertilizer use** - Nitrogen and Phosphorous contribute to nutrient overloads in nearby water sources causing algal blooms and subsequent oxygen depletion.
- **Pesticide use** - pesticides have both environmental and human impacts from degradation of habitat and water pollution to



immune system suppression and cancer.

- **Irrigation** - Many of the crops used for compostable plastic rely on irrigation which impact water levels and quality.
- **GMO's** - Many bioplastics are created using Genetically Modified Crops.
- **Food Security** - According to Oxfam, food prices have risen 83% globally in the last 3 years. The World Bank has stated that this has largely been the result of food crops being diverted to such things as biofuels and other biomaterials.



- **Social issues** - loss of family owned and small scale farming.
- **Land use changes** - In some countries forests and rainforests are being destroyed to create land for farm production as the demand on food crops grow .
- **Soil degradation** - Soil loss and compaction due to industrial farming methods.



# Sustainable Bioplastics Guideline

In order to minimize environmental effects of bioplastics and use them in a responsible manner refer to these guidelines, developed by the **Sustainable Biomaterials Collaborative**. This collaborative is a network of organizations working to spur the introduction and use of biomaterials that are sustainable from cradle to cradle.

- Reduce the amount of material, product and packaging used.
- Eliminate single-use products that can be neither recycled nor composted at the end of its original use.
- Avoid fossil-fuel-based materials in favour of materials and products derived from renewable feed stocks.

- 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.
- Support small- to mid-sized family owned and operated farms.
- Encourage agricultural systems that are sustainable for farmers, the environment, farm workers and

communities.

- Do not use genetically modified organisms in agricultural feedstock production.
- Use chemicals that meet the 12 Principles of Green Chemistry. [www.greenchemistry.ca](http://www.greenchemistry.ca)
- Avoid engineered nanomaterials and chemicals that have not been tested for environmental and public health effects across the lifecycle.
- Decentralize production and buy local to reduce the environmental footprint of production, transportation, and consumption.

[www.sustainablebiomaterials.org](http://www.sustainablebiomaterials.org)

## Moving Away from One-Time Use Disposables

**Is replacing one type of disposable for another the right direction?**

- Disposables of any kind do not solve the waste problem. They still need to be picked up and disposed of.
- Confusion from many different types of plastics or compostables can limit participation in the program. For example compostable plastics cannot be mixed with regular plastic recycling.
- Does not encourage behavioural change.
- Puts off dealing with the real problem - OVERCONSUMPTION

**Overconsumption** = the use of resources at a rate that exceeds the ability of natural resources to replace them.

**Ideas for a Reusable Program**

- Use a **deposit system**. This will help to recover money from lost items. **Tokens** can work, especially in food courts, and as a bonus can increase repeat business. **ID cards** can help in a secure building by having employees scan their card for food ware.
- Have a **closed off area** and ensure a monitor or security person at the exit.
- Sell a **reusable container** to employees and customers.

Eg., the Eco Clamshell is used at a university in Florida. The first container is purchased for \$5.00 and upon return to the cafeteria the dirty container is handed over and a clean one is given out.



**Cost Savings For All!**

- Decreased disposal fees with a reduction of waste going off-site, whether to landfill or composting.
- Fewer deliveries and pickups. Your loading dock will be more available due to decreased deliveries.
- Reduction in transportation costs and emissions associated with transporting disposables to your site.

*Is replacing one type of disposable product for another the best use of our resources?*

### Compostable Plastics Hierarchy

- 1. Reusable** - get creative with events, meetings, cafeteria, etc.
- 2. Compostable** - Certified product (when applies) using best practices and **compost at end of life**
- 3. Plastic or Paper** - buy with recycled content and recycle at end of life
- 4. Below this should not be an option**



**Clean Calgary Association**  
Environmental Education, Products & Services

## Clean Calgary Association

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**Empowering Calgarians to create healthy homes and communities by providing environmental education, products and services.**

Clean Calgary Association offers a variety of programs to help achieve mandates of waste reduction and water protection including:

### PRODUCTS

#### EcoStore

The Clean Calgary EcoStore sells products that are environmentally sustainable and help to reduce waste and conserve water. Products include compost bins, recycling bins, rain barrels, water saving kits and much, much more. Visit the website for details, [www.cleancalgary.org/ecostore](http://www.cleancalgary.org/ecostore).

Open Wednesday, Friday and Saturday 10-5:30, Thursday 10-7.

### EDUCATION

Our Education program offers a wide variety of presentations to businesses, schools and organizations to help answer tough questions about the environment, explain practical ways to become green and share Calgary-specific knowledge.

### SERVICES

#### Commercial Environmental Services

(formerly known as the Calgary Materials Exchange)

An innovative, award-winning program that has assisted hundreds of Calgary companies in finding alternative disposal options for operational waste. Commercial Environmental Services provides businesses in the industrial, commercial, institutional, construction and demolition sectors with the knowledge and tools required to reduce, reuse and recycle.

#### Healthy Homes

Free home visits to Calgarians interested in creating a healthy living environment. Areas of focus will be energy efficiency, water conservation, indoor air quality, waste reduction and healthy yards.

[www.cleancalgary.org](http://www.cleancalgary.org)

## Suppliers and Distributors of Compostable Food Ware and Bags

### Aspenware

[www.aspenware.ca](http://www.aspenware.ca)

877-547-FORK

Provides compostable cutlery made from unwanted softwoods from harvest

### Biosak by W. Ralston Inc.

[www.biosak.com](http://www.biosak.com)

Brad Reinbold, (403) 272-3631,

[breinbold@cttgroup.com](mailto:breinbold@cttgroup.com)

Biosak has a variety of compostable bags meant for collection of compost. Biosak bags can be found at Clean Calgary Association's EcoStore

### Clean Calgary Association's EcoStore

[www.cleancalgary.org/index.php/ecostore](http://www.cleancalgary.org/index.php/ecostore)

809 4th Ave. SW, Calgary

(403) 230-1443 x 222, [ecostore@cleancalgary.org](mailto:ecostore@cleancalgary.org)

The EcoStore can source compostable and reusable ware from a variety of distributors for large volume orders.

### Earth Distributors

[www.earthdistributors.com](http://www.earthdistributors.com)

Quinn Beck, (403) 220-0187

[q.beck@earthdistributors.com](mailto:q.beck@earthdistributors.com)

Local distributor of compostable food ware and environmental products.

### Green Shift

[www.greenshift.ca](http://www.greenshift.ca)

(416) 925-9665, [info@GreenShift.ca](mailto:info@GreenShift.ca)

Green Shift performs life cycle analyses on the products they sell and work with manufacturers to ensure higher standards are obtained.

### Worldcentric

[www.worldcentric.org](http://www.worldcentric.org)

(650) 283-3797

World Centric is a non-profit organization, with a mission to reduce economic injustice and environmental degradation through education, community networks, and sustainable enterprises.

## Contacts & Links

### Speaker Contact Info

Quinn Beck - Earth Distributors [q.beck@earthdistributors.com](mailto:q.beck@earthdistributors.com)

Sarah Begg - Clean Calgary Association [sarah@cleancalgary.org](mailto:sarah@cleancalgary.org)

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Lindsay Luhнау - Clean Calgary Association [lindsay@cleancalgary.org](mailto:lindsay@cleancalgary.org)

Talia Potter - Calgary Folk Music Festival [talia@calgaryfolkfest.com](mailto:talia@calgaryfolkfest.com)

Wayne Riviere - Biosak [wrviere@Cttgroup.com](mailto:wrviere@Cttgroup.com)

### Links

City of Calgary - Organics Recycling page [www.calgary.ca](http://www.calgary.ca)

Green Chemistry - [www.greenchemistry.ca](http://www.greenchemistry.ca)

The Story of Stuff [www.storyofstuff.com](http://www.storyofstuff.com)

Sustainable Biomaterials Collaborative [www.sustainablebiomaterials.org](http://www.sustainablebiomaterials.org)

## Commercial Compost Options

### Bio Cycle Nutrient Solutions Ltd.

[www.bio-cycle.ca](http://www.bio-cycle.ca)

Neil Wiens, (403) 803-2549, [neil@bio-cycle.ca](mailto:neil@bio-cycle.ca)

High River, Alberta

### Bowden Institution – CORCAN

(403) 227-7310

Bowden, Alberta

### International Compost Ltd.

Doug Sten, (403) 236-8988, [info@groundskeeperspride.com](mailto:info@groundskeeperspride.com)

Strathmore, Alberta

### PEL Recycling

Blaine Armstrong, (403) 369-3777, [blaine11@nucleus.com](mailto:blaine11@nucleus.com)

\*PEL Recycling provides a pick up service for compost. Compost is taken to City of Calgary's composting facility.

**Clean Calgary Association**