



UNIVERSITY OF  
SASKATCHEWAN



# Smart Purchases Big Impact

**Sustainable Purchasing Guide**  
**Garbage Bags**

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## Introduction

This section provides information on currently available options for **garbage bags** that can help to move the University of Saskatchewan toward its sustainability goals. Living within the boundaries of our sustainability goals requires us to apply two main strategies:

**Dematerialization** requires that we reduce the amount of materials as much as possible; and that we continually move toward the use of 100% recycled content.

**Substitution** requires that we find less harmful materials to replace those that currently damage and are not recyclable.

**Sustainable purchasing** is about including social, environmental, financial and performance factors in a systematic way. It involves thinking about the reasons for using the product (the service) and assessing how these services could be best met. If a product is needed, sustainable purchasing involves considering how products are made, what they are made of, where they come from and how they will be used and disposed.

Finally, remember that this is an evolving document – it will change with new information as our understanding of sustainability impacts and potential solutions improves.

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**Smart Purchases  
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Wherever possible **CHOOSE** products that employ a combination of characteristics listed in the left hand column, and **AVOID** products that demonstrate characteristic in the right-hand column.

CHOOSE	AVOID
<ul style="list-style-type: none"> <li>Waste reduction</li> <li>EcoLogo certified products</li> <li>Bioplastics</li> <li>High recycled plastic content</li> </ul>	<ul style="list-style-type: none"> <li>Petroleum-derived plastics</li> </ul>

### Option: Reduce Use by Reducing the Amount of Garbage

**Strategy: Dematerialization – less waste (SO 1, 2, 3, 4)**

Garbage bags are required because garbage is produced. A variety of measures can be taken to reduce the amount garbage, and thus, the use of garbage bags. These include recycling, composting and purchasing products that are designed to be durable or re-used.

### Option: Use EcoLogo Certified Products

**Strategy: Dematerialization and substitution – less waste; nature-like (SO 1, 2, 3)**

Environmental Choice certified garbage bag products are assessed in terms of their production methods and product contents, and are generally more sustainable than other alternatives.

### Option: Use Bioplastic Bags

**Strategy: Substitution SO (1, 2, 3, 4)**

Bioplastics are derived mainly from natural renewable resources. The main difference between bioplastics and synthetic plastics is that bioplastics are biodegradable within a composting cycle, just like pure cellulose.

Bioplastic bags, made from materials grown on the earth's surface, reduce the substances extracted from the earth's crust, reduce the chemical compounds created by the combustion of petrochemicals and reduce the associated human health impacts.

### Option: Use High Post-Consumer or Post-Industrial Recycled Plastic Content

**Strategy: Dematerialization – less waste (SO 1, 2, 3, 4)**

Recycled plastic bags are produced by combining and melting pellets of recycled plastic and virgin plastic into a roll of film. The availability of bags with recycled content is dependent on the type of bag. Certain colors, sizes, and thicknesses of plastic bags may be more difficult to find with recycled content.

Recycled plastic bags reduce the amount of non-renewable petroleum or natural gas used as feedstock for plastic bags and also requires less energy for the manufacture of the bags.

### Option: Use Paper Bags

**Strategy: Substitution (SO 1, 2, 3, 4)**

Paper yard and food waste bags are another option for the collection and composting of organic waste. The bags will fully decompose along with the wastes inside them. Paper bags, can have other sustainability impacts depending on how the paper is produced and the forest resources are managed so care should still be given when selecting them as an alternative.

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# Arriving at the currently preferred options

## 1. Identify the service

Garbage bags are used to line garbage cans and recycling bins of various sizes and to transport the garbage and recycled materials.

## 2. Assess the need

The University of Saskatchewan requires the ability to collect, store and transport garbage, compost and recycling. It must be done efficiently and in a way that minimizes odours.

## 3. Identify the contents

Most garbage bags are made of **low-density polyethylene** (LDPE), which is the most popular plastic in the world (high-density polyethylene (HDPE) is second). LDPE is soft, stretchy, and water and air proof.

The feedstock for polyethylene is derived from **petroleum** and **natural gas**. The physical (e.g. thickness) and chemical properties of the feedstock determine the performance potential of the garbage bag.

Polyethylene is delivered in the form of small resin pellets or beads. The pellets are melted and the molten polyethylene is put under high pressure and mixed with agents that provide color and make the plastic pliable. The prepared plastic polyethylene is blown into one long tube of bagging, which is then cooled, collapsed, cut to the right individual length, and sealed on one end to make a bag.

## 4. Identify sustainability impacts

*i. ....systematically increasing concentrations of substances from the earth's crust?*

- **Fossil fuels** are combusted to provide energy during the extraction of raw materials, transportation, and production of plastic garbage bags. The combustion of fossil fuels leads to an increase in concentration of substances extracted from the earth's crust in nature (CO<sub>2</sub>, CO and SO<sub>x</sub>). Increasing concentrations of these substances in nature can contribute to a number of negative effects such climate change and acid rain, as well as to negative human health impacts.
- **Petroleum** is also used as a feedstock for most polyethylene, a material that is extracted at a rate much greater than it is redeposited back into the earth's crust.

- Some of the inks used to colour plastic bags contain **heavy metals**. These are released into nature when the plastic bag is incinerated.
- ii. ....systematically increasing concentrations of substances produced by society?*
- If the bags are not recycled upon disposal (which is most often the case), they either become litter, or end up in landfills or incinerators. The **polyethylene** persists in the environment long after it is used and discarded, contributing to an increase in the concentration of synthetic substances in nature. Over time and under the right conditions plastics may oxidize, fragment and disintegrate, however the breakdown time required is too short to prevent their accumulation in nature. The additives in plastic garbage bags can also release **dioxins** when they are incinerated.
- The combustion of fossil fuels produces a number of **chemical compounds** (e.g. nitrogen oxides) that build up in the atmosphere.
- The process of refining fossil fuels into petrochemicals requires a number of **persistent chemicals** that are used as corrosion inhibitors, neutralizers, surfactants, defoamers, and more.
- iii. ....systematically degrading nature by physical means?*
- Plastic bags that go to **landfills** contribute to the physical degradation of nature through increasing amounts of land used for landfill.
- Plastic bags that make their way into oceans and lakes present a hazard to wildlife, particularly fish and waterfowl.
- iv. ...systematically undermining people's ability to meet their basic human needs?*
- A number of the compounds produced by the combustion of fossil fuels and other processes to create plastic bags (e.g. nitrogen oxides, carbon monoxide, sulfur oxides, particulate matter) negatively affect **human health**.

## 5. Envision sustainable garbage bags

In a sustainable society, materials are managed so that no 'unable wastes' (i.e., garbage) are produced. Rather than becoming garbage, waste becomes an input elsewhere in the system, as it does in nature. Therefore, a sustainable society would have no need for garbage bags, only a need for bags to collect and compost organic waste and recyclables. However, until societies are materially sustainable, a demand for garbage bags will remain.

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## 5. Envision sustainable garbage bags (con't)

Sustainability requires that materials be kept within **natural cycles** (where materials can be easily **assimilated** by nature) or tight **technical cycles** (where materials can be reused indefinitely in processes that do not move us away from our sustainability objectives). A sustainable garbage bag would not contribute to systematic increases of substances extracted from the earth's crust, or of human-made substances. This means that it would either (1) not contain any substances that could systematically increase in nature or (2) that these substances would be taken back and re-used entirely.

Garbage bags would either be **produced** from bio-based materials that natural ecosystems can easily assimilate, or be 100% recycled. The **energy** used for extracting raw materials, producing and transporting the bags would be generated from sustainable renewable sources in a carbon-neutral way, so that no carbon was allowed to systematically increase in the atmosphere and biosphere.

## 6. Identify and prioritize alternatives

Identify the product or service that offers the best pathway toward meeting all four of our Sustainability by using the following three criteria for assessment:

- a) Does the product or service move us in the right direction with regards to our four Sustainability Objectives?
- b) Does the product or service create a flexible platform for the next step toward sustainability?
- c) Is the decision financially viable?

## Resources and Additional Information

1. Environmental Choice Program – Plastic Bags  
<http://www.ecologo.org/common/assets/criterias/CCD-126.pdf>



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