



Smart Purchases Big Impact

Sustainable Purchasing Guide
Apparel

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A small black silhouette of a tree with many leaves.



Introduction

This section provides information on currently available options for **apparel** that can help to move the University of Saskatchewan toward its sustainability goals. Living within the boundaries of our sustainability objectives 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 nature 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 provided. 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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Big Impact**

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

- Recycled fabrics
- Biodegradable dyes
- Certification of fair labour practices
- Organic fibres
- Renewable materials

AVOID

- Treatment with chlorine based bleaches
- Wrinkle-resistant materials

Option: Reused or Recycled Clothing/Fibres

Strategy: Dematerialization (SO 1, 2, 3)

Choose products made from recycled fibres and materials. The fibre recycling process includes reusing apparel and/or creating apparel from other recyclable products. For example, fabrics created with reclaimed clothing materials and fleece made from recycled plastic bottles.

Fibre recycling can involve either chemical recycling, in which materials are chemically dissolved to their precursor chemicals, or mechanical recycling, where the materials are only changed physically.

In chemical recycling, polyester and nylon are broken down, purified and reconstituted into new fibres. Color and small impurities can be removed and the resulting fibre is almost the same as virgin fibre, so it can be used in many applications. However, chemical recycling has limitations on “inputs” as many coatings and fibre blends can contaminate this process and inhibit separation of the precursor chemicals. Chemical recycling produces a nearly closed-loop production cycle where each component of the good produced can be reused creating no overall waste.

In mechanical recycling the fabric is chopped and shredded down to fibre and spun into yarn again. Mechanical recycling also describes the process of melting synthetics back into resins, then extruding fibre and spinning yarn. As compared to chemical recycling, mechanical recycling can handle a wide variety of fibres, but the output yarn will be a mix of fibre types and colors and the variety of new products that can be made is limited. The fibres are chopped to short lengths during the recycling process, so strength and quality is reduced leaving a yarn most appropriate for sweatshirts or canvas fabrics. To increase the strength, these shorter fibres need to be blended with synthetic fibres, or longer virgin cotton fibres.

Option: Choose Certified Textiles

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

Choose products certified by Oeko-Tex for their use of biodegradable dyes. These certified products pose no human health risks to those working in, or near, the manufacturing plant or for those wearing the clothing. This also eliminates chemicals which may release pollutants into the waterways and atmosphere.

Bluesign is another notable textile certification to watch for. The five core principles of this program: resource productivity, air emissions, occupational health and safety, water emissions and consumer safety encompass a broad spectrum of



sustainability considerations.

Several prominent certifications exist which put special emphasis on creating fair working conditions. The Fair Labour Association and Worldwide Accredited Production are two of the best examples.

Fair Trade fabric and clothing refers to only the production of the fabric and not to the actual manufacture of apparel. At present there are no fair trade or ethical certification processes for clothing manufacturing.

Option: Choose Organic Cotton

Strategy: Substitution – Nature-like (SO 2)

Organic cotton is grown using methods and materials that have a low impact on the environment. Organic production systems replenish and maintain soil fertility, reduce the use of toxic and persistent pesticides and fertilizers, and build biologically diverse agriculture. Third-party certification organizations verify that organic producers use only methods and materials allowed in organic production. The industry for organic cotton continues to grow rapidly although it still makes up only a small percentage of overall cotton production.

Option: Choose Renewable Resources

Strategy: Substitution (SO 1, 2, 3)

Fabrics made from renewable resources like hemp, bamboo, wool, linen and lyocell provide great alternatives to cotton and synthetics. These products have several advantages over more conventional materials. These are summarized in the table below.

	Chemical free	Bio-degradable	Canadian Climate	Efficient Growth
Hemp	X	X	X	X
Bamboo	X	X		X
Wool	X	X	X	
Linen		X	X	X
Lyocell	X	X	X	

An indication of “chemical free” means that there are properties of the plant which make it naturally resistant to disease or infestation. This built-in defence makes the product easier to produce organically.

“Bio-degradable” means that the resource will break down in nature. These resources are preferable because they greatly reduce overall waste.

An indication of “Canadian climate” means that the resource can be produced in Canada in large quantities. Since buying locally reduces transport distance, this quality is desirable.

“Efficient growth” means that the resource grows quickly and has a high yield rate compared to other agricultural crops. This increases the financial viability and sustainability of the resource.

Regardless of which plant is being produced, the method of growth, harvest and transport will have a substantial impact on the sustainability of the final product. As a result it is important to consider all of these factors when making purchasing decisions.

Option: Avoid Chlorine Bleach Treatments

Strategy: Substitution – nature-like (SO 2)

Chlorine Bleach is commonly used as both a dye and a pre-colour treatment. Chlorine bleach can have negative impacts for both human health and the environment. Chlorine can cause burns to the skin and eyes, respiratory problems and lead to liver or kidney damage. When discharged into wastewater, chlorine can interact with other compounds to form chlorinated organic compounds, which are persistent in nature and increase in concentration over time. Look for manufacturers that use less harmful alternatives to bleach such as hydrogen peroxide.

Arriving at the currently preferred options

1. Identify the service

Clothing provides basic protection from the elements. In addition, it is an important means of personal expression and group affiliation.

2. Assess the need

Clothing at the University of Saskatchewan is purchased for a variety of reasons including: retail items for sale, uniforms for sports teams, and promotional apparel for departments, conferences, student clubs and summer camps.

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3. Identify the contents

Clothing can be made from synthetic materials like nylon, polyester and spandex or from natural materials like cotton, hemp and bamboo. Clothing can also be made from combinations of these materials. Clothes can also be dyed naturally or through the use of chemical compounds

4. Identify sustainability impacts

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

- Some of the **inks and dyes** used in apparel contain heavy metals. These are released into nature when clothing is incinerated or begins to breakdown in nature.

ii.systematically increasing concentrations of substances produced by society?

- The production of cotton or flax for use in fabrics can involve the use of **crop inputs** (herbicides, fertilizers, pesticides, insecticides etc) which may bio-accumulate in soils and water-ways.
- Chlorine** is commonly used as both a dye and a pre-colour treatment. The use of chlorine bleaching can have negative environmental and health impacts.
- Some wrinkle and stain-resistant clothing is treated with formaldehyde.
- Sports shirts often use **Polyvinyl Chloride**, which is not biodegradable. Phthalates are used to soften the material, though high doses of phthalates can cause disruption to hormone levels and birth defects.

iii.systematically degrading nature by physical means?

- Petroleum** is also used as a feedstock for many synthetic fibers, such as polyester. Petroleum is a material that must be mechanically extracted which can be destructive to local ecosystems. Impacts can include deforestation, displacement and disruption of animal populations and chemical pollution.
- Crops can be over-harvested to obtain the resources necessary to produce clothing
- The transport of apparel can also negatively impact sustainability

iv.systematically undermining people's ability to meet their basic human needs?

- Workers in the textile industry may or may not be protected by **labour standards** that meet international guidelines
- The production of cotton harvesting relies on heavy use of pesticides and herbicides. Depending on the chemical and application systems used, workers may suffer **health impacts** including damage to the nervous system, damage to the endocrine system, various types of cancer, and skin and

eye irritation. Similarly, pesticides can impact the **environment**, poisoning wildlife, leeching into water sources and exhausting the soil's ability to regenerate nutrients quickly.

- A number of the chemicals used to create, process and dye synthetic fibers can have negative **human health** effects

5. Envision sustainable apparel

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). Sustainable apparel 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.

The material and dyes used in producing apparel 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 apparel 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.

Materials used in the manufacturing of clothing that require harvesting would be done in a sustainable way that does not exhaust the soil of nutrients or eliminate biodiversity of the area. In addition any harvest of tree or grass products, such as Tencel or Bamboo, must be harvested in a sustainable manner that allows the plants time to recover lost populations.

The ideal wardrobe is free of toxic chemicals and made with organic, sustainable fibres by people working under fair and ethical conditions.

6. Identify and prioritize alternatives

To identify the best options, review the Current Options on page one and choose the most appropriate alternative by using the following three criteria for assessment:

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

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Resources and Additional Information

1. Patagonia's Common Threads Program
<http://www.patagonia.com/ca/common-threads>
2. Oeko-Tex Standard
http://www.oeko-tex.com/OekoTex100_PUBLIC/index.asp?cls=02
3. The Bluesign Standard
<http://www.bluesign.com/index.php?id=151>
4. The Fair Labour Association
<http://www.fairlabor.org/>
5. Worldwide Responsible Accredited Production
<http://www.wrapapparel.org/>
6. Organic Cotton Facts
http://www.ota.com/organic/mt/organic_cotton.html



This guide was made possible through the generosity of the Whistler 2012 project, which shared its template and much of its research.