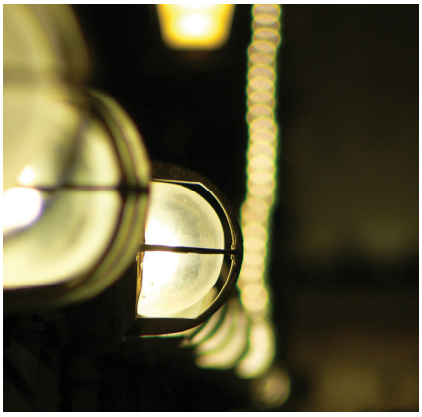
University of Saskatchewan

# Smart Purchases Big Impact

## Sustainable Purchasing Guide

### Paperboard and Cardboard Packaging

*Sustainability... your university, your world*



University of Saskatchewan

# Paperboard Packaging

## Introduction

This section provides information on currently available ***paperboard and cardboard packaging*** options 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.


### Purchasing Services

**Tel:** (306) 966-6704
**Email:** purchasing.services@usask.ca

### Office of Sustainability

**Tel:** (306) 966-1236
**Email:** fmd.sustainability@usask.ca


**Smart Purchases 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 | AVOID |
|---|---|
| • Reduce use<br>• EcoLogo certified products<br>• Sustainably harvested paper | • Virgin paper materials<br>• Chlorine bleached paper |

## Option: Reduce Use of Packaging

**Strategy: Dematerialization (SO 3, 4)**

Reducing the amount of paperboard and cardboard products mitigates all related sustainability impacts. This involves considering whether or not the function for which the cardboard or paperboard products was first envisioned could be achieved in a different way.

## Option: Use EcoLogo Certified Products

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

EcoLogo certifies paperboard products (file boxes, liner board, etc.) based on their resource consumption, energy use, greenhouse gas emissions, toxicity and solid waste generation. Choosing Ecologo products ensures adherence to recognized standards in these areas.

## Option: Use Products with High Post-Consumer Recycled Fibre Content

**Strategy: Dematerialization – less waste (S0 2, 3, 4)**

Select paperboard and cardboard products with high post-consumer recycled fibre content. As opposed to virgin fibres, post-consumer recycled fibres have been recovered from paper already "consumed" by an end user.

These products reduce the use of forest resources and the related habitat destruction, loss of topsoil and other environmental harms. Products made of post-consumer recycled fibres use less energy per ton of product produced. The use of post-consumer fibres also eases the burden on landfills and avoids wasting a useful resource.

## Option: Use Paper from Sustainability Harvested Resources

**Strategy: Substitution – management routine (SO 2, 3)**

When using wood based fibres, it is important to consider how the forest resources are managed and harvested. The products from companies that practice sustainable forestry techniques should be preferred. The Forest Stewardship Council of Canada certifies harvesting and forestry management practices to ensure long-term sustainability.

## Option: Use Chlorine-Free Paper

**Strategy: Substitution (SO 2)**

To reduce the potential risks associated with chlorine compounds, a number of paper manufacturers are switching to chlorine-free compounds for whitening paper. Alternative bleaching agents include: oxygen, hydrogen peroxide or ozone treatments.

Paper products often identify the bleaching method used for processing pulp. Paper products processed with derivatives of chlorine produce fewer dioxins than regular chlorine. This process is described as ***elemental chlorine free (ECF)***. Products bleached with no chlorine and no chlorine derivatives are sometimes referred to as ***totally chlorine free (TCF) or process chlorine free (PCF)***. PCF describes paper that contains fibres from recovered paper whose fibres may have been bleached with chlorine for their original use. In other words, PCF paper contains recycled fibres while TCF paper only contains virgin fibres.

# Arriving
## at the currently preferred options

### 1. Identify the service

Paperboard and cardboard products are often used for storage or shipping of goods.

### 2. Assess the need

The University of Saskatchewan requires paperboard or cardboard products for storage purposes and to ensure the safe shipment of some goods.

### 3. Identify the contents

Most paper products are made from ***wood chips*** that are left over after logs have been cut up into lumber products. Pulping is the process of breaking down the bonds within the wood structure to capture the fibres, the raw ingredients for paper. Methods for pulping include mechanical pulping, chemical pulping and the re-pulping of waste paper. These fibres are called wood pulp. The brown wood pulp is bleached to a lighter colour, spread out thinly and dried to make white sheets of paper. The most common bleaching substances contain chlorine.

Paper produced from virgin wood is referred to as pre-consumer, and paper that is produced from waste paper is called post-consumer.

### 4. Identify sustainability impacts

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

Most of the ***energy*** used during the ***extraction*** of raw materials, ***production*** and transportation of paper products is derived from the ***combustion of fossil fuels***. The combustion of fossil fuels leads to an increase in concentration of substances extracted from the earth's crust in nature (CO2, CO and SOx). Increasing concentrations of these substances in nature can contribute to a number of negative effects such as climate change and acid rain, as well as the associated negative human health impacts. It also depletes nonrenewable fossil fuel resources.

*ii. ...systematically increasing concentrations of substances produced by society?*

The use of elemental ***chlorine*** (chlorine gas) for removing lignin and brightening the pulp used to make paper poses potential hazards from the manufacture and handling of chemicals, emissions during production, and the effluent afterwards. If released to the environment, chlorinated organic compounds can have serious human health effects.

The combustion of fossil fuels produces a number of chemical compounds (e.g. nitrogen oxides) that build up in the atmosphere. This build-up contributes to global warming and acid rain.

*iii. ...systematically degrading nature by physical means?*

***Virgin fibres*** usually originate from trees. In addition to the actual removal of trees, harvesting can also require roads, both of which can destroy ***habitat*** and reduce the ability of plants and animals living within these forests to exist as healthy and viable populations. Removing trees can lead to erosion of topsoil and the destruction of aquatic habitats.

If the fibres originate from other plant material (bamboo, kenaf, straw, etc.) then disregard for sustainable agricultural practices can cause many of the same problems.

There are land issues related to postconsumer paper as well. If it is not recycled, most postconsumer paper ends up in ***landfills*** that take up space.

The ***extraction of fossil fuels*** for energy to harvest raw materials, process pulp and transport materials and products may move us away from the third sustainability objective, especially in the case where land disturbed in mining the fossil fuels is not reclaimed.

***Acid rain*** caused by the sulfur dioxide released during pulp and paper processing leads to some physical degradation of nature as well. Natural systems have the capacity to neutralize acidity in small doses, but greater amounts may damage terrestrial and aquatic ecosystems and hinder agricultural productivity.

*continued on page 3 . . .*

## 4. Identify sustainability impacts (con't)

*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/or pulp processing (e.g. nitrogen oxides, carbon monoxide, sulfur oxides, particulate matter) have a negative effect on ***human health***.

## 5. Envision sustainable paperboard and cardboard packaging

Paper products that are sustainable have a life-cycle where all the steps along the product lifecycle work towards our sustainability objectives. The paper would be harvested from either sustainably ***harvested*** non-wood resources (see below) or, in the case of forest resources, from trees that were grown and harvested using sustainable forestry practices so that the forest is renewed and ecosystems are protected. Next, the paper would be ***recycled*** to maximize its functional use.

The harvesting of the raw material and the production and use of the paper would not result in systematic increases of substances from the earth's crust or produced by society. This means that the ***energy*** used to power the various processes would be generated entirely from sustainable and renewable sources in a carbon neutral manner. Heavy metals and chemicals would either not be used or would be 100% recycled in technical cycles so that they do not accumulate in nature. The ***production and use*** of the paper would not physically degrade nature, and in no way undermine people's capacity to meet their needs.

## 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:

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. Forest Stewardship Council of Canada
   http://www.fsccanada.org/
2. Natural Resources Defense Council – Chlorine Free Paper
   http://www.nrdc.org/cities/living/chlorine.asp

WHISTLER

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