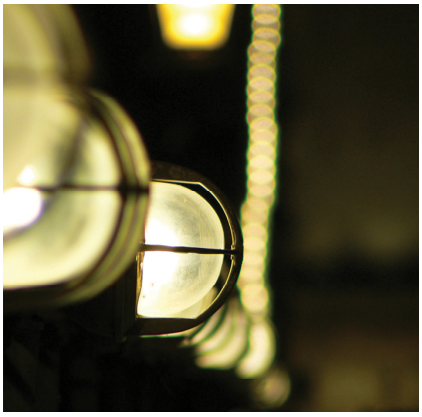
University of Saskatchewan

Smart Purchases Big Impact

Sustainable Purchasing Guide

Paper products

Sustainability... your university, your world



University of Saskatchewan

Paper Products

Introduction

This section provides information on currently available options for **paper products** 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 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
• High post-consumer recycled fibre content • Non-wood • Chlorine free • Paper that is less bright • Eco-Logo certified	• Long distance transport • Unsustainably harvested wood resources

Option: Reduce Paper Use

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

The first step toward a more sustainable paper cycle is to reduce use. Using less paper saves money and contributes to sustainability by mitigating the environmental impact of production and use. The average North American now uses 227 Kilograms of paper per year, more than double the global average. Consuming less paper reduces the impacts of paper production and the associated energy use from operating printers and copiers. Both of these processes are known to have negative impacts for sustainability and should be minimized.

Strategies for reducing paper use include:

- electronically archiving instead of printing non-critical documents
- sharing and reviewing document drafts electronically
- purchasing a duplex printer/photocopier and selecting double-sided printing as the default
- re-using paper that is already printed on one side for draft copies

Even if paper use declines in industrialized countries, developing nations will continue to increase their consumption as they gain access to more information and technology. Many countries currently have insufficient paper to fulfill basic education needs. It is therefore essential that paper consumption be closely monitored and restrained so that the resource, and the benefits it provides, can be more equally distributed to meet future needs.

Option: Choose High Post-Consumer Recycled Content

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

As opposed to virgin fibres, post-consumer recycled fibres have been recovered from paper products already "consumed" by an end user. The use of these recycled fibres directly reduces the use of forest resources, in turn mitigating the associated habitat destruction, loss of top soil and other forms of ecosystem damage.
Recycling one tonne of paper:

- Saves up to 31 trees, 4,000 kWh of energy, 1.7 barrels (270 litres) of oil, 10.2 million Btu's of energy, 26,000 litres of water and 3.5 cubic metres of landfill space
- Burning that same tonne of paper would generate about 750 kilograms of carbon dioxide
- Recycling paper saves 65% of the energy needed to make new paper and

also reduces water pollution by 35% and air pollution by 74%

Option: Choose Non-Wood (Tree-free) Fibres
Strategy: Dematerialization – higher yield plants (SO 1, 2, 3, 4)

Non-wood plant fibres do not need to be bleached with chlorine to be lightened, consume less energy when being processed, release fewer greenhouse gases in the production process and has less harmful water discharge. Crops grown specifically for the purpose of paper production can include Kanaf, jute, flax and hemp. Certain agricultural residues, such as wheat stalks and sugar cane bagasse, can also be processed into non-wood paper. When choosing non-wood fibres, preference should be given to those that are organically and sustainably grown. This eliminates the use of synthetic fertilizers, herbicides and pesticides, reducing the associated ecological and human health impacts.

Option: Use Sustainably Harvested Wood Fibre
Strategy: Substitution – management routine (SO 2, 3)

When using wood-based fibres, it is important to consider how the forest resources from which the paper was derived are managed and harvested. Preference should be given to companies that practice sustainable forestry techniques. Third party organizations such as the Forest Stewardship Council (FSC) certify the harvesting and management of forestry resources to ensure long-term sustainability.

Option: Choose Chlorine-Free Paper
Strategy: Substitution – nature-like (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.

Option: Choose Less Transportation
Strategy: Dematerialization (SO 1, 2, 3, 4)

The proximity of where the fibres are harvested, where the final products are produced and your own location has a significant impact on the sustainability of paper production. Growing, producing and buying locally will reduce emissions from fossil fuels. Transportation may have to be weighed against some of the other desired characteristics. More information regarding sustainable methods of transportation is available in the Transportation Guide.

Option: Select Paper with Appropriate Brightness
Strategy: Dematerialization – less waste (SO 1, 2, 3, 4)

The brightness of paper is largely a function of the chemicals used in the pulp and/or the amount of recycled fibres used in the paper. Selecting less bright paper can reduce overall impacts. The function or use of the paper influences how bright the paper needs to be. For example, copy paper is generally not used for publicity or advertising. When the content, rather than the appearance of the paper matters, the whiteness is irrelevant as long as the text is legible. It is important to appropriately match the paper to its purpose.

Option: Use EcoLogo Certified Products
Strategy: Substitution (SO 1, 2, 3)

Environmental Choice certified paper products have met the required standards regarding noxious emissions to water, wastewater discharge levels, use of recycled content, solid waste volume, potential contribution to acid rain and climate change, energy use and forestry and habitat conservation. This widely respected sustainability rating provides an easy way of distinguishing genuinely green products from their competitors.

Arriving
at the currently preferred options

1. Identify the service

Paper provides a highly accessible and convenient medium by which to record, disseminate and archive information.

2. Assess the need

The University of Saskatchewan requires the ability to record, receive and share information. It primarily uses paper for writ-

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ten, printed and copied documents, envelopes, file folders and promotional materials.

3. Identify Contents

Most paper is made from wood chips that are left over after logs have been cut up into beams and other shapes for different uses. Pulping is the process of breaking down the bonds within the wood, and methods for pulping wood include mechanical pulping, chemical pulping and re-pulping of waste paper. The fibres that are removed are called wood pulp, which has a brown color. The wood pulp is bleached into a lighter colour, spread out thinly and dried to make white sheets of paper. The most common bleaching substances contain chlorine.

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 and production and **transport** of paper products relies on the combustion of fossil fuels. The combustion of fossil fuels leads to an increase in the concentration of substances extracted from the earth's crust in nature (CO2, CO and SOx). Increasing concentrations of these substances in nature contribute to a number of negative effects such as climate change and acid rain, as well as negative human health impacts. As sulphate is a common chemical pulper, **sulphur dioxide** (SO2) is emitted to the air from the **pulp processing**. Health effects caused by exposure to high levels of SO2 include breathing problems, respiratory illness, and changes in the lung's defences. It also damages trees and crops. SO2 and nitrogen oxides are the main precursors of acid rain, which contributes to the acidification of lakes and streams, accelerated corrosion of buildings and reduced visibility.

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

- The use of elemental **chlorine** (chlorine gas) for removing lignin and brightening the pulp poses potential hazards throughout the paper production process, from the manufacture and handling of chemicals, to production emissions, to post-production effluent. If released to the environment, chlorinated organic compounds such as dioxin and furans can hinder proper hormonal functioning for exposed organisms. Research shows that dioxin mimics hormones and disrupts the endocrine (reproductive) system of fish, birds, and mammals.
- The pulping process releases numerous hazardous chemicals into the environment, especially through wastewater effluent and air contamination.
- The combustion of fossil fuels produces a number of **chemical compounds** (e.g. nitrogen oxides) that build up in the atmosphere.

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

- The removal of trees and construction of associated roadways may lead to topsoil erosion and the destruction of habitats which affect viability of plants and animals
- If paper is not recycled, most post-consumer paper ends up in **landfills**
- The **extraction of fossil fuels** for energy to harvest raw materials, process pulp and transport materials and products may also have negative environmental consequences

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

- **Acid rain** caused by the sulphur dioxide released during pulp and paper processing may damage terrestrial and aquatic ecosystems and hinder **agricultural productivity**.
- A number of the compounds produced by the combustion of fossil fuels and/or pulp processing (e.g. nitrogen oxides, carbon monoxide, sulphur oxides, particulate matter) have a negative effect on **human health**
- Other services that forests provide, such as **recreational opportunities** and **local economic development opportunities** (e.g. eco-tourism and non-timber forest products) are limited by the widespread industrial harvesting of trees

5. Envision sustainable paper products

Sustainable paper products would have a lifecycle where all the steps along the product lifecycle support our sustainability objectives. The paper would be harvested from either sustainably harvested non-wood resources or, in the case of forest resources, from trees that were grown and harvested using sustainable forestry practices. 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 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

Identify the product or service that offers the best pathway to-

ward meeting all four of our Sustainability Objective by using the following three criteria:

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: Printing and Writing Paper
   http://www.environmentalchoice.com/en/seeourcriteria/details.asp?ccd_id=302
2. Paper Consumption
   http://www.forestindustries.se/documentation/statistics_ppt_files/international_3/per_capita_paper_consumption_2009
3. Paper Recycling Information
   http://www.bir.org/industry/paper/
4. Non-Wood Fibers
   http://www.paperenvironment.org/nonwoodfiber.html
5. Forest Stewardship Council: Certification
   http://www.fsccanada.org/fscpaperproducts.htm
6. Natural Resources Defense Council – Chlorine Free Paper
   http://www.nrdc.org/cities/living/chlorine.asp

WHISTLER
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