RESPONSIBLE PURCHASING **GUIDE**

copy paper

RPN
Responsible Purchasing Network
Center for a New American Dream

about this guide

The Responsible Purchasing Guide for Copy Paper is published by the Responsible Purchasing Network in print, as a PDF file, and on the web. Print and PDF copies are available to the public for purchase. PDF and online versions of the guide are free to RPN members.The online edition includes additional resources available to RPN members, including: searchable product listings, multiple policy and specification samples, comparisons of standards, and related documents. Visit www.ResponsiblePurchasing.org to purchase a copy or to access the members-only web-based edition of the Guide.

about the Responsible Purchasing Network

The Responsible Purchasing Network (RPN) was founded in 2005 as the first national network of procurement-related professionals dedicated to socially and environmentally responsible purchasing. RPN is a program of the Center for a New American Dream (www.newdream.org) and guided by a volunteer Steering Committee of leading procurement stakeholders from government, industry, educational institutions, standards setting organizations, and non-profit advocacy organizations.

acknowledgements

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SOCIAL AND ENVIRONMENTAL ISSUES

Key impacts during the copy paper lifecycle include: hazardous releases of chlorinated compounds in the pulping process, high volumes of water use and contamination, pungent and toxic air pollutants, high volumes of solid waste, high energy demands and greenhouse gas emissions, and damage to arboreal and aquatic habitats. Energy consumption, emissions, and deforestation related to paper manufacturing contribute directly to the larger issue of global climate change.

BEST PRACTICES

Successful paper programs start by forming a paper team that gathers baseline data, sets goals for paper reduction and increased socially and environmentally preferable purchasing. Next, an organization should adopt a policy, evaluate standards and specifications, implement improved practices, and monitor progress. This section covers how to 1) increase paper efficiency, 2) choose the right paper, 3) work with suppliers, 4) get staff onboard, and 5) recycle.

COST, QUALITY, AND SUPPLY

Though recycled-content papers are widely available and of equal quality to virgin papers, they are typically between 8-36% more expensive than virgin papers. However, price premiums can be offset through paper efficiencies such as double-sided printing, group or bulk purchasing, and savings accrued from in-house recycling programs.

POLICIES

The model policy drafted by the Environmental Paper Network and RPN for institutional paper programs addresses paper efficiency, environmental attributes of paper products, recycling programs, and supplier communication. This guide also includes other sample policies from large and small government agencies, universities, and corporations.

SPECIFICATIONS

Minimum specifications for copy paper should include: 1) 30% post-consumer waste (PCW) recycled content, 2) chlorine-free certification; 3) chain of custody certification for virgin content; and 4) a requirement that vendors offer tree-free alternatives. For stronger specifications, including maximized PCW recycled content; recycled-content and recyclable wrappers, cartons, and corrugated packaging with a minimum of 30% PCW; and vendor green power use, refer to the Model Policy drafted by the Environmental Paper Network and RPN.

STANDARDS

Environmental standards and certifications make it easy for institutions to choose high quality and environmentally preferable copy paper. RPN recommends: Forest Stewardship Council (FSC) chain of custody certification, Chlorine Free Products Association's Totally Chlorine-free (TCF), and/or Processed Chlorine-free (PCF) marks, and paper certifications from Green Seal and EcoLogo. Other certification programs include the Programme for the Endorsement of Forest Certification schemes (PEFC), and the Sustainable Forestry Initiative (SFI).

PRODUCTS

The RPN database of eco-labeled papers includes 150 products, as well as the Paper Steps hierarchy of paper attributes, and World Wildlife Fund's Paper Scorecard, both of which are designed to help purchasers rank and choose environmentally preferable papers.

SOCIAL AND ENVIRONMENTAL ISSUES

Americans consume over 30 million tons of paper per year, most of which is quickly discarded (PIAC, 2007; Hawken, 1999).

Figure 1: Yearly paper use by average office worker

10,000 sheets per year

The average office worker uses 10,000 sheets per year, which stack up to a little over half her height in paper. See Figure 1. In 2004, federal offices used an estimated 109,000 tons of copier paper. By 2008, this amount was projected to increase more than ten percent (FNS, n.d.).

Institutional purchasers have the power to mitigate the negative social and environmental impacts of the paper and pulp industry by shifting the market toward papers made from post-consumer waste (PCW), without chlorine compounds, and with fiber from responsibly managed forests.

Key impacts during the copy paper lifecycle include: hazardous substance releases during the pulping process, water use and contamination, pungent and toxic air pollutants, energy demands and greenhouse gas emissions, damage to arboreal and aquatic habitats, and high volumes of solid waste. Several of these impacts also contribute directly to global climate change.

HAZARDOUS SUBSTANCES

Paper mills use caustic soda or lye to break down wood pulp for paper-making. Worldwide, the pulp and paper industry is the single largest consumer of caustic soda. Caustic soda plants using older technologies emit dozens of tons of mercury every year in the United States. Though environmentally superior production technologies are now common in the United States, some plants still use outmoded processes that emit high levels of mercury. Specifying that vendors offer paper for which the caustic soda used or sourced is manufactured at mercury-free locations alleviates many concerns about mercury pollution (NRDC, 2006).

The paper and pulp industry also contributes substantially to mercury emissions through its heavy use of energy. Electric power generation from coal-fired power plants is the single largest source of mercury emissions in the United States.

Mercury, a heavy metal, transforms into methylmercury in soils and water. Methylmercury bioccumulates in food chains, and if ingested by humans can damage the nervous system. The human nervous system is very sensitive to all forms of mercury. Methylmercury is particularly harmful in that it more readily enters the brain in this form. Exposure to high levels of mercury can permanently damage the brain and kidneys. The EPA has determined that methylmercury is a possible human carcinogen.Nursing or expectant mothers who ingest contaminated food can expose their babies to mercury, which can adversely affect their development and lead to learning disabilities (ATSDR, 1999).

After the pulp is made, it is then bleached to make copy paper. Approximately 60% of bleached pulp produced in the United States, nearly 22 million tons, is used for printing and writing papers. Conventional bleaching uses

chlorine compounds that contribute to hazardous concentrations of dioxin, furans and other chlorinated organic compounds, often referred to collectively as dioxins, in pulp plant effluent. Fortunately, elemental chlorine (Cl_2) is now used by only a small fraction (4% of bleached pulp production) of the industry. The so-called elemental chlorine-free (ECF) process uses chlorine dioxide (ClO_2). Though a significant improvement to using elemental chlorine, the ECF process still produces some persistent chlorinated substances, such as dioxins. When released in the air, these toxins eventually enter waterways where they bioaccumulate in fish and wind up in human food systems (EPA, 2002).

A 2004 draft EPA report concludes that "dioxins have the potential to produce a broad spectrum of adverse effects in humans by altering cell growth and development, causing cancer, and suppressing the immune system" (EPA, 2008c). Short term effects of dioxin include skin and respiratory tract irritation and cardiovascular and nervous system damage. In addition to being a known carcinogen, it may cause dermatitis, adverse effects on bone marrow, and endocrine system disruption over long-term or repeated exposure (CDC, 2003).

Purchasing chlorine-free bleached or unbleached papers reduces the potential impact of hazardous substances in the lifecycle of copy paper.

WATER

The quality of water discharged and quantity of water used in paper and pulp manufacturing are serious environmental concerns. In addition to endocrine disrupting pollutants, wastewater from pulp and paper processes contains suspended solids and sulfur compounds (EPA, 2002). Bacteria and other microorganisms feeding on the solids raise the biological oxygen demand (BOD) in the water, making less oxygen available for other organisms. When this contaminated, oxygen-depleted water is released into lakes and rivers, it disrupts the balance of aquatic ecosystems (Sheperd, 2008). BOD and suspended solids are concerns in both virgin paper and recycled paper manufacturing processes, but technology exists to reduce these pollutants from the effluent stream (FOE, 1997).

The paper industry is the largest consumer of process water of all US industrial sectors (EPA, 2002).Though industrial process water can be treated and reused responsibly, manufacturing one ton of virgin copy paper (a tiny fraction of the overall national annual consumption) produces nearly 20,000 gallons of wastewater. One hundred percent PCW copy paper production results in half as much wastewater. (Environmental impact estimates were made using the Environmental Defense Fund Paper Calculator.)

In Canton, North Carolina one paper plant has been polluting the local waterways for over 100 years, leaving them virtually lifeless, brown and foamy (AP, 2008). The Blue Ridge Paper Company paid $22 million to clean up their toxic discharges and $2 million in damages to downstream landowners, yet since 2005, the plant is still unable to meet federal and North Carolina standards and operates under a variance from the Clean Water Act (AP, 2007; Morrison, 2008). It was not until 2007, when dioxin levels fell below state advisory limits, that regulators lifted a warning on Pigeon River fish consumption. Local scientists, however, recommend that food from the river be eaten in moderation because of the high toxicity of dioxin (AP, 2007). Though researchers have reintroduced a number of wildlife species and attempted to clean up the river, it remains impaired (SMN, 2007).

AIR POLLUTANTS

Paper and pulp industry air emissions have local and global implications. Local air pollution is evident in the

"rotten egg" odor around paper and pulp mills caused by hydrogen sulfide and other reduced sulfur gasses released in the pulping process. The industry also emits particulates, volatile organic compounds (VOCs), and nitrogen oxides (NOx). Particulates and ground level ozone, created when VOCs and NOx emissions react with sunlight, aggravate respiratory conditions and damage lung tissue (EPA, 2002). Ground level ozone damages vegetation and reduces crop yields.

Nitrogen oxides also react with other compounds in the atmosphere to create acid precipitation, which can travel hundreds of miles before falling. Acid rain, snow and fog deteriorate built structures and pollute aquatic habitats (EPA, 2008d). The paper and pulp industry contributes directly to global warming through combustion processes and energy use that result in greenhouse gas emissions such as carbon dioxide (CO_2) (EPA, 2002).

ENERGY

According to the EPA, the pulp, paper and allied products industry is the third largest consumer of energy after the chemicals and minerals sectors (EPA, 2002). The US Energy Information Administration estimates that the pulp and paper industry accounts for 2.3 quadrillion Btu in 2002 or ten percent of all energy used by manufacturing industries in the United States (EIA, 2002).

Carbon dioxide emissions from paper and pulp manufacturing impact the global climate. As a result of its energy consumption, the American paper and pulp industry is responsible for 102.3 million metric tons of CO_2 per year – an amount equivalent to the carbon held in nearly 650,000 acres of forest preserved from deforestation (EIA, 2007; EPA, 2008a).

Global climate change means a warmer atmosphere, extreme summertime heat, rising sea levels, more intense hurricanes, shifting rainfall patterns, migrating disease vectors such as malaria and West Nile virus, bleaching of coral reefs, and species extinction. These changes are likely to affect agriculture and fisheries, increase prevalence of floods and droughts, and displace hundreds of millions of people around the world.

HABITAT ALTERATION

Conventional logging practices and conversion of forests to tree plantations reduces biodiversity, degrades wetlands and limits carbon storage capacity. Limiting carbon storage capacity represents a significant contribution to climate change beyond the energy use described above.

Genetically modified (GM) trees are used to produce softer fibers, greater pest resistance and higher herbicide tolerance. GM trees allow plantation managers to produce wood at a more rapid pace with lower costs. These crops are transforming wood cultivation and redesigning forests to meet the needs of tree farming. Recently, some have expressed concern over the impacts that GM trees can have on a forest's ecosystem, overall health, and surrounding biodiversity. Genetically modified plants create genetically dominant species that diminish biodiversity when their genes spread to surrounding areas. Subsequently, new types of trees are being engineered with reduced reproductive capacity. As a result, trees are cultivated with little pollen and fewer flowers, seeds and fruits. These food sources are important to forest food chains and overall well-being. Of similar concern is the use of herbicides in GM tree plantations: GM trees engineered to have increased chemical tolerance encourages farmers to use more herbicides, affecting the soil, water, forest wildlife and human health (Johnson, 2004).

Living trees serve as carbon sinks, holding more carbon than they release. According to Allen Hershkowitz,

senior scientist at the Natural Resources Defense Council and author of Bronx Ecology, tree plantations host about 90 percent fewer species and store much less carbon than the forests that preceded them (EPN, n.d.). Annual carbon emissions from the paper and pulp industry would require about 650,000 acres of intact forests to sequester, whereas over 30 times that acreage (21 million acres) of pine or fir plantations are needed to store the same amount of carbon (EPA, 2008a).

Forests are the largest single land use source of carbon sequestration in the United States (EPA, 2008b). Since 1990, however, their effectiveness as a carbon sink has declined. As reported in the Union of Concerned Scientists magazine, Catalyst, "Carbon sequestration by forests and other lands decreased by approximately 20 percent from 1990 to 2001, a decline stemming primarily from unsustainable timber management (especially on privately owned forests) and the clearing of forests for development" (Manion, 2004).

US Fish and Wildlife Service reported that 75% of the plantations established in the last two decades in the American Southeast, an important paper producing region, have been established at the expense of natural forests. Converting an intact forest to a tree plantation results in decreased carbon sequestration and also reduces the wetlands protection provided by the natural forest. The conversion of forests to plantations is the leading cause of freshwater wetland loss in the Southeast (EPN, n.d.). Without trees and other plants in place, wind and rain easily wash away topsoil into waterways. The lack of forest vegetation and soil increases the risk of flooding, which often destroys wetlands and decreases the likelihood of forest regeneration. Chemical pesticides and fertilizers also wash away with the soil, accumulating in fish and aquatic sediment.

Papers manufactured with post-consumer waste and chain-of-custody certified fibers from responsibly managed forests can greatly reduce the carbon emissions and habitat alteration associated with paper production. See the Specifications section for more details on specifying the best copy paper.

END OF LIFE MANAGEMENT

Waste paper can be reused, recycled or composted, but at the end of its typically short life, much paper becomes solid waste destined for landfills and incinerators. Of the more than 30 million tons of printing and writing paper consumed in 2007, barely half was recycled (PIAC, 2007). Recycling saves trees, water, and energy, whereas landfills pollute the environment and occupy valuable land. Though half of all paper and paperboard is recycled, they still make up about 34% of municipal solid waste (MSW) (EPA, 2008). When paper decomposes in the anaerobic conditions of a landfill, it releases methane, a greenhouse gas nearly 25 times more powerful than carbon dioxide at trapping heat in the atmosphere.

Paper products are also sent to incinerators, or "municipal waste combustors" (MWCs), for disposal. MWCs generate several forms of waste: ash residue; wastewater from cooling and ash dewatering operations; and air emissions (MA DEP, n.d.). Government regulations, pollution controls like scrubbers and filters, and compliance monitoring control some of the waste. Nevertheless, the following emissions, according to the Massachusetts Department of Environmental Protection (MA DEP, n.d.), are associated with MWCs:

- Acid gases, such as hydrogen chloride and sulfur dioxide, that contribute to acid rain and can cause or aggravate breathing problems;
- Chlorine-containing organic chemicals, including dioxins and furans, that are known or suspected to cause cancer and birth defects;
- Fly ash and soot particles, seen as smoke, that reduce visibility and can hinder breathing;
- Heavy metals, such as mercury and lead, that can affect the human brain, kidneys, liver and nervous

system, as well as child development; and

- Nitrogen oxides (NOx), a chief ingredient of ground-level ozone, that can cause or aggravate breathing problems.

Though recycling paper saves water, reduces greenhouse gas emissions, and diverts solid waste, it is not without some environmental concerns. Deinking, the process of turning recycled paper back into pulp, creates paper fiber biosolids as a byproduct (known as "sludge"). Deinking sludge consolidates impurities (e.g. coatings, dyes, and staples) and sometimes hazardous chemicals that may otherwise have spread through landfills and waterways. The slurry should be disposed of responsibly, though it is not strictly regulated across the United States and Canada. Some pulp mills sell sludge from virgin pulp-making and deinking to soil amendment manufacturers. Using sludge as a soil amendment can pose a threat to humans if it contains hazardous chemicals and pathogens like E. coli that make their way into waterways and food chains (Pearson, 2005). Burning sludge to generate electricity has air quality implications and also requires that the material first be dried. Heavy metals in sludge may be less prevalent than in the past, when these metals were used more often to make inks and pigments (FOE, 1997).

SOCIAL ISSUES

Many prime logging sites are home to indigenous groups. Paper and pulp manufacturers often violate the land rights of these rural communities, which are disproportionately burdened by the environmental consequences of logging, milling, and paper-making.

For instance, the provincial government of Ontario, Canada granted forestry permits to two forest product multinationals on Grassy Narrows First Nation's traditional lands. The lands were opened to commercial entities without the Nation's full and informed prior consent, violating their constitutional rights as indigenous people. According to the Environmental Paper Network, "Forestry has devastated Grassy Narrows' territory, with more than 50% of the land having been clear cut, destroying the habitats of the plants and animals that form the basis of traditional livelihoods: [foraging] for food, fiber and medicine. Replanting by [the forestry company] Abitibi has been with tree plantations that are heavily sprayed with chemicals that have negative impacts on berries and other plants." Similar clashes between paper companies and native people have been cited in Brazil, Finland, New Zealand, Russia, and Indonesia (EPN, 2007).

RELATED DOCUMENTS

EPN, State of the Paper Industry, 2007

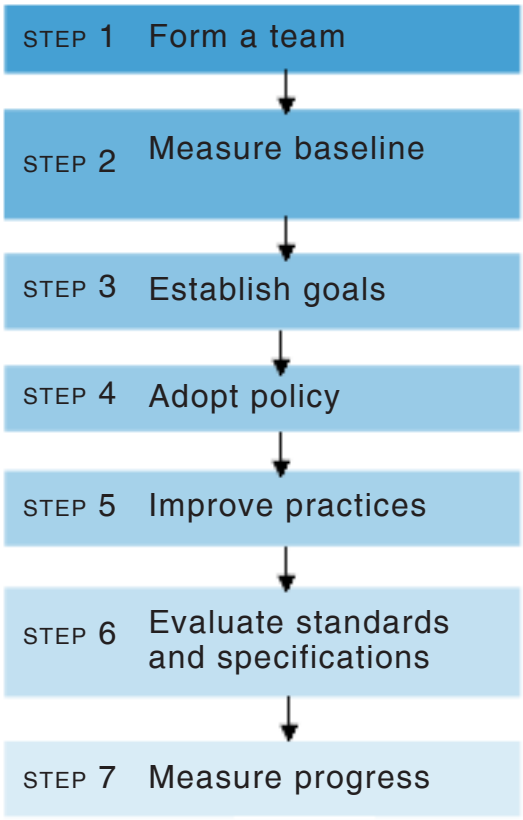
RPN, Responsible Purchasing Guide for Green Power, April 2008

EPN, Common Vision, 2002

A successful paper program follows best practices for procurement, use, and disposal.

Best practices include forming a team dedicated to the task, establishing baseline data, setting goals, adopting a policy, improving current behaviors , evaluating standards and specifications, and measuring and reporting progress. See Figure 2.

Figure 2: Team Flow Chart



FORM A TEAM

Dedicate a team to developing a green paper program. The team should include representatives from procurement, administrative support, waste management/recycling, and management. It should recommend and implement plans for paper procurement, use, reduction, and recycling or reuse, and measure the program's costs and benefits.

As a first step, the team should educate themselves on issues associated with paper purchasing, including misconceptions about environmentally preferable paper. This information will help the team determine strategies to address the use and procurement of paper and prepare them to respond to questions about new policies and procedures. See the Cost, Quality, and Supply section for more information about the reliability of recycled-content copy paper.

GATHER BASELINE DATA

Inventory the types and quantities of paper products currently purchased and consumed, calculating environmental and economic costs and benefits. For each product type record:

- Quantity in reams, cases, or sheets
- Brightness and weight
- Percentage post-consumer and total recycled content
- Percentage virgin fiber originating from sustainable sources
- Certification of chlorine-free production
- Unit pricing
- Delivery costs
- Disposal costs

This data will help set priorities and goals for transitioning to environmentally preferable paper.

Use resources such as the Paper Calculator to establish the baseline impacts of current paper use. Compare

current usage against other paper choices to project reduced impacts on wood use, energy use, greenhouse gas emissions, water use, and solid waste generation.

SET GOALS

Using current baseline data, set ambitious but realistic goals for purchasing environmentally preferable paper and paper products. Design a plan of action, with a specific timetable, for meeting these goals. To maximize impact, the plan should begin by focusing on products consumed in large quantities and where environmentally preferable alternatives already exist. Set targets for:

- Paper consumption reductions
- Recycled content
- Recycling rates
- Energy and greenhouse gas emissions reductions
- Water conservation
- Toxics reductions

See the Policies section for sample goals.

ADOPT A POLICY

Develop an organizational policy to formalize commitment to environmentally preferable paper practices and purchases. Communicate this policy to managers, staff, suppliers, customers, partners, and the public. For a model policy, see the Policies section below.

IMPROVE PRACTICES

Reduce costs and impacts with these strategies:

Increase Everyday Paper Efficiency

- Switch to electronic workflows and reference documents like email memos and online staff handbooks (Hawkins, 2007).
- Review and edit documents electronically.
- Use electronic signature software such as Docusign.
- Make an electronic letterhead template available.
- Keep electronic records, such as archived emails.
- Reduce white space by setting smaller default margins on word processing programs.
- Optimize printer-to-employee ratio and use the right printer for the job.
- Print double-sided using copiers, printers, and fax machines with duplexing capability. See the Responsible Purchasing Guides for Computers and Office Electronics for detailed tips.
- Rethink publication design (e.g., no title pages, no cover pages, no blank pages).
- Reuse products such as file folders, storage boxes, and paper printed on one side.
- Minimize unsolicited mail, both sent and received.
- Minimize overruns and maximize sell-through for published materials.

Choose the Right Paper

- Avoid coated and bright-colored papers, which are often less recyclable.
- Purchase paper with the minimum brightness suitable for the job.
- Reduce the basis weight and trim size of printed pieces.
- Reuse single-sided scrap paper for internal or draft print-outs.
- Purchase papers with recycled content and recyclable packaging.
- See Addendum 3 for a hierarchy of environmental paper attributes.

Work with Partners and Suppliers

- Give preference to suppliers, manufacturers, and printing services that use preferable papers and green power at their facilities.
- Ask printers to use vegetable-based inks (e.g. soy, linseed, corn) without toxic metals.

See Addendum 4 for sample Paper Supplier Evaluation form.

Get Staff Onboard

It is important to educate staff because paper use efficiency is directly tied to their behavior.

- Post signs above printers, such as usage graphs, educating staff about paper use.
- Provide how-to tips and reminders on paper conservation.
- Conduct short instructional trainings or brownbag lunches on setting printing defaults.

Close the Loop

Establish an office paper recycling program or policy, or improve upon an existing one, to increase the supply of recycled content pulp.

- Contact the local municipal waste management departments if a recycling program does not exist or is ineffectual. Most governments will offer customized assistance.
- Collect and recycle paper used internally and paper received from outside sources.
- Educate co-workers about recycling programs and alert janitorial staff and waste haulers to maintain separation of recyclables and trash.
- Work with waste haulers and/or building management to separate used paper from other recyclables in order to maximize its recyclability.
- Ask document destruction contractors to verify that they recycle.

EVALUATE STANDARDS AND SPECIFICATIONS

Once goals are set, aim to achieve them by drafting product specifications that meet needs. Do not start from scratch: reference existing environmental paper standards and draw from specifications used by other institutions. Read the Standards section for details on third-party environmental paper certifications and browse our sample Specifications for institutional buyers.

TRACK AND REPORT PROGRESS

Schedule and conduct regular progress reports. Identify and address obstacles that may be hindering success and adjust goals if necessary. Reward or recognize the stakeholders responsible for successes.

Use the Paper Calculator to measure improvements in units equivalent to cars taken off the road and trees saved. Report the organizational paper purchasing policy, goals, and achievements on organizational websites, press releases and in annual sustainability reports. Raise awareness further by including paper attributes on all printed documents.

RELATED DOCUMENT

RPN, Responsible Purchasing Guide for Office Electronics, 2007

Though recycled-content papers are slightly more expensive than virgin papers, they are widely available and perform equally well.

COST

Recycled copy paper often costs more than virgin paper. According to a 2004 survey of state purchasing agencies conducted by the Center for a New American Dream, the average price for copy paper with 30% post-consumer waste (PCW) was 8% higher ($25/case) than virgin paper ($23/case), and the average price paid for 100% PCW paper ($32/case) was 36% higher. See Figure 3. Ordering in bulk and choosing papers with lower weights and brightness levels are two ways to close the price gap, though at least 27 states and the District of Columbia simply allow for a price preference in order to meet their environmental objectives (New Dream 2005).

Figure 3: Cost Comparison of Virgin and Recycled Papers

Institutions can offset price premiums through paper reductions (based on 2004 RPN survey)

Despite price differences, it can be relatively easy to reduce overall paper costs while still shifting to preferable products. First, improve paper efficiency by installing duplexers for double-sided printing and follow the other recommended best practices in the Responsible Purchasing Guides for Computers and Office Electronics. Based on a five-week test of copier defaults set to double-sided copying, Citigroup estimated savings of $860,000 on paper costs alone and $11.2 million on all purchasing, handling and disposal costs annually (EDF, 2004).

Second, consider purchasing in higher volume or through a cooperative contract. Buying in bulk may reduce the purchase premium of PCW recycled copy paper.

Finally, ensure that paper is being recycled and allocate the savings from waste-hauling toward the paper budget. If space allows, increase the average paper order to reduce shipping costs (which also lowers environmental impacts, especially greenhouse gas emissions). These best practices can reduce paper costs enough that the increased price of highly environmentally preferable paper is less than the savings banked from improved practices – the result can be a lower cost paper program with decreased environmental impacts.

QUALITY

Recycled-content paper meets the same technical specifications as virgin papers and runs successfully on office electronics (Kinsella, 2000). Buyers Laboratory, Inc., an independent testing laboratory for copiers, printers, and fax machines, regularly runs 30% PCW paper in the machines it evaluates and reports "no noticeable difference in the runnability of recycled paper versus virgin paper" (Conservatree, 2003). Brands such as Cascades and Hammermill even guarantee their recycled content products for use in standard office

equipment.

The US Conference of Mayors (UCSM) Recycling at Work Campaign coordinated an evaluation of recycled papers during the fall and winter of 1998. In this study, Canon U.S.A, Hewlett-Packard, and Lexmark, evaluated over a dozen brands of 30% PCW recycled content copy paper and compared these papers to 20%-25% PCW and virgin fiber content copy paper. Two million sheets were tested on various copiers, laser printers, and ink jet printers. Tests covered paper feeding, reliability, image quality, toner fixability, smoothness, curl, and more. The highest recycled content paper showed equivalent performance to less environmentally preferable paper. UCSM reported, "There are no more excuses. Multipurpose recycled content paper containing 30% [PCW] fiber works in your office equipment" (UCSM, 1999).

Since this study, done a decade ago, the quality and availability of recycled content copy paper has increased significantly. Now, in addition to 30% PCW papers, there is a wide selection of 100% PCW papers that work in virtually all types of office equipment and are often indistinguishable from virgin copy paper.

To maintain the integrity of any copy paper, handle and store it with care. According to industry sources, "at least 99% of all paper jams are caused by poor storage or a machine in need of service." To avoid wasteful jams, store paper at room temperature and in a dry spot. Keep copy paper wrapped, off concrete floors, and away from pipes and direct sunlight. Use older stock first, and fan the stack before loading it into equipment (Paperrap, 2005).

SUPPLY

Recycled-content copy paper is available in standard weights and brightness levels and stocked by most printers, paper distributors, and retail outlets (Kinsella, 2000). Recycled paper with chlorine-free processing is also widely available. Major retailers such as Office Depot and Staples have committed to increasing recycled paper availability in stores and catalogs. In 2002, there was enough existing capacity to manufacture an additional 1.5 million tons of 30% PCW copy paper, an amount that could supply one third of the 2002 demand. Increasing demand has spurred increased production capacity and supply of recycled paper (Case, 2005).

Conservatree cites 63 brands of copy paper containing at least 30% PCW recycled-content, with 13 containing 100% PCW. Preferable products are carried by office supply stores, paper merchants, and are available directly from manufacturers. See the Products section for a list of certified papers.

RELATED DOCUMENT

Environmental Defense Fund and Citigroup, Inc, Copy This!, 2004

Educational institutions, cities, states, counties, and an increasing number of corporations have environmental paper policies addressing paper efficiency, recycling, recycled content, and cleaner production methods.

MODEL POLICY

Responsible Purchasing Network and Environmental Paper Network, Model Paper Purchasing Policy, 2007

Developed by the Environmental Paper Network in partnership with the Responsible Purchasing Network, this widely applicable policy covers paper efficiency, maximizing recycled content in paper purchases, choosing certified responsibly-sourced fiber, supporting cleaner production practices, maintaining recycling programs, and communicating to suppliers and partners. See Addendum 1 for the complete policy.

FEDERAL

Executive Order 13423: Strengthening Federal Environmental, Energy and Transportation Management, January 24, 2007
Section 2d requires federal government agencies to purchase a minimum of 30% PCW paper.

Environmental Protection Agency (EPA), Comprehensive Procurement Guidelines, n.d.
The EPA recommends specifying 30% post-consumer fiber and 30% recovered fiber when purchasing uncoated copy papers.

STATE

New York State, Executive Order No. 4: Establishing a State Green Procurement and Agency Sustainability Program, 2008
Requires that an interagency committee set goals for paper-use reductions and that all state agencies purchase only 100% PCW, process chlorine-free paper products.

LOCAL

City of Portland, OR, Sustainable Paper Use Policy, 2003
Initial goal was to reduce city paper consumption by 15% below 2001 levels by 2008 by incorporating best practices for paper use reduction, including purchasing duplex capable office electronics. Requires all paper products to, at minimum, meet the EPA CPG-RMAN recommendations and increasingly purchase products that are also PCF/TCF and contain virgin fiber from sustainably-managed sources

County of Multnomah, OR, Resolution Adopting Recycled Paper and Paint Policy, 2003
Sets goals to reduce paper consumption by 15% by 2008 from 2001 levels and switch all copier and general use paper products to PCF and a minimum 50% PCW.

County of Santa Clara, CA, Recycled Paper Policy, n.d.

The county government standard for purchasing paper: 50% recycled content with at least 10% PCW; purchasing agent is instructed to buy recycled paper when cost is comparable.

EDUCATIONAL INSTITUTION

Princeton's Paper Purchasing Policy, 2004
As of the Spring of 2004, all departments are required to order 100% PCW paper for all office needs, with exceptions for stationary and Department of Printing and Mailing due to special needs. The school negotiated with Boise Office Solutions to get a lower price on recycled paper.

University of Colorado, Student Union Bill, n.d.
Requires that all standard print jobs on white paper use 100% PCW paper. Non-standard jobs such as color paper, letterhead or bound volumes must have a minimum of 30% PCW content.

University of Oregon, Recycled Paper Policy, 2003
University Printing Services will provide and use chlorine-free recycled paper with 100% PCW content. All University paper products shall consist of at least 50% recycled content with at least 30% PCW content and be chlorine-free. Use of heavily dyed and neon papers is discouraged.

Ohio State University, Paper Policy, 2008
Commits to 30% PCW paper, encourages paper-saving strategies, and sets a 14% price premium as acceptable for preferable paper purchases.

Humboldt State University, Required Use of 100 Percent Recycled Paper, 2005
Requires all university departments to purchase exclusively 100% PCW office paper, exceeding the state mandate of a minimum of 30% PCW for 25% of all printing and writing paper purchases.

Washington University, Sustainable Paper Resolution, 2003
Student Union resolves to purchase paper with a minimum 30% PCW content that is processed chlorine-free; replace single-sided printers with duplex printers; utilize 100% PCW chlorine-free paper whenever possible; educate members to reduce paper and toner usage; and encourage other departments to do the same.

CORPORATE

Bank of America, Paper Procurement Policy, 2005
The company will implement measures to reduce paper use and promote recycling. 90% of paper will be at least 20% PCW. Virgin pulp must be third-party certified from sustainably managed forests.

Office Depot, Environmental Paper Procurement Policy & Vision Statement, n.d.
Office Depot's policy, for both internal use and retail procurement, is a broad commitment to increase recycled content, particularly PCW, phase out elemental chlorine bleaching, promote certified sustainable forest management, protect natural forests and avoid GMO fiber.

Staples, Environmental Paper Procurement Policy, n.d.
Addresses internal paper consumption and retail procurement. The policy states a goal of an average 30% PCW in all paper products, and mandates the use of PCW paper for internal operations. It also commits the company to protecting endangered forests and promoting sustainable forestry practices.

Review the responsible specifications for copy paper below and see the Products section for samples of supplier tracking forms, a hierarchy of environmentally preferable papers, and a paper scorecard.

Minimum specifications for copy paper should include:

- Maximized PCW recycled content, with a minimum of 30% for all papers
- Chlorine-free certification
- Chain of custody certification for virgin content to ensure paper comes from well-managed forests
- Require vendors to also offer tree-free alternatives (such as kenaf or hemp)

Stronger specifications include:

- 100% certified PCW recycled content paper
- Preference for PCW recycled-content and recyclable wrappers
- Minimum 30% PCW for cartons and corrugated packaging materials
- Verification of vendor's use of green power

MODEL SPECIFICATIONS

Responsible Purchasing Network and Environmental Paper Network, Model Environmental Specifications, 2007

Developed by the Environmental Paper Network in partnership with the Responsible Purchasing Network, this specification provides contract language for recycled content, responsibly-sourced fiber, cleaner production practices, recyclability, and promotion. See Addendum 2 for full specifications.

Markets Initiative, Ancient Forest Friendly Uncoated Paper Specifications, 2005

Gives preference to papers from sources guaranteed to be free of fiber harvested in a manner that threatens endangered forests. Also recommends maximum recycled "FSC Pure" certification for virgin fiber and chlorine-free fibers. Other recommendations include maximizing PCW content and using non-wood agricultural residues.

STATE

Commonwealth of Massachusetts, Recycled Paper and Envelopes RFR, 2005

The state requires:

- that all paper products contain at least 30% PCW content, are recyclable in municipal programs, and are packaged in a minimum 35% PCW content carton;
- that contractors offer 50%, or 100% PCW as well as a tree-free alternative.

Chlorine-Free Products Association and/or Forest Stewardship Council or Sustainable Forestry Initiative certifications are encouraged. Contractors are encouraged to reduce environmental impact by offering more

preferable products, using alternative fuel vehicles for deliveries, and/or reducing packaging. All vendors on the Massachusetts contract for office equipment (copiers, printers, fax machines, etc.) must agree that the recycled content paper specified on the paper contract will not be faulted for jams in the machines or other equipment problems.

State of Vermont, Paper Contract, n.d.
Three paper purchases are on this contract with two of them requiring processed chlorine-free 100% PCW content. The third calls for 80% PCW content and processed chlorine-free paper.

State of California, State Agency Buy Recycled Campaign, n.d.
Requires that every state agency:

- Receive supplier verification of the post-consumer recycled content of their products;
- Purchase paper with minimum 30% post-consumer content;
- Attain recycled-content product (RCP) procurement mandates; and
- Submit an annual report on dollars spent on all products in mandated categories.

COUNTY

King County, Recycled Copy Paper Specs, n.d.
Seeks seven contracts, the first 6 specify a minimum 30% PCW, the last specifies processed chlorine-free 100% PCW; all 7 prohibit paper that would jam printers or other office equipment.

CITY

City of Portland, RFQ – Paper, 2006
Minimum 30% PCW and at least elemental chlorine-free processing. The city asks supplier to identify certifications including FSC, PCF, Green Seal, or EcoLogo (formerly known as Environmental Choice). Also, supplier must identify the percentage of renewable energy used in production.

Environmental standards and certifications such as the following make it easy for institutions to choose high quality and environmentally preferable copy paper.

The summaries below describe each recommended standard-setter, their main criteria, and how each is developed and verified. Also included are other related standards and labels that purchasers may encounter as they are choosing preferable copy papers.

RECOMMENDED STANDARDS

Chlorine-Free Products Association (CFPA)

The not-for-profit trade association established in 1994, Chlorine Free Products Association (CFPA), developed CFPA #102, a chain-of-custody certification standard to address bleaching processes, recycled content, and forest management. Products that meet CFPA #102 may be labeled as TCF (Totally Chlorine Free) or PCF (Processed Chlorine Free).

TCF is reserved for virgin papers. The TCF mark means

- No chlorine or chlorine compounds were used in the papermaking process.
- The mill has no current or pending violations.
- The paper does not contain fiber from old growth forests.

PCF is reserved for recycled-content paper. The PCF mark means

- The paper contains at least 30% PCW.
- Any virgin fiber used in the paper is not sourced from old growth forests.
- No chlorine or chlorine compounds were used in the bleaching of virgin fibers or the re-bleaching of recycled fibers.
- The mill has no current or pending violations.

CFPA audits require chain of custody documentation for all raw materials. Auditors evaluate the impact of a manufacturing process on the environment based on water and energy use, chemistry, carbon gas releases; review manufacturers' environmental policies and permit compliance; and review ethical management practices and compliance, financial performance, product stewardship, public information, funding of research and development, and employee recognition. Once the audit is complete the organization ranks the applicant using a Sustainability Index.[1] Only processes or products that are manufactured free of chlorine chemistry are identified with the Totally Chlorine Free (TCF) or Processed Chlorine Free (PCF) trademarks.

1 CFPA's Sustainability Index addresses environmental policy and management, mill process, forestry certification, environmental risk management, product stewardship, public information, environmental compliance, and employee recognition.

EcoLogo[CM]

The EcoLogo[CM] Program is a Type I ecolabelling program (as defined in ISO 14024), and is managed by TerraChoice Environmental Marketing Inc., with offices in Ottawa, Chicago and Philadelphia. EcoLogo certifies copy paper and the associated manufacturing processes under the multi-attribute standard CCD-077: Printing and Writing Paper. The standard spans the full lifecycle of the products to address sustainable forest management, air and water emissions, solid wastes, recycled content, and energy use. Copy paper that meets CCD-077 is manufactured with:

- More efficient fiber use (including the use of post-consumer recycled sources and alternative non-wood fibers);
- Reduced chronic toxicity to aquatic species;
- Reduced chemical oxygen-demanding matter in the effluent;
- Increased energy efficiency;
- Decreased carbon dioxide (CO_2) emissions and potential for global warming;
- Decreased sulfur dioxide (SO_2) emissions and potential for acidification;
- Reduced solid wastes sent to landfill;
- No fiber from mills that produce effluent containing dioxins or furans;
- Only virgin fiber from sustainably-managed forests, if containing virgin fiber; and
- Off-site manufactured pulp (e.g. market pulp) and converting operations that meet all of the above requirements.

EcoLogo certification criteria documents are developed through a process that follows ISO 14024 eco-labeling standards. The open, public and transparent process ensures the participation of a broad base of stakeholders including user groups, product producers and associations, government agencies, scientists, consumer representatives, academics and environmental advocates. Stakeholder input to establish criteria and public consultation on draft criteria guide much of the development process. The process includes performing an environmental life-cycle evaluation, determining the range of current industry performance, and establishing leadership criteria that represent approximately the top 20% of the industry.

EcoLogo staff arrange for an independent third-party auditor to assess a manufacturer's documentation (including laboratory test data), product performance and production records, and to conduct an on-site manufacturing facility audit. EcoLogo only awards certification to products that pass the evaluation and audit process, and continue to meet annual monitoring criteria.

Forest Stewardship Council (FSC)

Manufacturers of products made from wood, such as copy paper, may seek certification for their products under the Forest Stewardship Council's international Chain of Custody standard. This standard verifies the source of the fibers used to make the paper, whether those fibers are recycled or sourced from FSC-certified forests. FSC Forest Management certification, for forests rather than forest products, addresses legal issues, indigenous rights, labor rights, multiple benefits, and environmental impacts surrounding forest

resulting paper products may be labeled with a unique tracking number as:

- FSC-pure, implying that 100% of the fiber originated in FSC-certified forests;
- FSC-mixed, implying that the fiber came from a combination of FSC-certified wood, controlled wood, and recycled fiber; or
- FSC-recycled, implying that 100% of the fiber came from post-consumer waste.

Supplemental standards exist for controlled wood and recycled (also called reclaimed) material.

In the development of its international accreditation standards, the Forest Stewardship Council adheres to the ISEAL Code for Good Practice in Setting Social and Environmental Standards. According to ISEAL, organizations commit to creating standards that are developed in transparent, multi-stakeholder processes; certification schemes that consumers can trust; and relevant, high-level performance criteria that create genuine social and environmental change.

During the development process, the public is invited to comment on FSC standards documents directly or become involved in consultative forums. Upon completion of a standard, the document is publicly available on the FSC website.

FSC does not directly certify any forests, mills or manufacturers. It accredits national and regional forest stewardship standards and independent third-party certifying bodies. The certification bodies, like Scientific Certification Systems, assess and audit operations against the FSC-accredited standards and are authorized to issue FSC certificates.

Green Seal, Inc.

Green Seal is a non-profit, independent environmental standards-setting and certification agency headquartered in Washington, D.C., certifying the product content and manufacturing process of copy paper under its Printing and Writing Paper standard, GS-07 and Coated Printing Paper under GS-10. Both standards cover two main attributes: recycled-content and bleaching processes. Paper products that meet the certifications may be labeled with the Green Seal Certification Mark, which must be accompanied by accurate bleaching information and percentage of recycled-content.

Papers certified under GS-07 must:

- contain at least 30% post-consumer waste by weight, and
- be manufactured without chlorine or its derivatives.

Those certified under GS-10 must:

- use coatings free of heavy metals and formaldehyde,
- contain at least 10% PCW, and
- be manufactured without chlorine or its derivatives.

Green Seal's environmental leadership standards are life-cycle based. The standard development process follows ISO 14020/14024 standards and ANSI Essential Requirements with an open and transparent process to interested parties such as users, producers, and general interest groups. The process includes an environmental and health evaluation, and if necessary, Green Seal will conduct its own life-cycle research following ISO 14040/14044, to fully assess the impacts of product or service. Green Seal provides information throughout the standard development process on its website, along with all issued standards, for public access.

Evaluation of products to be certified to Green Seal standards is done by its technical staff and external auditors

and includes a comprehensive review of the product components, supporting data, product performance, and an on-site audit to ensure it meets all the criteria in the standard. The certification also includes annual monitoring to ensure continued compliance.

OTHER STANDARDS

Leadership in Energy and Environmental Design (LEED) Rating System

The USGBC awards buildings LEED certification at the Certified, Silver, Gold, and Platinum levels, based on the number of credits earned in a variety of categories such as Energy and Atmosphere (EA), Indoor Environmental Quality (IEQ), and Materials and Resources (MR). Any given building seeking LEED certification can earn credits in the MR category by recycling paper and/or purchasing FSC-certified recycled-content paper. For instance, in LEED for Existing Buildings (LEED-EB), paper purchases that contain at least 10% PCW content or purchases that consist at least 50% FSC-certified papers may count toward MR Credits 1.1-1.3: Sustainable Purchasing: Ongoing Consumables.

Program for the Endorsement of Forest Certification (PEFC)

The Program for the Endorsement of Forest Certification (PEFC) is a global accreditor of forest management schemes that competes directly against FSC. It is a non-profit, non-governmental organization that endorses and accredits forest certification schemes, like SFI and those developed by national governments. These schemes provide chain of custody and sustainable forestry management certification against standards endorsed by the PEFC. Governments from around the world use the PEFC standard and the PEFC independent third party certification process to promote sustainable forest management, though it is best to specify for standards and labels that have specific social and environmental criteria, such as those from FSC, Green Seal, and EcoLogo. Currently the PEFC has a membership of 25 independent national forest certification systems accounting for more than 200 million hectares of certified forests producing timber.

The PEFC standard is developed and implemented by the PEFC Council. Each member country endorsed by the PEFC is represented on the PEFC council as a National Governing Body (NGB). The NGB allows for all interested parties in the member country to be considered when developing national forest certification schemes. Certification criteria must be developed in an open and transparent process that is reviewed every five years in order to incorporate new scientific knowledge.

Sustainable Forestry Initiative

FIBER USED IN THIS PRODUCT LINE MEETS THE SOURCING REQUIREMENTS OF THE SFI PROGRAM
WWW.SFIPROGRAM.ORG

The Sustainable Forestry Initiative (SFI) is the US-based PEFC-accredited forest management and chain-of-custody certification competing against FSC. It began as a second party certification program developed by the American Forest and Paper Association (AF&PA) and transitioned to a third party program in 2001. It officially incorporated as the Sustainable Forestry Initiative in 2007 (ÉEM, 2008). Though SFI is now overseen by an independent Sustainable Forestry Board, membership in the AF&PA is still required in its forest management and chain-of-custody standards.

Copy paper labeled with SFI's logo must meet its Requirements for Fiber Sourcing, Chain of Custody, and Product Labels. SFI certified papers may either be Percent Certified Content labeled or Fiber Sourcing labeled,

but are not marked with unique tracking numbers.

Percent Certified Content labels include:

- 100% Certified Content, implying all fiber is sourced from SFI certified forests;
- X% Certified Content, implying that a proportion of the fiber is sourced from SFI certified forests;
- 100% Recovered Fiber, implying that all the fiber is recycled but not necessarily PCW;
- X% Recovered Fiber Claim, implying that a proportion of the fiber is recycled but not necessarily PCW; and
- Volume Credit Label, implying that the portion of products that carry the label will be proportionate to the percentage of certified content in the entire inventory and considered as including 100% certified raw material.

Fiber sourcing labels may be used by primary and secondary producers, which include paper manufacturers. The standard that must be met for this certification is unclear. Producers must use an auditable system to characterize the forestry standards used for the raw material.

The Board of Directors manages the standard setting, fiber tracking, labeling and certification process. The standard development process has two thirds of its representation from academic, government and conservation organizations and the rest from the forest products industry; and it is subject to public review (Metafore, 2007). Throughout the development process the draft documents are available for comment on the SFI website. Upon board approval the completed standard is also made publicly available via the web.

SFI does not evaluate applicants as an organization. It requires an auditable monitoring system for chain of custody tracking. As of 2005, SFI has required third-party auditors accredited by ANSI-ASQ National Accreditation Board (ANAB) or in Canada, the Standards Council of Canada (SCC), to annually assess applicants and their facilities for permission to use the SFI label (Metafore, 2007).

OTHER LABELS

Federal Trade Commission (FTC): Three Chasing Arrows

The three chasing arrows label does not represent a set of standardized environmental criteria. According to the FTC, the symbol can either mean that a product is recyclable or contains recycled content. The FTC requires that either claim be clarified on the packaging and if a recycled content claim is being made that the label should disclose the percentage of recycled content. However there is no verification of either type of claim.

PRODUCTS

RPN's online paper database includes 150 products certified by Forest Stewardship Council, GreenSeal, EcoLogo, and CFPA (see Standards), including printing and writing papers.

Listings are periodically updated. Please check directly with certifying agencies to verify product certification status.

CHOOSING PAPERS AND VENDORS

Review the Paper Steps in Addendum 3 for a hierarchy of environmentally preferable papers. This simple chart helps users comprehend the hierarchy of minimum criteria, providing a bad-good-better-best comparison for paper purchasers. Use this tool to evaluate current paper purchases and decide where improvements can be made.

Organizations with established purchasing agreements that are unable to source papers listed in the hierarchy can confirm virgin fiber sources with suppliers and manufacturers using the sample Supplier Tracking Forms in Addendum 4.

World Wildlife Fund's Paper Scorecard is a 'one-size-fits-all' tool for scoring all paper grades. It focuses on a limited number of major social and environmental attributes, including: sustainable forest management, recycled content, manufacturing process improvements, climate change, solid wastes, and bleaching processes. Use this tool to help rank a variety of papers available to institutional purchasers.

The Paper Calculator, developed by Environmental Defense's Paper Task Force, and customized for RPN users, analyzes papers and generates meaningful impact reports.

Using national averages or regional specifications, compare copy papers with varying percentages of post-consumer content and quantify the environmental impacts savings in wood, energy, emissions, water and solid waste from switching to higher recycled content. Results are expressed in both standard measurements, such as tons of wood and gallons of water, but also in easy-to-communicate terms like trees and swimming pools.

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DEFINITIONS

Acid rain	acidic compounds caused by pollutants such as sulfur dioxide (SO_2) and nitrogen oxides (NOx) that collect in the atmosphere, are absorbed by clouds, and create acidic rainfall
Baseline	information gathered before a program begins that is used later to provide a comparison for assessing program impact
Bioaccumulate	process whereby harmful substances concentrate or magnify as they move up the food chain
British thermal units (BTU)	unit of energy describing the energy content of fuels; one BTU is the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit
Controlled wood	a term used by FSC to describe uncertified wood that comes from responsibly managed forests
Chlorine-free	manufactured without chlorine or chlorine derivatives
Deinking	removing ink and impurities from recovered paper to produce recycled fiber pulp
Dioxins	chemical compounds classified as persistent, bioaccumulative, and toxic (PBTs) by the EPA
Elemental chlorine-free	paper or pulp that is bleached using chlorine dioxide (ClO_2) rather than elemental chlorine (Cl_2)
Furans	chemical compounds classified as persistent, bioaccumulative, and toxic (PBTs) by the EPA
Global warming	observed increase in average global temperature and change in sea level and weather patterns due to higher levels of greenhouse gasses in the atmosphere
Greenhouse gas	heat-trapping gas in the Earth's atmosphere responsible for global warming; category includes water vapor, carbon dioxide, methane, ozone, CFCs, and nitrogen oxides
Green power	electricity produced from energy sources such as wind, solar, and geothermal, that are cleaner than conventional fuels and do not produce hazardous waste; in paper production fuel source may include logging waste that cannot be used to make pulp
Hazardous substance	1. material posing a threat to human health and/or the environment, that can be toxic, corrosive, ignitable, explosive, or chemically reactive, 2. substance that must be reported to the EPA if released into the environment
Municipal solid waste (MSW)	trash or garbage consisting of everyday items such as product packaging, furniture, bottles, food scraps, paper, appliances, paint
Municipal waste combuster (MWC)	incinerators or waste-to-energy plants where municipal solid waste is burned to generate power
Nitrogen oxides	class of conventional air pollutants from fossil fuel combustion that contribute to smog and acid rain
NO_x	see "nitrogen oxides"
Ozone	1. ground level pollutant that causes respiratory damage, 2. component of upper atmosphere that prevents ultraviolet sunlight from reaching the earth's surface

Paper fiber biosolids	untreated solid, semisolid or liquid residue generated during papermaking process
PCW	post-consumer waste (See Post-consumer recycled content)
Physical separation	procedure in which different types of raw material are segregated so that their origins are known at every stage of their lifecycle
Percentage based method	process whereby various certified raw materials are commingled and origin is defined by proportions rather than physical separation
Post-consumer recycled content	material recovered from a consumer product at the end of its life, diverted from waste destined for disposal and used again in the manufacturing of a product
Pre-consumer recycled content	recovered material that does not come in contact with end-use consumer; includes waste left over from manufacturing, converting and printing processes
Processed chlorine-free (PCF)	recycled paper or pulp that is unbleached or bleached without chlorine or chlorine derivatives
Pulp	fibrous material prepared from wood, cotton, grasses, etc., by chemical or mechanical processes for use in making paper
Recovered material	waste materials and by-products that have been diverted from the solid waste stream; includes pre- and post-consumer materials.
Sludge	residual semi-solid material left from industrial, water treatment, or wastewater treatment processes (See Paper fiber biosolids)
Totally chlorine-free (TCF)	virgin paper or pulp that is unbleached or processed with a sequence that includes no chlorine or chlorine derivatives
Virgin	paper or fiber not from recycled content; most often refers to paper or fiber from wood pulp

HANDY FACTS

- Americans consume over 30 million tons of paper per year (PIAC, 2007).
- The average office worker uses 10,000 sheets of copy paper per year (FNS, n.d.)
- In 2004, federal offices used 109,000 tons of copier paper. By 2008 this amount was projected to increase by over 10% (FNS, n.d.)
- Paper and pulp producers are the largest users of process water of all US industry sectors (EPA, 2002)
- The pulp and paper industry in the US used nearly three quadrillion Btu of energy in 2007. That's 10% of all energy used by US manufacturing industries. (EIA, 2007)
- From energy use alone, the American paper and pulp industry is responsible for 102.3 million metric tons of CO_2 per year – an amount equivalent to the carbon held in nearly 650,000 acres of forest preserved from deforestation, or over 21 million acres of pine or fir forests (EIA, 2007; EPA, 2008a).
- Of the 30 million tons of printing and writing paper consumed in 2007, just over 50% was recycled (PIAC, 2007)
- There is no noticeable difference in the runnability of recycled paper versus virgin paper (Conservatree, 2003)
- As of 2008, there were at least thirteen 100% PCW copy papers available (Conservatree).

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ADDENDUM 1: MODEL POLICY

Responsible Purchasing Network and Environmental Paper Network
Model Paper Purchasing Policy, 2007

Developed by the Environmental Paper Network in partnership with the Responsible Purchasing Network, this widely applicable policy covers efficient paper consumption, maximizing recycled content in new paper purchases, choosing certified responsibly-sourced fiber, supporting cleaner production practices, maintaining recycling programs, and spreading the word to suppliers and partners.

MODEL PAPER PURCHASING POLICY

Paper plays a key role in [Organization]'s operations. We are concerned about the future of the world's forests and the environmental impacts of paper production. We are therefore committed to purchasing, using, and disposing of paper in ways that conserve natural resources, reduce pollution, and minimize waste.

By developing a comprehensive paper policy, [Organization] is making a commitment to implement and track results of our paper efficiency and procurement strategies by:

1. **Using Paper Efficiently** by reducing consumption of paper and paper products when possible.

2. **Maximizing Recycled Content** by buying products with the highest postconsumer recycled content feasible for each specific need, but no less than the US Environmental Protection Agency (EPA) minimums for federal agencies.

3. **Choosing Responsibly-Sourced Fiber** by purchasing products that originate from sustainably managed forests and are certified by independent, third-party organizations, such as the Forest Stewardship Council.

4. **Supporting Cleaner Production Practices** by selecting products that are processed without chlorine or chlorine compounds and giving preference to suppliers and manufacturers using renewable energy.

5. **Closing the Loop** by implementing and maintaining a recycling system to ensure the raw materials for producing recycled-content paper are readily available.

6. **Spreading the Word** by producing an annual sustainability report and posting information on our paper policy and practices on our website.

[Organization] supports the goals set forth in the Environmental Paper Network's (EPN) A Common Vision for Transforming the Paper Industry: Striving for Environmental and Social Responsibility[2]. [Organization] pledges to work with stakeholders – including the environmental community, suppliers, and other institutional purchasers – to increase the demand for environmentally preferable paper and to encourage the paper industry to meet these goals.

1. Using Paper Efficiently

Using paper efficiently is a key first step in reducing the environmental impacts associated with paper use. To use paper efficiently, [Organization] will:

- ▶ Increase paper efficiency by [x amount] by [date], upon which time paper use will be re-evaluated and a

2 For more information on the Environmental Paper Network's consensus criteria, see A Common Vision for Transforming the Paper Industry: Striving for Environmental and Social Sustainability at **http://www.environmentalpaper.org/documents/CommonVision-treatise.pdf**.

new target established. [Organization] will develop a method for tracking and documenting results.

- Institute practices that increase paper efficiency, including, but not limited to:
  - Substituting electronic communications for printing.
  - Purchasing copiers, printers, and fax machines that can be set to default to double-sided printing.
  - Reusing products such as file folders, storage boxes, and paper printed on one side.
  - Reducing the basis weight and trim sizes of printed pieces.
  - Rethinking design processes to minimize printing and copying waste.
  - Minimizing unsolicited mail, both sent and received.
  - Minimizing overruns and maximizing sell-through for published materials.

2. Maximizing Recycled Content

Purchasing recycled-content paper and paper products has far reaching environmental benefits and will encourage suppliers to increase their capabilities in providing these products. To maximize the recycled content in paper and paper products, [Organization] will:

- Purchase and source paper and paper products that contain the highest postconsumer recycled content feasible for each specific need, but no less than the US Environmental Protection Agency (EPA) minimums for federal agencies.[3]
- Set a timeline for increasing the postconsumer content in purchased paper products as quickly as possible to higher percentages.
- Give preference to paper and paper products in which the portion of virgin fiber is verified by an independent, third-party organization, such as the Forest Stewardship Council.
- Give preference to paper and paper products that also contain other recovered materials (e.g. preconsumer recycled content, agricultural residues, etc.) after maximizing post-consumer recycled content.

3. Choosing Responsibly-Sourced Fiber

[Organization] supports responsible forest management practices that protect biodiversity, ecosystem integrity, and long-term benefits to communities. To promote the use of responsibly-sourced fiber in paper and paper products, [Organization] will:

- Supply Origin: Purchase papers listed on EPN's paper hierarchy when possible.[4] If existing suppliers and manufacturers cannot provide these papers, we will verify with them the source of any virgin fiber content in paper and give preference to suppliers and manufacturers that establish a credible "Chain of Custody" tracking system to reliably identify the origin of fiber sources. We will work with EPN member organizations to assist us with this process.
- Endangered Forests: Give preference to paper and paper products guaranteed to be free of fiber that

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3 For more information on federal minimum recycled content standards, see the Comprehensive Procurement Guidelines and Recovered Materials Advisory Notices at **http://www.epa.gov/epaoswer/non-hw/procure**.

4 For the Environmental Paper Network's paper hierarchy, see **http://www.WhatsInYourPaper.com/hierarchy**.

threatens endangered forests. We currently support the definition of endangered forests as outlined in the Wye River Coalition's *Endangered Forests: High Conservation Value Forests Protection – Guidance for Corporate Commitments*[5] and ForestEthics, Greenpeace, Natural Resources Defense Council, and Rainforest Action Network's *Ecological Components of Endangered Forests*[6]. We will consult with environmental experts, including EPN member organizations, for assistance in identifying endangered forests and paper and paper products from these forests.

- Forest Conversion to Plantations: Give preference to paper and paper products that can be guaranteed to be free of fibers from the conversion of diverse natural forest ecosystems into plantations. This policy supports the Forest Stewardship Council's criteria specifying November 1994 as the cut off date for no more conversion of natural forests to plantations. Wood from forests converted to plantations after November 1994 is unacceptable unless the plantations are being restored to natural forests.
- Certified Virgin Fiber: Give preference to paper and paper products with a remaining virgin tree fiber content that is certified by independent, third-party organizations that employ the most environmentally and socially responsible forest management and restoration practices. The Forest Stewardship Council (FSC) is the only acceptable international certification program that meets this guidance.[7] Other certification systems may be considered by [Organization] if their performance-based forest management and chain-of-custody standards meet or exceed FSC's standards; their governance and funding mechanisms are fully balanced, transparent, and independent; and they are widely accepted by environmental and social stakeholders. [Organization] will consult with environmental and other experts, such as EPN member organizations, when evaluating certification systems.
- Alternative Fibers: Give preference to paper and paper products made from alternative fiber crops (e.g. hemp, kenaf, etc.) if Life Cycle Analysis and other comprehensive and credible analysis indicates that alternative fibers are environmentally and socially preferable to other sources of virgin fiber.
- Genetically Modified Organisms: Buy paper and paper products with fiber content known to be free from genetically modified organisms. This includes transgenically modified trees and plants that have genes of other animals and plants inserted.

4. Supporting Cleaner Production Practices

[Organization] supports minimizing the environmental impacts of paper production. To encourage cleaner production practices, [Organization] will:

- Give preference to paper and paper products processed without chlorine or chlorine compounds (i.e. "processed chlorine-free" or PCF papers), as long as they also meet recycled content goals. [Organization] will set timelines for converting purchases of recycled content paper to PCF.
- Choose paper with the minimum brightness suitable for our printing needs to further minimize

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5 The Wye River Coalition's Endangered Forests: High Conservation Value Forests Protection – Guidance for Corporate Commitments is available at **http://www.environmentalpaper.org/documents/EF-Report.pdf**.

6 ForestEthics, Greenpeace, Natural Resources Defense Council, and Rainforest Action Network's Ecological Components of Endangered Forests is available at **http://forestethics.org/downloads/EFDefinitions_April_2006_2.pdf**.

7 For more information on Forest Stewardship Council, see: **http://www.fscus.org** and **http://www.fscoax.org** (FSC U.S. and international web sites), **http://www.certifiedwood.org** (certified wood supply database and tracking services), **http://www.forestworld.com** (certified wood supply database and tracking services), and web sites of certifiers specified on FSC web sites.

environmental impacts from paper bleaching.

- Avoid coatings and bright-colored papers whenever possible.
- Give preference to suppliers and manufacturers that use renewable energy to supply electricity for their facilities, either on-site or through the purchase of renewable energy certificates (RECs).[8]
- Use vegetable-based inks (e.g. soy, linseed, corn, etc.) and inks free of toxic metals whenever possible.

5. Closing the Loop

[Organization] supports measures to secure the availability of environmentally preferable papers, such as maintaining a paper recycling program. To ensure the raw materials for producing recycled-content paper must be readily available, [Organization] will:

- Collect and recycle paper that has been used internally as well as paper that is received from outside sources. If a paper recycling program does not currently exist, we will work with our building managers and suppliers to implement such a system.
- Educate co-workers as to what is required of them, including alerting cleaning staff and waste haulers to keep recyclables separate from trash.

6. Spreading the Word

[Organization] recognizes the benefit of promoting environmental awareness with our employees, suppliers, customers, partners, and the public. To publicly promote our commitment to using paper efficiently and purchasing environmentally preferable paper, [Organization] will:

- Publish and distribute to all interested stakeholders an annual sustainability report, which will detail progress in implementing this policy and any other activities related to [Organization]'s impact on the environment.
- Post our environmental paper purchasing policy, goals, and achievements on our website.
- Print on documents (e.g. letterhead stationary, envelopes, publications, etc.) an accurate description of the attributes of the environmentally preferable papers used, in order to raise awareness and accountability. Such attributes include, but are not limited to, postconsumer recycled content, bleaching technology (i.e. PCF), and any applicable eco-logos or certifications.
- Encourage suppliers to adopt similar paper policies and implement other environmentally and socially responsible practices.
- Communicate with employees about new paper policies and train them on paper reduction strategies.

The mission of the Responsible Purchasing Network (RPN) is to promote and practice responsible purchasing by identifying best practices, developing effective purchasing tools, educating the market, and using its collective purchasing power to maximize environmental stewardship, protect human health, and support local and global sustainability.

8 Renewable energy sources include solar, electric, biomass, wind, geothermal, small hydropower, biodiesel, and fuel cells. For more information on renewable energy sources, see **http://www.green-e.org/ipp/national_standard.html**.

The Environmental Paper Network (EPN) links environmental organizations that collaborate to support the conversion of the pulp and paper industry to socially and environmentally sustainable processes.

ADDENDUM 2: MODEL SPECIFICATION

Responsible Purchasing Network and Environmental Paper Network

Model Environmental Specifications, 2007

Developed by the Environmental Paper Network in partnership with the Responsible Purchasing Network, this document provides contract details for recycled content, responsibly-sourced fiber, cleaner production practices, recyclability, and promotion.

MODEL ENVIRONMENTAL SPECIFICATIONS

1. Recycled Content
2. Responsibly-Sourced Fiber
3. Cleaner Production Practices
4. Recyclability
5. Promotion

1. Recycled Content

- All paper and paper products must contain the minimum levels of postconsumer recycled content for federal agencies as outlined by the US Environmental Protection Agency[9]. Vendors are encouraged to offer products that contain a higher percentage of postconsumer material than these minimums.
- Vendors must verify the postconsumer recycled content of products offered. Preference will be given to paper and paper products with recycled content that is certified by the Forest Stewardship Council (FSC)[10]. Other certification systems may be considered if their standards meet or exceed FSC's standards; their governance and funding mechanisms are fully balanced, transparent, and independent; and they are widely accepted by environmental and social stakeholders.
- After maximizing recycled content, preference will be given to paper and paper products whose remaining content includes other recovered materials, including, but not limited to, pre-consumer fiber and agricultural residues.
- Recycled copy paper must function properly in all [Organization]'s copiers, fax machines, laser printers, and ink jet printers without jamming.
- All packaging, including ream wrappers and cartons/boxes, must contain a minimum of 30 percent postconsumer recycled content, and include a written statement verifying the actual percentage of recycled content. Efforts should be taken to reduce the use of packaging materials when possible.

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9 For more information on federal minimum recycled content standards, see the Comprehensive Procurement Guidelines and Recovered Materials Advisory Notices at **http://www.epa.gov/epaoswer/non-hw/procure**.

10 For more information on Forest Stewardship Council, see: **http://www.fscus.org** and **http://www.fscoax.org** (FSC U.S. and international web sites), **http://www.certifiedwood.org** (certified wood supply database and tracking services), **http://www.forestworld.com** (certified wood supply database and tracking services), and web sites of certifiers specified on FSC web sites.

2. Responsibly-Sourced Fiber

- Vendors must verify the source of any virgin fiber content in paper and paper products. Preference will be given to suppliers and manufacturers that have a "chain of custody" tracking system in place to reliably identify the origin of fiber sources.
- Preference will be given to paper and paper products that can be guaranteed to be free of fiber that threatens endangered forests. Endangered forests are defined as those meeting the criteria outlined in the Wye River Coalition's Endangered Forests: High Conservation Value Forests Protection – Guidance for Corporate Commitments[11] and ForestEthics, Greenpeace, Natural Resources Defense Council, and Rainforest Action Network's Ecological Components of Endangered Forests[12] .
- Preference will be given to papers that can be guaranteed to be free of fibers from the conversion of diverse natural forest ecosystems into plantations. [Organization] supports Forest Stewardship Council's criteria specifying November 1994 as the cut off date for no more conversion of natural forests to plantations. Wood from forests converted to plantations after November 1994 is unacceptable unless the plantations are being restored to natural forests.
- Preference will be given to paper and paper products with a remaining virgin tree fiber content that is certified by the Forest Stewardship Council (FSC)[13]. Other certification systems may be considered if their performance-based forest management and chain of custody standards meet or exceed FSC's standards; their governance and funding mechanisms are fully balanced, transparent, and independent; and they are widely accepted by environmental and social stakeholders.
- If paper and paper products made from alternative fiber crops (e.g. hemp, kenaf, etc.) are offered, vendor must submit in writing that the fiber source crops were grown and harvested using sustainable farming practices.
- Vendors must verify that fiber content of paper and paper products do not contain genetically modified organisms (GMOs). This includes transgenically modified trees and plants that have genes of other animals and plants inserted.

3. Cleaner Production Practices

- Preference will be given to paper and paper products that are processed chlorine-free (PCF).
- Preference will be given to suppliers and manufacturers that use renewable energy to supply electricity for their facilities, either on-site or through the purchase of renewable energy certificates (RECs). Vendors must provide information including percent electricity from renewable sources used for power generation, type of renewable energy, and any third party certifications, such as Green-e[14].

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11 The Wye River Coalition's Endangered Forests: High Conservation Value Forests Protection – Guidance for Corporate Commitments is available at **http://www.environmentalpaper.org/documents/EF-Report.pdf**.

12 ForestEthics, Greenpeace, Natural Resources Defense Council, and Rainforest Action Network's Ecological Components of Endangered Forests is available at **http://forestethics.org/downloads/EFDefinitions_April_2006_2.pdf**.

13 Ibid.

14 Renewable energy sources include solar, electric, biomass, wind, geothermal, small hydropower, biodiesel, and fuel cells. For more information on renewable energy sources, see **http://www.green-e.org/ipp/national_standard.html**.

4. Recyclability

- Paper and paper products must be recyclable in business or municipal recycling programs.
- All packaging, including ream wrappers and cartons/boxes, must be recyclable in business or municipal recycling programs.

5. Promotion

- [Organization] strongly encourages Vendors to submit materials electronically whenever possible. If submitting hard copies, it is desirable that materials are printed on paper with a postconsumer waste content of 30 percent or higher. [Organization] also encourages the use of submittal materials (i.e. paper, dividers, binders, brochures, etc.) that contain postconsumer recycled content and are readily recyclable. [Organization] discourages the use of materials that cannot be readily recycled such as PVC (vinyl) binders, spiral bindings, and plastic or glossy covers or dividers. Alternative bindings such as reusable/recyclable binding posts, reusable binder clips or binder rings, and recyclable cardboard/paperboard binders are examples of preferable submittal materials. Respondents are encouraged to print/copy on both sides of a single sheet of paper.
- [Organization] strongly urges Vendors to adopt a paper policy consistent with the Environmental Paper Network's A Common Vision for Transforming the Paper Industry: Striving for Environmental and Social Responsibility[15] as well as implement other environmentally and socially responsible policies and practices.
- Vendors will help [Organization] track purchases of environmentally preferable paper and paper products by providing semi-annual and annual reports on all products purchased under this contract. Information to be included in these reports must include, but are not limited to, total number of products purchased by category, total dollars spent on products by category, and the environmental attributes of products purchased.
- Vendors will also help purchasers identify environmentally preferable paper and paper products on its website and in its catalogs.

RPN

The mission of the Responsible Purchasing Network (RPN) is to promote and practice responsible purchasing by identifying best practices, developing effective purchasing tools, educating the market, and using its collective purchasing power to maximize environmental stewardship, protect human health, and support local and global sustainability.

environmental paper network

The Environmental Paper Network (EPN) links environmental organizations that collaborate to support the conversion of the pulp and paper industry to socially and environmentally sustainable processes

15 For more information on the Environmental Paper Network's consensus criteria, see A Common Vision for Transforming the Paper Industry: Striving for Environmental and Social Sustainability at **http://www.environmentalpaper.org/documents/CommonVision-treatise.pdf**.

ADDENDUM 3: PAPER STEPS

Paper Steps helps users comprehend the hierarchy of minimum criteria, providing a bad-good better-best comparison for all paper purchasers.

Paper Steps

Taking the Steps to Environmentally Responsible Paper

In the Steps below, 'environmental attributes' are defined as:

- Post-consumer Recycled Fiber
- Pre-consumer Recycled Fiber
- Agricultural Residue Fiber
- Forest Stewardship Council (FSC) Certified Virgin Fiber[1]

ENVIRONMENTALLY INFERIOR PAPER

This paper has no, or very minor, environmental attributes

MEETS NO MINIMUM CRITERIA:

- No/minimal recycled content
- Virgin tree fibers not FSC-certified
- Paper bleaching not Enhanced Elemental Chlorine Free (EECF)[2], Process Chlorine Free (PCF) or Totally Chlorine Free (TCF)

ENVIRONMENTAL IMPACT:
100% virgin paper emits 5,483 to 6,855 pounds of greenhouse gases and consumes 15-26 trees per short ton.[3]

TRANSITIONAL PAPER

Meets the minimum criteria below and at least 10-30% of fiber has environmental attributes

MINIMUM CRITERIA:

- 10% post consumer OR may be 100% virgin only if it has FSC certification
- Virgin fiber can not be from controversial sources[4/5]
- Paper bleaching not Enhanced Elemental Chlorine Free (EECF)[2], Process Chlorine Free (PCF) or Totally Chlorine Free (TCF)

ENVIRONMENTAL BENEFITS:
30% post-consumer recycled paper emits approx. 10-15% less greenhouse gases, and saves the equivalent of 4 to 8 trees per short ton.[3]

click to see papers that meet these criteria

ENVIRONMENTALLY IMPROVED PAPER

Meets the minimum criteria below and at least 50% of fiber has environmental attributes

MINIMUM CRITERIA:

- Minimum 30% post consumer recycled
- FSC certification required on papers with more than 50% virgin content
- No controversial sources[4/5]
- Enhanced Elemental Chlorine Free (EECF)[2] Processed Chlorine Free or Totally Chlorine Free (PCF or TCF)

ENVIRONMENTAL BENEFITS:
50% post-consumer recycled paper emits approx. 19-25% less greenhouse gases, and saves the equivalent of 8 to 13 trees per short ton.[3]

click to see papers that meet these criteria

ENVIRONMENTALLY SUPERIOR PAPER

Meets the minimum criteria below and all fiber (100%) has environmental attributes

MINIMUM CRITERIA:

- Minimum 50% post consumer recycled
- Virgin fiber can not have controlled wood content[6] or controversial sources[5]
- Processed Chlorine Free or Totally Chlorine Free (PCF or TCF)

ENVIRONMENTAL BENEFITS:
100% post-consumer recycled paper emits 25-50% less greenhouse gases, and consumes no trees.[3]

CLEANER PRODUCTION
is also a key element in environmental paper and while there are many variables, the Paper Steps focuses on bleaching technologies in its Minimum Criteria.

What's in Your Paper?
presented by environmental paper network

To find a list of Environmentally Improved and Environmentally Superior Papers visit **www.WhatsInYourPaper.com.**

1. Refers to virgin from FSC certified forests.
2. Enhanced Elemental Chlorine Free paper is made using technologies such as oxygen delignification and ozone bleaching prior to bleaching with chlorine dioxide.
3. Source: Paper Calculator from Environmental Defense, based on national (US) averages and varies by paper type. Does not include emissions for the burning of biomass.
4. FSC paper may contain pure, mixed or recycled sources. A 'transitional paper' does not include virgin fiber from controversial sources.
5. Controversial Sources include Endangered Forests as defined in the Ecological Attributes of Endangered Forests (reference), and those sources dealt with in FSC under the Controlled Wood Standard, including fiber sources from High Conservation Value Forests or Ecosystems, or where there is a risk of illegal logging, violations of traditional or civil rights, ecosystems subject to conversion, or fiber from genetically modified organisms.
6. To qualify for 'Environmentally Superior Paper,' no controlled wood content is allowed.

- The comparisons in this chart are assumed to be applied to a consistent grade of paper. Shifting from one grade to another, particularly from papers made from chemical pulp to those made from mechanical pulp may produce quite different comparisons of environmental impacts.
- The criteria above correspond to the pulp rating system for www.Pulpwatch.org
- The Paper Steps is based on the Hierarchy of Environmental Papers developed by Markets Initiative www.marketsinitiative.org

ADDENDUM 4: TRACKING FORMS

Ask suppliers to fill out paper supplier evaluation forms in order to verify the chain of custody. Useful samples are available from the Environmental Paper Network and the Environmental Defense Fund.

- Environmental Paper Network: Pulp Tracking Form
- Environmental Defense Fund: Annual Paper Supplier Evaluation