

Radical Nature Manifesto

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NO TO:

- **Spot varnish**
- **Foil blocking**
- **Metallic ink or paint**
- **Plastic**
- **Shrink wrapping**
- **Plastic bags**
- **Laminating**
- **Vinyl lettering**
- **Window envelopes**
- **Envelopes**
- **Heavy paper stock**
- **Waste**
- **Glue**
- **Back-lit graphics**
- **100% blocks of colour**
- **Coated paper**
- **Bleed**
- **Dark blue, dark purple and red**
- **CMYK**
- **Printing abroad**

YES TO:

- **100% post-consumer recycled paper**
- **Waterless printing**
- **Vegetable-based inks**
- **Digital printing**
- **Blind embossing**
- **Laser-cutting**
- **Thin paper**
- **Local printers**
- **Non-print advertising**
- **Compact fluorescent, LED or other energy-saving lights**
- **Lighter ink coverage**
- **Re-using, recycling, renewing, refilling, repairing, reclaiming**
- **Aqueous coating**
- **Engraving, embossing, die-cutting, laser-cutting**
- **Staples**
- **Wire-binding**
- **A-sizes**
- **Web, email, pdf**
- **Smaller, lighter, fewer**
- **Uncoated paper**
- **Black and white**
- **One or two colours**
- **Sustainability**
- **Screws**

PAPER

Virgin Paper

Four billion new trees are cut down every year for paper production. Virgin paper (pre-consumer) is made using 100% brand new pulp. The methods used to harvest trees for paper production are endangering the survival of forests all over the world. Logging companies engage in clearcutting forests which involves the felling and removal of all trees from a given tract of forest. Although wood is a renewable resource, clearcutting involves cutting down native forests, destroying an area's ecological integrity. This is done in order to create "tree farms" which are vast stretches of land planted with one type of tree (monoculture). To ensure that only one species of tree grows, the trees are sprayed with harsh chemicals, contaminating local waterways and communities with devastating effects on wildlife and human health.

Responsible paper manufacturers establish legal or sustainable sources of wood from managed forests for long-term yield, such as FSC certified forests. The Forest Stewardship Council (FSC) is a non-profit organization devoted to encouraging the responsible management of the world's forests. FSC sets high standards that ensure forestry is practiced in an environmentally responsible, socially beneficial, and economically viable way. Currently, FSC is the only widely-accepted international certification program among independent environmental advocacy groups.

Recycled Paper

Legally, to be labeled as "recycled", paper must include materials recovered after the initial paper manufacturing process. This could mean paper made from pre-consumer scraps, which are not recycled at all. Post-consumer waste (PCW) is paper that has already been used and returned through a recycling program, thereby diverting it from a landfill or incinerator. Each ton of 100% post-consumer recycled fiber that displaces a ton of virgin fiber saves between 12 and 24 trees. Recycled paper reduces energy consumption up to 70% over processing virgin pulp, and uses 55% less water to process, subsequently reduces the cumulative impacts of energy production.

Bamboo Fiber

Commonly thought of as an alternative to wood-based pulp, bamboo is a fast-growing grass with strong fibers ideal for paper. Once harvested bamboo doesn't need to be replanted, as new shoots continue to grow from the stump. Its extensive root system improves soil quality. Currently, there is no monitoring or certification system regulating the sustainability of bamboo grown for paper. Much of this bamboo is grown on converted forest land that was transformed to a monoculture plantation.

Kenaf

The kenaf plant is considered one of the most promising alternatives to wood for paper. Compared to a Southern Pine – a species commonly grown on tree plantations – which takes 14 to 17 years before it can be harvested, kenaf reaches 12-18 feet in 150 days and yields 3 to 5 times as much fiber. In addition, kenaf is resistant to most plant diseases and insects, requiring much lower levels of insect protection than for most commercial crops. Because kenaf contains less lignin, pulping requires less chemicals and less energy than wood pulping processes. Therefore, producing paper from kenaf causes less pollution.

Hemp

Hemp is the common name for plants of the genus Cannabis. The term is generally used for Cannabis strains that are cultivated for industrial (non-drug) use. A common misconception is that hemp and marijuana are the same. In fact, industrial hemp and marijuana are differentiated by THC content – the THC levels in hemp are far too low to produce any psychoactive effect. Regardless, it is not legal to grow hemp because it is a variety of Cannabis. For that reason, hemp fiber must be imported. Hemp stalks have strong fiber, ideal for use in a wide variety of products. Because of its strong fibers, paper made from hemp is longer lasting than wood pulp and can be recycled 7 times where wood pulp can only be recycled approximately 4 times. It grows without requiring pesticides or herbicides and is good at aerating the soil. One acre of hemp can produce as much usable fiber as 4 acres of trees or two acres of cotton. A quick growing plant, hemp can yield 4 times more paper pulp than trees over a 20 year period. Furthermore, the light colored pulp requires little or no bleaching.

PRINTING METHODS

The printing industry is responsible for approximately 10% of volatile organic compound emissions, water pollution and solid waste. VOCs are emitted from the use of cleaning solvents and inks, as well as alcohols and other wetting agents used in printing. Wastewater from printing operations contain lubricating oils, waste ink, cleaning solvents, chemicals, acids, alkalis, and plate coatings, as well as heavy metals. This can have long-term effects as a result of bioaccumulation and can travel through the food chain to affect humans.

Offset Lithography

Often referred to as four color process, offset lithography is the most commonly used commercial printing method today. In offset printing, ink is applied to a printing plate to form the "image" and then transferred, or offset, to a rubber blanket. The image on the blanket is then transferred to the paper to produce the printed product. Lithographic plates undergo chemical treatment that render the image area of the plate. Fountain solutions are applied to enhance the non-image areas ability to repel ink. During printing, a dampening solution is applied to the plate to control pH. Traditionally fountain and dampening solutions consisted primarily of water, isopropyl alcohol and other chemicals. Because of their high VOC emissions, these solutions are being used less, and being replaced by more environmentally-friendly options.

Digital Printing

Toner-based digital printing avoids using film, plates, and the harmful chemicals used in traditional offset printing. This process is the least environmentally impactful because it is completely digital through printing. It eliminates large volumes of waste during set-up and proofing, and there are no chemical washes or solutions on press. Digital printing is considered "print on demand", allowing for small quantities and less excess.

Waterless

Waterless printing is an offset lithographic printing process that eliminates the water or dampening system used in conventional printing. It uses a special silicone rubber coated printing plate and special ink. This technology eliminates the need for solvent-based press and blanket wash solutions, which account for a large portion of a printer's VOC output. VOCs have been linked to indoor air pollution, the deterioration of the ozone layer and, contributing to global warming. This process is also favorable because it conserves water. Chemically tainted waste water from traditional offset printing is eliminated. Waterless presses come up to color and register so much faster than conventional printing. These presses hold color consistently throughout the press run, saving approximately 30-40% of paper consumption!

INKS & FINISHES

Petroleum-Based Ink

When thinking of using products made from petroleum, or oil, we must first think of the environmental and cultural destruction in its extraction, the problematic transport of oil, and the resulting pollution from these steps. Secondly petroleum-based products have serious health and environmental implications. Traditional petroleum-based inks emit high levels of volatile organic compounds (VOCs) - greenhouse gases contributing to global warming and indoor air pollutants that carry serious health effects. Inks and toners are the second largest users of carbon black, which is primarily manufactured by the incomplete combustion of oil. Certain pigments which give ink its color are formulated with metals which can result in environmental and worker health hazards when metals are extracted, processed, or disposed. These ink colors may require additional steps in the press cleaning process which may be hazardous as well. Metal content in ink is not easily decomposed and can contaminate groundwater.

Vegetable-Based Ink

Soy-based inks contain 2-20% of soy oil by volume. While these inks do still contain petroleum-based compounds, they only contain about 17% of the amount of volatiles than conventional inks. Soy and vegetable-based inks are also easier to clean up and easier to de-ink, which makes the printed product easier to recycle. There is no benefit of soy over vegetable-based ink and vice-versa. Typically soy ink contains other vegetable oil to aid in the drying process. However, the manufacture of soy and vegetable-based inks involves the extensive use of diesel fuel, petroleum-based pesticides and herbicides. Printing presses that use vegetable-based inks can be cleaned with a water-based cleaner, replacing the high VOC solvent cleaners used with petroleum-based ink. Paper printed with vegetable ink is easier to deink in the recycling process and produces a less toxic sludge.

Aqueous Coating

Aqueous coating is available in gloss, dull or satin finish, and is applied on top of a printed piece to avoid smudging the ink. You cannot "spot" aqueous coat an area due to the application process. Aqueous coating is a water-based lacquer coating that is often the best overprint choice in terms of environmental impact. Paper with aqueous coating can be recycled and does not emit harmful byproducts. These coatings are also the most cost-effective. The cleanup process does not require toxic cleaning detergents nor does it necessitate high temperatures for drying.

UV Coating

UV coating is applied like ink to paper and dried by ultraviolet light. It can be used as an overall protective coating or "spot" applied to an area of the printed piece. The process of UV coating emits no toxic byproducts. However, the clean-up process from UV coatings requires utilizing dangerous chemicals that necessitate strict safety measures and could be hazardous to workers' health if not handled properly. In addition, the UV coating process requires high energy use due to UV drying lamps and air conditioning requirements. The ability to recycle paper with heavy UV coverage may be limited. Too much of this coating in a batch may contaminate the pulp which prevents the paper from being used to make recycled paper products.

Varnish

Think of varnish as ink without pigment, requiring it's own printing unit on press. This coating comes in gloss, dull and satin and is extremely strong. Varnishes recycle more easily than the UV coated stock. However, they emit harmful volatile organic compounds (VOCs) during the coating process which can cause eye, nose, and throat irritation, headaches, loss of coordination, nausea, as well as damage to the liver, kidneys, and the central nervous system. VOCs are also suspected to cause cancer in humans.

Lamination

Laminated paper is waterproof, washable and tear-proof, usually found on items such as hiking maps and restaurant menus. There are 2 types of lamination processes: film and liquid. The liquid laminate finish is applied much like a varnish, and dried in the same way. With the film technique, paper is sealed between 2 thin layers of plastic film, the edges sealed with adhesive, and dried with heat. VOCs are emitted during lamination processes. Furthermore, since plastic and adhesives are used in this technique, it renders the paper unrecyclable.

Specialty Finishes

Embossing is a technique in printing using heat and pressure to create a raised surface. Aside from the energy required, this process is relatively environmentally friendly. Die Cutting is used to create a custom shape or cut-out from the paper or board, working much like a cookie-cutter. This is an inexpensive way to create a specialty effect without any harsh toxic chemicals, washes or coatings. The die cut can then be reused over and over again. Engraving is a complicated process that involves etching a design into plate, inking, then pressing the plate to paper. Engraving inks are typically water or vegetable-based. This is an elegant and classic technique with minimal environmental impact. Foil stamping is the application of a shiny polyester film, usually with a metallic look. The process does not use harsh or toxic chemicals, but since the foils do not break down in the recycling process it renders the paper non-recyclable.

Binding Styles

Staples used in saddle stitching are easily removed during the recycling process, making this one of the most environmentally friendly binding options available. Wire rolls and plastic combs are a good binding method because no chemical adhesive is used, but they must be removed before recycling. The wire rolls and plastic combs are recyclable separately from the paper recycling. Petroleum-based adhesives for perfect-binding are very difficult to remove during the recycling process, however water-based alternatives dissolve easily.

Laser cutting

Worldwide Laser offers laser systems from Co2, YAG, Fiber, and UV which all have the ability to meet industrial production requirements, protect your products and customers with proper product markings and do so in an environmentally friendly and responsible manner. Gilbert, AZ (PRWEB) February 4, 2009 Laser systems from Worldwide Laser Co2, YAG, Fiber, and UV all have the ability to meet industrial production requirements, protect your products and customers with proper product markings and do so in an environmentally friendly and responsible manner. The LP series of Laser from Worldwide Laser provide for marking, cutting, and etching of products without any additives, sprays, or chemicals which are environmentally hazardous. This is important in terms of environmental considerations as certain additives like some ink and color spray agents can be considered environmentally damaging, the solvents, cleaning agents, and maintenance procedures associated with ink marking and ink based systems can also create environmental issues and concerns. Some jurisdictions and regulatory authorities have made or are planning regulations that would ban ink from food, medical, and pharmaceutical production areas and manufacturing facilities. The time to start planning and installing laser marking and laser cutting systems which are environmentally friendly and operate in a sustainable manner, while providing the consumer and product protection lasers systems allow, has arrived Worldwide Laser can help, 480.892.8566 option 5

Further reading

<http://www.greengraphicdesign.net/downloads.htm>
http://celery.webfactional.com/images/uploads/Celery_SustainScore_11.08_.pdf
<http://www.bw-environmental.com/too.htm>
<http://www.dalumpapir.com/953>
www.lovelyasatree.com/
<http://www.rethinkdesign.org>
<http://www.neenahpaper.com/ECOPaperCalculator/index.asp?ft=Home>
<http://www.re-nourish.com/>
<http://blog.orselli.net/2008/03/green-exhibit-design-interview-with-tim.html>
http://www.greendesignwiki.com/index.php?title=Main_Page

London-based Eco-printers

Beacon Press
Calvert

Envelopes

Plastic windows in business envelopes can last for 500 years in landfill. Specify business envelopes with cellulose-based windows, as these break down easily in landfill or compost.

Dark blue, dark purple and red colours

These colours are more difficult to de-ink than other colours, requiring additional chemicals and treatment. This produces more toxic sludge which can leach harmful chemicals and metals into groundwater.

Coated Paper

The clay coating on coated stock makes it harder to recycle. 40% less fibres can be re-used from coated stock than from uncoated stock.

In some areas, there is a backlog of coated paper waiting to be recycled, as it is specified at much higher rates than uncoated or satin stocks.

Uncoated and Satin Paper

These papers are easier to recycle than coated papers, as there is no clay coating.

40% more fibre from uncoated stock can be re-used than from coated paper. Often there is a backlog of coated paper at the recycling stage, as there is much more of it being specified than uncoated or satin paper.

Binding material

Plastic bindings can create problems when mixed with wastepaper at the recycling stage. Metal bindings can be easily removed with magnets in the recycling process.