

Environmental Choice^M Program

CERTIFICATION CRITERIA DOCUMENT

CCD-156



Product: Business Directories

Preamble

Environment Canada's Environmental Choice^M Program is pleased to publish the following national guideline on *business directories*.

The Environmental Choice Program is designed to support a continuing effort to improve and/or maintain environmental quality by reducing energy and materials consumption and by minimizing the impacts of pollution generated by the production, use and disposal of goods and services available to Canadians.

Paper-based business directories comprise at least 5% of the entire publishing industry, and thus represent a significant use of resources. In addition to the paper consumed by these publications, their printing and distribution consumes considerable energy and may result in a variety of harmful emissions to the air, land and water. A further issue with this particular market niche is the potential to print and distribute large numbers of business directories, far in excess of real demand, resulting in unnecessary waste. It is possible, however, to mitigate the potential environmental impacts through a combination of materials sourcing, environmentally-responsible printing and strategic distribution.

Based on a review of currently available life cycle information, the product category requirements will produce an environmental benefit through:

- a reduction in the use of non-renewable resources; and
- a reduction in toxic emissions to the environment.

Life cycle review is an ongoing process. As information and technology change, the requirements will be reviewed and possibly amended.

Environment Canada anticipates that *business directories* conforming to this certification criteria document will apply to the Environmental Choice Program for verification and subsequent authority to label the qualifying services with the EcoLogo^M.

Notice

Throughout this document, any reference to a standard or guideline means to its latest edition.

The Environmental Choice Program (ECP) reserves the right to accept equivalent test data for the test methods specified in this document.

Notice of Intent

Future revisions of this Certification Criteria Document may require that paper used in the products' manufacture fully complies with CCD-078: Uncoated Mechanical Printing Paper.

Interpretation

1. In this set of requirements, please note the following definitions:

“business directory” means a written publication that facilitates access to companies , products and services by providing a list of local, regional or national businesses, along with relevant contact information for those businesses. Such directories may be general or targeted towards specific markets;

“CCD-040” means the Environmental Choice Program certification criteria document *CCD-040: Printing Inks*;

“CCD-041” means the Environmental Choice Program certification criteria document *CCD-041: Lithographic Printing Services*;

“CCD-078” means the Environmental Choice Program certification criteria document *CCD-078: Uncoated Mechanical Printing Paper*;

“CCD-141” means the Environmental Choice Program certification criteria document *CCD-141: Digital Printing Services*;

“post-consumer material” means material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose; this includes returns of material from the distribution chain;

“pre-consumer material” means material diverted from the waste stream during a manufacturing process; excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it;

“recycled content” means the proportion of recycled material present in the raw material used in the manufacture of a product. Only pre- and post-consumer material shall be considered as recycled content;

“recycled material” means material which would have otherwise been disposed of as waste, but has instead been collected and reclaimed as a material input, in lieu of new primary material, for a manufacturing process. Recycled material includes both pre- and post-consumer material;

Category Definition

2. This category includes all *business directories*.

Note: Specific sub-categories may be added at a later date. The ECP reserves the right to determine which sub-category will be assigned to a particular applicant.

General Requirements

3. To be authorized to carry the EcoLogo^M, the *business directory* must:
 - (a) meet or exceed all applicable governmental and industrial safety and performance standards; and
 - (b) be manufactured in such a manner that all steps of the process, including the disposal of waste products arising therefrom, will meet the requirements of all applicable governmental acts, by laws and regulations including, for facilities located in Canada, the *Fisheries Act* and the *Canadian Environmental Protection Act* (CEPA).

Product Specific Requirements

4. To be authorized to carry the EcoLogo^M, the *business directory* must:
 - (a) be printed by a printing service that meets or exceeds the requirements of the ECP's certification criteria document for Lithographic Printing Services (CCD-041) (see *Appendix 1*); or for Digital Printing Services (CCD-141) (see *Appendix 2*);
 - (b) prior to June 2006, be printed on paper that meets the following requirements:
 - i) 100% recycled content,
 - ii) 40% post-consumer content,
 - iii) processed in a manner that is totally chlorine free(TCF),
 - iv) processed in a manner that uses 28.0 GJ/ADMt or less;
 - (c) on or after June 2006, be printed on paper that meets or exceed the ECP's certification criteria document for Uncoated Mechanical Printing Paper (CCD-078) (see *Appendix 3*);
 - (d) be printed with inks that meet or exceed the requirements of the ECP's certification criteria document for Printing Inks (CCD-040) (see *Appendix 4*);
 - (e) be distributed in accordance with the following requirements:
 - i) implement a "targeted" distribution strategy, designed to limit copies of the *business directory* being distributed. Such strategy must incorporate the use of designated pick-up locations, which:
 - (a) must be strategically chosen as most appropriate to the *business directory's* target market, and
 - (b) are clearly promoted via the supplier's website.
 - ii) in cases where the *business directory* is delivered door-to-door:
 - (a) the "targeted" distribution strategy must designed to limit delivered copies of the only to those recipients that are most likely to utilize it, and
 - (b) only one copy of the *business directory* per publication run may be delivered to any individual business or residence;

- (f) be 100% recyclable;
- (g) feature a prominent statement that promotes the use of on-line version(s) of the **business directory**; and
- (h) feature a prominent statement that indicates that EcoLogo does not endorse the products and/or services contained within the **business directory** itself (see Section 10).

Verification

- 5. To verify a claim that a product meets the criteria listed in this document, the ECP will require access, as is its normal practice, to relevant purchasing records, quality control and production records and the right of access to production facilities on an announced basis.
- 6. Compliance with requirement 3(b) shall be attested to by a signed statement of the Chief Executive Officer or the equivalent officer of the licensee. The ECP shall be advised in writing immediately by the licensee of any noncompliance which may occur during the term of the license. On the occurrence of any noncompliance, the license may be suspended or terminated as stipulated in the license agreement.

Conditions for EcoLogo Use

- 7. The EcoLogo may appear on wholesale or retail packaging, or on the product itself, provided that the product meets the requirements in this document.
- 8. All licensees and authorized users must comply with the ECP's *Guide to Proper Use of the EcoLogo^M* regarding the format and usage of the EcoLogo.
- 9. Any accompanying advertising must conform with the relevant requirements stipulated in this guideline, the license agreement and the ECP's *Guide to Proper Use of the EcoLogo^M*.
- 10. A criteria statement must appear with the EcoLogo whenever the EcoLogo is used in association with the **business directory**. The intent of this statement is to provide clarification as to why the product was certified and to indicate constraints to which the certification is limited. This is to ensure no ambiguity over, or misrepresentation of, the reason(s) for certification. In the particular case of this Certification Criteria Document, it must be made clear that the Environmental Choice Program does not necessarily endorse any product or service listed or advertised within the **business directory** (see Section 4 h).

The ECP suggested criteria statement wording for this product type is “*Publication and Distribution of Business Directory*”. The licensee may propose other wording for the criteria statement, but any such proposed wording must be approved by the Environmental Choice Program.

***For additional copies of this guideline or for more information about the Environmental Choice Program, please contact: TerraChoice Environmental Services Inc.,
1280 Old Innes Road, Suite 801, Ottawa, Ontario, K1B 5M7
Telephone: (613) 247-1900, Facsimile: (613) 247-2228, Email: ecoinfo@terrachoice.ca***

Appendix 1: ECP Certification Criteria for Lithographic Printing Services (excerpted from ECP CCD-041)

1. **Interpretation:** In the following guideline:

"alcohol" means organic compounds containing one or more hydroxyl groups attached to carbon atoms, when used as a fountain solution additive for offset lithographic printing (eg. ethanol, n-propanol, and isopropanol);

"alcohol substitutes" means non-alcohol additives that may or may not contain VOCs and are used in the fountain solution. Some additives are used to reduce the surface tension of water, others are added to prevent piling (i.e., ink build-up);

"aromatic solvents" means any organic solvent that has a benzene ring in its molecular structure;

"biochemical oxygen demand" or **"BOD₅"** means the amount of dissolved oxygen required for the biodegradation of the organic matter in water when tested in accordance with the 5 day test set out in the *Standard Methods for the Examination of Water and Waste Water*, latest edition, Sub-part 5210, jointly published by the American Water Works Association and the Water Pollution Control Federation;

"composite partial vapour pressure" means the pressure characteristic, at a given temperature, of any one component of a gaseous or vapour mixture in equilibrium with its liquid or solid form;

"dampening system" means equipment used to deliver fountain solution to the lithographic plate;

"EPA" means the United States Environmental Protection Agency;

"fountain solution" means a mixture of water, volatile and non-volatile chemicals, and additives that maintains the quality of the printing plate and reduces the surface tension of the water so that it spreads easily across the printing plate surface. The fountain solution wets the non-image area so that the ink is maintained within the image areas. Non-volatile additives include mineral salts and hydrophilic gums. Alcohol and alcohol substitutes including isopropyl alcohol, glycol ethers, and ethylene glycol are the most common additives used to reduce the surface tension of the fountain solution;

"halogenated solvent" means any organic solvent containing halogens including fluorine, chlorine, bromine and iodine;

"heatset" means a lithographic web printing process where heat is used to evaporate ink oils from the printing ink. Heatset dryers (typically hot air) are used to deliver the heat;

"heatset dryer" means a device used in lithography to heat the printed substrate and to promote the evaporation of ink oils;

"Kjeldahl Nitrogen" means the sum of organic and ammonia nitrogen;

"lithography" means a planographic printing process where the image and non-image areas are chemically differentiated; the image area is oil receptive and the non-image area is water receptive. There are three subprocesses - sheetfed offset, heatset web offset and non-heatset web offset;

"non-heatset" means a lithographic printing process where the printing inks are set without the use of heat. For the purposes of this guideline, ultraviolet-cured and electron-beam cured inks are considered non-heatset;

"offset" means an indirect printing process that transfers the ink film from the lithographic plate to an intermediary surface (rubber covered blanket cylinder), which in turn, transfers the ink film to the substrate;

"photo processing" means a sequence of chemical treatments or baths that convert the latent image in a photographic emulsion into a stable, visible one, and, then if applicable, transfer it to a receiving material;

"pre-press" means operations which encompass a series of steps during which the idea for a printed image is converted into a printing plate or image carrier. These operations include composition, typesetting, graphic arts, photography, image assembly, final film production, proofing and platemaking;

"planographic printing" means image and non-image areas are on the same plane yet defined by having received different physicochemical properties. Non-image areas are treated to be hydrophilic or water attractive and will not accept ink when wet, whereas image areas are treated to be hydrophobic, or water repellent, and the ink will adhere to these areas when wet or not (e.g. lithography);

"post-press" means the assembly of the printed materials and consists of binding and finishing operations;

"press" means a printing production assembly composed of one or more units (sheet or web) to produce a printed substrate;

"reclamation" means recovering valuable materials or removing impurities from a waste;

"recycling" means reprocessing waste in a way that makes it useful again. Recycling focuses on the use, reuse or reclamation of waste;

"sheet-fed" means a lithographic printing process where individual sheets of substrate are fed to the press sequentially. Products printed include books, posters, greeting cards, labels, packaging, advertising flyers, brochures, periodicals and reproducing artwork;

"source reduction" means reducing or eliminating waste at its point of generation;

"treatment" means removing harmful substances from the raw waste to the extent that the treated waste meets or exceeds local government regulations for the safe disposal of liquid and solid waste;

"unit" means the smallest complete printing component, composed of inking and dampening systems, of a printing press;

"use or reuse" means returning a waste material to the original process that generated the waste or employing it in another process as a substitute for an input material;

"volatile organic compound" or "VOC" means any organic compound which participates in atmospheric photochemical reactions. It excludes those organic compounds which the ECP designates as having negligible photochemical reactivity; and

"web" means a continuous roll of paper used as the printing substrate. After printing, the paper is then slit, cut, trimmed and folded to the preferred size. Web offset lithography includes periodicals, newspapers, advertising, books, catalogues and business forms.

2. Category Definition: This category includes all *lithographic printing services* as further defined in the subcategories in this section. The subcategories are:

- a) heatset web;
- b) non-heatset web (non-newspapers and newspapers); and
- c) sheetfed.

3. Process Specific Requirements:

To be authorized to carry the EcoLogo the **lithographic printing service** must:

- (a) not use products formulated or manufactured with benzene;
- (b) not use products formulated or manufactured with halogenated solvents;
- (c) use blanket washes having:
 - (i) a VOC content (as used) less than or equal to 30%, by weight, as tested in accordance with EPA Test Method 24; or
 - (ii) a VOC composite partial vapour pressure (as used) less than or equal to 10 mm Hg at 20°C, as tested in accordance with ASTM D5191-91 *Test Method for Vapor Pressure of Petroleum Products (Mini Method)*;
- (d) use a system that reduces or recycles photo processing wash waters;
- (e) have measures to reduce water consumption throughout the plant;
- (f) recover silver from spent photo processing chemicals and wash waters, either on- or off-site, such that the resulting level of silver does not exceed 5 mg/L after the terminal silver recovery unit(s). Acceptable methods of analysis include atomic absorption spectrometry or inductively coupled plasma spectrometry;
- (g) treat on-site the developer, proofing chemicals, and plate preparation, including developers and finishers, or collect for recycling where facilities exist, or for treatment and disposal at a licensed hazardous waste disposal facility;
- (h) utilize water-based plate development chemistry or employ a closed solvent-recovery system, if solvent-based development chemistry is utilized;
- (i) operate in a manner such that liquid chemical effluent is in compliance with applicable local sewer use by-laws or, in the absence of such by-laws, the following minimum criteria:
 - (i) biochemical oxygen demand ≤ 300 mg/L;
 - (ii) total Kjeldahl Nitrogen ≤ 100 mg/L;
 - (iii) sulphate \leq of 1500 mg/L;
 - (iv) total phosphorus \leq of 10 mg/L;

Notes: Sampling of effluent to be taken at the closest sewer access to the printing establishment.

Discharge agreements may be accepted in lieu of this criterion, at the discretion of ECP.

- (j) treat on-site waste ink and fountain solution, or collect for recycling where facilities exist, or for treatment and disposal at a licensed hazardous waste disposal facility;

- (k) recycle all film materials, printing plates, fine paper, coated paper, coloured paper, newsprint, newspaper, corrugated cardboard, web cores and plugs, and pallets where facilities exist;
 - (l) recover solvent from used press wipes for subsequent reuse or recycling where facilities exist, or for disposal of both solvent and wipes by a registered waste hauler; and
 - (m) not use printing inks in which the sum or incidental concentration levels of lead, cadmium, mercury, or hexavalent chromium exceeds 100 parts per million by weight.
4. To be authorized to carry the EcoLogo, the *lithographic printing service* must also meet criteria specific to its subcategory.

4.1 Heatset web lithographic printing services must:

- (a) not use products formulated or manufactured with isopropyl alcohol in press dampening systems;
- (b) use a fountain solution having a VOC content:
 - (i) that does not exceed 1.6% by weight of formulation (as used) as calculated from records of the amounts of constituents used to make the product; or
 - (ii) that does not exceed 3.0% by weight of formulation (as used) as calculated from records of the amounts of constituents used to make the product, and refrigerate the fountain solution to 60°F or less; or
 - iii) that does not exceed 5.0% by weight of formulation (as used) as calculated from records of the amounts of constituents used to make the product, and use no alcohol in the fountain solution;
- (c) operate and maintain pollution control equipment to control VOC emissions from dryers at a minimum efficiency of 90%.

4.2 Non-heatset web lithographic printing services must:

- (a) not use products formulated or manufactured with isopropyl alcohol in press dampening systems; and
- (b) operate a non-heatset web lithographic printing press or newspaper offset lithographic printing press that uses a fountain solution having a VOC content that does not exceed 5.0% by weight of the formulation (as used) as calculated from records of the amounts of constituents used to make the product, and that uses no alcohol in the fountain solution.

4.3 Sheetfed lithographic printing services must:

- (a) not use products formulated or manufactured with isopropyl alcohol in press dampening systems; and
- (b) use a fountain solution having a VOC content:
 - (i) at or below 5.0% by weight of the formulation (as used) as calculated from records of the amounts of constituents used to make the product; or
 - ii) at or below 8.5% by weight of formulation (as used) as calculated from records of the amounts of constituents used to make the product, and refrigerate the fountain solution to 60°F or less;
- (c) use no alcohol in the fountain solution.

Appendix 2: ECP Certification Criteria for Digital Printing Services

(excerpted from ECP CCD-11)

1. **Interpretation:** In the following guideline:

"**ambient ozone concentration**" means that concentration of ozone when measured in accordance with ASTM D5156-91 *Test Methods for the Continuous Measurement of Ozone in Ambient, Workplace, and Indoor Atmospheres (Ultraviolet Absorption)* under the testing conditions stipulated in the German Blue Angel Guideline *Copiers* (RAL-UZ 62);

"**aromatic solvents**" means any organic solvent that has a benzene ring in its molecular structure;

"**binding adhesives**" mean adhesives used in the post-press stage for binding sheets of printed material together;

"**ASTM**" means American Society for Testing and Materials;

"**CCD-037**" means the Environmental Choice Program's Certification Criteria Document *CCD-037: Laser-jet Desktop Printers*;

"**CCD-040**" means the Environmental Choice Program's Certification Criteria Document *CCD-040: Printing Inks*;

"**CCD-041**" means the Environmental Choice Program's Certification Criteria Document *CCD-041: Lithographic Printing Services*;

"**CCITT**" means International Telegraph and Telephone Consultative Committee;

"**CD**", or "**compact disc**", is a widely used data storage media onto which text, images, music or other information is stored by means of a specialized laser. Some *digital printing services* use CD image burners or other technologies to print graphic images onto CDs' non-reading sides;

"**CD image burner**" means a device that prints images onto the non-reading side of compact discs (CD's);

"**CFCs**" means chlorofluorocarbons;

"**cold application binding adhesive**" means an adhesive used to bind printed (paper) sheets together in a cold (i.e., room temperature) process (vs. hot melt process). Cold application binding adhesives are pastes which rely on the evaporation of volatile chemicals to bind and thus have relatively high VOC contents;

"**computer equipment**" means all computer equipment used in the pre-press and press stages of a digital printing operation, and includes, *inter alia*, personal computers (CPU, monitor, keyboard, etc.) used to compose, edit and layout images for printing, printers, digital publishing stations, CD image burners and network interfaces between these units;

"**digital printing service**" means a commercial or institutional printing service that has replaced conventional lithographic printing methods and technologies in both the pre-press and press stages of the printing process. A digital printing service may be part of a larger operation that utilizes both lithographic and digital printing; if so, any lithographic operations being assessed for ECP certification must be reviewed against *CCD-041*;

"**digital publishing machine**" means a device utilized in certain digital printing services that incorporates document binding into its overall printing process, as done by laser- or ink-jet printers. A digital publishing machine may be part of a larger operation that utilizes other digital and/or lithographic printing;

"dust concentration" means that concentration when measured in accordance with ASTM D4532-92 *Test Method for Respirable Dust in Workplace Atmosphere* under the testing conditions stipulated in the German Blue Angel Guideline *Copiers* (RAL-UZ 62);

"energy-saver mode" means the condition that exists when the machine is not printing, has previously reached operating conditions but is consuming less power than when the machine is in stand-by mode;

"EPA" means the United States Environmental Protection Agency;

"halogenated solvent" means any organic solvent containing halogens including fluorine, chlorine, bromine and iodine;

"ink-jet printer" means equipment using mechanical pressure to transfer drops or a stream of droplets to the substrate in a pattern matched to a digital image file stored in the printer's memory;

"laser-jet printer" means equipment using the laser recording process. It uses a laser light to "write" a transmitted image onto a photosensitive drum. The sensitized areas around the drum attract toner in order to print the characters onto the page;

"noise" means an undesired sound;

"noise emission values" means those values when tested in accordance with ISO 7779 *Acoustics - Measurement of Airborne Noise Emitted by Computer and Business Equipment*;

"post-press" means the assembly of the printed materials and consists of binding and finishing operations;

"ozone" means an unstable molecule, O₃, produced when oxygen decomposes in the presence of high voltage and electrical discharges;

"petroleum distillates" means high flash point, high boiling point distillates derived from the cracking of crude oil;

"pigment" means the fine solid particles of colorant used to give colour to printing inks. Pigments are substantially insoluble in the vehicle and in water;

"press" means a printing production assembly composed of one or more units (sheet or web) to produce a printed substrate;

"printing cartridge" means an assembly used for printing, and depending on the style of machine, containing but not limited to, one or more of the following: a photosensitive element, a corona unit, a developer unit, a wiper wand and toner;

"printing ink" means a dispersion of a pigment in a vehicle that is transferred through the printing process to produce an image on a substrate;

"PVC" means polyvinyl chloride;

"reclamation" means recovering valuable materials or removing impurities from a waste;

"recycling" means reprocessing waste in a way that makes it useful again. Recycling focuses on the use, reuse or reclamation of waste;

"remanufactured printing cartridge" means a printing cartridge to which the following service has been performed: the disassembly of the cartridge, inspection, cleaning and adjustment of all components, repair where necessary, replacement of worn or damaged parts, reassembly and testing of the remanufactured cartridge, and, where applicable, removal of the remaining toner, replacement of the toner supply, and refurbishing organic photoreceptor cell (OPC) or replacing the OPC with a new or aftermarket cell;

"source reduction" means reducing or eliminating waste at its point of generation;

"spool core" means a physical construction (generally composed of plastic or metal) which contains a spool of tape, ribbon, film or other similar material, prior to utilization of that material in a printing process step;

"stand-by mode" means the condition that exists when the machine is not printing, has reached operating conditions, but has not yet entered into energy-saver mode.

"substrate" means the media which is printed or coated. Such media include, *inter alia*, paper, fabric and vinyl or other plastic films;

"thermal transfer printer" means equipment using heat to transfer a wax, resin or other dye-carrying medium to the substrate in a pattern matched to a digital image file stored in the printer's memory. Generally, this process is used in conjunction with film or plastic substrates;

"treatment" means removing harmful substances from the raw waste to the extent that the treated waste meets or exceeds local government regulations for the safe disposal of liquid and solid waste;

"unit" means the smallest complete printing component, composed of inking and dampening systems, of a printing press;

"use or reuse" means returning a waste material to the original process that generated the waste or employing it in another process as a substitute for an input material;

"vehicle" means the liquid portion of an ink that holds and carries the pigment, provides workability and drying properties, and binds the pigment to the substrate after the ink has dried;

"vegetable-based ink" means inks which contain materials whose origins are from plants (eg. tree sap, gum rosins, rubber); and

"volatile organic compound" or **"VOC"** means any organic compound which participates in atmospheric photochemical reactions. It excludes those organic compounds which the ECP designates as having negligible photochemical reactivity.

2. Category Definition:

This category includes all ***digital printing services***. These services may use one or more printing methodologies as further defined in the following subcategories:

- (a) laser-jet operations;
- (b) ink-jet operations; and
- (c) digital publishing operations.

Note: other sub-categories (e.g., thermal transfer and CD image-burning operations) may be added at a later date.

3. Specific Requirements:

To be authorized to carry the EcoLogo the *digital printing service* must:

- (a) specifically provide an option for paper stock and other substrates that are either ECP-certified or include recycled content, and actively promote the use of such substrates to clientele;
- (b) ensure a minimum annual average of 20% of all paper stock used are either ECP-certified or include recycled content;
- (c) not use plastic substrates that contain PVC;
- (d) make suitable arrangements for end-of-service-life disposal of computer equipment that is used in the pre-press and press stages. Such arrangements may include, *inter alia*, specified equipment return/recycling within supplier agreements, donation to local schools or charities and/or integration with local municipal recycling efforts;
- (e) send the following materials to recycling facilities, where such facilities exist:
 - (i) fine paper,
 - (ii) coated paper,
 - (iii) coloured paper,
 - (iv) newsprint and newspaper,
 - (v) corrugated cardboard,
 - (vi) pallets,
 - (vii) spent toner/ink cartridges,
 - (viii) film materials,
 - (ix) filter and filter bags,
 - (x) spool cores,
 - (xi) excess binding materials (metal staples, plastic spirals, etc.), and
 - (xii) defective/excess/waste CD's, as applicable;
- (f) use binding adhesives that:
 - (i) are not be formulated or manufactured with the following:
 - (a) aromatic solvents,
 - (b) borax,
 - (c) any halogenated solvent, and/or
 - (d) mercury, lead, cadmium, hexavalent chromium or their compounds;
 - (ii) contain formaldehyde in excess of 0.02% by weight of whole formulation, as measured by a test method acceptable to ECP;
- (g) if using cold application binding adhesives:
 - (i) must maintain records of each adhesive's VOC content,
 - (ii) seek out adhesives with the lowest practical VOC content, and
 - (iii) ensure VOC emissions are appropriately contained;
- (h) ensure that binding agents are used, and residues disposed of, in accordance with instructions provided, so as to minimize health concerns and maximize performance;

- (i) ensure that all electrically powered post-press equipment (including, inter alia, knives, foot-or saddle-stitchers, shrink-wrapping machines, etc.) is turned off when not in use for periods in excess of 30 minutes; and
 - (j) ensure that when the final product is shipped in cardboard containers:
 - (i) the containers must include recycled content, and
 - (ii) where applicable, packing material must consist of paper scrap recovered from elsewhere in the process.
4. To be authorized to carry the EcoLogo, the **digital printing service** must also meet criteria specific to its subcategory.
- 4.1 Digital printing services using laser-jet operations must exclusively use printers that either meet the requirements of **CCD-37** or the following:
- (a) either:
 - (i) meet the energy consumption requirements as stipulated in Tables 1a, 1b or 1c, as appropriate, when tested in accordance with EPA's *Testing Conditions for Energy Star Measurement Printers*, OR
 - (ii) are pre-programmed (by the machines' operator(s)) to revert to a standby or "sleep" mode after a period of no more than 60 minutes, OR
 - (iii) are accompanied by instructions that direct the printers' operator(s) to physically turn off the machine or set it to a standby mode whenever commencing an anticipated period of inactivity exceeding 60 minutes;
 - (b) not cause an ambient ozone concentration in excess of 0.04 mg/m³;
 - (c) not cause a dust concentration in excess of 0.25 mg/m³;
 - (d) where applicable, be compatible with remanufactured printing cartridges without voiding the original manufacturer's warranty; and
 - (e) include the following information in either an instruction manual or a product information sheet:
 - (i) ambient ozone level being met and testing conditions used to determine the level,
 - (ii) the procedure for changing ozone filters and the recommended frequency of filter replacement or service by the manufacturer, if applicable,
 - (iii) dust concentration being met and testing conditions used to determine the level,
 - (iv) the energy use in the printing mode of operation when tested in accordance with EPA's *Testing Conditions for Energy Star Measurement Printers*, and
 - (v) the noise emission values of the unit for both printing and energy-saver modes of operation, if applicable.

4.2 Digital printing services using ink-jet operations must:

- (a) use printers which meet the energy consumption requirements as stipulated in Tables 1a, 1b or 1c, as appropriate, when tested in accordance with EPA's *Testing Conditions for Energy Star Measurement Printers*;
- (b) use printing inks that either meet the requirements of CCD-40 or the following:
 - (i) not contain VOC's in excess of 4% by weight, when tested in accordance with the EPA's *Test Method 24*, or as calculated from records of the amounts of constituents used to make the product;
 - (ii) not contain a combined total of petroleum distillates, calculated from records of the amounts of constituents used to make the product, in excess of 25%, by weight;
 - (iii) not contain a sum, or incidental concentration levels, of lead, cadmium, mercury, or hexavalent chromium must in excess of 100 parts per million (by weight); and
 - (iv) not contain either:
 - (a) benzene, or
 - (b) halogenated solvents; and
- (c) ensure that spent ink cartridges are either refilled for reuse, recycled or segregated from the waste stream and diverted to a registered hazardous waste hauler, as appropriate to the ***digital printing service's*** jurisdiction.

4.3 Digital printing services using digital publishing operations must:

- (a) meet the criteria as outlined in 5.1 and 5.2 that are relevant to the specific printing methodology used (i.e., laser or ink jet);
- (b) use binding adhesives that meet the criteria as outlined in 4(f) and 4(h).

Appendix 3: ECP Certification Criteria for Uncoated Mechanical Printing Paper (excerpted from ECP CCD-078)

Interpretation

1. In the following guideline:

“acidification potential” is a measure of the impact of emissions on acid rain formation. It is calculated using atmospheric emissions of sulphur dioxide (SO₂) and nitrogen oxide (NO_x) compounds. In Canada SO₂ is emitted by mills that use sulphur bearing coal and oil. For the purposes of this guideline acidification potential is based on measured SO₂ emissions from the mill;

“agricultural fibre” means a solid residue arising from the harvesting and processing of agricultural crops (e.g. dried stalks of harvested grain) which would otherwise be incinerated or sent to landfill;

“biomass” means biological materials (i.e., hogfuel, black liquor organics) that are commonly used as an energy source. (Canadian Standards Association, final draft CAN/CSA-Z810-96, 1996);

“COD” (chemical oxygen demand) is a measure of the amount of oxygen required to oxidize organic and oxidizable inorganic compounds in water. It measures the fraction of organic substances present in mill effluent that the natural environment cannot readily degrade. COD is measured by the ISO 6060 test method, or by method 5220 C or D in *“Standard Methods for the Examination of Water and Wastewater”*, 17th Edition, American Public Health Association, American Water Works Association and Water Pollution Control Federation, 1989, Washington, DC;

“CPPA” means the Canadian Pulp and Paper Association;

“cogeneration” means generating electrical energy for production and using the waste heat in the form of steam from the generation in other areas of the manufacturing process. Cogeneration requires approximately one third of the fuel that is required by condensing power;

“consumer” means a household, commercial establishment or institutional facility;

“code of sustainable forest practices” means a statement of practices which has the objective of maintaining environmental, economic, and social values of the forest. A code must specify, at a minimum, harvesting practices, forest regeneration, biodiversity and wildlife protection, soil conservation, watershed protection, and the participation of communities in forest planning;

“dry broke” means paper such as that spoiled in the process of drying, calendering, winding, rewinding and trimming, including butt rolls;

“effluent” means waste water from a mill, including process water, gas scrubbing water, boiler blow-down water, washdown water, cooling water and leachate from any site at the mill where solid residues generated by any mill are treated or disposed of or where wood chips or hogfuel is stored;

“fibre-only” means the actual amount of fibre that is fed into the pulp digester less the mass of moisture and the mass of any additives;

“global warming potential” (GWP) means the time-integrated change in radiative forcing due to the instantaneous release of 1 kilogram of a gas expressed relative to the radiative forcing from the release of 1 kilogram of CO₂;

“Helsinki Process” refers to the Pan-European Criteria and Indicators for Sustainable Forest Management;

“IC₂₅” means inhibiting concentration that will affect 25% of the test organisms;

“ISO” refers to the International Organisation for Standardisation;

“Incineration without energy recovery” means the combustion of a solid, liquid or gaseous waste with no power or chemical recovery;

“landfilled” means a method of disposing of solid mill waste by transporting it to a designated land area, dumping it into excavations and then applying a covering;

“light-weight uncoated mechanical printing paper” means paper, which consists of at least 10% fibre obtained through a mechanical pulping process, weighing 40 g or less, generally used for the printing of directories, catalogues, etc.

“marginal fuels” means those fuels used by utilities to fulfill any marginal or incremental power demands. Many major Canadian utilities supplying electricity to the grid do so by keeping either hydroelectric and/or nuclear facilities operating at the maximum required rate. When electricity requirements change or incrementally increase, the marginal change in power generation supplied by the utility is generally done with fossil fuels (i.e. oil, coal);

“market pulp” means pulp that is sold to paper producers on the open market.

“measurable concentration of 2,3,7,8-TCDD” means a concentration of 2,3,7,8-TCDD that is greater than the level of quantification as defined in *Reference Method for the Determination of Polychlorinated Dibenzo-para-dioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) in Pulp Mill Effluents*, Report EPS 1/RM/19, 1991;

“measurable concentration of 2,3,7,8-TCDF” means a concentration of 2,3,7,8-TCDF that is greater than the level of quantification as defined in *Reference Method for the Determination of Polychlorinated Dibenzo-para-dioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) in Pulp Mill Effluents*, Report EPS 1/RM/19, 1991, and that, when multiplied by 0.1, exceeds 5 ppb;

“Montreal Process” refers to the Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests;

“non-wood fibre” refers to alternative fibre sources and includes, but is not limited to, hemp, cotton, bamboo, straw, other plants cultivated specifically for use as a fibre source, and agricultural wastes;

“over the fence” refers to chemicals that are produced on-site, but where chemical and electricity metering is performed by the chemical supplier or organization which “leases” the equipment to the mill;

“post-consumer material” means a product which has served its end-use at the consumer level, has been discarded by the consumer, and would, unless diverted, enter the waste stream;

“pre-consumer material” means materials generated by an industrial process that would, unless diverted, enter the waste stream. This includes, but is not limited to, damaged or defective materials, overstock or obsolete inventories from manufacturers, distributors, wholesalers and trimmings from converting processes. It does not include wet or dry broke;

“printed recovered material” means material which has been printed and/or coated and would, unless diverted, enter the waste stream;

“product unit” means a metric tonne of pulp or paper product that is produced;

“pulp” means fibrous material produced mechanically or chemically by reducing woody plants into their component parts from which paper or paperboard sheets are formed;

“raw wood fibre” means fibre from wood which has not previously been pulped;

“recovered fibre” means that fibre derived from planer shavings, sawdust, pre-consumer materials and post-consumer materials;

“recycled material” means post-consumer material and pre-consumer material. It does not include by-products of an industrial process that can be, and regularly are, used in either the same process, or in a different process, except that proportion which originated as post-consumer material and pre-consumer material. It may include sawdust or planer shavings from sawmill operations;

“**sub-lethal toxicity**” means the effects that a substance has on a test organism over a significant portion of the test organisms life (10% or more), such as growth, reproductive or metabolic inhibition;

“**TEF_{sub}**” means sublethal toxicity emission factor. It is calculated as $TEF_{sub} = [\log (100/IC_{25 \text{ mean}})] \times [\text{annual mill effluent flow in m}^3] \div [\text{annual mill tonnage in ADMT}]$.

For freshwater receiving environments, the two required tests are:

- for invertebrates: Environment Canada's *Biological Test Method: Test of Reproduction and Survival Using the Cladoceran Ceriodaphnia dubia* (EPS Report 1/RM/21, 1992); and
- for fish: Environment Canada's *Biological Test Method: Test of Larval Growth and Survival Using Fathead Minnows* (Report EPS 1/RM/22, 1992).

For marine and estuarine receiving environments, the two required tests are:

- for invertebrates: Environment Canada's *Biological Test Method: Fertilization Assay Using Echinoids (Sea Urchins and Sand Dollars)* (Report EPS 1/RM/27, 1992); and
- for fish: US Environmental Protection Agency's *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms* (Report EPA600/4-91/003, 1991);

“**uncoated mechanical printing paper**” means paper, which consists of at least 10% fibre obtained through a mechanical pulping process, weighing more than 40 g/m², primarily used in the printing of publications such as newspapers, magazines, flyers and inserts, comic books and paperbacks; includes newsprint, supercalendered paper; and

“**wet broke**” means paper recovered from the wet press of a paper machine.

Category Definition

2. This category includes uncoated mechanical printing papers as further defined in the subcategories below:
 - a) light-weight uncoated mechanical printing paper;
 - b) uncoated mechanical printing paper.

Product Specific Requirements

3. To be authorized to carry the EcoLogo the *pulp and paper products* must:
 - (a) be manufactured so that the total of load points assessed for Fibre-use, COD, TEF_{sub}, Energy-use, GWP measure, acidification potential measure, and solid waste, as determined from Table 1, does not exceed 28;
 - (b) be manufactured so that the effluent from the paper mill or any mill which produces a market pulp does not contain a measurable concentration of 2,3,7,8-TCDD or a measurable concentration of 2,3,7,8-TCDF; and
 - (c) if manufactured from pulp made from primary wood fibre, use only pulp derived from forests which may be demonstrated to be managed under a code of sustainable forest practices such as the CCFM (Canadian Council of Forest Ministers), the Montreal Process, the Helsinki Process, etc.

APPENDIX 3a: Load Point Determination

Load Points are assigned for each parameter listed in the Table below on a linear scale from the minimum value shown (which is assigned a value of 0 (zero)), to the threshold, which is assigned a value of 4 (four).

Products that result in values which exceed the threshold on any parameter are assigned additional Load Points on an extrapolated linear scale. The Load Points for each parameter are summed to calculate the total Load Point value for the product. ***The calculation methodology provided in Appendix 2 must be done for each product that is to be certified.*** Values relevant to upstream manufacturing of pulp, whether at the site of the paper mill or otherwise, are included. Generally, the minimum end of the scale for a parameter corresponds to the best attained by any installation in the world with a proven record of operating commercially and reliably. A manufacturing process that generates a parameter equal to the minimum end of the scale would be assigned zero points for the parameter. If innovative or unusual technology is used to operate below the minima stated herein, then negative points would be assigned.

A threshold value, corresponding to approximately the 80th percentile of commercially operating values for the parameter, is set and would correspond to 4 Load Points. Intermediate values being scaled linearly. For example, a mill using 100% post-consumer fibre achieves a Load Point value of '0' for *Resource Depletion* because no primary fibre is used in the production of its pulp. The 80th percentile would be a mill using a mix of recycled content and other fibre sources that achieves a fibre-use efficiency of 1.3 tonnes input per tonne of pulp produced. This mill would receive a Load Point of '4'. Parameters above the threshold value would be assigned Load Points on the same linear scale. Values substantially above the threshold point would effectively disqualify a product. A product with one characteristic parameter that exceeds the threshold value would have to perform well in all other parameters to qualify. The minimum and the threshold values found in the Table below that represent optimal and the 80th percentile, have been set based on actual mill performance.

Table : Calculating Load Points

Category	Parameter	Units	Calculated
Resource depletion	Fibre use	t / ADMT product	
Liquid effluent	Chemical Oxygen Demand	kg / ADMT product	
Liquid effluent	Sub-lethal toxicity	TEF _{sub}	
Energy consumption	Energy use	GJ / ADMT product	
Global Warming	Estimated CO ₂ emissions	GJ / ADMT product	
Atmospheric (Acidic) emissions	Estimated SO ₂ emissions	kg SO ₂ / ADMT product	
Solid waste	Solid waste	m ³ / ADMT product	
Total Calculated Load Points			

Note: Appendix 2 contains an outline of the methodology to be used when calculating the Load Point values. It is based on the methodology used in the CPPA Environmental Profile Data Sheet. This appendix will be provided on request to those who wish to calculate Load Points for a given product.

Appendix 4: ECP Certification Criteria for *Printing Inks*

(excerpted from *ECP CCD-040*)

Interpretation

1. In the following guideline:

"binder" means the components in an ink film which hold the pigment to the printed surface;

"flexographic" or **"flexography"** means a typographic form of printing using resilient plates and relatively thin-bodied resin-solvent or water based inks;

"fountain solution" means a mixture used to prevent the non-printing areas of the lithographic plate from accepting ink;

"gravure" means a method of printing using the intaglio process, i.e. the ink is placed in cells below the surface;

"letterpress" means a process of typographic (raised type) printing generally using oil-based inks;

"lithographic" or **"lithography"** means a process of planographic printing involving two chemically different areas on the plate: one receptive to ink, the other receptive to fountain solution;

"non-renewable resource" means any naturally occurring finite resource which, in terms of the human time scale, cannot be renewed once it has been consumed (e.g. oil, coal, gas);

"offset" (see **"lithographic"**) means an indirect form of printing in which the ink is transferred from the printing plate to a rubber blanket and subsequently to the substrate;

"petroleum distillates" means high flash point, high boiling point distillates derived from the cracking of crude oil;

"pigment" means the fine solid particles of colorant used to give colour to printing inks. Pigments are substantially insoluble in the vehicle and in water;

"planographic" or **"planography"** means a printing process in which the image and non-image areas lie in the same plane of printing;

"printing ink" means a dispersion of a pigment in a vehicle that is transferred through the printing process to produce an image on a substrate;

"substrate" means the base material which is coated or printed;

"vehicle" means the liquid portion of an ink that holds and carries the pigment, provides workability and drying properties, and binds the pigment to the substrate after the ink has dried;

"vegetable-based ink" means inks which contain materials whose origins are from plants (eg. tree sap, gum rosins, rubber);

"volatile organic compound" or "VOC" means any organic compound which participates in atmospheric photochemical reactions. It excludes those organic compounds which the ECP designates as having negligible photochemical reactivity;

"water-based ink" means an ink containing a vehicle whose binder is water soluble or water dispersible.

Category Definition

2. This category includes all **printing inks** as further defined in the subcategories in this section. The subcategories are:

- (a) sheetfed offset;
- (b) heatset web offset;
- (c) coldset web offset;
- (d) letterpress;
- (e) water-based flexographic; and
- (f) water-based gravure inks.

Product Specific Requirements

4. To be authorized to carry the EcoLogo the **printing inks** must meet the criteria specific to its subcategory.

4.1 Sheetfed offset inks must:

- (a) not exceed a total VOC content of 4% by weight, when tested in accordance with EPA Test Method 24, or as calculated from records of the amounts of constituents used to make the product;
- (b) be accompanied by an indication of the percentage by weight of the vegetable content, as verified by the Environmental Choice Program, if any claim of vegetable content is made;
- (c) not be formulated or manufactured with:
 - (i) a combined total of more than 6% by weight of petroleum distillates, calculated from records of the amounts of constituents used to make the product; or
 - (ii) a combined total of more than 100 ppm of cadmium, lead, mercury and hexavalent chromium or their compounds.

4.2 Heatset web offset inks must:

- (a) not exceed a total VOC content of 25% by weight, when tested in accordance with EPA Test Method 24, or as calculated from records of the amounts of constituents used to make the product;
- (b) be accompanied by an indication of the percentage by weight of the vegetable content, as verified by the Environmental Choice Program, if any claim of vegetable content is made;
- (c) not be formulated or manufactured with:
 - (i) a combined total of more than 25% by weight of petroleum distillates, calculated from records of the amounts of constituents used to make the product; ; or
 - (ii) a combined total of more than 100 ppm of cadmium, lead, mercury and hexavalent chromium or their compounds.

4.3 Coldset web offset inks must:

- (a) not exceed a total VOC content of 4% by weight, when tested in accordance with EPA Test Method 24, or as calculated from records of the amounts of constituents used to make the product;
- (b) be accompanied by an indication of the percentage by weight of the vegetable content, as verified by the Environmental Choice Program, if any claim of vegetable content is made;
- (c) not be formulated or manufactured with:
 - (i) a combined total of more than 25% by weight of petroleum distillates, calculated from records of the amounts of constituents used to make the product, ; or
 - (ii) a combined total of more than 100 ppm of cadmium, lead, mercury and hexavalent chromium or their compounds.

4.4 Letterpress inks must:

- (a) not exceed a total VOC content of 4% by weight, when tested in accordance with EPA Test Method 24, or as calculated from records of the amounts of constituents used to make the product;
- (b) be accompanied by an indication of the percentage by weight of the vegetable content, as verified by the Environmental Choice Program, if any claim of vegetable content is made;
- (c) not be formulated or manufactured with:
 - (i) a combined total of more than 25% by weight of petroleum distillates, calculated from records of the amounts of constituents used to make the product, ; or
 - (ii) a combined total of more than 100 ppm of cadmium, lead, mercury and hexavalent chromium or their compounds.

4.5 Water-based flexographic inks must:

- (a) not exceed a total VOC content of 6% by weight, when tested in accordance with EPA Test Method 24, or as calculated from records of the amounts of constituents used to make the product;
- (b) not be formulated or manufactured with:
 - (i) petroleum distillates;
 - (ii) a combined total of more than 100 ppm of cadmium, lead, mercury and hexavalent chromium or their compounds;
 - (iii) more than 3% by weight of methanol; or
 - (iv) more than 3% by weight of ammonia or amine compounds.

4.6 Water-based gravure inks must:

- (a) not exceed a total VOC content of 6% by weight, when tested in accordance with EPA Test Method 24, or as calculated from records of the amounts of constituents used to make the product;
- (b) not be formulated or manufactured with:
 - (i) petroleum distillates;
 - (ii) a combined total of more than 100 ppm of cadmium, lead, mercury and hexavalent chromium or their compounds;
 - (iii) more than 3% by weight of methanol; or
 - (iv) more than 3% by weight of ammonia or amine compounds.

EcoLogo^{CM} Program Interpretation Document

VOC and Petroleum Distillate Content Printing Inks



Interpretation:

The EcoLogo^{CM} certification criteria documents for Printing Inks (CCD-040) currently states that, for heatset web offset inks, the total VOC content must not exceed 25% by weight and the ink must not be formulated or manufactured with a combined total of more than 25% by weight of petroleum distillates.

Until the next full review of CCD-040, the EcoLogo^{CM} Program will accept heatset web offset inks with a maximum total VOC content of 40% by weight and a maximum combined total petroleum distillate content of 40% by weight.

Basis for Interpretation:

The current standard for Printing Inks (CCD-040) cannot be met by any heatset web offset inks currently on the market because the requirements for VOC content and petroleum distillate content are too restrictive. After consultation with experts from the printing ink industry and an environmental assistance center for printers, it was concluded that the VOC and petroleum distillate limits for heatset web offset inks should be changed to:

- maximum total VOC content: 40% by weight
- maximum combined total petroleum distillate content: 40% by weight

Affected EcoLogo^{CM} Criteria Documents:

CCD-040 "Printing Inks"
CCD-079 "Business Forms"
CCD-080 "Envelopes"
CCD-156 "Business Directories"

Additional Notes:

A copy of the above certification criteria documents can be found at www.ecologo.org

Direct inquiries or comments to TerraChoice Environmental Marketing Inc.
E-mail: ecoinfo@terrachoice.com, Toll free: 1-800-478-0399, Telephone: 1-613-247-1900