

GREEN CHOICE PHILIPPINES

NELP-GCP - 2008019 INKJET CARTRIDGE

1. ENVIRONMENTAL SCENARIO

Printers or multi-function devices are among the many IT devices commonly used in offices and households. Inkjet printers are the most common type of computer printer for the general consumer due to their low cost, high quality of output, capability of printing in color and ease of use.

The typical desktop inkjet printers used at home and offices use aqueous inks based on a mixture of water, glycol and dyes or pigments and housed in containers called inkjet cartridges. These ink cartridges are usually inexpensive to manufacture and are usually considered disposable.

Because of its massive presence in homes and offices worldwide, inkjet cartridges also poses environmental impacts that includes the release of hazardous substances such as heavy metals from the pigments, release of volatile organic compounds (VOCs) from volatile solvents or mineral oil, and other release of toxic and hazardous substances throughout the entire life-cycle of the product. The following criteria focus on the hazardous components of an inkjet cartridge and its 3R design (reuse, reduce, recycle) in order to reduce the health impact, the waste generated and the resources consumed by inkjet cartridges throughout its entire life-cycle.

2. DEFINITION OF TERMS

2.1. 3R

Reduce, Reuse, Recycle

2.2. DENR ADMINISTRATIVE ORDER 2005-05 (DENR AO 2005-05)

Toxic Chemical Substances for Issuance of Chemical Control Orders

2.3. DENR ADMINISTRATIVE ORDER 2005-27 (DENR AO 2005-27)

Revised Priority Chemical List

2.4. DEVICE

The term used to define the equipment or machine in which an inkjet cartridge is used

2.5. END OF LIFE

Condition defined by one of two mechanisms: fade and ink out.

2.6. FADE

Phenomenon in which a significant reduction in uniformity occurs due to ink depletion

2.7. INDIVIDUAL CARTRIDGE YIELD

Value determined by counting the number of diagnostic pages printed between cartridge installation and end of life and multiplying by five.

2.8. INKJET TECHNOLOGY

The inkjet technology is basically defined as the process by which a paper document is created by spraying thousand of very fine drops of ink on a sheet of paper while the print head moves back and forth.

2.9. INK OUT

Signal generated by the printing system when the useable ink in the system is depleted and the printer stops printing.

2.10. RE-USE

Shall refer to the process of recovering materials intended for the same or different purpose without the alteration of physical and chemical characteristics.

2.11. REPUBLIC ACT 6969 (RA 6969)

Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990.

2.12. REPUBLIC ACT 9003 (RA 9003)

Ecological Solid Waste Management Act

2.13. STANDARD COLOR

The standard equipped print color in toner cartridges. These are the colors black, cyan, magenta and yellow.

2.14. TAKE-BACK SYSTEM

It requires the producers either take back spent products and manage them through reuse, recycling, or remanufacturing, or delegate this responsibility to a third party. It is also known as Extended Producer Responsibility (EPR). The idea underlying EPR is that placing responsibility for waste management with producers creates a strong incentive for them to redesign products with an aim toward less material use and improved recyclability.

2.15. TRANSPORT

Includes conveyance by air, water and land

2.16. UNIFORMITY OF PRINTING DENSITY

Uniformity for the density of the printed part with standard color

2.17. VOLATILE ORGANIC COMPOUND (VOC)

Organic chemical compounds that under normal conditions are gaseous or can vaporize and enter the atmosphere. VOCs contribute significantly to photochemical smog production and certain health problems.

3. SCOPE

These criteria are applicable to inkjet ink cartridge.

4. GREEN CHOICE REQUIREMENTS

4.1. Product Quality Performance

Products shall be of high quality and perform well in their intended application.

4.1.1. Print Quality

The print capacity of the product shall comply with the following requirements:

- Fixation of inkjet: There shall not be any scrap of ink on the paper.
- Cleanliness of the printed side of paper: There shall not be any spot, scratch or contaminant on the printing side of paper.

4.2. Product Environmental Performance

4.2.1. Compliance to Environmental Regulations

The applicant is required to comply with relevant environmental legislations. This includes production process, transport and disposal features of the product.

4.2.2. 3R Design

The standard for the design of inkjet ink cartridge are established based on its modularity. Each part of the product or module can be separated from the whole, and hence can be treated as a single entity for the purpose of recyclability, disassembly and reparability. The following requirements have to be fulfilled:

- Connections between parts must be easily located.
- There shall be no inseparable joints between different materials such as glued or welded joints.
- Labels and/or stickers shall be made up of the same material as the part in which they are attached and/or it must not be treated in a manner that would pose difficulty in recycling.

4.2.3. Heavy Metals

The product shall not contain mercury, lead, cadmium, and hexavalent chromium or as listed in DENR AO 2005-05. If the above substances exist in the product as impurities or contaminants, their total weight shall be less than 0.1% of the product.

4.2.4. VOC levels

- Water based inks shall contain less than 5% of VOCs by weight.
- Oil based inks shall contain less than 4% of VOCs by weight.
- Ultra Violet Cured Inks (UV) shall contain less than 2% of VOCs by weight.
- Solvent-Based inks shall contain less than 50% of VOCs by weight.

4.2.5. Colorants

The following azo dyes and pigments shall not be used in the ink formulation.

Name	CAS No.
4-aminodiphenyl	92-67-1
4-aminoazobenzene	60-09-3
Benzidine	92-87-5
4-chloro-o-toluidine	95-69-2
2-naphthylamine	91-59-8
o-aminoazotoluene	97-56-3
2-amino-4-nitrotoluene	99-55-8
p-chloroaniline	106-47-8
2,4-diaminoanisole	615-05-4
4,4'-diaminodiphenylmethane	107-77-9

3,3'-dichlorobenzidine	91-94-1
3,3'-dimethoxybenzidine	119-90-4
3,3'-dimethylbenzidine	119-93-7
3,3'-dimethyl-4,4'- daminodephenylmethane	838-88-0
p-cresidine	120-71-8
4,4'-methylene-bis-(2-chloroaniline)	101-14-4
4,4'-oxydianiline	101-80-4
4,4'-thiodianiline	139-65-1
o-toluidine	95-53-4
2,4-toluidinediamine	95-80-7
2,4,5-trimethylaniline	137-17-7
o-anisidine	90-04-0

4.2.6. Material Safety Data Sheets (MSDSs)

The applicant shall submit MSDS for the specified product.

4.2.7. Take-Back System

The applicant shall have an established and validated retrieval or take back system equivalent to not less than 30% of its total units sold.

4.3. Other Criteria**4.3.1. Packaging**

The products packaging material shall comply with the following:

- Plastic polymers containing halogens shall not be used as packaging materials.
- Primary packaging shall have a plastic resin identification code.
- Packaging materials shall not be treated or manufactured in a manner that would prevent recycling.

4.3.2. Label

The packaging or manual shall be attached with a label indicating a brief description on the proper use of the product.

5. EVALUATION AND VALIDATION

PRODUCT CRITERIA	EVALUATION AND VALIDATION
4.1 PRODUCT QUALITY PERFORMANCE	
<i>4.1.1 Print Quality</i>	Actual test of print quality during Product Evaluation
4.2 PRODUCT ENVIRONMENTAL REQUIREMENTS	
<i>4.2.1 Compliance to Environmental Regulations</i>	Submission of applicable licenses and permits to operate, indicating the manufacturer's compliance with agreements on environmental regulations applicable to the area where the plant is located.
<i>4.2.2 3R Design</i>	The applicant shall submit a portfolio and statement in writing signed by the Chief Executive Officer or counterpart of the company complete with relevant documentations, including samples.**
<i>4.2.3 Heavy Metals</i>	The applicant shall submit a certification or test result from duly recognized or accredited laboratories.*
<i>4.2.4 VOC Level</i>	
<i>4.2.5 Colorants</i>	
<i>4.2.6 Material Safety Data Sheets (MSDSs)</i>	Submission of Material Safety Data Sheets of the toner used
<i>4.2.7 Take-Back System</i>	The applicant shall submit its program on take back program. The program shall ensure a 30% retrieval of the annual sales.** %Retrieval = $\frac{\text{no. units retrieve (end of life)}}{\text{no. units sold}}$
4.3 OTHER CRITERIA	
<i>4.3.1 Packaging</i>	The applicant shall submit a portfolio and statement in writing signed by the Chief Executive Officer or counterpart of the company complete with relevant documentations, including samples.**
<i>4.3.2 Label</i>	The applicant shall submit a portfolio and statement in writing signed by the Chief Executive Officer or counterpart of the company complete with relevant documentations, including samples.**

* Laboratories accepted by national or international accreditation bodies such as the Asia Pacific Laboratory Accreditation Cooperation (APLAC) or International Laboratory Accreditation Cooperation (ILAC)

** Notarized documents

6. PERIOD OF VALIDITY

The product criteria shall take effect for three (3) years from the date of its approval, and subject to change or withdrawal by the **Green Choice Philippines-NELP Board**, if proven necessary at any period of time.

7. REFERENCES:

American Chemical Society. (2000). Is Extended Producer Responsibility Effective? *Environmental Science & Technology* , 170-175.

DENR Administrative Order 2005-05: Toxic Chemical Substances for Issuance of Chemical Control Orders

DENR Administrative Order 2005-27: Revised Priority Chemical List
Republic Act 6969: Toxic Substances, Hazardous and Nuclear Waste Control Act

Hong Kong Green Label Scheme; Product Environmental Criteria for Ink Jet/Laser Jet Printers (GL-006-003)

Hong Kong Green Label Scheme; Product Environmental Criteria for Printing Ink GL-004-004

ISO/IEC 24711: Method for the determination of ink cartridge yield for colour inkjet printers and multifunction devices that contain printer components.

Japan Environment Association; Eco Mark Product Category No. 102: Printing Ink, Version 2.2 Certification Criteria

National Statistics Office. (2003, December 3). *2002 Survey of Information and Communication Technology (SICT) Highlights*. Retrieved March 2, 2008, from National Statistics Office Website: <http://www.census.gov.ph/data/sectordata/sr0373tx.html>

New Zealand Ecolabelling Trust; License Criteria for Printing Inks EC-17-98

Nordic Ecolabelling; Swan Labelling of Toner Cartridges Remanufactures version 4.0

GREEN CHOICE PHILIPPINES
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