Environmental Choice™ Program

CERTIFICATION CRITERIA DOCUMENT

PRC-097

Product: Cleaning Products with Low Potential for Environmental Illness and Endocrine Disruption

Preamble

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.

At least 54 kilotonnes of general purpose cleaners are consumed each year in Canadian homes, primarily to remove soils and stains from hard surfaces. General purpose cleaners may pose a burden on the environment in terms of wastewater loading and treatment, emissions of volatile organic compounds (VOCs), and resource consumption. In 1995, the Environmental Choice Program introduced a criteria document (ECP-33) for certifying general purpose cleaners, which demonstrate industry leadership in terms of environmental preferability. Issues addressed by ECP-33 include biodegradability of surfactants, toxicity and persistence of degraded ingredients, avoidance of phosphate and nitrilotriacetic acid as builders, reduced dependence on organic solvents (i.e. those that are volatile organic compound-emitting) and efficient packaging (i.e. by marketing in concentrated form).

While the products certified under ECP-33 demonstrate overall industry leadership, environmental concerns beyond those specifically addressed in that guideline have arisen since 1998. These issues include, *inter alia*, potential contribution of cleaning product ingredients to environmental illnesses, potential endocrine-disrupting properties of certain ingredients and environmental effects of ethylene oxide (used in surfactant production). These issues may be addressed through the certification of general purpose cleaners which are specifically designed to: produce ultra-low emissions of VOCs and otherwise avoid contributing to environmental illness symptoms by consumers; avoid ethylene oxide; and, demonstrate suitable biodegradability under anaerobic conditions. This Certification Criteria Document thus addresses these new concerns, in addition to requiring the leadership criteria from the original ECP-33 criteria document.

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.

Interpretation

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

"**APEO**" means alkylphenol ethoxylate;

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

"**BCF**" means bioconcentration factor, a measure of the partitioning of a chemical between water and fish;

"**bioaccumulating**" means that an ingredient has a bioconcentration factor (BCF) greater than 100 (or log BCF > 2) when tested according to one of the following:

- *Code of Federal Regulation* 40CFR797.1520,
- ASTM E-1022-84 *Standard Practice for conducting bioconcentration test with fishes and salt-water bi-valve mollusk*, or
- OECD *Guidelines for Testing of Chemicals*, 305C, *Bioaccumulation: Degree of Bioconcentration in Fish*;

The following ingredients are considered non-bioaccumulative do not have to be tested for BCF:

- those that are readily biodegradable;
- those that have a water solubility greater than 1500 mg/L when tested using a method consistent with ASTM E1148-87, *Standard Test Method for Measurement of Aqueous Solubility*, and
- those that have an octanol-water partition coefficient of log P less than 3 when calculated, or tested using the *OECD Guidelines for Testing of Chemicals*, method 117 or 107.

"**builder**" means any substance intended to maintain alkalinity, and/or bind dissolved metal ions (soften the water), and/or keep the soil in suspension, increasing the effectiveness of the detergent. Builders include substances such as phosphates, NTA, EDTA, zeolites, sodium citrate and sodium silicate;

"**chelating agent**" means an organic compound which has the ability to combine with, or chelate, a metal ion in solution, through more than one coordinate bond; the chelate, or heterocyclic ring thus formed, is generally very soluble in water. Two of the most commonly used chelating agents are the builders EDTA and NTA;

"**Cleaning Product with Low Potential for Environmental Illness and Endocrine Disruption**" means any cleaner designed to perform on a variety of hard surfaces for household, institutional and/or recreational purposes, that is specifically manufactured to minimize the exposure to chemicals and allergens harmful to environmental illness sufferers and reduce the potential release of endocrine-disruptors into the environment. It excludes federally-registered disinfecting cleaners intended for use in certain situations where a highly germicidal action is required, such as in hospital and food processing areas;

"**consumer**" means a household, commercial establishment or institutional facility;

"**corrosive**" means a product which causes irreversible tissue damage to the skin;

"**dose**" means the quantity of general purpose cleaner recommended by the manufacturer for normal cleaning conditions to obtain the desired performance. For products that are used undiluted, it is 5 mL. For products that are used in a diluted form, it is the amount recommended by the manufacturer for cleaning floors and, if different from 125 mL of cleaner in 8 litres of water, it shall be the 8 litre equivalent;

"**EC_{50}**" means median effective concentration;

"ECP-33" means the Environmental Choice Program's Certification Criteria Document *General Purpose Cleaners*;

"**EDTA**" means ethylene diaminetetraacetic acid, or ethylene dinitrilotetraacetic acid and any of its salts;

"**environmental illness**", or EI, encompasses a number of related conditions including, *inter alia*, Sick Building Syndrome, Multiple Chemical Sensitivity (MCS), Chemical Hypersensitivity, and Environmental Sensitivity Disorder. In all cases, EI means an acquired hypersensitivity to chemical and allergenic sources triggered by prolonged exposure to a variety of common consumer/industrial substances including, *inter alia*, household cleaners, perfumes, photocopy toners and pesticides. Avoidance of the chemical/allergenic source is considered to be crucial to mitigating the health effects of EI;

"**ethylene oxide**" means a petrochemical product used primarily as an intermediate in the production of several industrial and commercial chemicals. It is an established carcinogen and possesses several other physical and health hazards including, *inter alia*, acute toxicity, high reactivity, reproductive and mutagenic effects, neurotoxicity, and sensitization;

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

"**IC_{50}**" means the inhibiting concentration for a 50 percent effect;

"NTA"means nitrilotriacetic acid or any of its salts;

"**octanol/water partition coefficient**" means the ratio of a chemical's solubility in n-octanol and water at equilibrium;

"**OECD**" means the Organization for Economic Co-operation and Development;

"**potentially bioaccumulating**" means ingredients that meet one of the following:

- a water solubility less than 1500 mg/L when tested using a method consistent with ASTM E1148-87, *Standard Test Method for Measurement of Aqueous Solubility*, or
- an octanol-water partition coefficient of log P greater than 3 when calculated, or tested using the *OECD Guidelines for Testing of Chemicals*, method 117 or 107;

"**readily biodegradable under aerobic conditions**" for a component, is determined using any of the six test methods described in *OECD Guidelines for Testing of Chemicals*, 301A-301F; for a whole formulation, is determined using one of the methods described in *OECD Guidelines for the Testing of Chemicals*, provided that all measurements and calculations are based on the carbon content of the mixture and its degradation, i.e. dissolved organic carbon (DOC) removal (301A or 301E), CO_2 evolution (301-B) or oxygen consumption in the presence of an inhibitor of nitrogen metabolism (301C, 301D or 301F);

"**readily biodegradable under anaerobic conditions**" for a component, is determined using of the test method described in ASTM E 1199-92: *Standard Test Method for Determining the Anaerobic Biodegradation Potential of Organic Chemicals*;

"**recalcitrant metabolites**" means persistent organic molecules formed during the biodegradation of a substance that possess the potential to be absorbed by the cells of living organisms. At least some metabolites are thought to be potential endocrine-disruptors. The potential of a chemical substance to form recalcitrant metabolites upon degradation may be determined through a modification of *OECD 301 A: Coupled Units Test*, as described by Gerike, et al in *Alkyl Polyglucisides* by Hill, et al, VCH Publishers Inc., New York, 1997;

"recognized environmental health organization" means an established research or advocacy organization or government agency that is considered a credible source of information on environmental illnesses. Such organizations include, *inter alia*, the Asthma Society of Canada, the Canadian Lung Association, the Environmental Illness Society of Canada and Envirodesic;

"**solvent**" is a general term for a chemically diverse range of liquid substances which dissolve other materials;

"**surfactant**" means any substance which is intended to reduce surface tension, thereby helping water to surround and suspend soils from hard surfaces; 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.

General Requirements

2. To be authorized to carry the EcoLogo^{M}, the ***Cleaning Product with Low Potential for Environmental Illness and Endocrine Disruption*** must:

   (a) meet or exceed all applicable governmental and industrial safety and performance standards; and

   (b) be provided 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

3. To be authorized to carry the EcoLogo[M], the ***Cleaning Product with Low Potential for Environmental Illness and Endocrine Disruption*** must:

(a) clean common hard surfaces effectively as measured by a method based on CAN/CGSB-2-GP-11, Method 20.3, *Methods of Testing and Analysis of Soaps and Detergents: Cleaning Efficiency*;

(b) not require being labelled as poisonous under the Consumer Chemicals and Containers Regulations of the Hazardous Products Act;

(c) be accompanied by detailed instructions for proper use to maximize product performance and minimize waste;

(d) whenever intended to be diluted with water by the consumer prior to use, be labelled with a clear and prominent statement saying that tepid water should be used for dilution;

(e) not be formulated or manufactured with:
- *i)* phosphates,
- *ii)* NTA,
- *iii)* EDTA,
- *iv)* APEOs,
- *v)* organic ingredients which are bioaccumulating or potentially bioaccumulating, or
- *vi)* any chemicals that are included in the International Agency for Research on Cancer (IARC) lists for proven (Group 1), or probable (Group 2A) carcinogens;

(f) not contain halogenated organic solvents or butoxy-ethanol;

(g) not utilize ethylene oxide in the manufacture of either the whole formulation nor any component thereof;

(h) not contain volatile organic compounds in excess of 0.05% by weight as measured by:
- *i)* *EPA Method 24-24A, 40 C.F.R., Part 60, Appendix A (1991),*
- *ii)* *Method 18,48 Federal Register 48, no. 202, October 18, 1983,*
- *iii)* *Method 1400 NIOSH Manual of Analytical Methods, Volume 1, February 1984,*
- *iv)* *Environmental Protection Agency Method 8240 GC/MS Method for Volatile Organics, September 1986*; or
- *v)* as demonstrated through calculation from records of the amounts of constituents used to make the product.

For products for which the label specifies dilution with water prior to use, the VOC limit shall apply on the concentrated form (i.e. *before* any dilution has taken place);

(i) be readily biodegradable under both aerobic and anaerobic conditions as determined by whole formulation testing;

(j) based on the recommended dose, not be toxic to aquatic life as measured by whole formulation short-term sensitive toxicity test performed on all of the following:

i) on *Ceriodaphnia* according to *Biological Test Method: Test of Reproduction and Survival using the Cladoceran Ceriodaphnia dubia*, Report EPS 1/RM/21, February 1992, Environment Canada, with a resulting IC_{50} > 4000 mg/L,

ii) on a fresh water green algae *Selenastrum capricornutum,* according to *Biological Test Method: Growth Inhibition Test Using the Freshwater Alga Selenastrum capricornutum*, Report EPS 1/RM/25, November 1992, Environment Canada, with a resulting IC_{50} > 2000 mg/L, and

iii) on the bacteria *Photobacterium phosphoreum*, according to *Biological Test Method: Toxicity Test Using Luminescent Bacteria (Photobacterium phosphoreum)*, Report EPS 1/RM/24, November 1992, Environment Canada, with a resulting IC_{50} > 1000 mg/L;

(k) based on the recommended dose, have a calculated oral rat toxicity LD_{50} > 5000 mg/kg, as measured by whole formulation toxicity test performed according to one of the following:

i) *OECD Guideline No. 401*,

ii) *US Toxic Substances Control Act 40 CFR 798*, or

iii) *Federal Insecticide, Fungicide and Rodenticide Act: 40 CFR 158, 162*;

(l) demonstrate a minimal potential for the introduction of endocrine-disrupting by-products into the receiving environment, through a complete absence of detectable recalcitrant metabolites formed during biodegradation tests;

(m) demonstrate low potential for skin irritancy through an appropriate test of either the whole formulation or active ingredients. An acceptable standard would be an irritation index score of <12.0, as determined from the HET-CAM test; and

(n) be listed with a recognized environmental health organization as a product not harmful and/or potentially beneficial to people suffering from, or prone to, environmental illness.

Verification

4. 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.

5. If applicable, compliance with requirement 2(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

6. The EcoLogo may appear on wholesale or retail packaging, or on the product itself, provided that the product meets the requirements in this document.

7. 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.

8. 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}*.

9. It is recommended that a criteria statement appear with the EcoLogo whenever the EcoLogo is used in association with the ***Cleaning Product with Low Potential for Environmental Illness and Endocrine Disruption***. 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.

   ECP suggested criteria statement wording for this product type is "*Cleaning Product with Low Potential for Environmental Illness and Endocrine Disruption*". The licensee may propose other wording for the criteria statement, but any such proposed wording must be approved by the Environmental Choice Program.