EcoLogo®

Environmental Standard - Certification Criteria Document

CCD 146:
Hard Surface Cleaners

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A terrachoice company

Ottawa | Philadelphia
T 1.800.478.0399 F 613.247.2228
ecoinfo@terrachoice.com
www.ecologo.org

EcoLogo Standard: CCD 146
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Introduction

The EcoLogo® Program develops standards designed to reduce environmental impacts by specifying criteria for: safer chemicals and materials, use of recycled and recyclable materials, and minimizing pollution generated by the production, use and disposal of these products and their packaging. EcoLogo® is committed to recognizing a wide variety of environmentally preferable chemical-based hard surface cleaners.

EcoLogo® is a Government of Canada official mark used under license from Environment Canada. TerraChoice is not an agent of Environment Canada.

This standard establishes human health and environmental criteria for the certification of hard surface cleaners. However, there exist many differing types of hard surface cleaners, many of which perform diverse functions and which are chemically unique. Product class-specific certifications that can currently be granted under this standard include the following:

- Bathroom Cleaners
- Boat and Bilge Cleaners
- Cleaners for Cooking Appliances
- Degreasers
- Dish Washing Detergents
- General Purpose Cleaners
- Industrial Cleaners
- Vehicle Cleaners
- Window and Glass Cleaners

Hard surface cleaners not already considered may also be certified under this standard if they meet the following conditions:

1) A review of the product by EcoLogo® results in a finding that the likely environmental and human health impacts associated with the expected use of the product are sufficiently addressed by the criteria in CCD-146 standard; and,
2) The product complies with all base criteria of the standard, including those additional criteria that apply for products intended for household use. Base criteria represent the most stringent thresholds for cleaning products, allowing products outside the above categories that are capable of meeting these criteria to be certified as cleaners under this standard.

Cleaning and degreasing products that are biologically-based and those products requiring registration under the Federal Insecticide, Fungicide and Rodenticide Act in United States are outside the scope of this standard. Any manufacturer wishing to have a product certified under CCD-146 may also, at additional expense, opt to request that EcoLogo® conduct a formal review of the product for the purposes of evaluating and establishing criteria specific to the new product class. Contact the EcoLogo® program for more details.

Notice

Any reference to a standard means to the latest edition of that standard. The EcoLogo® Program reserves the right to accept equivalent test data for the test methods specified in this document.

Definitions

1) In this standard:

"aerosol" means a cloud or fine spray of particles of a liquid in a gas;

"active ingredient" refers to an ingredient that contributes to the intended function of the product;

"AOEC" refers to the Association of Occupational and Environmental Clinics;

"aromatic solvent" means those organic compounds containing:

- at least one ring structure consisting of six carbon atoms joined by alternating single and double bonds, and
- two or less simple substitutions (additional chemical groups) to the basic benzene ring.

Examples of aromatic compounds under this definition include but are not limited to benzene, toluene, phenol, xylenes, and benzyl alcohol;

"as sold" means the most concentrated form of the product produced by the manufacturer (i.e. undiluted) that is packaged for sale;

"asthma" refers to a condition of variable airflow obstruction, commonly resulting in coughing, wheezing, dyspnea, or chest tightness;

"asthmagen" means any substance that through inhalation exposure contributes to the development of asthma in a human. In this standard, an asthmagen is any substance classified by the AOEC as generally accepted (G), and those reviewed and meeting criteria for sensitizer-induced (Rs);

"ASTM International" means a standard setting organization formerly known as the American Society for Testing and Materials;

"as used" means the form of the product after it has been diluted to the lowest dilution rate (i.e. most concentrated) indicated on the label by the manufacturer for the products intended use;

"bioaccumulating" means the biological sequestering of a substance at a higher concentration than that at which it occurs in the surrounding environment or medium. Within this standard an ingredient is considered bioaccumulating if it 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, or;
- ASTM E-1022-94 (2007) Standard Guide for conducting bioconcentration test with fishes and salt-water bi-valve mollusc, or;
- OECD Guidelines for Testing of Chemicals, 305C[1], Bioaccumulation: Degree of Bioconcentration in Fish;

The following ingredients are considered non-bioaccumulative and 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, Kow, of less than 3 when calculated or tested using the OECD Guidelines for Testing of Chemicals, method 117 or 107;

"bioconcentration factor" means the ratio of chemical concentration in an organism to that in surrounding water;

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

"bulk" for industrial or institutional products, means products sold in drums or totes of 15 gallons or more in volume. For household applications, means a product sold in a quantity or volume greater than 3 times the typical non-bulk product;

"carcinogen" means any substance that is an agent directly involved in the exacerbation of cancer or in its propagation. In this standard, a carcinogen is any substance classified by IARC (Group 1, 2A, 2B), NTP (Groups 1 and 2), EPA IRIS (Weight of evidence A, B1, B2, C, GHS (Categories 1 or 2), or by OSHA (29CFR 1910.1003(a)1);

"CCCR" means the Canadian Consumer Chemicals and Containers Regulations;

"CSMA" means the Chemical Specialities Manufacturers Association, the former name of the Consumer Speciality Products Association (CSPA);

"chlorinated plastic materials" means packaging materials made of polyvinyl chloride (PVC) or other chlorinated compounds. Vinyl chloride is a known carcinogen;

[1] OECD 305C has been withdrawn and consolidated into OECD 305

"disinfectants" as defined by US EPA are those which are used on hard, inanimate surfaces and objects to destroy or irreversibly inactivate infectious fungi and bacteria, but not necessarily their spores;

"EC_{50}" means the median effective concentration. It is the concentration that is estimated to cause some defined toxic effect to 50% of the test organisms; (e.g., immobilization, or serious incapacitation, for instance luminescence in the bacteria test outlined in Appendix 2);

"ethylene glycol ethers" means a group of solvents and plasticizers characterized by the general form of an ethylene glycol (1,2 ethanediol) group bound to an alkyl chain by an ether (oxygen) bond. Ethylene glycol monomethyl ether and ethylene glycol monoethyl ether and their acetates are reproductive toxins. Butoxyethanol (ethylene glycol monobutyl ether) has shown haemolytic (destruction of red blood cells) properties. These three compounds are considered "toxic" and ethylene glycol monopropyl ether also shows haemolytic properties;

"endocrine disruptor" means an exogenous substance or mixture that alters function(s) of the endocrine system and consequently causes adverse health effects in an intact organism, or its progeny, or (sub)populations. Only chemicals listed as category 1 or category 2 on the European Union Priority List of Endocrine Disruptors are considered endocrine disruptors for the purposes of this standard;

"flash point" means the minimum temperature of a liquid at which the vapors given off are sufficient to create a flammable mixture with air that will ignite when exposed to an open flame, when tested in accordance with the ASTM Test methods D93-80[2], D92-05a, or D3278-82, or ISO Test Methods 13736, or 2719;

"FD&C" means compounds approved by the U.S. Food and Drug Administration as safe for use in foods, drugs, and cosmetics;

"GHS" means the Globally Harmonized System of classification and Labeling of Chemicals, developed by the United Nations;

"HET-CAM" means the Hen's Egg Test on the Chorioallantoic Membrane;

"halogenated solvents" means any solvent containing halogens including fluorine, chlorine, bromine and iodine. Halogens are highly reactive and have a tendency to bioaccumulate and exhibit toxic effects;

"IARC" means International Agency for Research on Cancer, an organization that lists known and suspected carcinogens;

"IC_{50}" means the inhibiting concentration for a 50% effect on the test organisms. It represents a point estimate of the concentration of test materials that can cause a 50% impairment in a biological function (e.g. reduced growth, impairment of the reproductive, immune or metabolic systems, and decreased ability to survive). These potential impacts do not kill the organism but may reduce the total population over time thereby decreasing aquatic productivity;

[2] Replaced with ASTM D93 - 10a Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester

"individual consumers" means individuals purchasing products for domestic and household use;

"ingredient" means any chemical or compound present in greater than 0.01% by weight in a product formulation;

"institution" means office, school, hospital, large retail and other commercial or public workplace setting where, generally, professional cleaning companies (e.g., janitorial services), provide cleaning of everyday soil from floors, bathrooms, walls and other hard surfaces;

"industrial setting" means manufacturing or processing plant, resource extraction site, auto repair shop, printing press, commercial carwash or any other contained workplace area that requires cleaning of specific and extraordinary soil from hard surfaces;

"LC_{50}" means median lethal concentration. It is the concentration of material that is estimated to be lethal to 50% of the test organisms;

"metal" means an element that forms positive ions when its compounds are in solution and whose oxides form hydroxides rather than acids with water. "Toxic metals" are metallic elements that disrupt essential physiological processes. Examples of "toxic metals" and those with the potential for toxicity include, but are not limited to arsenic, cadmium, cobalt, hexavalent chromium, manganese, mercury, nickel, selenium, silver, and lead;

"mutagen" means a chemical that produces a mutagenic effect on an exposed human or animal. For the purposes of this standard, a mutagen is defined as a substance that is evaluated to be a Category 1A, 1B, or 2 substance as per the GHS Germ Cell Mutagenicity (2007);

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

"octanol/water partition coefficient" describes the ratio of a chemical's distribution (e.g. solubility) in n-octanol and water at equilibrium;

"ozone depleting substances" refers to a family of man-made compounds defined by the Montreal Protocol that have been shown to participate in atmospheric reactions that deplete the stratospheric ozone layer;

"polish" means a hard surface (e.g., cars) care product designed to provide a protective film that generally may also serve a cleaning (i.e., soil removal) purpose. The terms "wax" and "polish" are commonly used interchangeably (see wax);

"post-consumer" means material that has served its end-use at the consumer level, has been discarded by the consumer, and unless diverted, would enter the waste stream;

"potentiation" means the increased effect of a toxic chemical acting concurrently with a "nontoxic" one;

"primary packaging" means the packaging elements that are in direct contact with the product. Examples of primary packing include the bottle, cap and all labels attached to a bottle of dish liquid;

"propellants" means compressed gases or vapors in a container that, upon release of pressure and expansion through a valve, carry another substance from the container. Typical propellants are carbon dioxide, propane, butane, and isobutane;

"quaternary ammonium compound" or "quat" is a compound, often found in disinfectants, that chemically is an organic nitrogen compound in which a central nitrogen atom is joined to four organic cations and one anionic acid radical. Such compounds include, inter alia, alkyl dimethyl benzyl ammonium chloride and didecyldimethylammonium chloride;

"readily biodegradable" for an ingredient, 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 for each ingredient, 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);

"recycled " means post-consumer material and/or 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;

"refillable package" means a container which, after being used, is returned to the manufacturer or its agent and is being refilled by the manufacturer or its agent at least 5 times with the product it is intended to contain;

"repeated dose toxicity " sometimes referred to as chronic toxicity, means the degree to which an ingredient or mixture of ingredients can harm humans or animals through repeated exposures over an extended period of time;

"reproductive toxin" means a substance or agent that can cause adverse effects on the human reproductive system. In this standard, reproductive toxins are chemicals listed as male or female reproductive or developmental toxins on the State of California Proposition 65 list under the State of California Safe Drinking Water and Toxic Enforcement Act of 1986;

"sanitizers" as defined by US EPA are those products which are used to reduce, but not necessarily eliminate, microorganisms from the inanimate environment to levels considered safe as determined by public health codes or regulations;

"secondary packaging" means the all packaging associated with the product that is not primary packaging. Examples include corrugated cardboard cartons, plastic wrap, and chipped cardboard packaging for bag refills;

"skin sensitizer" a substance that will lead to an allergic response following dermal contact;

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

"source-reduced package" means a package that represents at least 20% reduction in material, by weight, as compared to those which are commonly used to contain the product;

"surfactant" (surface active agents) means an ampiphillic (dually water repelling and water attracting) substance that reduces the surface tension of water allowing it to rinse and clean surfaces. Surfactants also disperse soil and hold it in solution. They are the key active ingredients in most cleaning products;

"synergy" means the combined toxic effect of two or more chemicals is greater than the sum of the effect of each chemical given alone;

"toxic" means the degree to which a substance or mixture of substances can harm humans or animals. Acute toxicity is the ability of a substance / mixture to cause harmful effects in an organism through a single or short-term exposure. Subchronic toxicity is the ability of the substance / mixture to cause effects for more than one year but less than the lifetime of the exposed organism. Chronic toxicity is the ability of a substance or mixture of substances to cause harmful effects over an extended period, usually upon repeated or continuous exposure, sometimes lasting for the entire life of the exposed organism;

"volatile organic compound" or "VOC" means any organic compound which participates in atmospheric photochemical reactions. It excludes those organic compounds, also referred to as "exempt" compounds that the EcoLogo® Program designates as having negligible photochemical reactivity (see Appendix 4);

The VOC content shall be determined in accordance with the California's Air Resources Board (CARB) ARB Method 310, modified not to allow exemption for fragrances. Organic compounds with vapour pressure less than 0.1 mm mercury and boiling points greater than 216°C as determined by CARB Method 310 are exempted;

"wax" means a hard surface (e.g., cars) care product designed to provide a protective film that generally does not serve a cleaning purpose. A wax is an organic mixture or compound with low melting point and high molecular weight, which is solid at room temperature. The terms "wax" and "polish" are commonly used interchangeably (see polish);

General Requirements

2) To be authorized to carry the EcoLogo®, all hard surface cleaners for household, institutional, and industrial use must products must:

   a) Meet or exceed all applicable governmental and industrial safety and performance standards; and
   b) Be manufactured and transported in such a manner that all steps of the process, including the disposal of waste products arising there from, will meet the requirements of all applicable governmental acts, bylaws and regulations.

Hard Surface Cleaner requirements

Human Health and Environmental Impacts

3) To be authorized to carry the EcoLogo®, all hard surface cleaners intended for institutional and industrial use must meet the following requirements:

   a) In lieu of whole product toxicity testing, pre-existing toxicity information for individual chemicals must be used when sufficient data exist to characterize the entire chemical formulation;

   b) demonstrate that the undiluted product is not toxic to humans, as calculated by weighted average of individual ingredients, for each of the following routes of exposure or requirements stipulated in Appendix 1;
      i) Each ingredient should demonstrate low oral toxicity with LD_{50} >5,000 mg/kg using procedures defined in Part 3 of the Globally Harmonized System for Classification and Labeling of Chemicals (GHS),
      ii) each ingredient should demonstrate low dermal toxicity with LD_{50} > 4,000 mg/kg (using procedures defined in Part 3 of the Globally Harmonized System for Classification and Labeling of Chemicals (GHS),
      iii) not be classified as harmful or toxic under CCCR SOR/2001-269 for inhalation exposures,
      iv) if product is sold as a glass cleaner, have a calculated oral rat toxicity LD_{50} >10,000 mg/kg, where each ingredient has been tested according to OECD Test Guidelines for acute mammalian toxicity testing (Methods 420, 423 or 425),

      Note: If insufficient data exist to characterize all ingredients, the product may demonstrate conformance to the above values through whole product testing;

   c) Not be formulated with ingredients considered toxic under GHS "Specific Target Organ Systemic Toxicity - Repeated Exposure" (UN, 2007) for 90-day exposures;

   d) In addition to the toxicity criteria (3b,) also not be considered hazardous under:
      i) in the US, the Federal Hazardous Substances Act (16 CFR Part 1500), and/or,
      ii) in Canada, Class D (Division 1 Subdivision A and Division 2 Subdivision A) or Class E of the Controlled Products Regulations (SOR/88-66) of the Hazardous Products Act;

   e) The *as sold* product shall not contain any ingredients identified as an asthmagen as defined in this standard;

   f) The as sold product shall not contain ingredients identified as Subcategory 1A skin sensitizers under GHS 3.4 (Skin or Respiratory Sensitization);

g) Have limited effects on aquatic life based on whole formulation short-term sensitivity toxicity testing of the recommended dose. The use of pre-existing toxicity information is required where such information exists. In lieu of such data, evidence on the limited toxicity of individual ingredients on a number of aquatic organisms, may be accepted (see Appendix 2 for details);

h) Be readily biodegradable under aerobic conditions as determined by whole formulation testing. In lieu of such testing, evidence of ready biodegradability at the ingredient level will be accepted if sufficient evidence exists of the ready biodegradability of each ingredient within the formulation. In the absence of published data, QSAR data from EPA's EpiSuite may be considered;

i) Not be formulated or manufactured with any ingredient that bioaccumulates or that form degradation products that bioaccumulate;

j) If formulated with fragrances, use only fragrances that conform with the Code of Practice for the International Fragrance Association. In addition, all ingredients must be disclosed to the EcoLogo Program and all fragrance ingredients shall have a median lethal dose (LD50) greater than 50 mg/kg for oral exposure and 200 mg/kg for dermal exposure. Fragrances meeting these requirements will not be evaluated under other criteria in this standard.

   For the purposes of this standard, any essential oil present at >0.01% in the product, as sold, will be evaluated as a single ingredient. For any synthetic fragrances present at >0.01% in the product, as sold, applicant must provide individual data for all fragrance ingredients present at >0.01% in the synthetic fragrance[3].

k) If formulated or manufactured with colorants, use only colorants certified and permitted by the US Food and Drug Administration for food, drug, and cosmetic (FD&C) use, or Design for Environment approved, or a natural color ingredient, or polymeric colorants. In addition, all ingredients must be disclosed and each ingredient must comply with all criteria in this standard.

Physical Properties

4) To be authorized to carry the EcoLogo®, all hard surface cleaners must, as sold (e.g., before dilution if applicable):

   a) Have a pH of greater than 2.0 and equal to or less than 11.5[4];

   b) Have a flash point > 61°C, as determined when tested in accordance with the ASTM Test methods D93-80, D92-05a, or D3278-82, or ISO Test Methods 13736, or 2719. Product must have a maximum temperature usage which does not exceed 17°C below flash point;

[3] Criteria amended following comments received from stakeholders
[4] Unless it can be demonstrated that the product is not corrosive at a pH of less than 2.0 or greater than 11.5

c) For institutional/ industrial use, the product, except for toilet bowl/urinal cleaners, must be concentrated to at least the following levels[5]:
   i) General purpose cleaners: 1:32,
   ii) Glass and restroom cleaners: 1:16.

Prohibited and Restricted Compounds

5) To be authorized to carry the EcoLogo®, all hard surface cleaners must:

a) Not be formulated or manufactured with any intentionally added ingredients that are carcinogens, mutagens, or reproductive toxins, nor any compounds known to produce or release carcinogens, mutagens, or reproductive toxins;

b) Not be formulated or manufactured with endocrine disruptors;

c) Not contain more than 1% by weight of volatile organic compounds as used (e.g., after dilution if applicable), or more than 12% by weight as sold (e.g., in concentrated form if applicable), with the following exceptions;

   i) degreasers must contain less than 3% by wt. VOC as used, and less than 25% as sold.

d) Not be formulated or manufactured with solvents belonging to any of the following group;
   i) aromatic solvents or halogenated solvents,
   ii) the following ethers or their acetates,
      a) ethylene glycol ethers,
      b) diethylene glycol ethers,

e) Not be formulated or manufactured with any of the following;
   i) ethylene diaminetetracetic acid, ethylene dinitrilotetracetic acid, nitrilotriacetic acid, or salts of these compounds,
   ii) inorganic phosphates,
   iii) ammonia or ammonium compounds,
   iv) phthalates,
   v) ozone depleting substances,
   vi) toxic metals, either in elemental form or in compounds,
   vii) anti-microbial compounds, such as quaternary ammonium compounds or sodium or calcium hypochlorites;

f) If formulated using thickeners, use only thickeners classified by the U.S. Food and Drug Administration as food grade.

[5] Wherever applicable

Packaging

6) To be authorized to carry the EcoLogo®, all hard surface cleaners (including both product and refills) must:

   a) Be packaged in materials, including primary and secondary packaging, that;
      i) do not contain PVC or other types of chlorinated materials,
      ii) do not contain intentionally added heavy metals of lead, mercury, cadmium, and hexavalent chromium, excepting those added as a result of using recycled content, the sum of which shall not exceed 100 ppm by weight;

   b) If plastic;
      i) be clearly marked with the appropriate Society of Plastics Industry recycling classification,
      ii) be recyclable, refillable, represent a source-reduced package, or;
      iii) contain a minimum post-consumer content of 25%;

   c) If non-plastic;
      i) are comprised of a minimum of 90% by weight recyclable or compostable materials and,
      ii) demonstrate that efforts were made to use the maximum available post-consumer material content;

   d) If available in a concentrated form, be packaged with explicit instructions for safe dilution and use;

   e) if packaged in bulk, have an option available for the collection and reuse of empty totes and drums;

   f) Not be manufactured or formulated in an aerosol that uses propellants;

   g) If concentrated, not be sold in ready to use packaging such as wipes or spray bottles;

   h) Be accompanied by detailed instructions on proper product use, and indications for the proper waste disposal and the recyclability of the container and/or packaging materials.

Product Performance

7) To be authorized to carry the EcoLogo®, all hardsurface cleaners:

   a) Must clean common soils in its category effectively as determined by the appropriate category test method(s) specified in Appendix 3- Part 1;

   b) In a category without a specified test method, must demonstrate the effective removal of soil or other contaminants from the intended surface as well as two other nationally recognized, functionally equivalent products using a test method that complies with the specifications listed in Appendix 3- Part 2.

Product Labeling

8) To be authorized to carry the EcoLogo®, all hardsurface cleaners:

   a) If sold as a glass or window cleaner, should be accompanied by detailed instructions which specifically recommend the use of a reusable media or tools (e.g., cloths or rubber "squeegee") over the use of disposable materials;

   b) If sold as a boat and bilge cleaner, must be labelled with explicit instructions that bilges should be pumped out at marina facilities and not overboard, and that the boat should be cleaned away from shorelines;

   c) If sold as an industrial cleaner, must be clearly identified as a product not intended or to be sold for domestic, household or institutional use, and be accompanied by detailed instructions for the proper disposal of waste materials resulting from the use of the product. Examples of materials include the remains of degreasing baths and rags carrying the product;

   d) Whenever intended to be diluted with water by the consumer prior to use, product must be labelled with a clear and prominent statement saying that unheated tap water should be used for dilution[6].

[6] Dishwashing detergents are exempted

Household Hard Surfaces Requirements

9) To be authorized to carry the EcoLogo®, all hard surface cleaners intended for use in the household must:

a) Meet each of the criteria previously defined for products sold for institutional or industrial use, unless otherwise specified in this section below;

b) In addition to meeting the specific requirement of section 3, not require being labeled as harmful or an irritant, except for product categories referenced in 9(c), under:
   i) in the US, the Federal Hazardous Substances Act (16 CFR Part 1500), and/or,
   ii) in Canada, Part 1 and Part 2 of the Consumer Chemicals and Containers Regulations of the Hazardous Products Act;

c) If sold as a boat and bilge cleaner or a cooking appliance cleaner, or degreaser, not require being labeled as corrosive under:
   i) in the US, the Federal Hazardous Substances Act (16 CFR Part 1500), and/or,
   ii) in Canada, the Consumer Chemicals and Containers Regulations of the Hazardous Products Act;

d) Have a pH no less than 3 and no greater than 11[7];

e) In addition to meeting the packaging requirements for institutional products, be packaged in a format that meets one of the following:
   i) Be provided in a concentrated format, or,
   ii) Be provided in a ready-to-use (non-concentrated) format that is accompanied by information on the product label identifying
      - if bulk versions and/or concentrated versions are available, and
      - exactly how consumers can obtain the bulk and/or concentrated versions.

[7] Unless it can be demonstrated that the product is not corrosive at a pH of less than 3.0 or greater than 11

Verification

10) To verify a claim that a product meets the criteria listed in the document, the EcoLogo® Program will require access, as is its normal practice, to relevant quality control and production records and the right of access to production facilities on an announced basis.

11) Compliance with section 2(b) shall be attested to by a signed statement of the Chief Executive Officer or the equivalent officer of the manufacturer. The EcoLogo® Program shall be advised in writing immediately by the licensee of any non-compliance which may occur during the term of the license. On the occurrence of any non-compliance, the license may be suspended or terminated as stipulated in the license agreement.

Conditions for Use of EcoLogo®

12) The EcoLogo® mark may appear on wholesale or retail packaging, or on the product itself, provided that the product meets the requirements in this standard.

13) A criteria statement must appear with the EcoLogo® whenever it is used in association with hard surface products. 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.

The suggested criteria statements for select product categories covered under this standard are as follows:

- Glass and Window Cleaners – "Glass and Window Cleaners"
- Boat and Bilge Cleaner – "Boat and Bilge Cleaner",
- Vehicle Cleaner - "Vehicle Cleaners for Household / Institutional Use"
- Degreasers - "Degreasers",
- Industrial Cleaners - "Industrial Cleaner"
- Cooking Appliance Cleaner - "Cooking Appliance Cleaner",
- Bathroom Cleaner - "Bathroom Cleaner",
- Dish washing detergents – "Dish Cleaner", and
- General Purpose Cleaners – "General Purpose Cleaner".

The suggested criteria statement wording for other product types is "Multi-purpose Cleaner." The licensee may propose other wording for the criteria statement, but any such proposed wording must be approved by the EcoLogo® Program.

Contact Information

For additional copies of this standard, or for more information about the EcoLogo® Program, please contact:

TerraChoice Environmental Marketing Inc.
Toll Free: 1-800-478-0399
Telephone: (613) 247-1900
Email: info@ecologo.org

Appendix 1: Human Health and Environmental Impacts

To be authorized to carry the EcoLogo®, all hard surface cleaners intended for institutional and industrial use must meet the following requirements (using pre-existing test data where available), as required under Section 3(b):

a) Demonstrate that the undiluted product is not toxic to humans, as calculated by weighted average of individual ingredients, for each of the following routes of exposure;
   i) for oral exposures, have a oral rat toxicity LD_{50} >5,000 mg/kg, where each ingredient has been tested according to OECD test guidelines for acute mammalian toxicity testing defined in OECD test methods, 420, 423, or 425 or by US EPA OPPTS Harmonized Guideline: 870.1200 Acute dermal toxicity 870.1100,
   ii) for dermal exposures, have an LD_{50} > 4,000 mg/kg , where each ingredient has been tested according to OECD test guidelines for acute mammalian toxicity testing defined in OECD test method 402 or US EPA OPPTS Harmonized Guideline: 870.1200,
   iii) not be classified as harmful or toxic under CCCR SOR/2001-269 for inhalation exposures,
   iv) If product is sold as a glass cleaner, have a calculated oral rat toxicity LD_{50} >10,000 mg/kg, where each ingredient has been tested according to OECD Test Guidelines for acute mammalian toxicity testing (Methods 420, 423 or 425),

   If insufficient data exist to characterize all ingredients, the product may demonstrate conformance to the above values through whole product testing.

Appendix 2: Determining Aquatic Toxicity

CCD-146 has requirements to test the whole formulation of the product on a range of metabolically diverse aquatic organisms (animal, plant, bacteria) in order to more accurately capture the potential impact as the product enters the aquatic ecosystem. This approach is also intended to reflect the potential for synergy and potentiation between ingredients.

However, since whole formulation test results may not be readily or easily available, other data will be accepted if it meets the requirements outlined in Part 2.

Part 1- Whole Formulation Testing

Based on the recommended dose for typical use, the whole formulation must not adversely inhibit at least one species in three of the four following taxonomies: vertebrate, invertebrate, microalgae, and bacteria. These species should be physiologically and ecologically similar to organisms that reside in North American ecosystems. Listed below are required thresholds and acceptable methods.

Thresholds:

The following thresholds apply only to the products:

a) Household cleaners: 1,000 mg/l (e.g., $IC_{50} > 1{,}000$ mg/l);
b) Institutional cleaners: 500 mg/l (e.g., $IC_{50} > 500$ mg/l);
c) Industrial cleaners: 200 mg/l (e.g., $IC_{50} > 200$ mg/l).

Methods:

a) Aquatic vertebrate species using **one** of the following;
   i) EPA-600-R95-136, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms", US Environmental Protection Agency, 1995; or
   ii) Report EPS 1/RM/22, "Biological Test Method: Test of Larval Growth and Survival Using Fathead Minnows", Environment Canada, 2011; or
   iii) Report OECD/OCDE-203, "*Fish,* Acute Toxicity Test", Organization for Economic Cooperation and Development, 1992; or
   iv) ISO 7346-2, "Water quality – Determination of the acute lethal toxicity of substances to a fresh water fish", 1996.

b) invertebrates species using **one** of the following;
   i) EPA-821-R02-013, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" (*Ceriodaphnia dubia)*, US Environmental Protection Agency, 2002, or,
   ii) EPA-600-R95-136, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms", US Environmental Protection Agency, 1995, or,

iii) Report OECD/OCDE-202, "*Daphnia magna* Acute Toxicity Test", Organization for Economic Cooperation and Development, 2004, or,
iv) Report EPS 1/RM/21, "Biological Test Method: Test of Reproduction and Survival Using the *Cladoceran Ceriodaphnia dubia*", Environment Canada, 2007, or,
v) Report EPS 1/RM/27, "Biological Test Method: Fertilization Assay Using Echinoids (Sea Urchins and Sand Dollars)", Environment Canada, 2011.

c) Freshwater microalgae using **one** of the following;
i) Report EPA-821-R02-013 (section 14), "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", October 2002, U.S. Environment Protection Agency, or,
ii) Report EPS-1-RM-25, "Biological Test Method: Growth Inhibition Test Using a Freshwater Algae", March 2007, Environment Canada, or,
iii) Freshwater Alga and Cyanobacteria, Growth and Inhibition Test, Report OECD/OCDE-201,Organization for Economic Cooperation and Development, or,
iv) ISO 8692: 2004, "Water quality – Freshwater algal growth inhibition test with unicellular green algae", International Organization for Standardization.

d) Bacteria using **one** of the following;
i) ASTM D5660-96(2009), "Standard Test Method for Assessing the Microbial Detoxification of Chemically Contaminated Water and Soil Using a Toxicity Test with a Luminescent Marine Bacterium", 2009, or,
ii) ISO 11348-1:2007, "Water quality -- Determination of the inhibitory effect of water samples on the light emission of *Vibrio fischeri* (Luminescent bacteria test) -- Part 1: Method using freshly prepared bacteria", International Organization for Standardization, 2007, or,
iii) Report EPS 1/RM/24,"Biological Test Method: Toxicity Test Using Luminescent Bacteria *Photobacterium phosphoreum*", Environment Canada, November 1992.

If user instructions for concentrated cleaners (i.e. those that are diluted for normal use) recommend use at full strength for specific cleaning applications, then the full strength dose must have a IC_{50} >100 mg/l on all of the above species.

Part 2- Requirements of Individual Ingredients

No single ingredient present at 0.01% or greater by weight of the product as sold must be:

a) Very acutely toxic (has a LC_{50} of <1 mg/l or an EC/IC_{50} of < 0.02 mg/ l) when tested on three different species of divergent taxonomic and ecological ranks. These species should be physiologically and ecologically similar to organisms that reside in North American ecosystems. The methods listed in Part 1 should be used;
b) Acutely toxic (has a LC_{50} > 1 mg/l and <100 mg/l or an EC/IC_{50} >0.02 mg/l and <2mg/l) when tested on three species as described above, and potentially bioaccumulating; or
c) Data from other aquatic toxicity tests deemed acceptable to the EcoLogo® Program.

However, to address potential synergistic impacts the entire whole product formulation must be tested against the requirements in Part 1 if:

a) More than 5% by weight of the product as sold is made up of ingredients considered acutely toxic; or
b) If the product contains more than 8 active ingredients (surfactants, builders, solvents, acid, and alkalis that act to remove soil).

Exceptions:

a) Whole product formulation toxicity testing is required if the amount of acutely toxic ingredients is above 5% by weight multiplied by a proportion factor for concentration above 64:1. For example, a product with a recommended typical dilution of 256:1, the proportion factor is 4 (256/64 = 4). Therefore, the amount of acutely toxic ingredients above which whole formulation testing required is 20% (5% x 4).

Appendix 3: Determining Product Efficacy

CCD-146 requires that products demonstrate the effective cleaning of soil and other contamination from their intended surfaces in order to be awarded the EcoLogo®. A list of test protocols identified and deemed acceptable to the EcoLogo® Program is presented in Part 1 of this Appendix 3. A procedure for demonstrating the cleaning efficacy of products in categories with no defined test procedure is presented in Part 2.

Part 1- Procedures to Demonstrate Product Efficacy

Products must demonstrate their ability to clean the intended surfaces by removing common soils and surface contaminants. Test procedures acceptable for demonstrating the effectiveness of the product for individual product categories include those listed below. All testing must be performed at the most dilute, least concentrated level recommended by the manufacturer for common cleaning applications unless otherwise specified by the test protocol.

Procedures

a) General Hard Surface Cleaners[8];
   i) If sold as a general purpose cleaner, then demonstrate at least 75% efficiency in removing soil as per CSPA DCC-17 "Greasy Soil Test Method for Evaluating Spray-and-Wipe Cleaners Used on Hard, Non-Glossy Surfaces".

b) Bathroom Cleaners;
   i) If sold as a soap scum remover, then demonstrate at least 75% efficiency in removing soil (soap scum) in ASTM method d5343 "Standard Guide for Evaluating Cleaning Performance of Ceramic Tile Cleaners",
   ii) if sold as a toilet bowl or urinal cleaner, then demonstrate efficiency in removing mineral stains as measured by an acceptable test method (see Appendix 3- Part 2),
   iii) If sold as a bathroom cleaner, then demonstrate at least 75% efficiency in removing soil in CSPA DCC-16 "Guidelines for Evaluating the Efficacy of Bathroom Cleaners" – Spot, Soap Scum, or Lime Soap removal.

c) Boat and Bilge Cleaners;
   i) if sold as a wax, perform as well as the control product in a test based on ASTM D4330-94(2008) "Standard Practice for Evaluation of Fibreglass Boat Polish and Wax",
   ii) if sold as a bilge cleaner, meet cleaning efficiency requirements outlined in Section 4.5 of the U.S. military specification document MIL-C-22230[9] "Cleaning Compound, Fuel Tank & Bilge".

[8] CSPA DCC-15 previously referred was not the most appropriate test for determining cleaning efficiency and as such, has been removed
[9] MIL-C-22230 has been replaced with MIL-C-22230B

d) Cooking Appliance Cleaners;
   i) clean oven, grill and barbeque surfaces effectively as measured by the Federal specification document A-A-7A[10] "Cleaning Compound, Solvent-Detergent (Alkaline Cleaner – Degreaser for Ovens, Grills and Washable Surfaces)",
   ii) If sold as an oven cleaner demonstrate at least 75% cleaning efficiency in removing soil as per CSPA DCC-12 "Guidelines for Screening the Efficacy of Oven Cleaners".

e) Degreasers and Industrial Cleaners must demonstrate at least 75% cleaning efficiency as measured by any of the following test methods;
   i) ASTM Method G122-96(2008) "Standard Test Method for Evaluating the Effectiveness of Cleaning Agents",
   ii) CSPA DCC-17 "17 "Greasy Soil Test Method for Evaluating Spray-and-Wipe Cleaners Used on Hard, Non-Glossy Surfaces" ,
   iii) by a method based on CAN/CGSB 2-GP-11, Method 20.3 "Methods of Testing and Analysis of Soaps and Detergents".

f) Dishwashing Detergents;
   i) if sold as a hand dishwashing product then clean dishes effectively that is demonstrate a cleaning efficiency equivalent or better than a leading product in North America in that category or demonstrate at least 75% cleaning efficiency as measured by a method in line with the International Organisation for Standardization (ISO) document 4198 "Surface active agents -- Detergents for hand dishwashing -- Guide for comparative testing of performance",
      - CSPA DCC-10 Foam Stability for Hand Dishwashing detergent; or
      - ASTM D4009 – 92(2006) Standard Guide for Foam Stability of Hand Dishwashing Detergents

   ii) if sold for use in an automatic dishwasher product then clean dishes effectively, that is demonstrate a cleaning efficiency equivalent or better than a leading product in North America in that category or demonstrate at least 75% cleaning efficiency, as measured by a method in line with the International Organisation for Standardization (ISO) document 7535 "Surface active agents -- Detergents for domestic machine dishwashing -- Guide for comparative testing of performance"[11],
      - CSPA DCC-05A Deposition on Glassware during Machine Dishwashing; or
      - ASTM D3556 - 85(2009) Standard Test Method for Deposition on Glassware During Mechanical Dishwashing

g) Vehicle Cleaners
   i) if sold as a polish, perform better than the control in a performance test based on ASTM D6625-01-Jan-2007 "Standard Practice for Conducting a Test of Protective Properties of Polish Applied to a Painted Panel Using Fluorescent UV-Condensation Light- and Water-Exposure Apparatus".

[10] A-A-7A has been replaced by A-A-7B
[11] The previously referred CSPA DCC-01 test guideline estimates foam production and is not appropriate to prove evidence of this requirement

h) Window and Glass Cleaners;
   i) as used, clean common glass and other highly-polished surfaces effectively as determined by either a minimum "3" rating for cleaning, streaking and smearing, when assessed with CSMA DCC-09: Glass Cleaners, or as measured by an acceptable test method (see Appendix 3),
   iii) not damage or degrade polymer-based solar screens or other window treatments, as demonstrated by an acceptable test method (see Appendix 3),
   iv) CSPA DCC-09 Glass Cleaners and,
   v) CSPA DCC-09(a) “standard guide for evaluating the filming and Streaking of Glass Cleaners”.

Part 2- Demonstrating Product Efficacy When Recognized Standard Not Available

For products without an authoritative test protocol identified in Part 1, the EcoLogo® Program will accept efficacy test data that indicate the product is able to clean (or polish, if advertised) the intended surface as well as at least two nationally recognized, functionally equivalent products.

Whatever method is employed, efficacy testing must comply with the following general conditions:

a) Testing must be performed by a third party accredited laboratory;
b) Testing must be carried out under controlled, replicable conditions; in situ or anecdotal data is not acceptable for EcoLogo® certification;
c) Generated test data must be objective and quantified in recognized metric units; subjective observations are not generally acceptable for EcoLogo® certification, unless accompanied by at least one independent objective measure;
d) All control conditions must be specified;
e) The product must be tested at its maximum recommended dilution (i.e., minimum concentration);
f) Complete copy of the testing protocol and final report must be made available to the EcoLogo® Program.

Appendix 4: Volatile Organic Compounds with Negligible Photochemical Reactivity

The list of volatile organic compounds (VOCs) designated by the EcoLogo® Program as having negligible photochemical reactivity has been taken from the following two documents:

1. State of California Air Resources Board, Regulation for Reducing Volatile Organic Compound Emissions from Consumer Products, Appendix.
2. U.S. EPA VOC Definition, Federal Register, 31 March 2009, 40 CFR sec. 51.100.

This EcoLogo® designated list includes the following compounds:

(a) acetone
(b) ammonium carbonate
(c) carbon monoxide
(d) carbonic acid
(e) ethane
(f) metallic carbides or carbonates
(g) methane
(h) methylene chloride (dichloromethane)
(i) methyl acetate
(j) methyl formate
(k) dimethyl carbonate
(l) propylene carbonate
(m) cyclic, branched, or linear completely methylated siloxanes
(n) parachlorobenzotrifluoride (PCBTF)
(o) perchloroethylene (tetrachloroethylene)
(p) 1,1,1-trichloroethane
(q) trichlorofluoromethane (CFC-11)
(r) dichlorodifluoromethane (CFC-12)
(s) trichlorotrifluoroethane (CFC-113)
(t) dichlorotetrafluoroethane (CFC-114)
(u) chloropentafluoroethane (CFC-115)
(v) chlorodifluoromethane (HCFC-22)
(w) dichlorotrifluoroethane (HCFC-123)
(x) dichlorofluoroethane (HCFC-141b)
(y) chlorodifluoroethane (HCFC-142b)
(z) 2-chloro-1,1,1,2-tertrafluoroethane (HCFC-124)
(aa) trifluoromethane (HFC-23)
(bb) 1,1,1,2,3,4.4,5,5,5-decafluoropentane (HFC-43-10mee)
(cc) pentafluoroethane (HFC-125)
(dd) 1,1,2,2-tetrafluoroethane (HFC-134)
(ee) 1,1,1-trifluoroethane (HFC-143a)
(ff) 1,1-difluoroethane HFC-152a)
(gg) 3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)
(hh) 1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)
(ii) perfluorocarbons (classes of):
  (a) cyclic, branched, or linear, completely fluorinated alkanes
  (b) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations
  (c) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations
  (d) sulfur-containing perfluorocarbons with no unsaturations with the sulfur bonds only to carbon and fluorine
(jj) difluoromethane (HFC-32)
(kk) ethylfluoride (HFC-161)
(ll) 1,1,1,3,3,3-hexafluoropropane (HFC-236fa)
(mm) 1,1,2,2,3-pentafluoropropane (HFC-245ca)
(nn) 1,1,2,3,3-pentafluoropropane (HFC-245ea)
(oo) 1,1,1,2,3-pentafluoropropane (HFC-245eb)
(pp) 1,1,1,3,3-pentafluoropropane (HFC-245fa)
(qq) 1,1,1,2,3,3-hexafluoropropane (HFC-236ea)
(rr) 1,1,1,3,3-pentafluorobutane (HFC-365mfc)
(ss) chlorofluoromethane (HCFC-31)
(tt) 1-chloro-1-fluoroethane (HCFC-151a)
(uu) 1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a)

(vv) 1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane (C4F9OCH3 or HFE-7100)

(ww) 2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF3)2CFCF2OCH3)

(xx) 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane (C4F9OC2H5 or HFE-7200)

(yy) 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF3)2CFCF2OC2H5)

(zz) 1,1,1,2,2,3,3-heptafluoro-3-methoxy-propane (n-C3F7OCH3 or HFE-7000)

(aaa) 3-ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl) hexane (HFE-7500)

(bbb) 1,1,1,2,3,3,3-heptafluoropropane (HFC 227ea)

(ccc) 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-trifluoromethyl-pentane (HFE-7300)