Environmental Choice[M] Program

CERTIFICATION CRITERIA DOCUMENT

CCD-112

Product: Biological Digestion Additives for Cleaning and Odour Control

Preamble

Environment Canada's Environmental Choice[M] Program is pleased to publish the following national guideline on ***Additives that Facilitate Biological Digestion for Cleaning and Odour Control***.

The Environmental Choice[M] 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.

Millions of species of bacteria and fungi are known to exist, only a small number of which are pathogenic or otherwise problematical. A significant number of these microbial species have been found to be useful in industrial and commercial processes, and their use for bioremediation has been initiated. Commercial applications include degradation of greasy cooking residues and drain blockages, treatment of human wastes in holding tanks and control of noxious faecal odours. The effectiveness of these commercially-applied microbes can be increased by use of appropriate additives that promote a competitive advantage for aerobic microbial species.

In order to be eligible to carry the EcoLogo[M] or the words Environmental Choice[M], ***Additives that Facilitate Biological Digestion for Cleaning and Odour Control*** must:

- not be toxic,
- not be harmful to humans, riparian species and aquatic species,
- not accumulate in the environment,
- be accompanied by instructions for use and disposal, and
- be efficacious, meaning to control odour, help to decrease waste materials that are present and/or help to maintain a clear RV and/or marine holding tank environment.

The Environmental Choice Program has developed technical criteria using known assessment methods in order to address the first four of these issues. After thorough research, the ECP has determined that there is no single, internationally and/or nationally accepted test method available to evaluate the last issue, efficacy.

It is understood that biological activity (i.e., aerobic bacterial metabolism) is a more environmentally-benign mode of action for treating holding tank waste and preventing odours than conventional use of toxic and corrosive chemicals and masking scents. This set of certification criteria therefore seeks to further recognize those additives that serve to promote aerobic respiration in holding tanks, either through direct support (e.g., nutritional supplement) of aerobes or facilitating a competitive advantage over anaerobic species.

For *Additives that Facilitate Biological Digestion for Cleaning and Odour Control*, the ECP will accept equivalent efficacy test data that indicate the additive: i) controls odour; ii) helps to decrease the waste materials that are present; iii) helps to facilitate natural aerobic metabolism (respiration); and, iv) helps to maintain a clear environment. This testing must have been performed by an accredited third party laboratory, and a complete copy of the testing protocol and final report must be made available to the ECP.

Should any single, nationally or internationally accepted testing protocol for efficacy be developed at some time in the future, the Environmental Choice Program will perform an evaluation to determine its appropriateness for inclusion in this document.

Notice

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

The Environmental Choice[M] 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:

"biodegradable" means readily biodegradable. For a component, it 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)];

"facultative aerobic bacteria " means bacterial species that are capable of metabolizing either aerobically or anaerobically, but will preferentially utilize aerobic metabolism (i.e., respiration) in the presence of oxygen (i.e. aerobic environment);

"obligate aerobic bacteria" means bacterial species that are capable only of metabolizing aerobically (i.e, require oxygen);

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

"surfactant" (or surface-active agent) means any compound that reduces interfacial tension between two liquids or between a liquid and a solid. The three categories of surfactants are detergents, wetting agents and emulsifiers.

"**Test Method"** means a scientific procedure in which the performance of a product(s) is measured under specific conditions to yield reproducible results.

Category Definition

2. This category includes all ***Additives that Facilitate Biological Digestion for Cleaning and Odour Control*** as further defined in the sub-categories in this section. The sub-categories are:

   (a) drain and/or grease trap additives;

   (b) septic tank additives;

   (c) RV and/or marine holding tank additives; and

   (d) odour control additives

   Note: Other 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

2. To be authorized to carry the EcoLogo^{M}, the ***Additive that Facilitates Biological Digestion for Cleaning and Odour Control*** 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 ***Additive that Facilitates Biological Digestion for Cleaning and Odour Control*** must:

a) be in compliance with the New Substances Notification Regulations as per the *Canadian Environmental Protection Act, 1999*;

b) not require being labelled as a bactericide or pesticide under the *Pest Control Products Act*;

c) not require being labelled as poisonous or corrosive under the *Consumer Chemicals and Containers Regulations* of the *Hazardous Products Act*;

d) be efficacious, as demonstrated by an acceptable test method and/or by facilitating natural aerobic microbial respiration within the area of intended use. Examples of acceptable test methods are provided in Appendix A;

e) not eliminate obligate and facultative aerobic bacteria in the intended area of use or otherwise impair their aerobic metabolism;

f) use only those surfactants that:

   i) are biodegradable, and

   ii) comprise less than or equal to 3% of the product when calculated on a weight basis for solids or a volume basis for liquids;

g) be accompanied by detailed instructions that identify the following to maximize product performance:

i) the product's proper disposal and use,

ii) the product may not be effective in the presence of chemical sanitizers such as formaldehyde or chlorine bleach, and

iii) the product must be used on a continuous basis in order to ensure effectiveness.

Verification

4. To verify a claim that a service meets the criteria listed in this document, the ECP 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.

5. 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 retail or wholesale products, signs or sign boards, point-of-purchase displays, delivery vehicles, and any accompanying advertising or corporate literature provided the service 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 required that a criteria statement appear with the EcoLogo whenever the EcoLogo is used in association with the ***Additives that Facilitate Biological Digestion for Cleaning and Odour Control***. 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 criteria statement must be specific to the product's sub-category. For sub-category 2(a), the required criteria statement may be "*Drain Additive*" , *"Grease Trap Additive"* or "*Grease Trap and/or Additive*". For sub-category 2(b), the required criteria statement is "*Septic Tank Additive*". For sub-category 2(c), the required criteria statement may be *"RV Holding Tank Additive"*, *"Marine holding tank additive"* or *"RV and/or marine holding tank additive"*. For sub-category 2(d), the required criteria statement is *"Odour Control Additive*". 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., 2781 Lancaster Road, Suite 400, Ottawa, Ontario, K1B 1A7, Telephone: (613) 247-1900, Facsimile: (613) 247-2228, Email: ecoinfo@terrachoice.ca

Appendix A
Acceptable Test Methods for Determining Efficacy of Additives that Facilitate Biological Digestion for Cleaning and Odour Control

At the time of publication, the ECP determined that there was no single, internationally and/or nationally accepted test method available to evaluate the efficacy of alternative Additives that Facilitate Biological Digestion for Cleaning and Odour Controls that are not biologically-based. It is understood, however, that such additives should promote aerobic respiration in holding tanks, either through direct support of aerobes (e.g., nutritional supplement) or by facilitating a competitive advantage over anaerobic species.

The ECP will thus accept efficacy test data that indicate the additive:

- controls odours emitted from the holding tank;
- helps to decrease the amount waste materials introduced to the holding tank;
- helps to facilitate natural aerobic metabolism (respiration) within the holding tank; and
- helps to maintain a clear holding tank environment.

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

- Testing must to be performed by a third party accredited laboratory;
- Testing must be carried out under controlled, replicable conditions; in situ or anecdotal data is not acceptable for ECP certification;
- All control conditions must be specified; and
- a complete copy of the testing protocol and final report must be made available to the ECP.

The following are examples of relevant efficacy tests. Please note that in least some cases, a given test would need to combined with another to satisfactorily demonstrate efficacy to the ECP.

1) Biodegradation respirometer test

Demonstrates aerobic biological activity by analysing gases in a test environment in order to monitor oxygen utilization (i.e., by aerobic bacteria) over time. Conditions appropriate for microbial growth are created in a test environment, and the amount of subsequent oxygen uptake is measured with a respirometer. Appropriate respirometry standards include the TMECC 05.08 RESPIROMETRY

2) ATP Synthase test

Measures biological activity by detecting adenosine triphosphate (ATP) produced in laboratory sample to which the additive has been introduced, under controlled conditions. ATP is a key compound in cellular metabolism, owing to its ability to carry energy from one metabolic reaction to the next. However, ATP is produced in both aerobic and anaerobic organisms, thus its detection, alone, is insufficient indication of efficacy; results must a therefore be combined with another test.

3) Noxious gas measurement

Measures the comparative generation of noxious gases formed in the holding tank, with and without use of the applicant's additive. Such gases are formed from the result of anaerobic respiration and include hydrogen sulphide, mercaptans, ammonia and amines. Hydrogen Sulphide, for example, may be determined through *USEPA Method 376.2*. The absence (or minimal detection of) such gases would support claims that an appropriate aerobic environment is facilitated by the product. This test is primarily applicable to odour control products.

4) Measured Reduction of Organic Material

These tests introduce the additive into a controlled test environment that contains a relevant sample of organic material (depending upon the application, this may be either F.O.G. (fat, oil and grease) or faecal waste) and monitors the subsequent biodegradation of the organic material. This operates on the assumption that the test medium is being digested by (aerobic) microbes and thus supports the efficacy of the additive. Such tests are primarily applicable to drain/grease trap additives.

5) Odour Panel Test

These tests utilize a panel of "expert" judges who compare the relative intensity of the odour given off by test samples, usually as compared to an appropriate reference compound. While ultimately subjective, such tests have become accepted as a reasonable method of determining the efficacy of products designed specifically to control undesirable odours, as long as the tests are carried out under strict, objective methodologies. Examples of recognized "panel-based" standards include:

- ASTM E544-99 Standard Practices for Referencing Suprathreshold Odor Intensity; and
- The Appendix to Blue Angel RAL-UZ 84a: Serviceability Test of Sanitary Additives for Odour Reduction in Mobile Toilets.

EcoLogo™ Program
Interpretation Document CCD-112

Equivalent Testing Methodologies for Biodegradation

Interpretation:

The EcoLogo™ Standard for Biological Digestion Additives for Cleaning and Odour Control, CCD-112, has biodegradation requirements that must be met. The following test method is currently indicated in the standard as being required:

- TMECC 05.08 Respirometery test.

Upon further examination, the EcoLogo Program will now also accept the following test for CCD-112 Certification:

- OECD 301F

Basis for Interpretation:

The EcoLogo Program reserves the right to accept alternative test methods to those specified in a particular standard. Equivalency is determined through a review and comparison of:

- The methodology and procedures themselves
- The reliability, repeatability and reproducibility of the methods
- The materials, equipment and test conditions required
- The requirements for reporting of data and test results
- The consideration of peer and expert review of the methodologies

Affected EcoLogo Standards:

This interpretation applies only to CCD-112, Biological Digestion Additives for Cleaning and Odour Control.

Additional Notes:

For further clarification as to this interpretation document, please contact the EcoLogo Program at 1-800-478-0399 or 613-247-1900