

IBEL Content – Work Group Packet

April 6, 2010



This document has been developed for use during the April 6th IBEL workgroup call, scheduled from 1-3 PM Eastern. To participate, please use the following call-in information. Thanks.
(218) 936-1100 Access Code #105445.

-- Jack

IBEL Content- Working Menu

The following is a working list of potential IBEL content. Entries in the table indicate proposed categories and the associated IBEL metric(s) to be measured or reported. Please note: Not all metrics will necessarily apply to all products. This list will evolve through the decisions of work groups, and will be updated after each work group meeting to reflect the most recent status. When completed, this list will constitute a **MENU** of metrics against which product data can be reported. Individual metrics will be selected from this menu to assemble the product label content for each product category in future calls. **Purple shaded entries in the table are to be considered on the April 6, 2010 work group call.** Changes since last call are displayed in **Blue** text. Approved criteria are shaded in green.

Human Health & Environmental

Category	Reportable IBEL Metric	Status
Asthmagens content		May 13
Acute Chemical Concern - Oral	Oral LD50, GHS	Recommended (Mar 9)
Acute Chemical Concern - Inhalation	Inhalation LC50, GHS	Recommended (Mar 9)
Acute Chemical Concern - Dermal	Dermal LD50, GHS	Recommended (Mar 9)
Corrosivity to Skin		May 24
Skin Sensitizer		May 24
Product Absorption via Skin		May 24
Volatile Organic Compound Content		May 13
Chronic Chemical Concern - Oral		
Chronic Chemical Concern - Inhalation		May 13
Chronic Chemical Concern - Dermal		May 24
Phosphorus Eutrophication		April 6
Biodegradable Content – Aquatic		April 6
Bioaccumulating content		
Toxicity to Aquatic Life		April 6
Product Embodied Energy		
Product Embodied Water		

Product Performance

Category	Reportable IBEL Metric	Status
Product Performance (specific to product type)		Under Development (Mar 11)
Energy Efficiency		
Water Efficiency		

Additional Product/Packaging

Category	Reportable IBEL Metric	Status
Prohibited Product Content		April 9
Trace contaminants – CMRs (unintentionally added)		
Fragrance	Fragrance Added (No/IFRA/DfE/Other)	Open for Comment (Feb 19)
Color and dyes	Colorant added (Yes/No)	Open for Comment (Feb 19)
Combustibility	Flash point, (°F)	Open for Comment (Feb 19)
Post-Consumer Material content	PC Packaging content (%)	Approved
Renewable /Biobased Material content (Includes product and packaging)	Renew/Biobased Product Content (%) Renew/Biobased Packaging content (%)	Revised – Open for Comment (WG Call - Feb 9)
Recyclable Product Content (packaging only)	% of Product Recyclable	Revised – Open for Comment (WG Call - Feb 9)
EOL – Product Takeback (packaging only)		
EOL- Biodegradable/compostable Content – Land disposal		
Labeling content		

Corporate Performance Categories

Category	Reportable IBEL Metric	Status
Sustainability Reporting		May 19
Environmental Mgmt program		May 19
Supply Chain mgmt program		May 19
Sustainable Energy Use		May 19

Phosphorous Content (Eutrophication)

IBEL Proposed Metric(s)–

1. Product Performance

- **IBEL Reported Value** – Phosphorous content (wt %)
- **Method for Reporting /Measurement** – Total wt of phosphorous content divided by the total weight of product, calculated for the product *as used*.
- **Verification** – The following documentation must be provided by manufacturer, if requested, to prove conformance with reported value(s).
 - o Product formulation (kept confidential)
 - o Calculation by manufacturer of phosphorus content.
- **Rationale for inclusion in IBEL** – Phosphorus content, when discharged to water, can lead to Eutrophication of receiving aquatic ecosystems. Many of the chemical products used in the marketplace are likely to be disposed to drain or local waterways.
- **Reporting Context** – less than or greater than established thresholds of 0.5%?

Definitions

Eutrophication - the process by which a body of water becomes enriched in dissolved nutrients (as phosphates) that stimulate the growth of aquatic plant life usually resulting in the depletion of dissolved oxygen

Misc Information/Comments: NA

Phosphorus content is addressed in each of the standards in this space. The current CCD-146 standard prohibits phosphorus content in many of the product classes, while Green Seal allows up to 0.5% P content in their GS-37 cleaner standard.

Strawman & Comments

The following is a subsection of the original IBEL strawman and all comments submitted for each relevant metric under discussion during this call.

Phosphorus Eutrophication	Phosphorus Eutrophication	Phosphorus Eutrophication
COMMENT:		
Don Versteeg Need to define. Is a nondegradable phosphonate considered to be a phosphorus compound?		

Aquatic Toxicity

IBEL Proposed Metric(s)–

2. Acute Toxicity- Oral

- **IBEL Reported Value** – Acute LC₅₀ for a listed species (see below).
- **Method for Reporting /Measurement** – Results of testing by an independent, accredited testing laboratory using an appropriate test method (e.g. OECD method 202). *Alternatively*, testing is not required if sufficient acute aquatic toxicity data exist for each ingredient to allow calculation of toxicity on a component level basis using the method displayed below.

$$TP = \left(\sum_{i=1}^n \frac{wt_i}{TV_i} \right)^{-1}$$

Where,

TP = toxicity of the product

wt_i = the weight fraction of the ingredient

TV = the toxicity value for each ingredient (LD₅₀)

n = number of ingredients

(Source: GS-37) – Note, replace LD₅₀ with LC₅₀ for Aquatic Toxicity

Toxicity will be measured on the product as a whole and in **as used** form.

- **Verification** – The following documentation must be provided by manufacturer, if requested, to prove conformance with reported value(s).
 - o Method of determination and the calculations made, if any.
 - o Source documentation of all toxicity values used in the determination of the product LC₅₀, as well as formulation data sufficient to define the chemical identities and concentrations in the undiluted product (this is kept CBI), or if testing,
 - o Aquatic toxicity test results (expressed as an LC₅₀) from an independent and accredited lab along with a description of the test method.
- **Rationale for inclusion in IBEL** – In the aquatic environment, cleaning chemicals may contain constituents that pose a direct threat to fish, daphnia or other aquatic species if they are acutely hazardous and become present in sufficient concentrations
- **Reporting Context** – Use of the **GHS system** for categorizing chemicals to provide context for the LC₅₀ values reported. The GHS would list product in categories as described below ??

Definitions

LD 50/ Lethal Concentration: The concentration in air or water of a toxicant or microbe that will kill 50 percent of the test organisms within a designated period. The lower the LC 50, the more toxic the compound.

(Source: <http://www.epa.gov/OCEPATERMS/lterms.html>)

Toxicant: A harmful substance or agent that may injure an exposed organism. (Source: <http://www.epa.gov/OCEPATERMS/tterms.html>)

Toxicity: The degree to which a substance or mixture of substances can harm humans or animals. *Acute toxicity* involves harmful effects in an organism through a single or short-term exposure. (Source: <http://www.epa.gov/OCEPATERMS/tterms.html>)

Misc Information/Comments:

GHS- *Globally Harmonized System of Classification and Labeling of Chemicals* was developed under the UN to define the health, physical and environmental hazards of chemicals. It creates a classification process based on available chemical data for comparison with defined hazard criteria, and provides guidance on communicating hazard information and protective measures on labels and Safety Data Sheets. The GHS can be accessed at http://www.unece.org/trans/danger/publi/ghs/ghs_rev03/03files_e.html

GHS Categories for Aquatic Toxicity can be found on the Table at the end of this document.

Established Criteria

The following products have established minimum criteria.

Table 1. Acute Toxicity Criteria of Established Ecolabels

Category	Acute Toxicity (LC ₅₀)
Green Seal	> 100 mg/L (Algae, Fish or Daphnia)
EPA DfE	??
Ecologo 146	>200 mg/L or higher -prod specific- (algae, fish, daphnia)

Note: Values represent minimum thresholds, where higher values are better.

For the Ecologo standard, CCD-146 lists thresholds for individual products. Examples include:

- Household Cleaners (LC₅₀ > 1,000 mg/L)
- Institutional cleaners (LC₅₀ > 500 mg/L)
- Industrial cleaners (LC₅₀ > 200mg/L)

Test methods

There are a variety of test methods referenced between all of the standards. Common to each are the OECD standards, so perhaps they are a common requirement we can standardize? I have attached a list of test methods to the back of this document. Listed standards include:

- Fish - ISO 7346-2 or OECD test guidance 203
- Algae - OECD test guidance 201
- Daphnia - OECD test guidance 202

Specified test methods are listed in Appendix 1 of the CCD-146 standard for Hard Surface Cleaners, found at: <http://www.ecologo.org/common/assets/criterias/CCD-146.pdf>

Animal Testing

Toxicity will be measured on the product **as used**. In lieu of whole product toxicity testing on animals, the standard allows for verification of acute toxicity on a component level basis providing sufficient toxicity data exist for each of the products ingredients, and the correct procedure for calculating toxicity as described in the above referenced guidance is adhered to strictly.

Strawman & Comments

The following is a subsection of the original IBEL strawman and all comments submitted for each relevant metric under discussion during this call.

Toxicity to Aquatic Life	Aquatic Toxicity (LC50) Species (e.g. fish, daphnia) Test method (method or calc)	Measured on product <i>as used</i> .
Kurt Bischoff Although aquatic toxicity is often a requirement for 3rd party approval of environmentally preferable products none of these products should ever be discharged into a lake, stream or storm sewer prior to treatment. I have often questioned the relevance of this requirement for products not being used to clean aquariums or buoys. Mark Kozak Measured on product <i>as used</i>. Agreed Libby Sommer See earlier comment on acute oral toxicity. Same comment applies here. Also, I think we want to ensure that high toxicity ingredients at low concentrations are not overlooked. Comments on Acute Oral Toxicity: The UN, under GHS, has developed a method for classifying mixtures based upon the acute toxicity of the mixture constituents. This method, however, does not provide an exact value for the acute toxicity of said mixture. Rather, GHS bins mixtures into toxicity groupings. To EPA's knowledge, there is no scientific, generally accepted method of calculating the acute toxicity of a mixture from its constituents. Binning provides another advantage; purchasers will likely not understand the significance of differences in toxicity values (e.g. is an acute toxicity of 2500 mg/kg significant in comparison to a value of 2000 mg/kg?). GHS categorization provides a framework for understanding those differences.		

Aquatic Biodegradation (still under development)

IBEL Proposed Metric(s)–

3. Product Performance

- **IBEL Reported Value – 1)** % biodegradation and test method
2) Biodegradable classification (e.g. readily, ultimate, non-biodegradeable, unclassified, etc)
- **Method for Reporting /Measurement** – Results of testing on the whole product, *as used*, by an independent, accredited testing laboratory using an appropriate test method (e.g. OECD method 301 A).
Alternatively, testing is not required if sufficient data exist to demonstrate that each individual component of the product is readily biodegradable using an acceptable test method. (A list of acceptable test methods will be developed)
- **Verification** – The following documentation must be provided by manufacturer, if requested, to prove conformance with reported value(s).
 - o If tested by whole product testing, biodegradation test results and the test method used from an independent, third party lab .
 - o If whole product testing was not conducted, source documentation all evidence supporting the classification of readily biodegradable for each component in the product formulation
- **Rationale for inclusion in IBEL** – Rapid biodegradation prevents the build-up of the chemicals in the environment to potentially harmful concentrations, and lowers the potential for bioaccumulation of the chemicals in aquatic species.
- **Reporting Context- ??**

Specific Questions-

What about other test methods other than the OECD methods. I am thinking specifically about ingredient specific data that may assert claims such as ultimate biodegradability (which I believe is comparable to the readily biodeg claim). Should this data be allowed?

Can we limit the test methods to a subset of those specified? The goals would be to harmonize the way in which this data is measured and reported.

DfE takes a different approach to Green Seal and Ecologo that recognizes the link between toxicity and persistence when considering the potential impact of a compound/product on the environment. However, since we are not establishing thresholds in IBEL, does the DfE approach modify how we should address this issue?

Definitions

Readily biodegradable – 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, it 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), CO₂ evolution (301-B) or oxygen consumption in the presence of an inhibitor of nitrogen metabolism (301C, 301D or 301F). (Source: Ecologo CCD-146)

Readily biodegradable under anaerobic conditions - is determined using the test method described in ASTM E 1199-92: Standard Test Method for Determining the Anaerobic Biodegradation Potential of Organic Chemicals. (Source: Ecologo CCD-146)

Misc Information/Comments: NA

Both Green Seal and Ecologo use the same basic approach to biodegradation, requiring that products meet the requirements for being readily biodegradable as determined by whole product testing, using the OECD Guidelines for testing chemicals (301A or 301 E) . Both also allow for bypassing such testing for products where each component can demonstrate evidence of being readily biodegradable using OECD methods 301A-F. Green Seal expands this list to allow other proof for individual components to include ISO 7827, 9439, 10707, 10708, 9408, 14593 in addition to the OECD 301 test methods.

Specific language directly from the Green Seal Standard is as follows:

“Specifically, within a 28-day test, the ingredient shall meet one of the following criteria within 10 days of the time when biodegradation first reaches 10%:

- Removal of DOC > 70%
- BOD > 60%
- % of BOD of ThOD > 60%
- % CO₂ evolution of theoretical > 60%

Per OECD guidance the 10-day window requirement does not apply to structurally-related surfactant homologues. For organic ingredients that do not exhibit ready biodegradability in these tests the manufacturer may demonstrate biodegradability in sewage treatment plants using the Coupled Units Test found in OECD 303A by demonstrating DOC removal > 90%.

An exception shall be made for an organic ingredient that does not exhibit ready biodegradability if it has low aquatic toxicity, is not bioaccumulating (4.12), and exhibits biodegradation rates above 70% (measured as BOC, DOC, or COD), per ISO test methods 9887 or 9888; or OECD 302A, B, or C. For purposes of this section, low aquatic toxicity is defined as having an acute *and* chronic aquatic toxicity >100 mg/L where chronic aquatic (fish) toxicity is measured per OECD Method 204.

Testing is not required for any ingredient for which sufficient information exists concerning its biodegradability, either in peer-reviewed literature or databases. In the absence of experimental data, QSAR data from EPA's BioWin (EpiSuite) models may be considered. “