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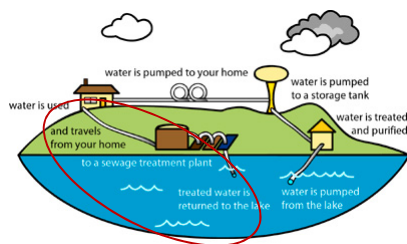
Day 1: Tuesday, 20th January 2015

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Toxicity to aquatic organisms

Toxicity to aquatic organisms



The Water Use Cycle
<http://water.greenventure.ca/>

How can we assess and limit the impact that detergents can potentially have on aquatic fauna and flora?



Toxicity to aquatic organisms

Assessment and verification

- Currently all six EU Ecolabels related to detergents use Critical Dilution Volume (CDV) to assess toxicity to aquatic organisms. Other ecolabels also use this approach (Nordic Swan, NF Environnement).
 - Other methods exist that could be used, each based on different principles and assumptions (for examples see list proposed in the ILCD Handbook, p.78).
- ➔ Each method has pros and cons, it is a question of finding the method that can ally both simplicity and effectiveness.



Toxicity to aquatic organisms

Summary of meeting – “current and future implementability of USEtox” (Jan 15)

- USEtox is the recommended method for midpoint analysis of freshwater ecotoxicity by the ILCD handbook and has been applied in the scope of different PEF pilots.
 - In the PEF pilot for heavy-duty liquid laundry detergents, the results showed that fragrances are largely responsible for environmental impacts, much more than more present ingredients such as surfactants.
 - During the study, all characterisation factors had to be recalculated with more precise data. This work took a long time even though there were only 25 ingredients in the generic detergent considered (much fewer ingredients than in a real formulation)
 - The current version of the USEtox model has also been shown to have limitations when dealing with non-ionising inorganics and metals.
- ➔ at this stage, the application of USEtox on a large scale, such as for the EU Ecolabel, is not considered feasible but the method could potentially be used in future revisions.



Toxicity to aquatic organisms

Critical Dilution Volume (CDV)

- CDV was developed to be specifically used in ecolabelling.
- It is not an LCA-based approach and only considers the toxicity of the ingoing ingredients at the time of manufacturing of a product.
- It makes heavy use of the precautionary principle and aims to protect the most sensitive species through the use of safety factors and worst-case scenario numbers.
- It is supported by the DID list (updated in 2014, lists information for over 200 ingredients commonly found in detergents and cosmetics).



Toxicity to aquatic organisms

Common proposed template

Criterion X – "Toxicity to aquatic organisms"

The critical dilution volume (CDV) of the product must not exceed the following limits for the reference dosage:

| Product type | Limit CDV |
|-------------------------|-----------|
| Type of product covered | xx xxx |

Assessment and verification: Calculation of the CDV of the product. A spreadsheet for calculation of the CDV value is available on the EU Ecolabel website.

The Critical Dilution Volume (CDV) is calculated for all ingoing substances and mixtures (i) in the product using the following equation:

$$CDV = \sum CDV(i) = 1000 \cdot \sum dosage(i) \cdot \frac{DF(i)}{TF(i)}$$

Where:

$dosage(i)$: weight (g) of the substance or mixture i in the reference dose,

$DF(i)$: degradation factor for the substance or mixture i

$TF(i)$: toxicity factor for the substance or mixture i

The values of $DF(i)$ and $TF(i)$ shall be as given in the DID list Part A (Appendix I). If a substance or mixture is not included in the DID list Part A, the applicant shall estimate the values follow the approach described in the DID list Part B (Appendix I).



Toxicity to aquatic organisms

CDV threshold updates

Competent bodies and other stakeholders were requested to send information on CDV values of products on the market. The following CDV (calculated with the 2007 DID list) values were provided:

- LD – 28 values (0 for stain removers)
- IILD – 4 values (3 multi component, 1 single function)
- DD – 22 values (including 3 rinse aids)
- IIDD – 2 values
- HDD – 58 values (including 2 "concentrated")
- APC – 240 values (4 RTU APC, 120 undiluted APC, 40 window cleaners, 71 sanitary cleaners, 5 toilet cleaners)



Toxicity to aquatic organisms

CDV threshold updates

The 2014 DID list contains the following updates (additions/updates to data only):

| DID number | Type | Name |
|------------|-----------------------|---|
| 2017 | Anionic surfactant | di-iso C13 Alkyl sulfosuccinate |
| 2116 | Non-ionic surfactant | C14-15 Alcohol, $\leq 2,5$ EO |
| 2132 | Non-ionic surfactant | C12-18 Alkyl glycerol ester (even numbered), 1-6,5 EO |
| 2133 | Non-ionic surfactant | C12-18 Alkyl glycerol ester (even numbered), $>6,5-17$ EO |
| 2146 | Non-ionic surfactant | Amines, tallow, $\geq 20 - \leq 50$ EO |
| 2147 | Non-ionic surfactant | Amines, C18/18 unsaturated, $\leq 2,5$ EO |
| 2204 | Amphoteric surfactant | C12-14 Alkyl amidopropyl amine oxide |
| 2205 | Amphoteric surfactant | C12-18 Alkyl amidopropyl amine oxide |
| 2207 | Amphoteric surfactant | C8-18 Amphoacetates |
| 2401 | Preservative | 1,2-Benzisothiazol-3-one (BIT) |
| 2410 | Preservative | CMI + MI in mixture 3:1 (CAS 55965-84-9) (§) |
| 2418 | Preservative | Triclosan |
| 2531 | Other ingredient | Mono-, di- and triethanol amine |



Toxicity to aquatic organisms

| Product type | Current limit | Proposed limit |
|---|---------------|----------------|
| Heavy-duty laundry detergent | 35 000 | 32 000 |
| Low-duty laundry detergent | 20 000 | 20 000 |
| Stain remover | 3 500 | 3 500 |
| Single function dishwasher detergent | 25 000 | 20 000 |
| Multi function dishwasher detergent | 30 000 | 25 000 |
| Rinse aid | 10 000 | 7 500 |
| Hand dishwashing detergents | 3 800 | 2 700 |
| All-purpose cleaners (RTU) | 52 000 | 52 000 |
| All-purpose cleaners (undiluted) | 18 000 | 12 200 |
| Window cleaners (RTU) | 4 800 | 4 800 |
| Window cleaners (undiluted) | --- | 1 200 |
| Sanitary cleaners (RTU) | 80 000 | 72 000 |
| Sanitary cleaners (undiluted) | --- | 18 000 |
| Toilet (WC) cleaners | 80 000 | 80 000 |

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Toxicity to aquatic organisms

Toxicity to aquatic organisms Consultation questions

- How are the values impacted by the updated DID list?
 - ➔ **Updated values are requested from CBs and industry (or full formulations)**

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