Cradle to Cradle

Sustainability in Cleaning

by Amanda Colling

Just as the world of cleaning got used to the concept of Cradle to Grave, a new concept appears– *"Cradle to Cradle. Remaking the way we make things."* Authors *McDonough* and *Braungart* argue that most people will resist the idea of paying penance to the environment and mankind by drinking warm beer and having cold showers. Now through innovative biotechnology and ecologically intelligent design, reengineering manufacturing processes and materials used, makes this change possible. Incorporating nature and science one can now ensure that our waste becomes a food source which in turn gives life.

Innu-Science is a strong believer of the *Cradle to Cradle* concept and has been practicing in this for years, as we use the intelligence of natural systems by harvesting living bacteria to do the cleaning job, just the way nature intended. Our products when used, are flushed into the environment after our bacteria has broken down the soils and furthermore continues to enhance the environmental nutrient cycle.

When choosing cleaning products it is important to carefully evaluate sustainability characteristics of a product. Let's take a closer look at these key characteristics which will help guide you in your decision. We'll also look at how Innu-Science demonstrates their commitment towards the principles of sustainability in cleaning and further expound on their alignment with the *Cradle to Cradle* concept:

Biodegradability

There are laboratory tests that evaluate if a product is "readily" biodegrade once it returns to nature. The OECD 301 series methods are the most widely recognized. They evaluate the biodegradability of a product in the presence of oxygen. A "readily" biodegradable substance will degrade rapidly in the environment provided oxygen is present.

Biodegradability alone is not a guarantee of environmental and human health safety. For example, a biodegradable product containing phosphates (and other sources of phosphorous) will be an environmental stress. Similarly, a biodegradable product containing alcohol and solvents will present a toxic risk for human health.

Innu-Science biotechnology products "readily" biodegradable according to OECD 301 standards. Ingredients biodegrade both with and without the presence of oxygen accelerating the process exponentially. European Directive awarded Innu-science with the prestigious Ecolabel certification (Commission Decision of March 23, 2005 – 2005/344/EC).

Choosing Surfactants

Cleaning products all contain at least surfactants to help "wet" a surface – even if it is soiled and greasy. Surfactants are produced from petroleum or plant materials and where they come from has no bearing on its biodegradability or its aquatic toxicity. *Petroleum-based surfactants* have the disadvantage of contributing to the depletion of a non-renewable resource. *Plant-based surfactants* have the advantage of coming from renewable resources. However, plant-based surfactants are produced through additional agricultural activities that are more polluting and destructive to natural habitats, such an example is the deforestation in Southeast Asia. The destruction of these natural habitats contributes significantly to the increase in greenhouse gases. Furthermore effects show the centralization of single-crop farming which has a devastating effect on the increase in agricultural food products and contributes to impoverishing and starving local populations.

Out of concern for balance and protecting natural ecosystems and sustaining food sources, Innu-Science uses combinations of petroleum-based and plant-based surfactants. All surfactants used are only readily biodegradable with or without oxygen.

Level of Toxicity

Toxicity is the measure of a substance or product's ability to cause detrimental negative health effects to human (or other) organisms. People working in the cleaning industry are particularly vulnerable to the toxicity effects from cleaning products due to the frequency and duration of exposure. Several toxic substances frequently found in cleaning products such as Ammonia; Butyl Cellosolve (ethylene glycol monobutyl ether (EGBE); Chlorine; hypochlorite; D-limonenes; Di- and tri-ethanolamine (DEA, MEA); Disinfectants (quaternary amines, Triclosan); EDTA; NTA and the list goes on.

Scientific tests show the Innu-Science products have very low-toxic and present very low health risks (if any at all). An ingredient that may offer attractive cleaning properties is often rejected due to its toxicity. Innu-Science technologists carefully consider the toxicological impact when selecting ingredients for our products.

Aquatic toxicity

This is seen as the effect of cleaning products on the aquatic fauna of our lakes and rivers. Susceptible organisms include fish, algae and crustaceans. Cleaning products often contain substances like NTA, EDTA, disinfectants and other substances that have an impact on aquatic organisms.

Innu-Science aims for the lowest possible aquatic toxicity and we take into account 3 different trophic levels: fish, crustaceans and algae. Few cleaning products perform as well as Innu-Science products, with as low a CDV-tox.

VOC's

Volatile Organic Compounds are present in many cleaning products, take only seconds to enter the user's body and is found in the blood within 8 seconds. They are the "toxins" that are said to "take your breath away." VOC's are responsible for deteriorating indoor air quality; negatively impact on the ozone layer; cause discomfort and symptoms of irritation in users of cleaning products and they can be carcinogenic. The prime source in cleaning products comes from fragrances and solvents used to solubilise greasy deposits or to mask unpleasant odours that arise after using ineffective cleaning products. Common VOC's used in cleaning products are Fragrances; D-limonenes; Butyl cellosolve (ethylene glycol monobutyl ether (EGBE); Ethanol; Isopropanol Alcohol.

Innu-Science never uses solvents in its cleaning products and our products therefore contain no VOC-emitting ingredients other than fragrances. Just another benefit of using biotechnology ingredients, bacteria does the cleaning and no solvents are needed to achieve high cleaning performance. Our highly effective cleaning efficacy cleans deep down and eliminates odours at the source. We only use fragrances to make our products appealing, and they are used in the weakest concentrations possible.

The Right Dose Concept

The "right dose" refers to the minimum quantity and strength of a product required to accomplish a given cleaning task. For example, it would be abusive to use a heavy-duty degreaser at high concentration to clean. The "right dose" is not a profit-generating concept for the manufacturer, but it reduces a product's ecological footprint.

Innu-Science trains users on how to effectively apply this concept by: 1.Developing formulations at the appropriate performance level for the cleaning task, 2. Putting dilution stations within arm's reach of users – to enable high dilutions, 3. Creating maintenance programs where one product that can be used at different dilutions to accomplish tasks of different natures and difficulties, 4. Respecting the concept of the right dose minimizes the ecological footprint of your cleaning – even when you are using an eco-friendly cleaning product.

Reduced Transport, Waste (Plastic) and Energy

The less concentrated a cleaning product is, the more plastic is used, which in turn results in more frequent deliveries to the end-user increasing the waste, transport and energy. Hot water is generally used in the cleaning process which consumes high levels of energy negatively impacting ones carbon footprint.

Our products are highly concentrated and in most instances the concentrates are diluted 1:300 (3ml per 1 Liter of water). This therefore results in less transport and fever plastic containers being used, decreasing impact and reducing carbon footprint. No hot water needed to assist the cleaning efficacy as bacteria is at work – resulting in lower energy bills. Innu-Science products are packaged in recyclable containers. With regards to product manufacturing, all formulations are produced locally to decrease transportation.

The *Cradle to Cradle* concept boosts sustainability of the environment and humanity holistically. With technology and strategic decisions moving forward into a greener world is possible. Innu-Science are world leaders in cleaning and have based all formulations on sustainability. For further technical information and ways to align with our vision and the *Cradle to Cradle* concept contact us.

Innu-Science - The Green Edge

- Long Lasting Results
- High Concentration Formulations
- Best In-Use Costs
- Holistic Solutions

Enviro Certified

- Products are proudly endorsed by Indalo Yethu, SA's official environmental campaign
- Internationally certified by EcoLogo
- Manufactured in South Africa

LOCAL PRODUCTION:

Our Innu-Science SA operation produces our products in Centurion in a Medical Control Council Accredited Production facility. Due to the fact that we are formulating with live bacillus bacteria and biological fermentation extracts, our products cannot be produced in a conventional hard chemistry factory, hence our decision to make use of clean room processes to ensure optimum conditions.

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