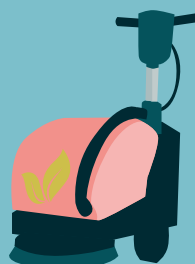


Sustainable washing and cleaning

a success for more than 50 years



Foreword

For more than fifty years, NVZ - Clean | Hygienic | Sustainable has been a driving force behind initiatives to make domestic tasks, such as washing and cleaning, safer and better for the environment.

Not only in the Netherlands do we lead the way with sustainable initiatives, but also in a European context as a very active participant in the European trade association A.I.S.E.. This makes sense, because the market for detergents and cleaning agents is European-oriented and in the Netherlands many products are produced for other European countries.

In this publication we present how the policy on sustainability has developed over the last 50 years and what the results are. What started with product-oriented care for environmental safety, nowadays focuses on sustainability in a much broader sense following the 17 Sustainable Development Goals (SDGs) of the United Nations.¹

Of course, we also look ahead to the latest developments and ambitions. Progressive insight ensures that industry is never 'finished': smarter chemistry and improvements to appliances such as washing machines and dishwashers constantly offer new opportunities. Knowledge sharing and cooperation with others play an important role in this.

Sustainable and effective cleaning and maintenance

Properly used detergents, disinfectants and maintenance products ensure a clean, hygienic living and working environment and the well-being of people. Without these products, hygiene and good maintenance are not feasible.

In this way these products contribute to the 17 sustainability goals. Cleaning of clothes and other items prolongs the item's lifespan. Sustainable use prevents the unnecessary purchase of new items and the waste of raw materials and energy to make them.

¹ The SDGs (Sustainable Development Goals) are seventeen goals to make the world a better place in 2030. The SDGs were agreed by the countries affiliated with the United Nations (UN), including the Netherlands. The goals were established on the basis of global input from organisations and individuals.

Effective cleaning is important: you do not want to waste energy or resources on something that does not work. The detergents and cleaning products industry is innovative in that regard. New products and processes are constantly being developed that work even better. In addition, sustainable cleaning has been an important issue for the industry for decades.

For a good understanding of 'sustainable cleaning', we look at three interrelated concepts. These concepts are also central to the mission and vision of NVZ:

1. Cleanliness: the absence of visible dirt.²

Dirt is a food source for bacteria, mites and moulds. By removing dirt, you can already achieve a good level of hygiene.

It is not possible to be 'too clean': cleanliness cannot be measured. What you can measure is dirt and the presence of pathogens.

2. Hygiene: to maintain and promote good health through cleaning and disinfection, thus breaking the chain of infection.³

3. Sustainability: making conscious choices to minimise the impact of your behaviour or business operations on your living environment, near and far. You do what is necessary at this moment, without getting in the way of the possibilities of new generations to continue to do so in the future. In the past, this usually involved three areas: economic growth, people and the environment. Nowadays, sustainability is defined on the basis of the 17 sustainable development goals.

² www.nvz.nl

³ NVZ/A.I.S.E., may 2018: "Goede hygiëne essentieel voor het doorbreken van de infectieketen"

Sustainability initiatives in the industry

The detergents industry has a long tradition of sustainability initiatives. For although detergents are indispensable for a clean, hygienic and sustainable society, the agents used should not harm the environment. Manufacturers themselves are taking responsibility for this by adjusting the composition of products and helping consumers and professional users to be more aware of the products they use.

Biodegradability

At the start of the sixties it appeared that the increased use of washing powders led to large amounts of foam on surface waters. The government, science and industry immediately started looking for the exact cause of this. In their search for explanations for the large amounts of foam, scientists discovered a relationship between the molecular structure of the surfactant TPBS⁴, used in all washing powders, and other surfactants. It turned out that the more branched the structure of the surfactant, the less biodegradable it is. The concept of biodegradability did not yet exist, let alone the rules about it.

When the role of bacteria in the degradation process became clear, the problem was quickly solved. Industry took responsibility as soon as the relationship was known and, thanks to the development of new surfactants, solved the problem within a few years. In the Netherlands, the first 'environmental covenant avant la lettre' was drawn up in 1967, in which it was agreed not to use TPBS. An agreement that was easy for the government to monitor.

At the end of the 1960s, agreements were also made in a European context about the measurement of biodegradation in the environment. Regulations soon followed and were further updated in the decades that followed. Today, only surfactants that are 100% biodegradable are used for washing and cleaning products.

4 Tetrapropylene benzene sulphonate

100% Biodegradable means that a substance can be completely broken down under the influence of micro-organisms into naturally occurring substances water, carbon dioxide and inorganic salts. Even before 2000, the majority of the surfactants used fulfilled this criterion. In 2004, this criterion was included in the European Detergents Regulation ((EC) No. 648/2004).

Phosphates

In the mid-1970s, the Netherlands was confronted with a new environmental problem: the eutrophication of surface water. The excessive amounts of phosphate in the water led to excessive algal growth, which caused the water to suffocate. This subsequently resulted in a decline in biodiversity. Phosphates were used as water softeners and detergent boosters. Initially, the detergents industry thought they could solve this quickly by switching to other water softeners, but the available alternatives proved to be much more harmful. This delayed the introduction of substitutes by some ten years.

With the arrival of zeolites in combination with small quantities of polycarboxylates⁵, a solution was found that could be used immediately. By 1993, the use of phosphates in detergents and cleaning agents had already been reduced by fifty percent. In 1987, NVZ and the Minister of Environment signed the Phosphate Covenant. This resulted in all washing powders being phosphate free by the end of the eighties. Only many years later, the use of phosphates in detergents was formally regulated in the EU.

Packaging

At the end of the 1980s, various non-governmental organisations (NGOs) took vigorous action against the ever-growing mountain of packaging waste. The entire business community was more or less forced to do something about it. In June 1991, the government and industry voluntarily signed the first agreement on packaging: the Packaging Covenant. The aim was to reduce the amount of packaging waste and to promote recycling. Many ambitious targets were set and agreements made. Several of the goals were not complied with, or only much later than agreed. Some were complied with temporarily and then reversed.

During this period, the detergents and cleaning products industry had made great strides in making packaging more sustainable. One of the agreements was that within five years, industry had to reduce the amount of new packaging to the level

⁵ Polycarboxylates are largely removed in a sewage treatment plant, so they hardly enter the environment.



Today, all surfactants used in detergents and cleaning agents are 100% biodegradable

of 1986. At the time of writing, the detergents and cleaning products industry has gone even further than that goal. In 1986, 13.9 grams of packaging material was needed per washing cycle. In 1991 this had already been reduced to 10.35 grams and by the end of the covenant's term it was less than 7 grams. Key words for this success were innovation, concentration and compacting of detergents and cleaning products.

Integrated Product Policy

In the early 1990s, the Dutch government felt the need to establish an integrated product policy, taking into account both the social benefits and an acceptable environmental burden of products. The environmental policy had several spearheads, including the detergents and cleaning products that are indispensable for restoring the use value of soiled goods. Another key element was extending the life span and maintaining a responsible level of hygiene. To achieve this, washing and cleaning agents are used in large quantities.

This gave the Dutch government (the Ministry of Housing, Spatial Planning and the Environment) reason to draw up a plan of approach together with NVZ, RIVM and the Water Boards. They examined the current environmental burden of various ingredients and how the burden could be reduced. Using an 'environmental risk assessment', a Maximum Permissible Risk level (MTR) and the Predicted Environmental Concentration (PEC) of a substance in the environment were sought. When the MTR:PEC ratio is one, the risk is acceptable. However, the smaller the number, the more certain one can be that the environmental risk is indeed acceptable.



From the 1960s, the industry already was busy with maximizing the washing effect and minimizing the environmental burden.

Determining an MTR and PEC for a substance was a new approach. During the process, Dutch parties (NVZ, Ministry of VROM, RIVM and the Water Boards) developed a methodology that was eventually adopted throughout Europe. The main ingredients of detergents and cleaning products are anionic and ionic surfactants (OAS). These substances ensure that greasy dirt is loosened from textile or surfaces and that the dirt is kept floating in the washing water for subsequent disposal. The most commonly used OAS are linear alkylbenzene sulphonates (LAS), alcohol ether sulphonates (AES), alcohol ethoxylates (AE) and soap.

As these are the main ingredients of detergents, the environmental risk assessment started with them. The evaluation was based on the evaluated scientific substance data (collected by industry) and on a monitoring programme at seven representative locations in the Netherlands. The monitoring programme determined whether the calculation of the PEC was correct.⁶ The studies concluded that for the OAS, the risk is very low at a PEC:MTR ratio below 0.05. A large number of other ingredients, including optical brighteners and phosphonates, were later considered. The environmental risk for these substances was also found to be very low.

NVZ and Integrated Product Policy

When the Dutch government launched the integrated product policy, this was not entirely new to the detergents and cleaning products industry. From the 1960s onwards, industry had been continuously working on maximising the cleaning effect and minimising the environmental impact. When suspicions arose about

⁶ RIVM/NVZ; Environmental Risk Characterization of 4 major surfactants used in the Netherlands (1995); RIVM report no. 679101 25

the degradability of the substance DTDMAC, widely used in fabric softeners⁷, industry made an agreement with the Dutch government in 1990 to phase out this substance in ten years. Industry started looking for possible alternatives and just two years later (end of 1992) DTDMAC was no longer used in the Netherlands.

Since the 1960s, major shifts have been achieved in the balance between environmental gains and losses in washing and cleaning. On important points, the environmental burden was considerably reduced, partly due to pressure from public opinion and in constant dialogue with the government. An example is the replacement of various substances, which was made possible by new innovations. For example, in the early 1970s, the harmful nonylphenol ethoxylates (NPEO) were quickly replaced by the safer alcohol ethoxylates that became available.

Other innovations that have led to major environmental gains

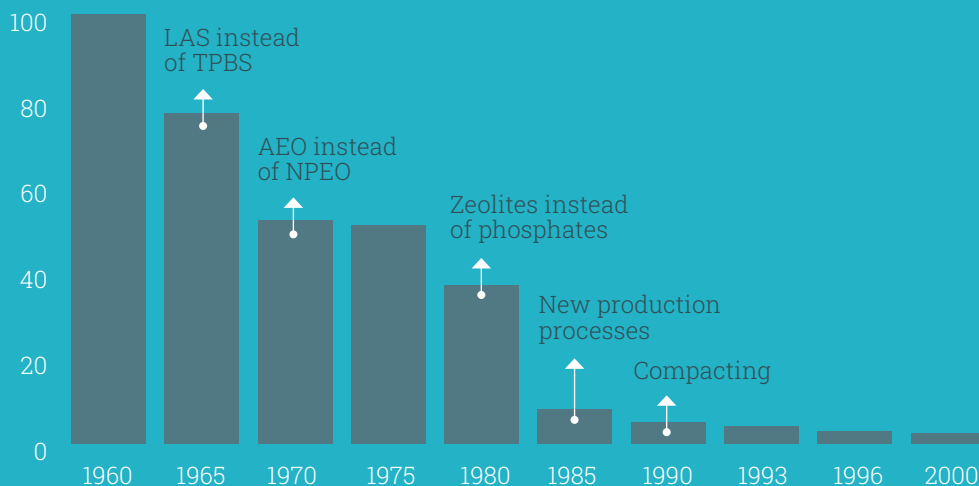
- Parallel to the replacement of harmful ingredients by less harmful variants, the detergents industry is constantly looking for other compositions and/or production processes that lead to more efficient and sustainable products. An example is the introduction and further development of enzymes that made it possible to wash at ever lower temperatures and with less environmentally damaging ingredients while at the same time improving washing performance.
- The introduction of the bleach activator TAED in the mid-1970s meant that a detergent needed 65% bleach to achieve the same effect.
- At the end of the 1980s, new - at the time revolutionary - production processes made it possible to compact textile detergents so that sodium sulphate, among others, was no longer needed. The bleaching agent sodium perborate could be replaced by the safer and less environmentally damaging sodium percarbonate.

7 Ditalgdimethylammonium chloride

WATER LOAD INDEX

Just as it is impossible to compare apples and oranges, it is not possible to summarise the various aspects of the environmental impact of different substances or mixtures in a single figure. However, a number of important environmental criteria can be processed into a kind of 'water load index'. This is based on criteria for environmental toxicity, such as environmental concentration after wastewater treatment (i.e. after biodegradation and sedimentation) and toxicity of the residue to aquatic organisms.

After the turn of the century, the focus for the sustainability of the detergent and cleaning product sector is on reducing the CO2 tax. Until 2000, the water tax index was a useful instrument to chart the progress of environmental improvements. The figure below shows the development of the water tax index from 1960 to 2000 for textile washing. For 1960, the index was set at 100. Although the number of washes in 1960 was much lower compared to today, the burden on the environment was enormous.



The reasons have the most effect at the beginning, and then weaken. So the starting point is displayed but they worked even longer.

In 2017, about three million tons of detergent consumption was avoided compared to thirty years earlier.



Large environmental gains

The environmental gains achieved were very large and this was a good reason for the detergents industry to continue innovating, concentrating and compacting, not only in the Netherlands but throughout the EU. The absolute quantity of detergent used in Europe was measured from 1997 to 2017 and was found to have decreased significantly, while the number of washes had increased by almost 25% over the same period. The reduction in detergent use was made possible by a series of voluntary initiatives led and coordinated by the European industry association A.I.S.E., and it should be noted that these initiatives are still ongoing. Cumulatively, savings in the order of 30 million tonnes have been achieved over the reported two decades. Comparing 1997 with 2017, three million tonnes of detergent consumption was avoided in 2017. This is due to the technological innovations that have enabled a reduction in dosage.

Safe substances policy; the Netherlands takes the lead with SOMS and NVZ with HERA

At the end of the 1990s, the debate in Europe erupted about the more or less stalled European substances policy. Of the more than 30,000 existing substances on the market, we hardly knew whether they were safe for humans and the environment. Legislation that was supposed to ensure that we learn more about these substances was far from adequate. A large number of countries started their own national initiatives. In the Netherlands, they started the SOMS programme (Strategisch Omgaan met Stoffen, or Strategically Dealing with Substances). Many of the ideas generated in the Netherlands in the SOMS programme were incorporated in Brussels in what later became the REACH Regulation. NVZ was particularly

actively involved in the establishment and development of SOMS. NVZ introduced many of the SOMS ideas to the A.I.S.E., which in turn dealt with them proactively by launching the HERA project.

HERA (Human and Environmental Risk Assessment) was a European project that ran from 1999 to 2005. It was carried out by Cefic (European chemical industry organisation) and A.I.S.E. (European detergent manufacturers). This project voluntarily assessed the risks of ingredients in household cleaning products. This was done five years before European regulations (REACH) made it mandatory.

The methods and results used were not only published. There was also constant room for discussion with stakeholders, on the basis of which they were adjusted, if necessary. This was an important step forward. Previously, manufacturers of chemicals or products had carried out risk assessments, but kept the results to themselves. Furthermore, HERA validated the safety information on ingredients with expert groups and an external advisory panel of scientists.

HERA was preceded by ERASM, a project which, since the early 1990s, has been working on the development of reliable risk assessment techniques.

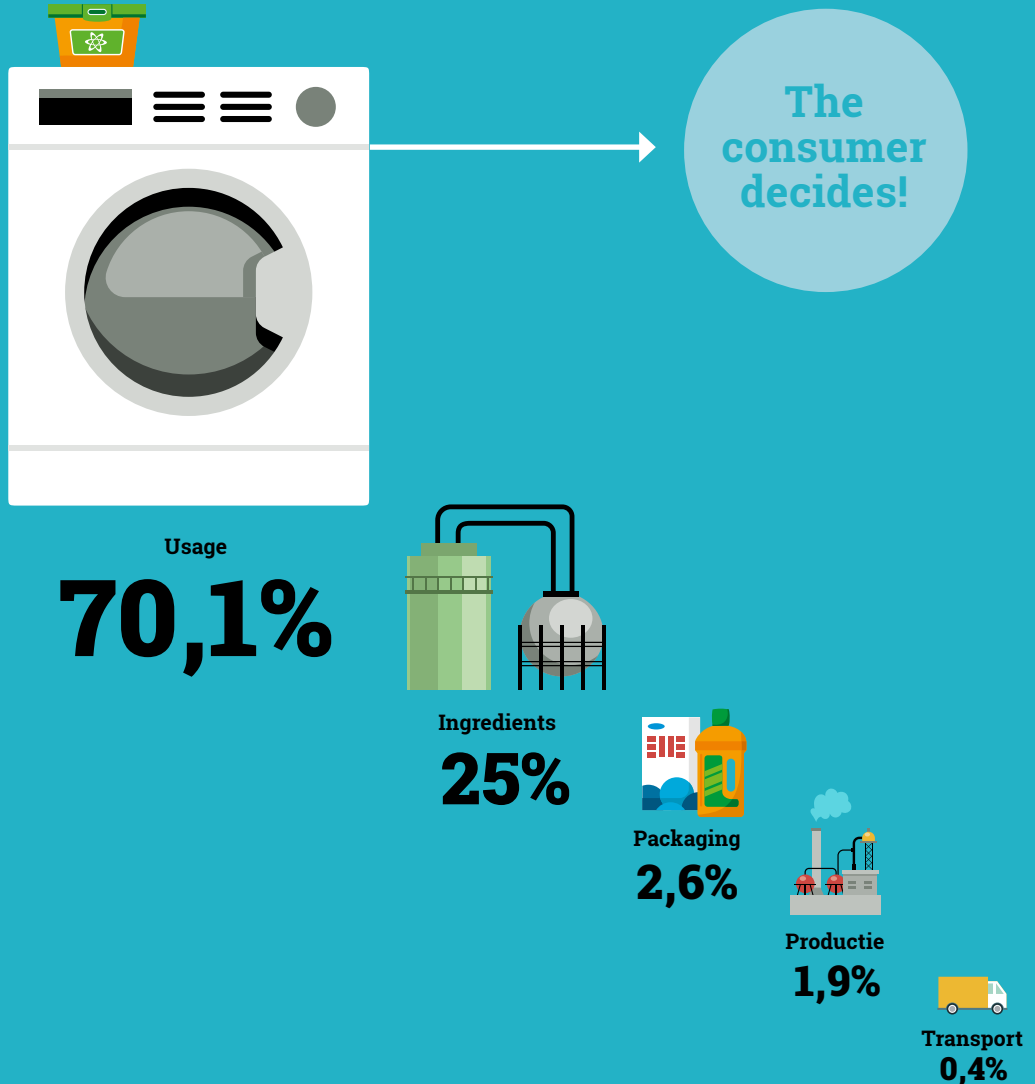
In short, the industry has invested a lot in assessing the safety of its ingredients and communicating about it in the supply chain for years.

Product-oriented environmental management

At the beginning of the 21st century, the Dutch government and NVZ increasingly focused on Product-Oriented Environmental Care (PMZ). This is a form of environmental management that not only looks at one part of a product, such as its packaging, but also at all stages of its life. PMZ involves the complete life cycle analysis (LCA) of the product: from the extraction of raw materials to the reuse and disposal of waste products. Life cycle analyses quickly showed that the greatest environmental impact of detergents is attributable to the use phase. To make PMZ a success, you will therefore have to involve the consumer.

LCA of a textile wash

The LCA of a concentrated textile detergent, viewed in one wash, showed at the beginning of the 21st century that the use of textile detergents by the consumer has the greatest impact on the environment.

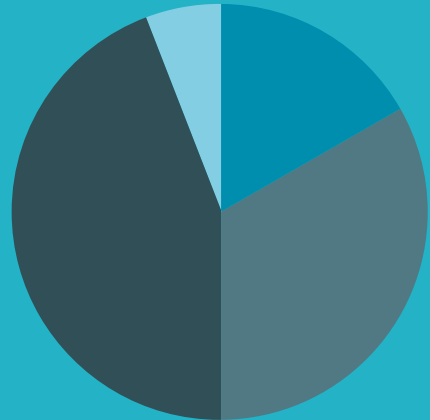


ENERGY CONSUMPTION

SINNER CIRCLE

When talking about sustainable cleaning, it is good to consider the so-called "Sinner Circle". According to the Sinner Circle, four factors play a role in cleaning:

- 1 Chemistry
- 2 Movement (mechanical force)
- 3 Time
- 4 Temperature



These factors also influence each other. A long time ago, detergents mainly consisted of soap or soap flakes. Classic soap is only effective (forms micelles) at very high temperatures. That is why cleaning was done at 90 degrees or higher and why many people burnt themselves on the hot washing-up or cleaning suds. Heating water costs a lot of energy and is bad for delicate fabrics and surfaces. Soap is also unsuitable for use in machine applications, as it creates too much foam.

Sustainable cleaning machines

According to the Sinner Circle, when the factors time, temperature and chemistry decrease, they must be compensated with movement. Without cleaning machines, this would mean that a cleaner would have to clean hard and for a long time, which in turn raises health and safety issues. Fortunately, we are past Cinderella's time, and movement can be generated by the mechanical power of cleaning machines. Due to the technological advancements of the past years, cleaning machines are not only profitable for the most expensive hotels or the largest

The introduction of, for example, washing machines and dishwashers in most households led to a change in detergents. Washing could be done at increasingly lower temperatures, also because of the introduction of enzymes that tackle difficult stains. Special detergents were also developed for example for wool or silk (without enzymes). If you translate this development into Sinner's factors, you see the following:

- 1 The chemical factor became smaller or more effective (much less detergent needed per wash or cleaning, but more effective ingredients)
- 2 The movement factor increased (better washing machines that constantly move the laundry)
- 3 The time factor decreased
- 4 The temperature factor decreased dramatically



It is important to realise that it is not the chemicals in a detergent, but the use of energy and water that cause the greatest environmental impact. The hotter the water is, the greater the energy consumption!

exhibition halls. In fact, cleaning machines are very cost-effective and make an important contribution to sustainability:

- Machines help ensure the hygiene of large spaces
- Machines achieve more results in less time
- Machines handle wastewater with care
- Machines are efficient in their water use
- Machines have economical dosing systems (water and detergent)

Just as clean with less

The detergents industry is constantly innovating in products that clean effectively at lower water temperatures. Packaging is also becoming increasingly recyclable. Whether recycling actually takes place is mainly in the hands of the user. This was the reason for the detergents industry to inform and motivate users of its products to actively participate in the process of sustainable washing and cleaning.

Various initiatives have been launched over the years in this regard. In 1998, for example, the Wash-right campaign “As clean as possible with less” was launched in the Netherlands. It focused on washing with a full drum, following dosage instructions, washing at low temperatures and saving packaging by offering it for

TEXTILE DETERGENTS

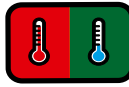
TIPS FOR SAVING WATER, ENERGY, CO₂ AND MONEY



Avoid underfilling the machine



Use the dosing instructions



Wash at low temperature



Save packaging-
recycle or refill

A.I.S.E.©

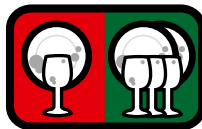
WWW.CLEANRIGHT.EU

MECHANICAL DISHWASHING

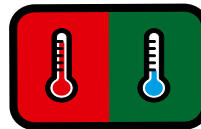
TIPS FOR SAVING WATER, ENERGY, CO₂ AND MONEY



Scrape instead of pre-rinsing



Fill the machine to capacity



Try the 50° or lower temperature programs

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refilling or recycling in the right way. The campaign consisted of an information panel on the packaging of textile detergents (see image) and commercials on television.

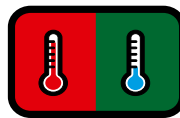
Results were soon measured. The average wash temperature dropped from 49 degrees in 1996 to 42.5 degrees. In addition, 76% no longer washed with a half-empty machine and 64% took water hardness into account in their dosage. With a campaign like this, the industry was truly a pioneer. The great success led to the campaign being extended to other product categories (see images).

ALL-PURPOSE CLEANERS

TIPS FOR SAVING WATER, ENERGY, CO₂ AND MONEY



Use the dosage instructions



Use cooler water



Save packaging - recycle

A.I.S.E.©

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HANDWASH

TIPS FOR SAVING WATER, ENERGY, CO₂ AND MONEY



Scrape instead of pre-rinsing



Use the dosage instructions



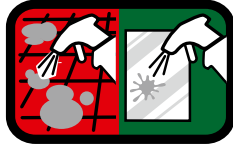
Do not rinse under running water

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TRIGGERSPRAYS

TIPS FOR SAVING WATER, ENERGY, CO₂ AND MONEY



Apply correctly. Use only for spot cleaning or small areas.



Save packaging - recycle or refill

A.I.S.E. ©

WWW.CLEANRIGHT.EU

European projects

The detergents market is a European oriented market, in which the Netherlands has relatively many producers. Because the market is so European-oriented, the sector has been focusing more and more on European projects since the 21st century.

In several projects, the detergents industry has focused on making detergents more compact. Less raw materials, less packaging and lower transport costs were the result. These projects focus on:

- Liquid detergents (April 2016 - March 2018)
- Powder detergents (January 2006 - December 2007; later also July 2012 - June 2014)
- Fabric softeners (July 2012 - June 2014)

Consumers were given instructions on how to dose the more compact products through (visual) information on the packaging.

In addition, there are two other product categories for which specific programmes have been developed:

- Air fresheners (2007 - 2017; second programme 2016 - now)
- Liquid laundry detergent capsules (2012, 2015 and 2017 - now)

TOILET CLEANERS



Participating companies follow a set of rules and agreements on safety, product labelling, information on the chemical composition, product design (which must not resemble toys or food) and guidelines for advertising. This makes it clearer for consumers how they can use and store the products effectively and safely.

Sustainable cleaning since 2004: the Charter

The A.I.S.E. Charter for Sustainable Cleaning (hereafter the Charter) helps consumers and professional users to use detergents in a sustainable way and encourages manufacturers of detergents and cleaning products to work towards continuous improvement of safety and well-being for consumers, professional users and employees and a reduction of the environmental impact. The Charter consists of a number of voluntary agreements and procedures.

Life cycle

When assessing the sustainability of products, Charter takes everything into account from 'birth' (choice of raw materials) to 'death' (waste disposal). The use phase is also taken into account. This is important because the energy and water consumption of detergents during the use phase causes the greatest environmental impact.

Continuous improvement at company level

The Charter ensures that companies continue their efforts to produce more sustainably and to improve their products. Every year, they have to report on a number of important indicators. Ultimately, this Charter approach leads to benefits for people and the environment. Examples include better safety information for professional users and consumers, lower energy and water consumption, less waste and packaging and improvements on social and economic level.

Independent control

Every year, the participating companies have to provide data about their efforts to work more sustainably. These figures are checked by an external, independent agency. Every year, the A.I.S.E. publishes a report on the results.

Recognisable for consumers

A detergent from a manufacturer participating in the Charter can be recognised by its Charter logo. The logos below mean that the company operates in a sustainable way and is constantly improving its products to make them more effective and less harmful to the environment.

Renewal Charter

As of 2020, the Charter, the industry's 'signboard' for sustainable initiatives, has been renewed. The Charter continues to assess companies on the production, design and use of detergents and cleaning products. It also makes it possible to compare them with each other ('benchmarking'), for example on how far they are in sustainable improvements compared to other companies. Procedures for participating companies will be partially adjusted so that they can continue to participate at lower costs. From 2020, you will find new logos on packaging from companies participating in the Charter.



The results of more than fifty years of working on sustainability

Consumers can wash smarter

Scientists have analysed all types of detergents. The entire life cycle was examined, from extraction and production of raw materials to use and disposal. The analyses show that the greatest environmental gains can be made when users:

- Dose well
- Wash with a full drum
- Wash at lower temperatures

This is not only good for the environment, but also for the consumer's wallet. Running a wash at ninety degrees Celcius is more than ten times as expensive as running a wash at fifteen degrees. And running a wash at sixty degrees costs almost twice as much as running a wash at forty degrees.⁸

The eco-mode is very suitable for getting normally soiled laundry clean with low energy consumption. The eco program has a slightly lower temperature than the set temperature. The eco-programme takes longer than an average programme to compensate for the lower temperature. However, washing at forty or sixty degrees with the eco-setting is thirty percent more economical than the normal washing programme at forty or sixty degrees. The temperature has the greatest impact on energy consumption.⁹

8 www.milieucentraal.nl

9 www.milieucentraal.nl

Information makes consumers use products better

For years, standard information on proper use has been printed on billions of packages of detergents and cleaning products in Europe. This prevents overdosing and overheating.

Tips are also available on the website www.cleanright.eu. Explanations are given through easy-to-understand pictograms for saving energy, water, CO₂ and money when cleaning.

A European campaign (I Prefer 30°) has been running since 2013 to encourage consumers to wash at lower temperatures. The “Keep caps from kids” campaign points out the importance of keeping liquid capsules stored in high places and sealed, i.e. out of reach of children (www.keepcapsfromkids.eu).

Tips on how to wash clothes at home in a sustainable way have also been collected together with partners from the household appliance and clothing label industries.

Clearer label ensures better and safer use

Consumers and professional users of cleaning and maintenance products want to be sure that they can use the products safely. Naturally, manufacturers adhere to the laws and regulations in this area, which also prescribe what must be included on a label.





In addition, voluntary pictograms have been developed: **safe use icons**. These pictograms make it clear what safe use means. For consumers, the Cleanright website has been developed, which explains this in several European languages. Professional cleaners can see from special pictograms for which application a product is intended. Visual material has also been developed to show the correct and safe use of disinfectants.

Less raw materials, just as clean

For more than 20 years - since 1997 - industry has been working to reduce the amount of raw materials per wash. This went hand in hand with the development of better and smarter washing machines and dishwashers. Laundry detergents have become smarter and more compact. Tabs (powder) and caps (liquid) have been developed to make it easier for consumers to dose and use less product per wash. In Europe, the number of households has increased by 20% and the number of washes by 23%, while at the same time a 45% reduction in detergent use has been achieved. This is mainly due to the fact that the average dose per wash has been halved in the last two decades.

Machine dishwashing products have achieved similar innovations as laundry detergents. Compacting and the development of liquid capsules or powder tablets facilitate correct dosing.

RESULTS IN THE NETHERLANDS

In the period 1997-2017, the number of households in the Netherlands increased by 15%¹⁰. More than half (61%) of the households consist of one person, while in 1997 this was still 49%. The Dutch population grew from 15.6 million to over seventeen million people. Nevertheless, the amount of detergent used decreased by 31%, which equals to a reduction of 48,638 tons of detergent!

The amount of energy per wash has also been reduced considerably. In the sixties, 200 grams of washing powder was used per wash and the machine ran at ninety degrees. With today's machines and average electricity usage, such a wash would produce 0.33kg of CO₂ emissions. In 1970 the dial was turned back to sixty degrees, which already produced 40 percent less CO₂ emissions per wash. After that it went fast. Around 1990, an average of eighty grams (tablet) or one hundred grams of detergent was used per wash, half of what was used in the sixties. Washing at forty degrees was usually chosen. Now, only 35 grams of detergent is enough for a clean wash and consumers usually choose to wash at thirty or forty degrees.¹¹

Consumption and costs per wash at different temperatures, 5 kg cotton laundry, old label A¹²

Wash programme temperature in °C	Cost in €	Energy consumption in kWh
15	0,03	0,13
30	0,08	0,35
40 with eco mode	0,08	0,35
40	0,12	0,52
60 with eco mode	0,15	0,65
60	0,21	0,91
90	0,33	1,43

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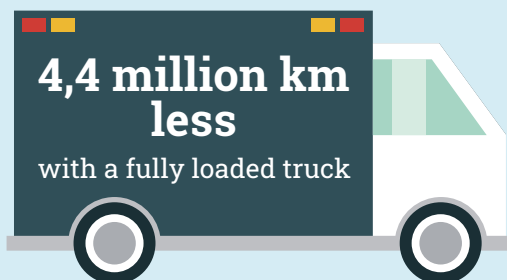
12 www.milieucentraal.nl

SMALLER ECOLOGICAL FOOTPRINT

The image of everyone's ecological footprint is often used to visually express the impact of your lifestyle on the world. For laundry detergents in the Netherlands, the reduction in environmental pressure 1997-2017 can be visualised as follows:

31%

Detergent savings
= 48.638 tonnes



Big transport savings



1655 fewer trips

with garbage trucks by saving on packaging (approx. 4,000 tonnes)

Total CO savings

(independent of the use phase)

23.480 tonnes

= 20 million km in a passenger car

Sustainability is the future

This brochure described how the Dutch and European detergents and cleaning products industry has worked voluntarily over the past 50 years to achieve sustainability. Of course, they will not stop there. On the contrary. Working on well-being and hygiene, with an eye to reducing the burden on the environment, remains at the heart of what manufacturers of washing and cleaning agents do. Sharing of knowledge plays an increasingly important role in this respect.

In 2020, the eBug programme to teach primary school children the most important knowledge about necessary and effective hygiene was further rolled out. The Hygiene Forum also remains a regular item on the agenda. During this conference, scientific results are discussed regarding hygiene, the prevention of infectious diseases and the fight against antibiotic resistance. The annual Substances Day, organised by NVZ together with partners, also helps companies to work with hazardous substances in a responsible way. Last but not least the Sustainability Day annually keeps the subject on the members' agenda and inspires new policy. The results are shared and continuously supplemented on the new website www.steedsduurzamer.nl. In addition, NVZ continuously participates in discussions with social partners, in order to work together to make cleaning more sustainable where possible.

In short, sustainability is still very much a necessity and is therefore very high on our agenda. This brochure shows what an innovative, knowledge-driven industry has already achieved in recent decades.

Colofon

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Editors: Hans Razenberg, Marita Vaes and Lisa Sligting

Design: ontwerpburo Suggestie & Illusie

Printing on 100% sustainable paper

For this special edition about fifty years sustainable industry, NVZ chose to print on sustainable tulip bulb paper and valorise paper. Both types of paper are produced in the Schut Papier paper factory in Heelsum. Until now, the surplus of tulip bulbs ended up on the compost heap or the bio-digester. But since 2018, the bulbs have been pulverized and processed into paper. The pulp of the tulip bulb (20%) is mixed with a wood-free cellulose. Both the brown skin and the glossy inside of the bulb are subtly visible in the tulip bulb paper. The Valorise paper is also 100% sustainably recycled and consists of 5% fiber from tomato plants. In addition, both papers are from Dutch soil and the printing is CO2 neutral! (Libertas Pascal, Utrecht)

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nvz.nl

☎ + 31 (0)30-6921880

✉ nvz@nvz.nl

🏠 Visiting and postal address:
Arthur van Schendelstraat 600
3511 MJ Utrecht, The Netherlands



Clean
Hygienic
Sustainable