



The AskREACH New Year's-test: Sports and leisure articles

January 2021

The information and views contained in this report are those of the authors and do not necessarily reflect the official opinion of the European Union or the LIFE AskREACH project.



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Introduction

The AskREACH New Year's-test, carried out as a part of the LIFE AskREACH project, shows that many sports and leisure articles contain various plasticisers which are harmful to reproduction as well as other substances of concern which are harmful to the environment and human health.

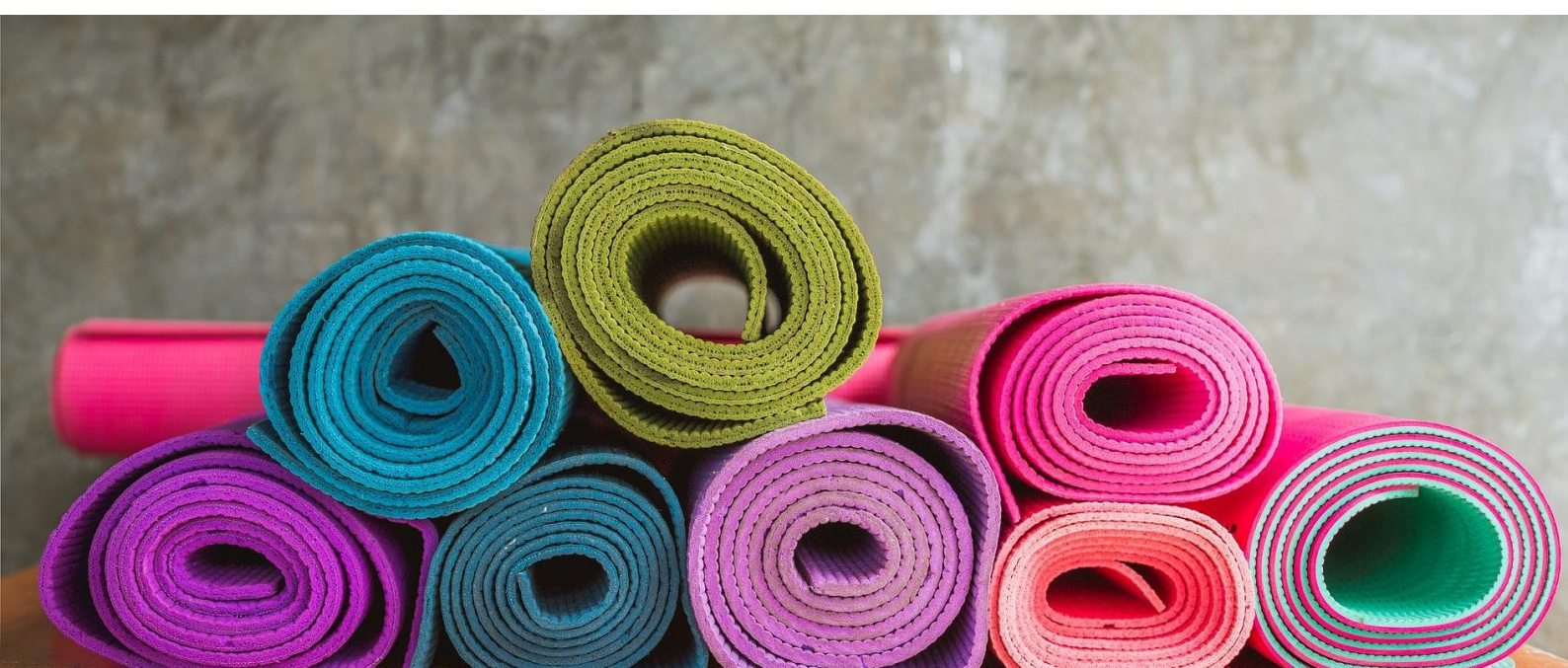
Consumers have the right to know from the seller or manufacturer of an article whether it contains substances that are harmful to human health or the environment. Under the EU "[REACH](#)" chemicals regulation (1907/2006/EU), these substances have been compiled in a "[candidate list](#)" since 2007 and fall under the so-called "right for information". On request of a consumer, both producers and sellers are obliged to provide information on such "Substances of Very High Concern" (SVHCs) and instructions on the safe use of the article.

SVHCs are proven to be either:

- carcinogenic,
- reprotoxic,
- mutagenic,
- endocrine disruptive,
- persistent, bioaccumulative and toxic,
- very persistent and very bioaccumulative, or
- of similar concern.

SVHCs can potentially be found in all types of consumer articles such as toys, shoes, clothing, furniture, jewellery, tableware, electronics and, as this test shows, in sports and leisure equipment.

They include substances such as plasticisers in plastic materials, flame retardants, heavy metal compounds, various dyes, and polycyclic aromatic hydrocarbons.



REACH

The European Union REACH Regulation on the Registration, Evaluation, Authorisation and restriction of Chemicals ([1907/2006/EU](#)) came into effect in 2007. Its aim is to ensure a high level of protection for human health and the environment, as well as the free circulation of chemical substances on the internal market and the enhancement of competitiveness and innovation.

Candidate list

Certain chemical substances are defined in the REACH Regulation as SVHCs (Substances of Very High Concern). The SVHCs are listed in the "[Candidate List](#)", which is updated twice a year and currently contains 209 substances (12th January 2021). These substances are candidates for the authorisation process under REACH, i.e. their use might be limited to certain applications. In addition, REACH stipulates that these chemicals should progressively be replaced by suitable alternative substances or technologies where economically and technically viable.

Article 33

Article 33 of REACH states that a manufacturer or seller is obliged on request to inform a consumer if a given article contains SVHC substances. This obligation applies as soon as at least one SVHC is present at a concentration of more than 0.1% of the total mass. The information must be made available within 45 days and must include at least the name of the SVHC substance.

Not only is this response period relatively long, but in addition, a request only needs to be answered if an SVHC is contained. So, if a consumer does not receive a response to a request, this can either mean that no SVHC is contained, or that the request has been lost or ignored.

Article 33 applies to most solid objects such as clothing, furniture, toys or electronics offered for consumer use. In the case of food, medicines and "non-solid" articles such as cosmetics, cleansing agents, paints, or powders, the obligation to provide information applies only to the packaging.

If an article contains an SVHC substance, this may not necessarily constitute an acute hazard, as the substance could be chemically bound, for example, inside an article. However, over the life cycle of consumer articles certain substances may be released into the environment and might - due to the possible undesirable properties – lead to (cumulative) effects. Consumers may request information about the presence of such substances and avoid them.



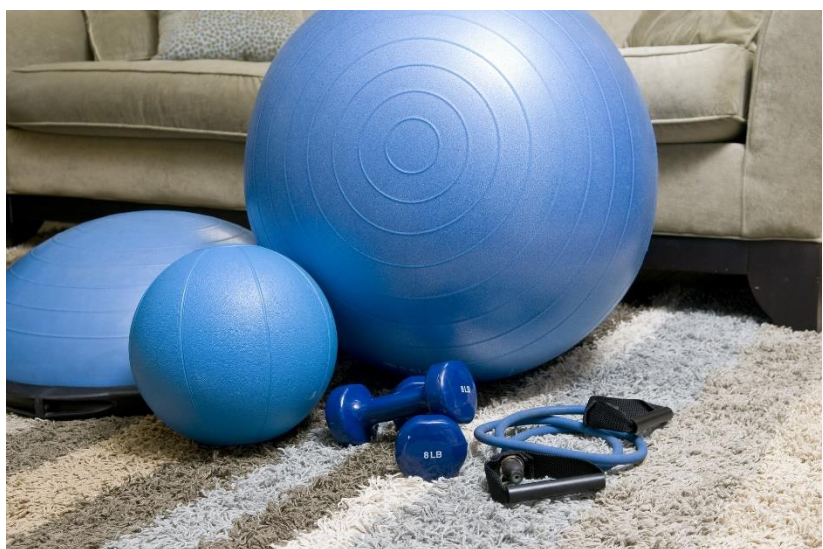
Methods

13 organisations from 13 different European countries joined the testing activity. Each organisation purchased 3 - 8 random samples of sports and leisure articles within their country in shops or online. The samples were chosen with a focus on soft plastic articles. The articles investigated included gymnastic balls, skipping ropes, water bottles, exercise weights, and mats. In total 82 samples were obtained.

Samples per partner organisation:

Partner Organisation	Country	Number of samples
Arnika - Toxics and Waste Programme	Czech Republic	8
BEF LV - Baltijas Vides Forums	Latvia	6
BUND - Bund für Umwelt und Naturschutz - Friends of the Earth Germany	Germany	6
Fundacja Kupuj Odpowiedzialnie (Buy Responsibility Foundation)	Poland	6
GLOBAL 2000 - Friends of the Earth Austria	Austria	7
INERIS - Institut National de l'Environnement Industriel et des Risques	France	7
LIST – Luxembourg Institute of Science and Technology	Luxembourg	6
Magyar Természetvédők Szövetsége – Friends of the Earth Hungary	Hungary	3
NOA – National Observatory of Athens	Greece	8
Safer Chemicals Alternative (ALHem)	Serbia	6
Swedish Consumers' Association / Sveriges Konsumenter	Sweden	7
Zelena akcija – Friends of the Earth Croatia	Croatia	7
ZERO - Association for the Sustainability of the Earth System	Portugal	5
Total number of samples		82

The samples were sent to an independent, accredited laboratory in Germany, where they were tested in a risk-based approach: All articles were tested for phthalates, alkylphenols and short-chain chlorinated paraffins, most of the articles also for flame retardants and some were additionally tested for heavy metals, BPA (bisphenol A), and the allergen azodicarbonamide.



Tested substances:

Substance group	Individual substances
Phthalates	DEHP, BBP, DHNUP, DIHP, DMEP, DBP, DIBP, DPENP, DiPP, PiPP, DPP, DnHP, DCHP, DNOP, DIDP, DINP, DHxP, DIHxP ¹
Chlorinated paraffins	SCCPs (short-chain chlorinated paraffins) MCCPs (medium-chain chlorinated paraffins) (not SVHCs)
Alkylphenols	Octylphenol, nonylphenol, tris(nonylphenyl)phosphite
Flame retardants	Deca-BDE, HBCDD, TXP, TCEP ²
Heavy metals	lead, cadmium
Others	ADCA (azodicarbonamide)

The REACH Regulation stipulates that consumers must be informed on request about an SVHC in an article if its concentration in the article exceeds 0.1 percent w/w. According to a judgement of the European Court of Justice, information must be given for all parts which meet the REACH article definition. For example, for an assembled article like a bicycle, information must be given separately for handle grips, tyres, frame, screws, etc. The limit value of 0.1 mass percent refers to the components individually.

Therefore, the individual components of the purchased articles were also examined in our test. For example, water bottles were evaluated in their separate parts.

Depending on their composition, the articles were examined individually or in pools.

On purchasing the articles, their barcodes were scanned with the Scan4Chem app and SVHC requests were sent to the seller in accordance with REACH Article 33.

If no response was received from companies within 45 days, they were asked again by e-mail without using the Scan4Chem app.

The tested substances

Phthalates

Phthalates are plasticisers used in plastics such as PVC to make them supple.

Phthalates can affect our biological system like hormones. Some have shown to be harmful to reproduction, such as diethylhexyl phthalate (DEHP), dibutyl phthalate (DBP), benzyl butyl phthalate (BBP), and diisobutyl phthalate (DIBP). In children, for example, they can interfere with sexual maturation. The exposure to hormone-like substances is also suspected to contribute to the declining fertility of men, which has been observed in

¹ Di(2-ethylhexyl)phthalate; benzylbutyl phthalate; 1,2-benzenedicarboxylic acid, di-C7-11 branched and linear alkyl ester; 1,2-benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich; bis(2-methoxyethyl) phthalate; dibutyl phthalate; di-iso-butyl phthalate; di-n-pentyl phthalate; di-iso-pentyl phthalate; n-pentyl-iso-pentyl phthalate; 1,2-benzenedicarboxylic acid dipentyl ester; Di-n-hexyl phthalate; dicyclohexyl phthalate; di-n-octyl phthalate; di-iso-decyl phthalate; di-iso-nonyl phthalate; 1,2-benzenedicarboxylic acid, dihexyl ester, branched and linear; Di-iso-hexyl phthalate

² Decabromodiphenyl ether, hexabromocyclododecane, tris(2-chloroethyl)-phosphate, trixylyl phosphate



Europe over decades. For example, the plasticisers mentioned above show anti-androgenic effects such as reduced testosterone production and can have a damaging effect on testicular function.

A study carried out by the German Environment Agency between 2003 and 2006 in which 1,790 children aged between 3 and 14 years were examined, revealed alarming results, particularly for plasticisers. Metabolites of selected plasticisers were found in the urine of almost all children, in some cases at considerable concentrations.

Phthalates enter the body mainly through food, but also through the air children breathe or through direct contact with the skin. Because children often play on the floor, they take in plasticisers via dust. Infants and young children also frequently put things in their mouth. Through the saliva, phthalates can be absorbed into the body.

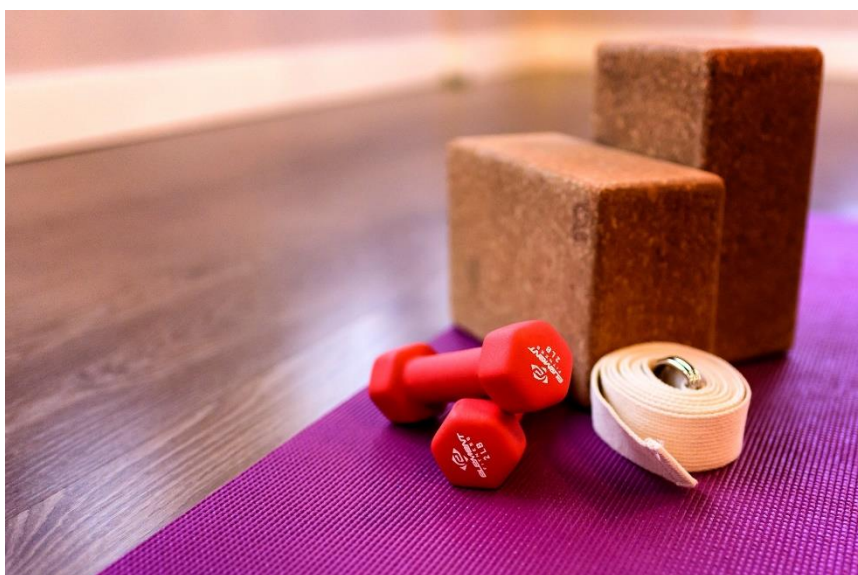
Everyday objects such as clothing, vinyl wallpaper, carpeting, shoes, imitation leather furniture, kitchen and bathroom articles, or cables can contain phthalates.

In July 2020, articles including several phthalates, namely DEHP, DIBP, BBP and DBP were banned from being placed on the market if the concentration exceeds 0.1% of the plastic's mass ([REACH Annex XVII Entry 51](#)). DNOP, DINP, and DIDP, other phthalates, have been banned from use in toys and childcare products ([REACH Annex XVII Entry 52](#)).

Flame retardants

Since the 1970s, so-called flame retardants have been added to a variety of articles. They are most frequently found in furniture, electronic articles, construction and building materials, and in vehicles. They are intended to reduce the flammability of articles. Often brominated and chlorinated flame retardants or organophosphorus compounds are used. However, it has been known for a long time that many flame retardants are poorly degradable, accumulate in the environment, and are toxic to humans and the environment. For these reasons, they are now detected in air, soil, water, humans and animals. Various studies show a link between brominated flame retardants and thyroid cancer.

Due to their negative effects on humans and the environment, many flame retardants have been identified as SVHCs, and some additionally as persistent organic pollutants (POPs) according to the EU Regulation on Persistent Organic Pollutants ([POP Regulation 2019/1021/EU](#)).



Short-chain chlorinated paraffins (SCCPs)

There are long-chain, medium-chain and short-chain chlorinated paraffins, and the shorter the chain, the more toxic they are. So far, only short-chain chlorinated paraffins (SCCP) are classified as SVHCs. However, medium-chain chlorinated paraffins (MCCP) are also suspected of being problematic. SCCPs are used in a wide variety of applications, for example as plasticisers in plastics, as binders in paints, as flame retardants, or as fat liquors for leather and furs.

Chlorinated paraffins are extremely durable and very toxic to aquatic animals. They pollute waters, soils and living organisms. SCCPs are classified by the International Agency for Research on Cancer as "potentially carcinogenic to humans". They can also harm the kidneys, liver and thyroid gland. Short-chain chlorinated paraffins accumulate in human fatty tissue and are passed on to infants through breast milk. SCCPs are common all over the world and can be found in soils, waters, plants, humans and animals. They are regulated in the POP Regulation, which sets a limit concentration in articles of 0.15 percent.

MCCPs are also highly toxic to aquatic life and are classified as "may cause harm to breast-fed children" ([CLP regulation](#), 1272/2008/EU). The rising use of these substances is certainly a cause for concern.

Heavy metals

Heavy metals include mercury, cadmium, arsenic, chromium, and lead. Heavy metals and their compounds usually occur in traces in nature. Many of them are vital for plants, animals and humans, but at even slightly higher concentrations they may be harmful.

Worldwide, some soils are heavily polluted with problematic heavy metals, which can find their way into groundwater. Subsequently, they may accumulate in plants, but also in the skeleton, liver, kidneys and red blood cells of animals and humans.

Some heavy metals and/or their compounds are carcinogenic, harmful to reproduction or have negative effects on the nervous system and organs such as kidneys and liver.

Heavy metals are used in electric/electronic devices, household items, jewellery, and toys.

Alkylphenols

Alkylphenols, including nonylphenols (NPs), are often used in detergents, paint, pesticides, and textile processing.

They are intended to alter the surface properties of a range of articles and many of them, for example detergents, are often released directly into the environment and waters. Once there, they are highly persistent and can cause severe harm. They are linked to reproductive health issues and act similarly to hormones. They are especially harmful to aquatic life, even causing fewer male fish to develop and damaging their reproductive health. For these reasons, NPs were added to the list of SVHCs in 2012.



Bisphenol A (BPA)

BPA is another harmful substance found in consumer articles. Since the 1960s, it has been used to produce hard plastic (polycarbonate) and epoxy resins. It has been used in a wide range of consumer articles, from food and beverage cans and water pipes to water bottles, drinking cups, or electronic casings and even toys. Because of this widespread use, consumers are exposed to the chemical in many ways, for example through the consumption of food and water.

Since 2018, BPA has been classified as an SVHC due to its reproductive toxicity and endocrine disrupting properties. Because of its oestrogen-like effect, BPA can have an impact on reproductive health and can even be harmful to the brain development of foetuses and infants.

Azodicarbonamide (ADCA)

ADCA is used as a blowing agent in the production of foamed plastics. An example of this would be yoga mats. It is on the list of SVHCs since 2012 due to a connection to respiratory issues, allergies and asthma.



Results

Detected substances

SVHCs were found in 24% of the tested articles (see table in the annex). While some of those did not exceed the 0.1% concentration limit which would trigger the obligation to inform, we found SVHCs at higher concentrations in 9 articles (11% of the samples). In 7 samples, the **plasticisers** DEHP, DIBP or DBP were found, none of which may be placed on the market since July 2020 at a concentration higher than 0.1%. The articles can therefore not be legally sold if they were placed on the market after July 2020. The plasticiser DEHP was detected with a concentration of 24% in a skipping rope, and DIBP was found at concentrations up to 35 and 41% in two types of gymnastic balls.

Two articles fall under the duty of information because of the SVHC "**ADCA**".

Short-chain chlorinated paraffins (SCCP) were found in one sample at a concentration of 2.6%. SCCPs are also regulated via the POP regulation (persistent organic pollutants), and the placing on the market of articles with SCCPs above 0.15% is banned worldwide, so the skipping rope in question should not have been sold.

Middle-chain chlorinated paraffins (MCCP) are not listed as SVHCs, but they are used as alternatives to SCCPs and are also problematic for health and environment. MCCPs were found in six articles, in four of them at concentrations above 0.1%.

Two articles contained the **flame retardant DecaBDE**, but the threshold of 0.1% was not exceeded. Therefore, the obligation to inform does not apply for these articles.

The **alkylphenol NP** was found in traces in 10 samples (below 0.1%). **BPA** was detected in traces in one sample.

Some articles were tested for **heavy metals**, but none were detected.

In total, out of the 82 articles tested, nine fall under the obligation to inform in accordance with Article 33. Seven of these cannot be legally sold.

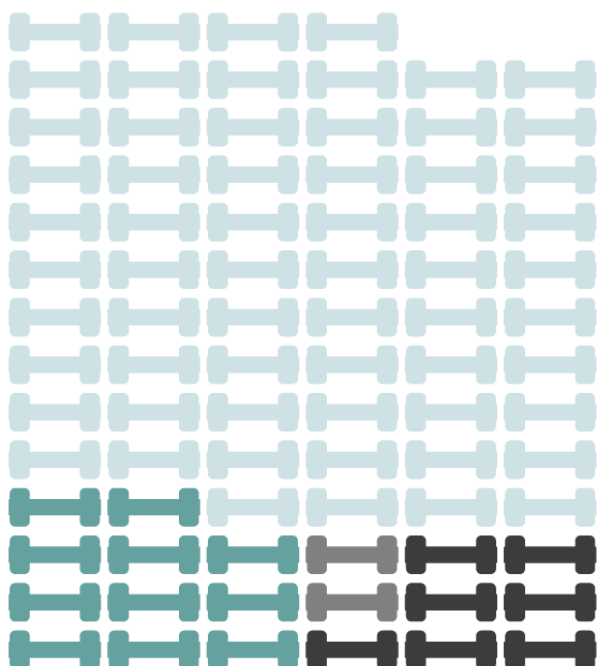
The responsible enforcement authorities have been informed accordingly.



HARMFUL SUBSTANCES IN SPORTS ARTICLES



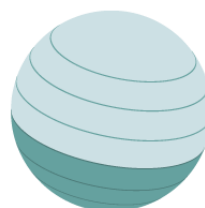
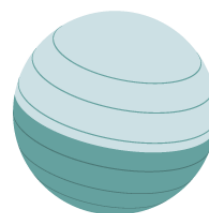
82 products were tested for SVHCs
(Substances of very high Concern)...



24 % of the samples contain SVHCs
9 articles contain SVHCs over 0,1 %
7 articles are not marketable

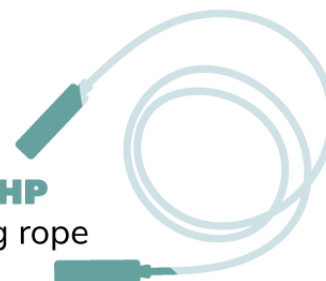
Sad leaders

41 % DIBP
in a
gymnastic ball



35 % DIBP
in another
gymnastic ball

24 % DEHP
in a skipping rope



DIBP = Diisobutylphthalat
DEHP = Diethylhexylphthalat



Answers of the companies

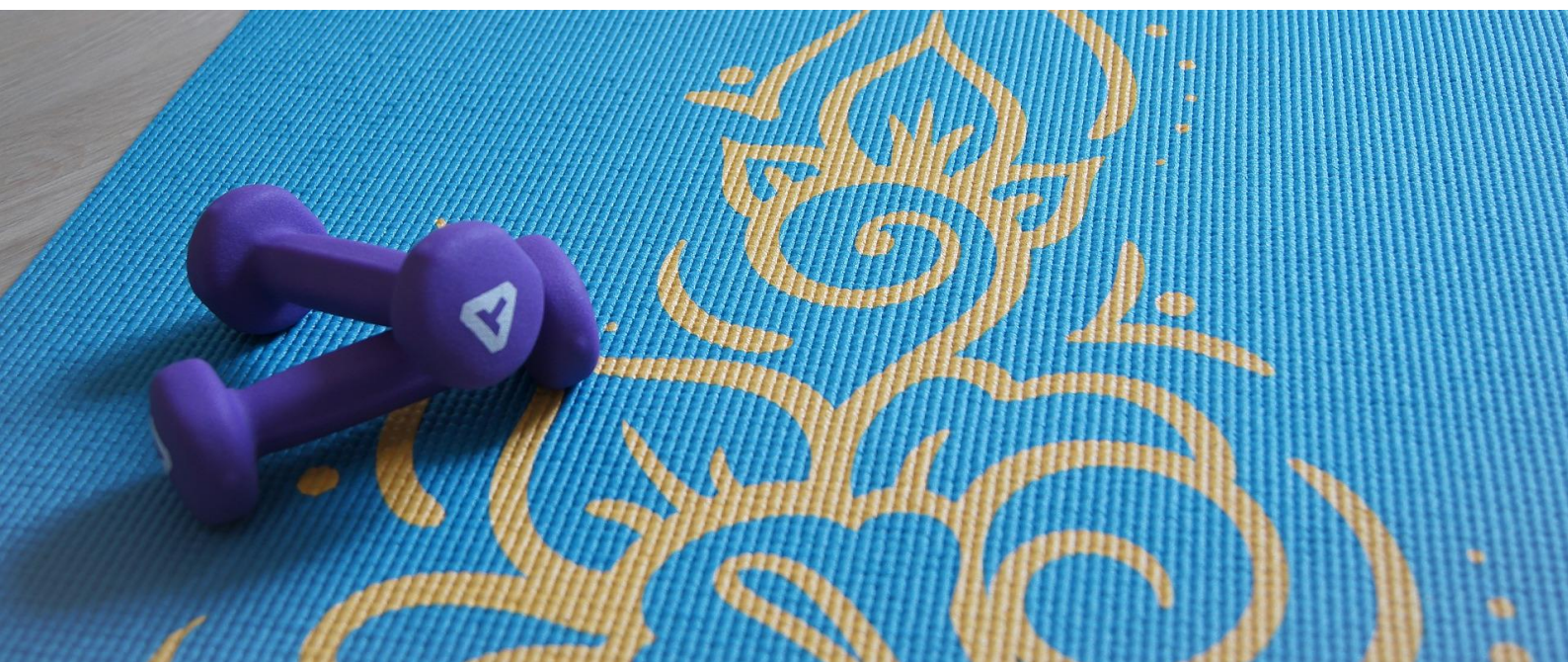
Although SVHCs in concentrations above 0.1% were found in nine of the articles tested, and these articles therefore fall under the "right for information", we did not receive information about SVHCs from any of the sellers of these articles. However, when asked for a statement about the analytic results, some of them provided test reports and stated that they received information from their suppliers that no SVHCs were present in the article in question.

For 56% of the articles, we received no answer at all, even after one or more e-mail reminders. If an article does not contain SVHCs, the manufacturer or seller is not obliged to respond. However, it would be consumer-friendly to respond anyway. Those companies who replied either stated that the articles in question did not contain SVHCs or gave inadequate responses.

Some companies answered that their articles were "REACH compliant". However, this response is not really informative since REACH does not generally ban SVHCs in articles in concentrations above 0.1%. Other sellers said that we should get in touch with their suppliers, which is inadequate, since every retailer must be able to provide SVHC information about all the articles they are selling.

In general, there is a very low level of awareness about SVHCs among companies. Answering consumer requests about SVHCs should become a matter of course in future.

The more consumers send requests via the Scan4Chem-app, the more companies will come to understand that consumers are interested in this issue and do not want to buy articles with SVHCs. As a result, they will have to deal with the issue more and make efforts to replace SVHCs in their articles. By using the app, consumers can help speed up this process. In addition, there are also many companies that are already making great efforts to keep harmful substances out of their products and provide correct information to their customers.



Recommendations

What is needed?

- SVHCs in everyday articles should be replaced by safe and sustainable alternatives as soon as possible. It is appreciated that the EU Commission is considering a ban on SVHCs in consumer products in their [Chemicals Strategy for Sustainability](#).
- Substances for which no safe limits can be derived, e.g. chemicals that interfere with the hormone system or non-threshold carcinogens, should be replaced as a matter of priority.
- All potential substances of very high concern should be identified rapidly and evaluated and, where appropriate, added to the candidate list.
- For companies at every stage along the supply chain, passing on SVHC information should become a matter of course in compliance with REACH Article 33. Information on SVHCs in articles must be disseminated both along the supply chain and to the responsible authorities and ultimately made available to the public and consumers. This information is currently beginning to be made available in the SCIP database which was established by the European Chemicals Agency in the context of the [Waste Framework Directive](#).
- Companies should be made more aware of REACH obligations so that they are correctly implemented.
- The 45-day response period should be shortened, and replies required for any SVHC request, even if no SVHCs are present, in order to avoid misunderstandings.

What can consumers do?

- Avoid articles made of plastic, especially soft PVC or cheap articles made of dark hard plastic. Return strongly smelling plastic articles to the retailer.
- Look out for eco-labels such as the EU Eco-label or the Blue Angel.
- Scan articles you want to buy in advance with the "Scan4Chem" app and send an SVHC request to the seller or manufacturer of the item. Send requests for all articles you are interested in with the Scan4Chem app to show companies that consumers want safe articles!

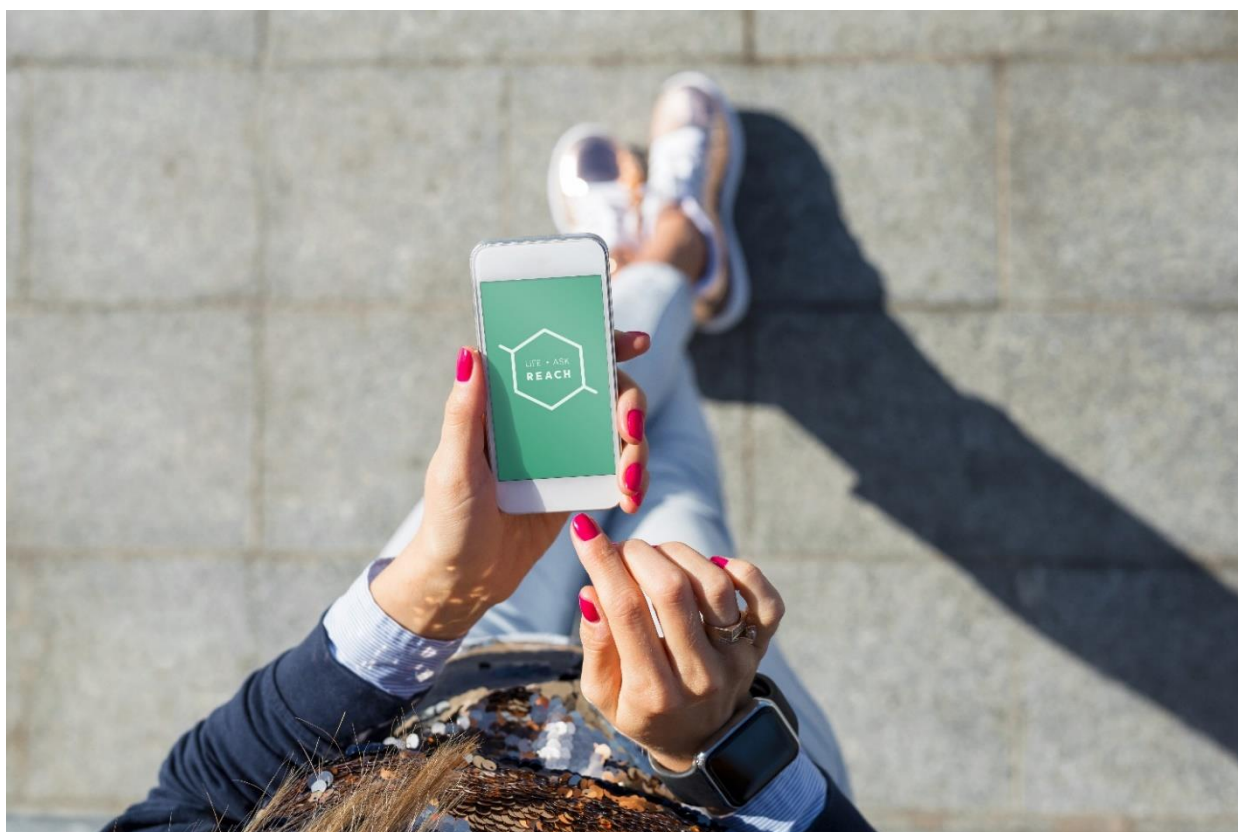


The AskREACH project and the Scan4Chem app

[LIFE AskREACH](#) is a five-year project funded by the EU LIFE programme. Under the coordination of the German Environment Agency, 20 partner organisations in 13 EU member states are cooperating to make the REACH consumer rights more widely known.

As part of the project, a smartphone app (named "Scan4Chem" in most countries) allows consumers to use the barcodes of articles to see if they contain SVHCs or to send REACH consumer requests directly to companies.

We also work with companies to make it easier for them to respond to SVHC requests. The project offers a database so that companies can upload information about their articles for faster responses and companies are supported in order to ease communications along the supply chain. The Scan4Chem app can be downloaded for free in the app stores. In 2021 it is planned to connect the app to the SCIP database, in which companies have to enter all articles with SVHCs above 0.1% according to the Waste Framework Directive.



Imprint

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ANNEX

Articles in which SVHCs were found

Product	SVHC [% w/w]	Country	Price [€]	Answer of company
Boxing glove red	DBP 0,065%; DEHP 2,9%; DIBP 0,13%; below limit: NP 0,0015%; DIDP 0,012%; DPENP 0,038%; <i>DINP** 11%; MCCP* 0,011%</i>	Serbia	21,1	no answer
Children's sunglasses	below limit: NP 0,00079%	France	5,95	no answer
Dumbbells	DEHP 0,61%	Sweden	3,89	incorrect answer
Futsalball	below limit: NP 0,0014%	Germany	38,94	correct answer
Gymnastic shoes	<i>DINP** 0,038% (no SVHC)</i>	Portugal	5,95	no answer
Handtrainers	<i>DIDP** 0,46% (no SVHC)</i>	Hungary	2,83	no answer
Jumping rope	below limit: DecaBDE 0,0013%; DEHP 0,011%	Sweden	14,52	no answer
Massage ball	below limit: NP 0,025%	Germany	12,5	correct answer
Overball	DIBP 35%; MCCP* 0,69%	Czech Republik	3,67	no answer
Pilates Airpad	DIBP 15%; below limit: DEHP 0,016%; <i>MCCP* 0,019% (no SVHC)</i>	Germany	13,95	incorrect answer
Pilates ball	DIBP 41%	Luxembourg	7,99	no answer
Pilates ball	below limit: NP 0,00034%	Germany	2,99	correct answer
Reaction ball	below limit: NP 0,00054%	Czech Republik	2,56	no answer
Silicone swimming cap	DEHP 0,12%; below limit: NP 0,00057%; <i>MCCP* 0,13% (no SVHC)</i>	Latvia	5,00	incorrect answer
Skipping rope	DEHP 24%; SCCP 2,6%; below limit: NP 0,001%; DecaBDE 0,0038%; <i>MCCP* 3,4%; DINP** 0,024%</i>	France	2,99	no answer
Smartphone running armband	below limit: NP 0,00063%	Latvia	1,00	correct answer
Soccer ball	below limit: NP 0,0014%	France	4,5	correct answer
Tennis ball	ADCA 0,48%	Luxembourg	1,99	incorrect answer
Water bidon	below limit: BPA 0,000033%	Portugal	2,99	no answer
Water bottle	below limit: DEHP 0,019%	Latvia	4,50	incorrect answer
Waterproof bag	below limit: NP 0,014%; <i>DINP** 26%; DIDP** 0,014% (no SVHC)</i>	Greece	28,9	no answer
Yoga mat	ADCA 0,22%	Czech Republik	12,93	incorrect answer
Yoga mat	<i>MCCP* 0,67% (no SVHC)</i>	Germany	9,74	correct answer

* MCCPs are not listed as SVHCs, but are likely to have similar characteristics as SCCPs and are thus likely to be harmful to health and environment. They are currently under assessment as PBT but no communication duty applies yet.

** DINP and DIDP are not listed as SVHCs but are restricted in children's articles (REACH Annex XVII Entry 52)

Red = Not marketable on EU market

Orange = Duty of information according to REACH article 33

Italics: Not yet classified as an SVHC