The AskREACH Summer-Test: Swimming, gardening and DIY articles

Summer 2022

The Project LIFE AskREACH (No. LIFE16 GIE/DE/000738) is funded by the LIFE Programme of the European Union

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INTRODUCTION

The product test of summer items carried out as part of the EU project "LIFE AskREACH" shows that many everyday objects still contain harmful chemicals such as phthalates or heavy metals.
Thirteen partner organizations from various EU countries purchased a total of 106 products and had them analyzed by an independent, accredited laboratory. The product categories included swimming, gardening, and DIY items.

The analyzed substances are classified as Substances of Very High Concern (SVHCs) according to the European Union chemicals regulation REACH. SVHCs are proven to be harmful for humans and/or the environment. They can be:

- carcinogenic,
- toxic to reproduction,
- mutagenic,
- endocrine disruptive,
- persistent, bioaccumulative and toxic,
- very persistent and very bioaccumulative, or
- of similar concern

SVHCs can be present in all kinds of consumer products, such as toys, kitchen utensils, furniture, clothing or jewellery. In this summer-themed product test, the focus was on gardening, swimming and DIY articles.

LEGAL BACKGROUND

REACH

The EU 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.

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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 in June 2022 contained 224 substances. 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 SVHCs. This obligation applies as soon as at least one SVHC is present at a concentration of more than 0.1% by weight in that article. The information must be made available within 45 days and must include at least the name of the SVHC substance.
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, cleaning agents, paints, or powders, the obligation to provide information applies only to the packaging.

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 scan the barcodes of articles to see if they contain SVHCs, or to send REACH consumer requests directly to companies.

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We also work with companies to make it easier for them to respond to SVHC requests. The project offers a database where companies can upload their article information so that they will not have to answer individual consumer requests. The project also facilitates communications along the supply chain for companies. The Scan4Chem app can be downloaded for free in app stores.

PARTNER ORGANISATIONS PARTICIPATING IN THE TESTING ACTION

Name of Organisation	Country
BUND – Bund für Umwelt und Naturschutz Deutschland e.V. – Friends of the Earth Germany	Germany
LIST – Luxembourg Institute of Science and Technology	Luxembourg
The Danish Environmental Protection Agency	Denmark
BEF-LV – Baltic Environmental Forum Latvia	Latvia
GLOBAL 2000 – Friends of the Earth Austria	Austria
Fundacja Kupuj Odpowiedzialnie (Buy Responsibility Foundation)	Poland
Arnika – Toxics and Waste Programme	Czech Republic
Zelena akcija – Friends of the Earth Croatia	Croatia
ZER0 – Association for the Sustainability of the Earth System	Portugal
NOA – National Observatory of Athens	Greece
INERIS – French National Institute for Industrial Environment and Risks	France
Swedish Consumers' Association / Sveriges Konsumenter	Sweden
Magyar Természetvédők Szövetsége – Friends of the Earth Hungary	Hungary

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ANALYZED SUBSTANCES

Substance/substance group	Substances included
Phthalates	BBP; DBP; DEHP; DIBP; DIHP; DHNUP; DMEP; DPENP; DiPP; PiPP; DPP; DnHP; DCHP; DHxP; DIHxP; DPP; 1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters, 1,2-Benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters
Chlorinated Paraffins	SCCPs; MCCPs
Alkylphenols	Octylphenols; Nonylphenols; TNPP
PAH (Polycyclic aromatic hydrocarbons)	Benz[a]anthracene; Benzo[a]pyrene; Chrysene; Benzo[k]fluoranthene
Heavy metals	Lead; Cadmium
ADCA	ADCA
Formamides	Formamide; N,N-dimethylformamide
Flame retardants	DecaBDE; TCEP; HBCDD; TXP
Siloxanes	D4; D5; D6
UV stabilizers	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320); 2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328); 2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350); 2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)
Bisphenols	Bisphenol A

Phthalates

Phthalates are plasticisers used in plastics such as PVC to make them soft and flexible. 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 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 by the German Environment Agency between 2003 and 2006 examined 1,790 children aged between 3 and 14 years and revealed alarming

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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. Countless everyday objects such as clothing, shoes, tools, swimming gear, kitchen and bathroom items or cables may contain phthalates. Since July 2020, products containing the phthalates DEHP, DIBP, BBP and DBP may no longer be placed on the market if the concentration exceeds the limit of 0.1 percent by weight (with very few exceptions). Other phthalates (DNOP, DINP and DIDP) have been banned for use in children's products.

Short- and medium-chain chlorinated paraffins (SCCPs & MCCPs)

Chlorinated paraffins are divided into long-, medium- and short-chain chlorinated paraffins depending on the chain length. They are used in many different ways, for example as plasticisers in plastics, as binding agents in paints, as flame retardants or as oiling agents for leather and furs.
Chlorinated paraffins are extremely persistent and very toxic to aquatic life. They pollute water and soil and can harm living organisms. SCCPs are classified as “possibly carcinogenic to humans” by the International Agency for Research on Cancer. They can also cause kidney, liver and thyroid damage. They accumulate in human fat tissue and are passed on through breast milk. SCCPs are distributed all over the world and can be detected in soil, water, plants, humans and animals. They are regulated by the European regulation for persistent organic pollutants (POP regulation), which sets a limit concentration in articles of 0.15%.

Alkylphenols

Alkylphenols are commonly used in detergents, paints, pesticides and textile processing. They are intended to change the surface properties of a wide variety of products and many of them, such as cleaning agents, often end up directly in the environment and in water. Once there, they are very persistent and can cause serious damage: they are linked to reproductive health problems and act in a similar way to hormones. They are particularly harmful to aquatic life and can even result in fewer male fish developing and can affect their reproductive health.

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Polycyclic aromatic hydrocarbons (PAHs)

PAHs are formed during the incomplete combustion of biomass (e.g. wood, coal or oil) and are often carcinogenic, mutagenic, toxic to reproduction, persistent in nature and toxic to aquatic organisms. Due to their longevity, they are found almost everywhere these days. In everyday objects, PAHs are often found in bicycle handlebar grips or tool handles, where they can also be absorbed through the skin. Plasticiser oils that make plastics more soft and flexible often contain PAHs. PAH contamination is found in particular among cheap plastic and rubber products.

Heavy metals

Heavy metals such as copper, lead, cadmium or mercury are usually only found at low concentrations in nature. While many of them are vital for plants, animals and humans, even slightly elevated concentrations can have a harmful impact on their health. Soil around the world is widely contaminated with heavy metal compounds, which in turn can transfer into groundwater. They subsequently 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 our nervous system and organs such as the kidneys and liver. These include, for example, lead and cadmium.
Heavy metals can be found in household items, jewellery and even toys.

Azodicarbonamide (ADCA)

ADCA is used as a blowing agent in the production of foamed plastics. An example of this would be swimming aids. ADCA was listed as an SVHC in 2012 due to its association with respiratory diseases, allergies and asthma.

Formamide

Formamide and dimethylformamide are rather volatile organic compounds and both are toxic to reproduction, meaning they damage our fertility. Formamide can form during the foaming of plastics, which is why it is often found in swimming aids, flip-flops or yoga mats.

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Flame retardants

Flame retardants have been added to a large number of products since the 1970s. They are most commonly found in furniture, electronic products, construction and building materials, and in vehicles. They are intended to reduce the flammability of products. Brominated and chlorinated flame retardants or organophosphorus compounds are often used.
However, it has long been known that many flame retardants are poorly degradable, accumulate in the environment and are toxic to humans and the environment. They are now commonly detected both in the environment as well as in 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, some flame retardants have not only been classified as SVHCs, but also classified as persistent organic pollutants (POPs) under the EU POP Regulation.

Siloxanes

The siloxanes D4 (octamethylcyclotetrasiloxane), D5 (decamethylcyclopentasiloxane) and D6 (dodecamethylcyclohexasiloxane) are all poorly degradable in nature, accumulate in living organisms and have toxic effects there. D4 is also suspected of affecting fertility. Siloxanes are used to manufacture silicones, which is why they can be found in swimming caps or swimming goggles made of silicone.

UV stabilizers

Benzotriazole phenols are used as UV stabilizers in plastics, surfaces, cosmetics and sunscreens. They also barely degrade in nature and accumulate in the environment and in living organisms, with toxic effects.

Bisphenol A (BPA)

BPA is another harmful substance commonly found in consumer products. It has been used to make hard plastic (polycarbonate) and epoxy resins since the 1960s. BPA has been used in a wide variety of products, from beverage and food cans and water pipes to water bottles and drinking cups to electronic housings and even toys. Due to this widespread use, consumers are exposed to the chemical in many ways, for example through the consumption of food and water.

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BPA has been classified as an SVHC since 2018 because of its reproductive and endocrine disrupting properties. Because of its oestrogen-like effects, BPA can affect reproductive health and even be harmful to brain development in foetuses and infants.

RESULTS

The results show that many swimming, gardening and DIY articles still contain substances of very high concern.

Almost a third of the articles analyzed contained at least one SVHC and 10 articles contained SVHCs above the threshold of 0.1% by weight.
For those 10 products, the duty to inform according to REACH article 33 applies.

Six articles contained plasticisers that have been restricted in consumer articles in July 2020 due to their negative effects on our hormone system. Already at very low concentrations they can be toxic to reproduction. Nevertheless, these plasticisers were found at concentrations of up to 23% by weight, which means that almost a quarter of the article consisted of these harmful substances. These high concentrations of plasticisers were found for example in gardening gloves and even in a painting apron for children. Most of these articles would not have been marketable.

In a rubber spattle, four carcinogenic and persistent polycyclic hydrocarbons were detected over the limit value. These SVHCs are also additionally restricted according to the EU chemicals regulation REACH. This article was not fit to be placed on the EU market.

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Items with an SVHC >0.1% w/w

Country	Product	Price [€]	SVHCs detected
AT	Rubber spattle	3.49	**Benz[a]anthracene 0.00223%*; Benzo[a]pyrene 0.00273%*; Chrysene 0.00217%*; Benzo[k]fluoranthene 0.00033%*** Lead 0.00412% BPA 0.0000442%
AT	Waterproof tape	17.99	**2-(2H-Benzotriazol-2-yl)-4,6-di-tert-pentylphenol (UV-328) 0.22%**
DE	Plastic cord	4.99	**DIBP 16%** **MCCPs 12%**
DE	Hosepipe	7.99	**MCCPs 0.48%**
DE	Pond liner	21.99	**DEHP 0.15%** **MCCPs 0.15%**
FR	Painting apron children	9.79	**DEHP 23%** Nonylphenols 0.00039%
HR	Pruning shears	4.77	**MCCPs 0.41 %**
HU	Gardening gloves	1.80	**DEHP 23%;** DBP 0.032% **SCCPs 4.4%; MCCPs 3.6%**
LU	Hosepipe	5.95	**DEHP 2%; DBP 0.25%** Benz[a]anthracene 0.00005%; Benzo[a]pyrene 0.00008%; Chrysene 0.00006%
LV	Flip-flops	1.30	**DBP 11%** **SCCPs 8.3%** ADCA 0.0063% Formamide 0.0014%

*substance specific threshold of 0.0001%, above that concentration not allowed in consumer products, only few exceptions

red = not legal in consumer products on EU-market, only few exceptions
orange = duty of information (SVHC above 0.1%, no additional restriction for the respective product)
black = legally allowed on market and no duty of information due to low concentration

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All analyzed articles

Country	Product	Price [€]	SVHCs detected
AT	Extension cable	6.45	BPA 0.0000262%
AT	Pump bag	10.95	
AT	Working gloves	6.95	
AT	Earplugs noise reducing	6.95	
AT	Rubber spattle	3.49	**Benz[a]anthracene 0.00223%*;** **Benzo[a]pyrene 0.00273%*;** **Chrysene 0.00217%*;** **Benzo[k]fluoranthene 0.00033%*** Lead 0.00412% BPA 0.0000442%
AT	Facemask for dust, FFP2	7.79	BPA 0.0000139%
AT	Earplugs noise reducing	4.29	
AT	Screwdriver	6.99	BPA 0.00019%
AT	Swimming noodle	3.99	
AT	Gardening gloves waterproof	6.49	Lead 0.00182%
AT	Water pistol	2.39	
AT	Inflatable mattress	5.99	
AT	Waterproof tape	17.99	**2-(2H-Benzotriazol-2-yl)-4,6-di-tert-pentylphenol (UV-328) 0.22%**
AT	Hosepipe	1.99	
CZ	Flower pot	5.21	
CZ	Flower pot	1.44	
CZ	Shower/pool stickers	5.16	
CZ	Spray bottle	4.76	
CZ	Rubber boat for children	7.16	
CZ	Garden tools for children	2.75	Nonylphenols 0.0004% MCCPs 0.03% Lead 0.0027%
CZ	Chemical dispenser for pools	6.76	
CZ	Children tableware set	7.76	

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Country	Product	Price [€]	SVHCs detected
DE	Garden trowel	1.99	
DE	Pond liner	19.95	
DE	Gardening shoes	12.95	
DE	Plastic cord	3.99	
DE	Gardening gloves	8.99	
DE	Inflatable pool ring	8.40	
DE	Paddling pool	15.99	
DE	Hosepipe	9.99	
DE	Plastic cord	4.99	**DIBP 16%** **MCCPs 12%**
DE	Hosepipe	7.99	**MCCPs 0.48%**
DE	Paddling pool	3.99	
DE	Pond liner	21.99	**DEHP 0.15%** **MCCPs 0.15%**
DE	Gardening gloves	2.99	Nonylphenol 0.00047%
DE	Swimming aid	2.00	
DK	Gardening gloves	6.72	Phenanthrene 0.00003% Pyrene 0.00002%
DK	Toy water pump	1.00	Phenanthrene 0.00003%
DK	Flat nose pliers	9.40	Phenanthrene 0.00003%
DK	Paddling pool	10.21	
DK	Gardening shoes	13.44	
DK	Kneeling pad	11.96	
FR	Gardening shoes	13.95	
FR	Toy water pump	4.99	N,N-dimethylformamide 0.00059%
FR	Household gloves children	4.39	
FR	Painting apron children	9.79	**DEHP 23%** Nonylphenols 0.00039%
FR	Kneeling pad	6.49	Formamide 0.012% DEHP 0.014%
GR	Swimming cap	7.99	D4 0.0042%; D5 0.038%; D6 0.049%
GR	Swimming goggles	7.99	D4 0.0014%; D5 0.03%; D6 0.054%
GR	Flower pot	1.79	

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Country	Product	Price [€]	SVHCs detected
GR	Garden trowel	4.89	
GR	Inflatable swim ring	3.99	
HR	Pruning shears	4.77	**MCCPs 0.41 %**
HR	Box	3.71	
HR	Hosepipe	31.77	
HR	Funnel	1.97	
HR	Flower pot	1.98	
HR	Tongs	14.59	N,N-dimethylformamide 0.00048%
HR	Wire brush	1.19	
HR	Working gloves	0.80	N,N-dimethylformamide 0.054% ADCA 0.024 %
HR	Shovel	7.29	
HR	Screwdriver	2.51	
HR	Bucket	1.06	Lead 0.00238 %
HU	Gardening gloves	1.80	**DEHP 23%;** DBP 0.032% **SCCPs 4.4%; MCCPs 3.6%**
HU	Inflatable penguin, swimming	2.90	
HU	Household gloves	1.34	
LU	Swimming noodle	1.99	
LU	Paddling pool	4.99	
LU	Hosepipe	5.95	**DEHP 2%; DBP 0.25%** Benz[a]anthracene 0.00005%; Benzo[a]pyrene 0.00008%; Chrysene 0.00006%
LU	Gardening shoes	5.99	
LU	Pruning shears	6.98	
LV	Working gloves	4.37	
LV	Inflatable pool float	4.54	
LV	Flip-flops	1.30	**DBP 11%** **SCCPs 8.3%** ADCA 0.0063% Formamide 0.0014%
LV	Water wings	1.79	
LV	Toy water pump	1.80	

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Country	Product	Price [€]	SVHCs detected
LV	Watering can	8.99	
PL	Markers children	15.08	
PL	Scissors	4.31	
PL	Working gloves	1.94	
PL	Gardening tools	3.23	
PL	Stamps children	3.23	
PT	Ear protector	7.49	Phenanthrene 0.00004%
PT	Pruning shears	8.99	
PT	Screwdriver	2.59	
PT	Tool box	6.99	
PT	Extension cable	14.79	
PT	Trimmer line	12.99	
PT	Plug socket	8.99	BPA 0.0014%
PT	Paint brush	5.69	
PT	Lashing strap	6.09	Lead 0.00123%
PT	Hinge	4.09	
PT	Door handles	6.59	Cadmium 0.00206%; Lead 0.00815%
PT	Light switch	5.48	
PT	Saw	24.90	DecaBDE 0.002% Lead 0.00384%
PT	Working gloves	6.69	
PT	Pliers	13.90	
PT	Utility knife	3.39	Lead 0.0414%
SE	Gardening shoes	2.88	DBP 0.026%
SE	Water toy	2.88	
SE	Water toy	3.85	
SE	Toy water pump	2.79	
SE	Hosepipe	9.61	
SE	Cooler bag	16.25	DEHP 0.0053%
SE	Life jacket	22.98	
SE	Glue gun	6.63	

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RECOMMENDATIONS

What needs to be done?

- SVHCs in everyday products should be replaced by safe alternatives as soon as possible.
- 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 rapidly be identified and evaluated and, where appropriate, added to the candidate list.
- For companies at every stage of the supply chain, passing on SVHC information should become a matter of course in compliance with REACH Article 33. Information on SVHCs must be disseminated both along the supply chain and to the competent authorities and ultimately made available to the public and consumers.
- Companies should be made more aware of REACH obligations so that these are correctly implemented.
- The 45-day response period should be shortened, and replies given to every 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. Preferably buy products made of natural materials like wood.
- Look out for eco-labels, such as the EU Ecolabel or the Blue Angel.
- Scan products you want to buy in advance with the “Scan4Chem” app and send an SVHC request to the seller or manufacturer of the item. Scan as many products as possible with the Scan4Chem app to show companies that consumers want safe products!

IMPRINT:
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