

The Swedish Chemicals Agency's Analyses in conjunction with Enforcement 2020

ENFORCEMENT 9/21



The Swedish Chemicals Agency is supervisory authority under the Government. We work in Sweden, the EU and internationally to develop legislation and other incentives to promote good health and an improved environment. We monitor compliance of applicable rules on chemical products, pesticides and substances in articles and carry out inspections. We also provide inspection guidance for municipalities and county councils. We review and authorise pesticides before they can be used. Our environmental quality objective is A Non-toxic Environment.

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Preface

The Swedish Chemicals Agency is the central enforcement authority for regulations within the field of chemicals. Among other things, we control that products and articles on the Swedish market do not contain hazardous chemical substances to which legal restrictions apply. This report is a synthesis of the analyses conducted by our Enforcement and Statistics Department over the course of 2020. This report gives an overview. If you would like a deeper analysis of the information in the report, please see the publications referred to in this report. The project leader has been Frida Ramström at the unit Enforcement of Rules – Pesticides and Articles.

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Glossary

Abbreviation	Explanation
ICSMS	Information and Communication System on Market Surveillance – a system in which enforcement authorities in the EU report controlled products.
PVC	Polyvinyl Chloride – a kind of plastic that can be made soft by the addition of plasticisers.
Safety Gate	Safety Gate has previously been called Rapid Alert and Rapex. It stands for "Rapid Alert System for non-food dangerous products" and is a system in which enforcement authorities in the EU report dangerous products.
XRF	X-Ray Fluorescence – an analysis method for screening analyses of elements on the surface of material.

Summary

The Swedish Chemical Agency's Enforcement and Statistics Department makes inspections of companies manufacturing, importing and providing chemical products and articles that have been treated with or contain chemical substances. One part of the inspection activity is chemical analyses of products to check that they fulfil the requirements of the legislation. This report is an account of analyses made by the Enforcement Department during 2020.

The products that have been analysed are within the categories *toys and childcare articles, clothing, shoes and accessories, electrical products, building materials and furnishings, sports and leisure equipment* and *chemical products*. In total, 983 products have been tested during 2020 and 16 percent of these contained forbidden substances in levels above the limit values in the legislation. This proportion is at the same level as previous years.

The category with most forbidden substances was *clothing, shoes and accessories*. 74 articles in this category, which corresponds to 22 per cent, contained restricted substances in concentrations above limit values. It was mainly jewellery that contained the heavy metal cadmium (65 jewellery). Cadmium is used when manufacturing cheap jewellery to give the jewellery weight and to soften the metal to make it easier to process. Cadmium may be acute toxic if a piece of jewellery containing cadmium is swallowed. In a long run and at a lower dose, cadmium could damage the skeleton and the kidneys.

In this report, we have compiled information on what substances on the Candidate List that we find in the products and in what type of products they are found. The two substances that we find most often are the softener bis(2-ethylhexyl) phthalate (DEHP) that can be found in different products made of soft PVC plastic and the flame retardant tris(2-chloroethyl) phosphate (TCEP).

The analytical results presented in this report may be used when developing new legislation or by companies that want to investigate their own products. In addition, other enforcement authorities may have use for the information about which substances we have found in different types of articles and chemical products.

Sammanfattning

Kemikalieinspektionens tillsynsavdelning inspekterar företag som tillverkar, importerar och säljer kemiska produkter och varor som innehåller eller har behandlats med kemiska ämnen. Som en del av kontrollen analyseras produkter för att kontrollera att de klarar de krav som finns i lagstiftningen. Denna rapport är en sammanställning av de analyser som tillsynsavdelningen har gjort under 2020.

De analyserade produkterna sorterar under kategorierna *leksaker och barnavårdsartiklar, kläder, skor och accessoarer, elektriska produkter, byggvaror och inredning, sport- och fritidsvaror samt kemiska produkter*. Totalt har 983 produkter analyserats under 2020. 16 procent av dessa innehöll ämnen i halter över gränsvärdena i lagstiftningen. Det är ungefär samma nivå som tidigare år.

Den kategori med flest otillåtna ämnen var *kläder, skor och accessoarer*. 74 varor i denna kategori, vilket motsvarar 22 procent, innehöll otillåtna ämnen i halter över gränsvärdena. Det var främst smycken som innehöll tungmetallen kadmium (65 smycken). Kadmium kan användas vid tillverkning av oäkta smycken för att ge tyngd till det och göra metallen mjukare så det blir lättare att bearbeta den. Kadmium kan vara akut farligt om en person sväljer en del av ett smycke som innehåller kadmium. På längre sikt och vid lägre intag av metallen, kan kadmium ge skador på skelettet och njurarna.

I rapporten har vi även sammanställt vilka ämnen med särskilt farliga egenskaper (som finns upptagna på kandidatförteckningen) som vi har hittat. De två ämnen vi hittat mest av är mjukgöraren di(2-etylhexyl)ftalat (DEHP) som finns i varor gjorda av mjuk PVC-plast samt flamskyddsmedlet tris(kloretyl)fosfat (TCEP). DEHP och TCEP kan försämra förmågan att få barn och TCEP är även misstänkt cancerframkallande.

Analysresultaten som presenteras i den här rapporten kan även användas för att utveckla ny lagstiftning eller av företag som själva vill undersöka sina egna produkter. Dessutom kan andra tillsynsmyndigheter ha nytta av att veta vilka ämnen vi har hittat i olika sorters varor och kemiska produkter.

1 Introduction

1.1 Background

As one part of the enforcement activities during 2020, the Swedish Chemicals Agency has checked the content of chemical substances in articles and chemical products using chemical analyses. These chemical analyses have been conducted partly by using the Agency's own XRF instrument¹ and partly with the help of accredited external laboratories. The aim of this report is to compile and provide an overview of information and results from the analyses in our enforcement over the course of 2020. The report does not encompass those analyses that other parts of the Swedish Chemicals Agency have ordered, for example surveys of chemical substances in articles.

The regulations that the Swedish Chemicals Agency enforces are largely common to the entire EU. The legislation differentiates between *chemical products* and *articles*. Chemical products are individual chemical substances or mixtures of substances, commonly in liquid or powder form. Examples of these are paint, glue and various types of pesticides. Articles are objects where the physical form, surface or design has greater significance to their function than the chemical content, with examples such as clothing, electronics and plastic toys.

Appendix 1 contains brief information about the substances mentioned in the report. A brief description of the legislation mentioned in the report may be found in Appendix 2.

The Swedish Chemicals Agency's previous analyses in connection with enforcement are compiled in the reports for 2008-2013², 2014-2015³, 2016⁴, 2017⁵, 2018⁶ and 2019⁷.

¹ XRF (X-Ray Fluorescence) is a technique based on X-rays that can measure the content of elements in certain materials.

² Enforcement 6/14 – The Swedish Chemicals Agency's Analyses in conjunction with Enforcement 2008-2013, October 2014 ([Enforcement 6/14: Analyses by the Swedish Chemicals Agency in connection with enforcement 2008-2013 - Kemikalieinspektionen](#))

³ Enforcement 7/16 – The Swedish Chemicals Agency's Analyses in conjunction with Enforcement 2014-2015, October 2016 ([Enforcement 7/16: The Swedish Chemicals Agency's Analyses in Conjunction with Enforcement 2014–2015. - Kemikalieinspektionen](#))

⁴ Enforcement 7/17 – The Swedish Chemicals Agency's Analyses in conjunction with Enforcement 2016, March 2017 ([Enforcement 7/17: Analyses in Conjunction with Enforcement 2016 - Kemikalieinspektionen](#))

⁵ Enforcement 6/18 – The Swedish Chemicals Agency's Analyses in conjunction with Enforcement 2017, June 2018 ([Enforcement 6/18: The Swedish Chemicals Agency's analyses in conjunction with enforcement - Kemikalieinspektionen](#))

⁶ Enforcement 11/19 – The Swedish Chemicals Agency's Analyses in conjunction with Enforcement 2018, November 2019 ([Enforcement 11/19: The Swedish Chemicals Agency's Analyses in conjunction with Enforcement 2018 - Kemikalieinspektionen](#))

⁷ Enforcement 11/20 – The Swedish Chemicals Agency's Analyses in conjunction with Enforcement 2019, 2020 ([Enforcement 11/20: The Swedish Chemicals Agency's analyses in conjunction with enforcement 2019 - Kemikalieinspektionen](#))

2 Analyses

Most of the analyses ordered by us during 2020 have concerned substances in articles, but we have also tested chemical products. Articles are objects where the shape, surface or design determines its function to a greater degree than does its chemical composition, in contrast to chemical products. Please note that we have selected products for testing based on highest risk of containing hazardous substances. Therefore, the results reported here do not provide a representative picture of the entire market since the selection of products is not random.

In the section below, the products have been divided into groups of products that we have prioritised for inspection⁸ and in our action plan for a non-toxic everyday environment⁹. A figure with the analytical results appears at the beginning of each section.

- The number of products that do not comply with the legislative requirements is stated in red bars.
- Orange bars show the number of articles in which we have found substances of very high concern (included on the Candidate List) in concentrations more than 0.1 per cent by weight. A customer who buys or receives an article containing substances on the Candidate List must be provided with information about the substances since they have hazardous properties. Read more about this in Appendix 2.
- Yellow colour shows how many products contain restricted substances in concentrations below the limit values or substances that are not regulated for the specific group of products, but which still have hazardous properties. In a few cases, yellow may also indicate that there is an exemption for some applications or that the product was put on the market before the substance was forbidden.
- Products which did not contain any of the substances searched for in the analyses are in green bars.

The products are divided into these four groups to visualise the substances that are found in the analyses even though they are not prohibited. For some groups of products, there are very few substances that are restricted, but substances with hazardous properties can still be found in these.

The review below does not contain a detailed account of the quantity of different substances found or in which specific products these are found. For more detailed information, please see section 3.6 *Additional information* or contact the Swedish Chemicals Agency.

In this report, we have also made a compilation of which substances on the Candidate List we have found in articles; see section 2.8 *Substances on the Candidate List*. Substances on the Candidate List are particularly dangerous substances that are not prohibited in all articles. If an article contains more than 0.1 per cent by weight of such a substance, the customer must be given information about the substance and recommended risk management measures. Professional customers shall receive the information without having to ask for it and private consumers have the right to receive it within 45 days of request and free of charge.

We have also compiled information about in which articles we have found cadmium. This is because cadmium is a harmful substance and we need to reduce exposure to it. This compilation may be found in section 2.9 *Cadmium*.

⁸ Tillsyn nr 15/20 - Strategi för effektiv tillsyn över kemikalier i varor, 2020 ([Tillsyn 15/20: Strategi för tillsyn av farliga ämnen i varor - Kemikalieinspektionen](#))

⁹ Vägen mot en giftfri vardag, 2020 ([Report 4/20: The road toward a non-toxic everyday environment - Kemikalieinspektionen](#))

2.1 Toys and childcare articles

We have tested 121 different toys and childcare articles and found prohibited concentrations of

- bis(2-ethylhexyl) phthalate (DEHP), diisononyl phthalate (DINP), diisobutyl phthalate (DIBP) and tris (1-chloro-2-propyl) phosphate (TCPP) in 11 plastic toys
- DINP in one masquerade costume. Four other masquerade costumes did not meet the requirement on flammability.
- boron in four slime products. One of these also contained organic tin.
- lead, cadmium, DEHP and SCCPs in eight electrical toys
- nitrosamines in two balloons
- TCPP in one toy made of textile.

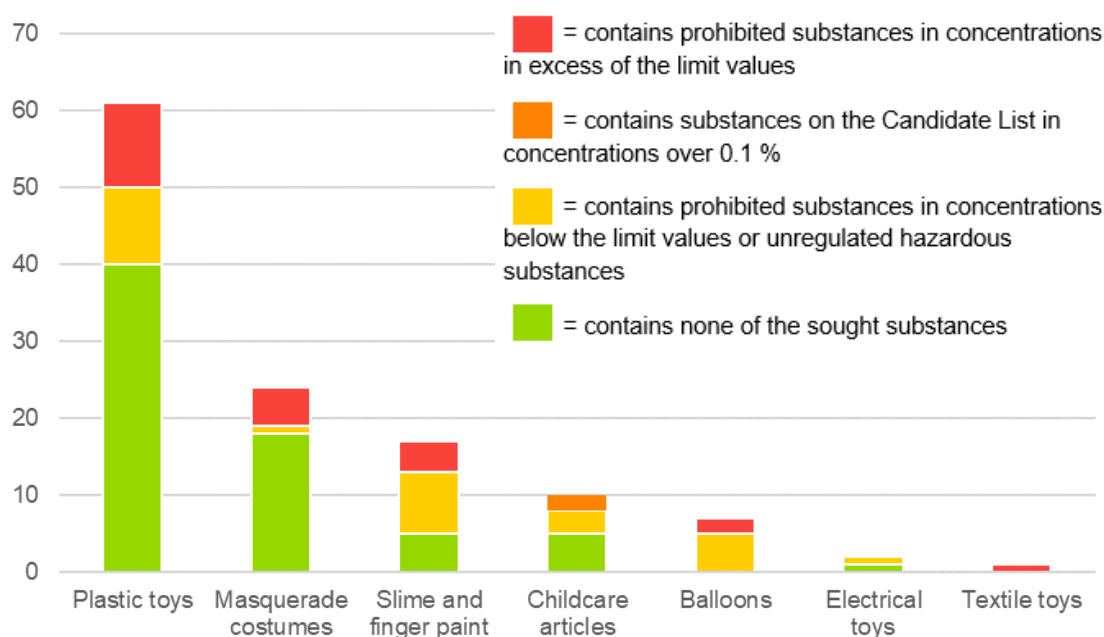


Figure 1. Toys and childcare articles that have been analysed by the Swedish Chemicals Agency during 2020.

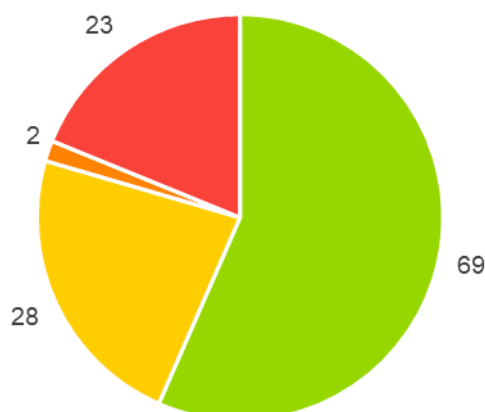


Figure 2. 23 toys and childcare articles contained excessive levels of restricted substances, 2 contained substances on the Candidate List over 0.1%, 28 contained low levels or unrestricted substances and 69 contained none of the substances searched for.

2.1.1 Plastic toys

During the year, we checked 61 different toys made of plastic. 11 of these contained prohibited levels of hazardous substances (six contained the plasticiser DINP, two contained the flame retardant TCPP, two contained the plasticiser DEHP and one contained the plasticiser DIBP).

The toys that contained the forbidden plasticisers were plastic horses, a jump ball and an inflatable toy. The flame retardant TCPP was found in two toys made of plastic foam. In addition to the 11 toys that contained prohibited substances, we found restricted substances in a further ten, but the levels were below the limits. In the remaining 40 plastic toys we found none of the substances we were looking for.

2.1.2 Masquerade costumes

In an enforcement project on e-commerce, we have tested 24 masquerade costumes. Four of these did not meet the requirements on flammability for toys. In addition, one contained the plasticizer DINP in a concentration above the limit value. In one masquerade costume, we found a substance below the limit value. For the remaining 18 masquerade costumes, we did not find any deficit.

2.1.3 Slime and finger paint

We tested 11 slime products during 2020. Of those, four had too high migration levels of boron and one product also migrated too high levels of organic tin. In the remaining seven slime products, lower levels of restricted substances migrated, mainly boron, but at levels below the limit values. We also tested five finger paints, of which one contained low levels of nitrosamines, but below the limit value. The remaining four finger paints did not contain nitrosamines.

2.1.4 Childcare articles

During the year, we have analysed ten childcare articles¹⁰, for example mattresses for resting and changing mats. In two mattresses, we found substances on the Candidate List in concentrations above 0.1 percent of weight. The substances were DIBP and azodicarbonamide (ADCA). Recipients of these articles should be given information on the content of these substances. Consumers should be given the information on request. Three childcare articles contained low levels of restricted substances and in five articles, we could not find any of the substances searched for.

2.1.5 Balloons

In a joint EU project, we tested balloons for nitrosamines. Two balloons contained too high levels of nitrosamines. The remaining five balloons contained low levels (below limit value).

2.1.6 Electrical toys

In 2020, we checked two electrical toys. One of these contained a low concentration of lead (below limit value) and the other did not contain any of the substances searched for.

2.1.7 Textile toys

A jumping sack made of textile contained a too high level of the flame retardant TCPP.

¹⁰ Product intended to facilitate sleep, relaxation, hygiene, the feeding of children or sucking on the part of children.

2.2 Clothing, shoes and accessories

In the category clothing, shoes and accessories, we have tested 335 articles and found prohibited levels of

- cadmium, lead, mercury and nickel in 72 items of jewellery
- lead and short-chain chlorinated paraffins (SCCPs) in two shoes.

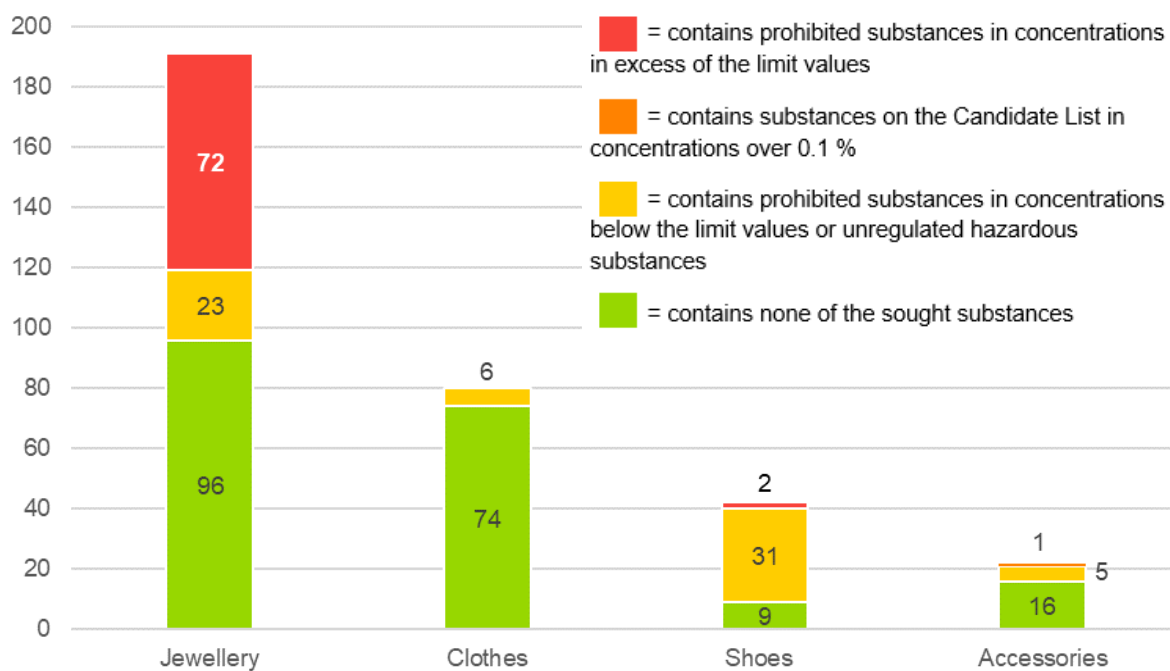


Figure 3. Clothing, shoes and accessories that have been analysed by the Swedish Chemicals Agency during 2020.

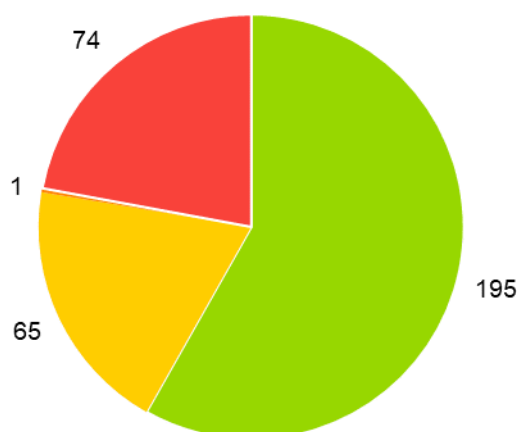


Figure 4. The number of items of clothing, shoes and accessories that contained excessive levels of restricted substances (red), contained substances on the Candidate List over 0.1% (orange), contained low levels or unrestricted substances (yellow) or that contained none of the substances searched for (green).

2.2.1 Jewellery

During the year, we have analysed 191 items of jewellery, mainly for the metals lead, cadmium and nickel. 72 items of jewellery contained forbidden substances:

- 65 contained cadmium
- eight contained lead
- two contained mercury
- three released too high levels of nickel.

Some of the jewellery contained several forbidden substances. In 23 other items of jewellery, we found restricted substances but in concentrations below the limit values. We found none of the substances we were looking for in 96 items of jewellery.

2.2.2 Clothing

During 2020, we tested 80 pieces of clothing and we found neither forbidden substances nor substances on the Candidate List. Six pieces of clothing contained low levels of restricted substances or substances that are not restricted in this type of articles. In the remaining 74 pieces of clothing, we did not find any of the substances that we searched for.

2.2.3 Shoes

In 2020, we analysed 42 shoes and in two of these, we found forbidden substances. One shoe contained a too high level of lead and the other shoes contained a too high level of SCCPs. 31 shoes contained low levels of restricted substances or substances that are not restricted in this type of articles. The other nine shoes did not contain any of the substances searched for.

2.2.4 Accessories

During the year, we controlled 22 accessories, for example bags and gloves. None of these contained forbidden substances, but one belt contained the substance DEHP, that is on the Candidate List, in a concentration above 0.1 percent by weight. Five other articles contained low levels of hazardous substances (in concentrations below limit values) or substances that are not restricted for these types of articles. In 16 of the 22 accessories, we did not find any of the substances searched for.

2.3 Electrical products

We have analysed 297 electrical products and we found prohibited levels of

- DEHP, SCCPs and dibutyl phthalate (DBP) in ten cables
- lead, SCCPs, polybrominated diphenyl ethers (PBDE), DEHP, DBP and DIBP in fifteen electrical kitchen appliances
- lead in four phone chargers
- lead, cadmium and DEHP in three lighting products
- DEHP, lead and SCCPs in five headphones
- lead and cadmium in two other types of electrical products.

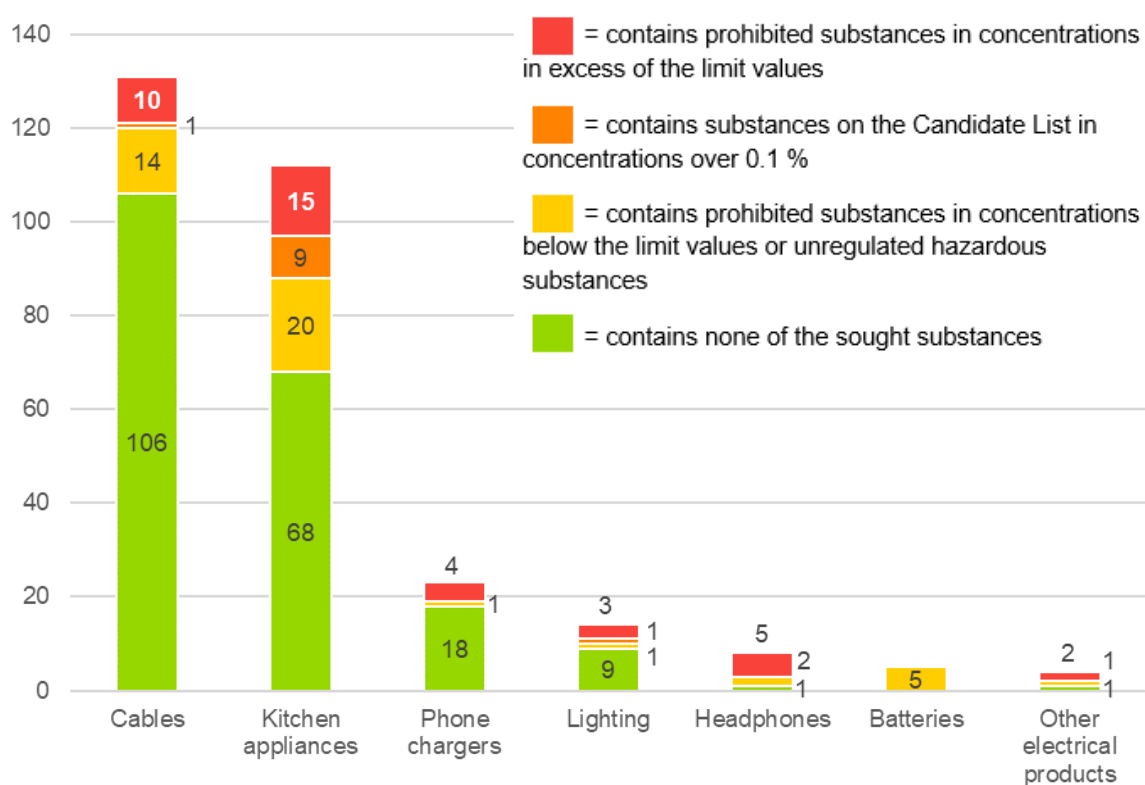


Figure 5. Electrical products that have been analysed by the Swedish Chemicals Agency during 2020.

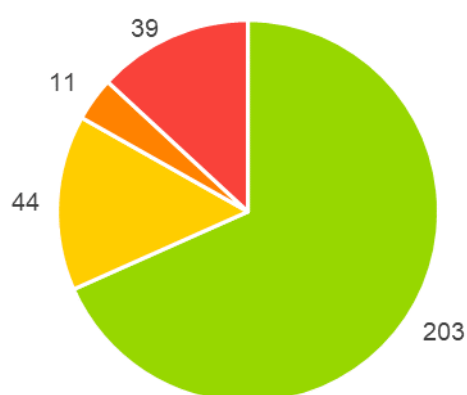


Figure 6. The number of electrical products that contained excessive levels of restricted substances (red), contained substances on the Candidate List over 0.1% (orange), contained low levels (yellow) or that contained none of the substances searched for (green).

2.3.1 Cables

Ten of the 131 cables that we tested during 2002 contained forbidden substances. All ten contained DEHP, four also contained SCCPs and three contained DBP. Another cable contained DEHP in such a concentration that the duty on information was applicable (but the restriction for DEHP was not applicable). 14 cables contained low levels of restricted substances (DEHP, DBP, SCCPs and lead) or substances that are not restricted for this type of article (DINP and DIDP). The remaining 106 cables did not contain any of the substances searched for.

2.3.2 Kitchen appliances

During 2020, we controlled 112 kitchen appliances, for example coffee machines, stick mixers and toasters. Of these, 15 contained forbidden substances in concentrations that are not allowed (11 contained lead, eight contained DEHP, eight contained SCCPs, one contained PBDE, one contained DIBP and one contained DBP).

In addition, nine other products contained substances on the Candidate List in concentrations above 0.1 percent by weight (seven contained the flame retardant tris(2-chloroethyl) phosphate (TCEP), one contained DEHP and one contained SCCPs). Another 20 products contained low levels of some restricted substances or substances that are not restricted for this type of articles. The remaining 68 electrical products did not contain the substances searched for.

2.3.3 Phone chargers

Four of the 23 mobile phone chargers that we checked in 2020 contained prohibited levels of lead. One phone charger contained the non-regulated phthalate DINP and in the remaining 18 phone chargers we did not find any of the substances searched for.

2.3.4 Lighting

In 2020, we checked 14 electric lighting products and three of these contained prohibited levels of substances (two contained lead, two contained cadmium and one contained DEHP). Another lighting product contained a substance on the Candidate List. In addition, one lighting product contained cadmium in a concentration below the limit value. Nine of the 14 tested lighting products did not contain any of the substances searched for.

2.3.5 Headphones

In 2020, we checked eight headphones and five contained prohibited levels of substances. All five headphones contained DEHP, four contained lead and two contained SCCPs. Two other headphones contained low levels of restricted substances or substances that are not restricted for this product group. One pair of headphones contained none of the substances we were looking for in the analyses.

2.3.6 Batteries

During 2020, we analysed five batteries. All five contained low levels of lead, below the limit value.

2.3.7 Other electrical products

In the category other electrical products, there were two of four products that we tested that contained forbidden substances, cadmium and lead. Another product in this category contained a low level of cadmium that was below the limit value. In one product, we did not find the substances searched for.

2.4 Building materials and furnishings

We analysed 58 articles in the category building material and furnishing articles. Of these, we found prohibited levels of

- Polycyclic aromatic hydrocarbons (PAHs) in three ground materials for playgrounds
- PAHs in a swing made of tire
- SCCPs and lead in three furnishing articles.

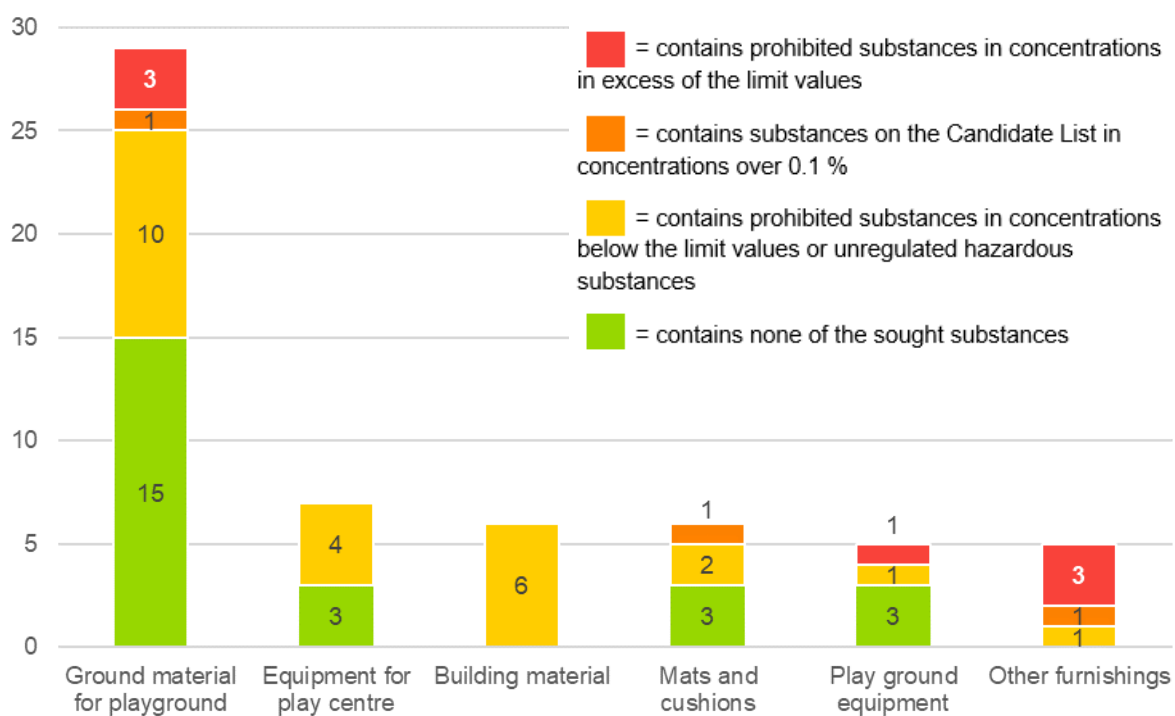


Figure 7. Building materials and furnishings that have been analysed by the Swedish Chemicals Agency during 2020.

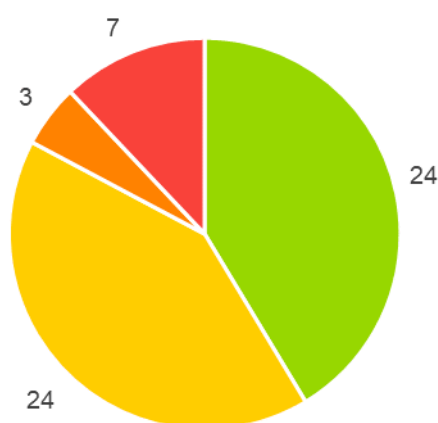


Figure 8. The number of items of building materials and furnishings that contained excessive levels of restricted substances (red), contained substances on the Candidate List over 0.1% (orange), contained low levels or unrestricted substances (yellow) or that contained none of the substances searched for (green).

2.4.1 Ground materials for playgrounds

During the year, we have controlled 29 different ground materials for playgrounds, mostly rubber-based materials. Three of these contained too high concentrations of a group of substances called polycyclic aromatic hydrocarbons, PAHs. One material also contained the substance ADCA, that is on the Candidate List, in concentration above 0.1 percent by weight. Ten material contained low levels of restricted substance respectively substances that are not restricted for this type of articles. In 15 of the tested materials, we did not find any of the substances searched for.

2.4.2 Equipment for play center

We controlled seven mattresses made for use in play centre. None of these contained forbidden substances, but three contained substances that are restricted for toys. An additional article contained lead, but in a low concentration. Three articles did not contain any of the substances that we searched for.

2.4.3 Building material

During 2020, we analysed six insulating plates and none of these contained forbidden substances, but all contained the phthalate DINP, which is not regulated for this type of article.

2.4.4 Mats and cushions

In an enforcement project on articles in children's public environment, we controlled six mats and cushions for use in preschools. One tuffet contained the phthalate DEHP which is a substance of very high concern (listed on the Candidate List). Two other articles contained a low level of a restricted substance respectively substances that are not restricted for this type of articles. In three mats and cushions, we did not find any of the substances searched for.

2.4.5 Playground equipment

In 2020, we controlled three swings and two trampoline pads that are used on playgrounds. One swing made of tire contained a too high level of PAHs. One trampoline pad contained a low concentration of the flame retardant TCPP, but it was not in scope of the restriction in the toy safety legislation. In the remaining three articles, we did not find the substances that we searched for.

2.4.6 Other furnishings

During the year, we have analysed five articles within the category other furnishings. Two of these, an advent lantern and a bowl, contained too high levels of lead. A corner protector contained too high concentration of SCCPs and the substances DEHP and DIBP in concentrations above 0.1 percent by weight, which means that the information duty for substances on the Candidate List was applicable. One sitting furniture contained the flame retardant TCPP but was not in scope for the restriction that only applies to toys.

2.5 Sports and leisure equipment

We analysed 24 sports and leisure articles and we have not found forbidden substances in any of these.

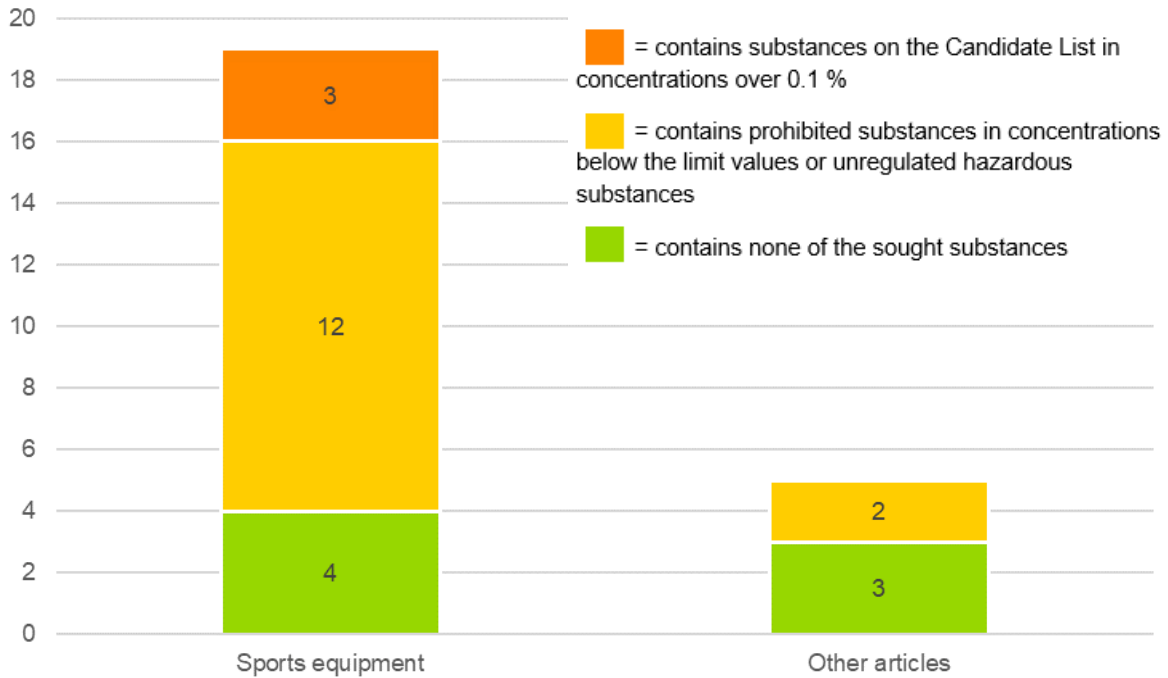


Figure 9. Sports and leisure articles that have been analysed by the Swedish Chemicals Agency during 2020.

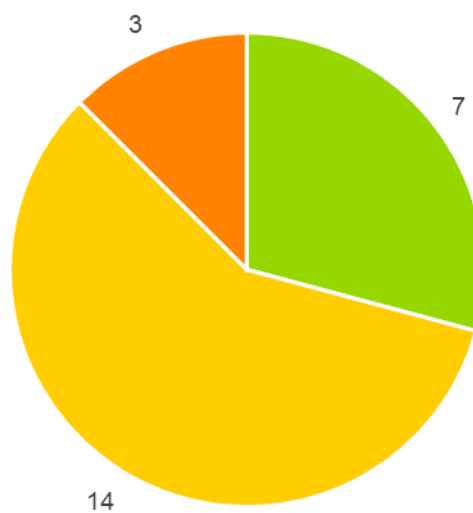


Figure 10. The number of sports and leisure articles that contained substances on the Candidate List over 0.1 % (orange), contained low levels or unrestricted substances (yellow) or that contained none of the substances searched for (green).

2.5.1 Sports equipment

During the year, we analysed 19 sports equipment, primarily made of soft plastic. None contained forbidden substances, but three sports equipment contained substances on the Candidate List in such levels that information to customers is a requirement. All three contained ADCA, two also contained the phthalate DIBP and one contained N,N-dimethylformamide (DMFa). 12 other articles in this category contained low concentrations of restricted substances or substances that are not restricted for this type of articles. The remaining four items in the category did not contain any of the substances searched for.

2.5.2 Other articles

In 2020, we checked five products in the category other articles. Of these, none contained forbidden substances or substances on the Candidate List. Two articles in this category contained low levels of restricted substances or substances not restricted for this product group. The remaining three articles did not contain any of the substances we were looking for.

2.6 Chemical products

We have analysed 141 chemical products and found products that are not allowed in the categories:

- disinfectants (five products)
- plant protection products (three products)
- ski-wax (two products).

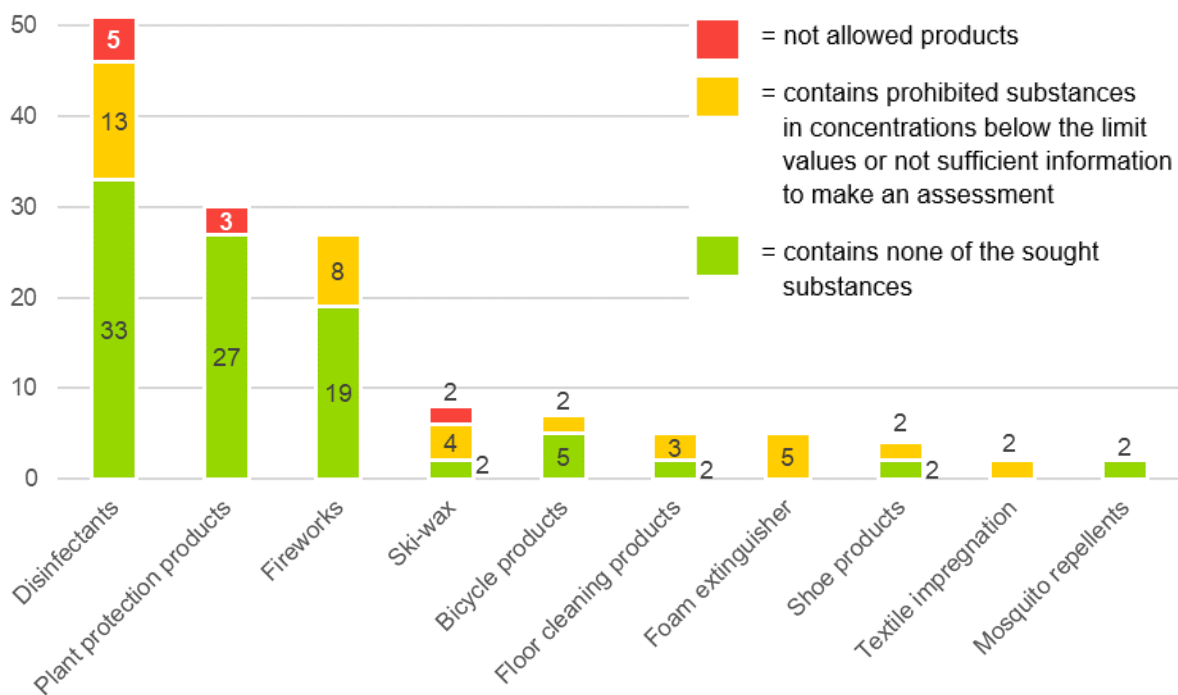


Figure 11. Chemical products that have been analysed by the Swedish Chemicals Agency during 2020.

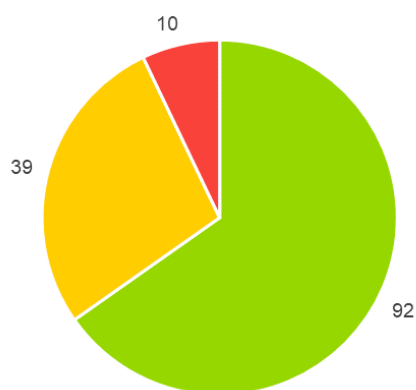


Figure 12. The number of chemical products that contained excessive levels of restricted substances (red), contained low levels or unrestricted substances (yellow) or that contained none of the substances searched for (green).

2.6.1 Disinfectants

Five of the 51 disinfectants we analysed had non-conformities. We came to the conclusion that two products were not efficient since the concentrations of active substances were too low. Three products contained methanol which could have serious effects on human health. For 22 products, there were deviations from the specified concentrations of active substance, but we concluded that the concentrations were within effective dose. For 13 products, there was not enough information to be able to assess if the product should be categorized as "no non-compliance" or "remark". The 22 products with deviation and the 13 products with lack of information are shown in figure 11 and 12 in yellow. 11 disinfectants fulfilled all the requirements.

2.6.2 Plant protection products

During the year, we analysed 30 plant protection products regarding the content of active substance, possible contaminants and certain physical properties such as pH, appearance and density. The purpose was to ensure that the products comply with the approval decision and that there are no illegal products on the Swedish market. We came to the conclusion that three of the plant protection products did not meet the requirements regarding concentration of active substance, since the measured concentration was not the same as the specified concentration.

2.6.3 Fireworks

We tested 27 fireworks regarding the substances hexachlorobenzene (HCB) and mercury. None contained HCB, but eight contained extremely low contamination levels of mercury.

2.6.4 Ski-wax

In a project on perfluorinated compounds, we controlled eight ski-waxes of which two contained too high concentrations of perfluorooctanoic acid (PFOA) and PFOA salts. Additional four ski-waxes contained different perfluorinated compounds, although below the limit values. Two ski-waxes did not contain any of the substances that we searched for.

2.6.5 Bicycle products

We investigated if seven bicycle chemical products contained perfluorinated compounds. None of these contained restricted substances in concentrations above the limit values, but two contained low levels of different perfluorinated compounds.

2.6.6 Floor cleaning products

In the same project as mentioned above, we controlled five floor varnished and floor polishes regarding perfluorinated compounds. None of these contained restricted substances in concentrations above the limit values, but three contained low levels of different perfluorinated compounds.

2.6.7 Foam extinguisher

We controlled the concentration of perfluorinated compounds in five foam extinguishers. None contained restricted substances in concentrations above the limit values, but all five contained low levels of different perfluorinated compounds.

2.6.8 Products for shoe care

During 2020, we analysed four chemical products for shoe care (impregnation spray and shoe polish). Two products contained perfluorinated compounds in concentrations below limit values and two did not contain any of the substances searched for.

2.6.9 Textile impregnation

In an enforcement project on perfluorinated compounds, we analysed two textile impregnation products. Both these contained perfluorinated compounds, but in concentrations below limit values.

2.6.10 Mosquito repellents

In an enforcement project on e-commerce, we controlled two mosquito repellents with analyses. Both products met the requirements.

2.7 Packaging

When we test articles, we also test the packaging of the articles. In 2020, we have analysed seven packaging and two of them contained prohibited levels of SCCPs. One packaging also contained DEHP in concentration above 0.1 percent by weight. Three additional packaging contained low levels of SCCPs and/or DEHP. Two packaging did not contain any of the substances searched for.

We only register packaging analyses when we find prohibited levels, which means that we control more packaging than is shown in this report. Most of the packaging we test does not contain prohibited levels of restricted substances.

2.8 Substances on the Candidate List

Substances with especially hazardous properties may be added to what is known as the Candidate List. These are substances that can cause cancer or harm to genetic material or that can have a negative effect on the ability to have children. They may also be harmful to the environment or have other serious effects. At present, there are about 200 substances on the Candidate List.

If an article contains more than 0.1 per cent by weight of such a substance, the customer must be given information about the substance and how to handle the article in a safe way. Professional customers shall receive the information without having to ask for it and private consumers have the right to receive it within 45 days of request and without charge. This rule can be found in article 33 in the REACH Regulation.

When we perform analyses, we are looking for both prohibited substances and substances on the Candidate List. In this report, the articles that contain substances on the Candidate List at levels above 0.1 per cent by weight are shown in orange in the figures. However, in some cases, we also find substances on the Candidate List in article that contain prohibited substances (shown in red in the figures). In the figure below, we have compiled the substances on the Candidate List that we have found during 2020 in articles at levels above 0.1 per cent by weight. Articles that contain prohibited substances are included here.

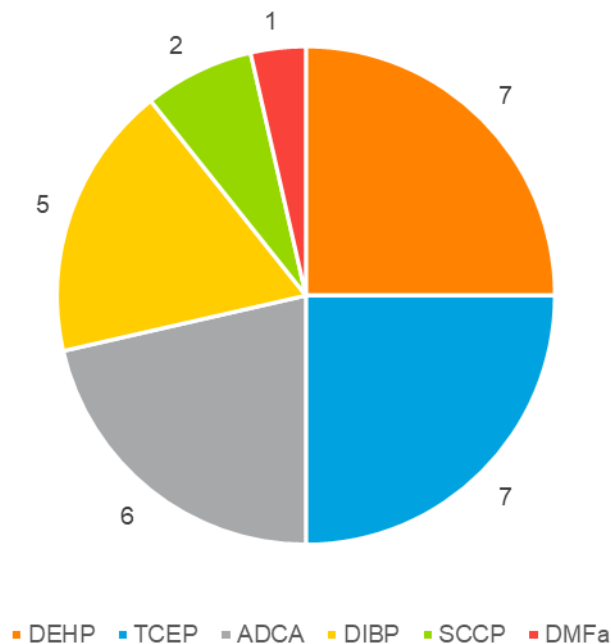


Figure 133. The figure shows which substances on the Candidate List we have found in articles we checked in 2020, as well as how many articles we found them in.

The rules concerning information on substances on the Candidate List apply to articles, not to chemical products. In total, we have analysed a total of 826 articles and for most of these analyses we have been looking for substances on the Candidate List. We found such substances in 20 articles.

The substances on the Candidate List that we have found most often during 2020 are the phthalate DEHP and the flame retardant TCEP. DEHP is a softening plastic additive in PVC plastic and is primarily used by manufactures outside the EU. We found DEHP at levels above 0.1 per cent by weight in seven articles in which it is not prohibited, for example sports equipment. DEHP is prohibited in toys, childcare articles and electrical products. In the middle of 2020, DEHP was also restricted in many other types of consumer articles¹¹, but most of the articles in our controls were put on the market before this date. TCEP is a phosphorus-based flame retardant and we found it in seven electrical products.

We found the substance ADCA in six articles made of foamed plastic. ADCA is used as a blowing agent in the manufacture of foamed plastic. If the manufacturing process is performed correctly, the substance should not remain in the final product.

The phthalate DIBP is used in the same way as DEHP and we found it in five articles made of soft plastic.

Two articles contained SCCPs at levels sufficient for the customer information requirement to apply. SCCPs are prohibited in articles at levels above 0.15% by weight. Between 0.1 and 0.15% by weight, the substances are allowed but is subject to the customer information requirement. The substance is used as plasticizer and flame retardant in PVC plastic manufacture outside the EU.

¹¹ Europaparlamentets och rådets förordning (EG) nr 1907/2006/EG om registrering, utvärdering, godkännande och begränsning av kemikalier (Reach), artikel 67, bilaga XVII punkt 51

We found the substances DMFa in a sport mattress. DMFa is a chemical that is used when producing polyurethane plastic and, in some case, the substance can remain in the finished article.

2.9 Cadmium

Cadmium is a heavy metal that has several hazardous properties. At low levels, there is mainly a risk of negative effects to the kidneys and skeleton. Ingestion of a high level of cadmium, for example if a piece of jewellery with high concentration of cadmium is swallowed, can be fatal. According to a report from a government commission performed by the Swedish Chemicals Agency in 2011¹², part of the Swedish population has levels of cadmium in their bodies that could affect the skeleton and kidneys. It is therefore important to reduce exposure to cadmium.

People are mainly exposed to cadmium through the food we eat and through smoking. Cadmium in articles such as jewellery and electronics is probably of little significance in terms of direct exposure, unless for instance a piece of jewellery containing cadmium is swallowed. However, the existence of cadmium in articles means that the substance is still found in the material cycle and there is a risk of it ending up in new products or having a negative effect on people and the environment when the articles become waste. Among other things, cadmium is restricted in electronics, jewellery, plastic articles and toys.

During 2020, we have looked for cadmium in several types of articles. In total, we found cadmium in 99 articles, of which 68 cases were above limit value in the regulation. 80 of these articles were jewellery (65 jewellery with cadmium concentration above limit value) that in many cases contained high concentration of cadmium (around 90 percent). We found cadmium in 19 electrical products, but only in three cases, the concentrations were above the limit value.

¹² Rapport 1/11 Kadmiumpulhalten måste minska – för folkhälsans skull, januari 2011 [Rapport 1/11: Kadmiumpulhalten måste minska - för folkhälsans skull - Kemikalieinspektionen](#)

3 Results and discussion

Of the 983 articles and chemical products that we have analysed, 156 contain too high concentrations of forbidden substances or in other ways did not fulfil the requirements in the legislation.

The category in which we have analysed most articles was *clothing, shoes and accessories*. This was also the category with most forbidden substances. 74 articles in this category, which corresponds to 22 per cent, contained restricted substances in concentrations above limit values. It was mainly jewellery that contained the heavy metal cadmium (65 jewellery). Cadmium is used when manufacturing cheap jewellery to give the jewellery weight and to soften the metal to make it easier to process. Cadmium may be acute toxic if a piece of jewellery containing cadmium is swallowed. In a long run and at a lower dose, cadmium could damage the skeleton and the kidneys.

Cadmium is forbidden in jewellery in concentrations above 0.01 per cent by weight, but our controls show that cadmium is present in jewellery manufactured outside of the EU and imported here. Therefore, it is important that the importer of jewellery to the EU requests to the supplier that the jewellery may not contain restricted substances. Consumer that buys jewellery from companies outside the EU, for example through e-commerce, should be aware of the risk and rather avoid buying jewellery in that way.

Figure 14 shows the number of tested products and the analysis results.

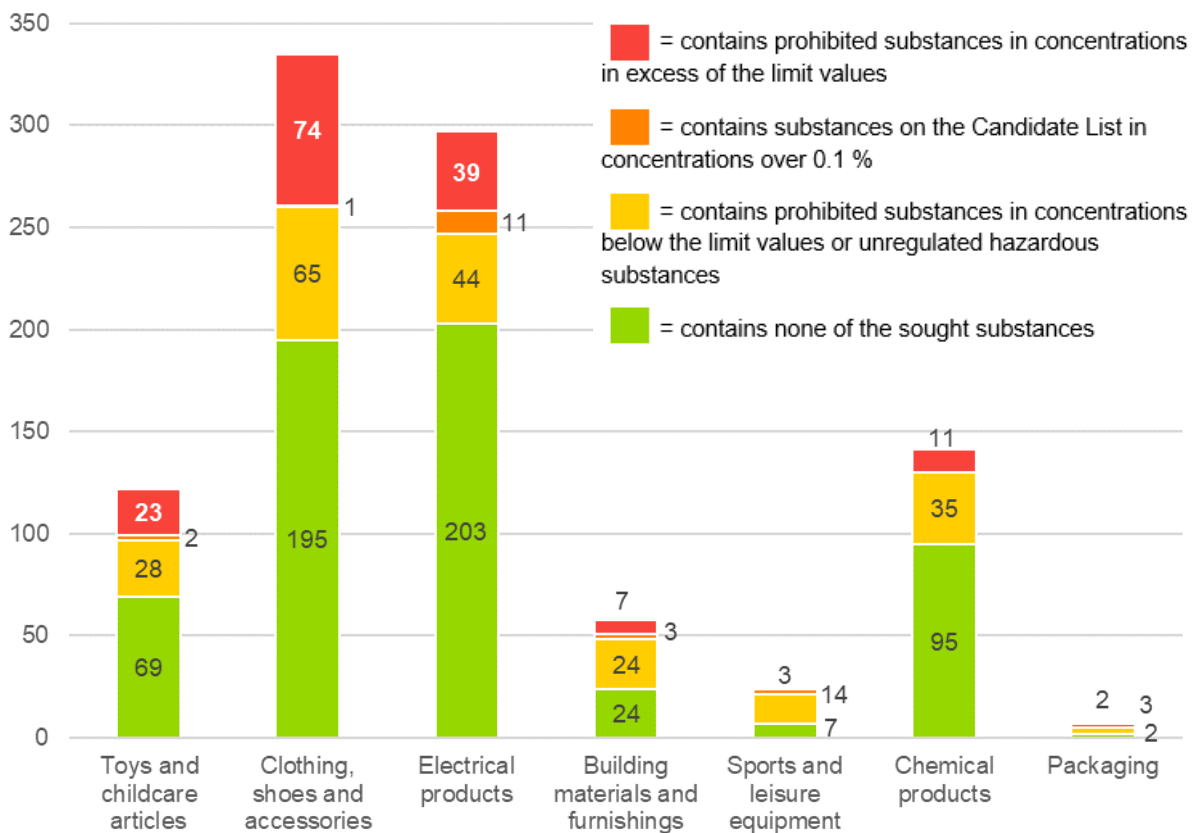


Figure 14. Number of articles (of various types) and chemical products that the Swedish Chemicals Agency has analysed during 2020.

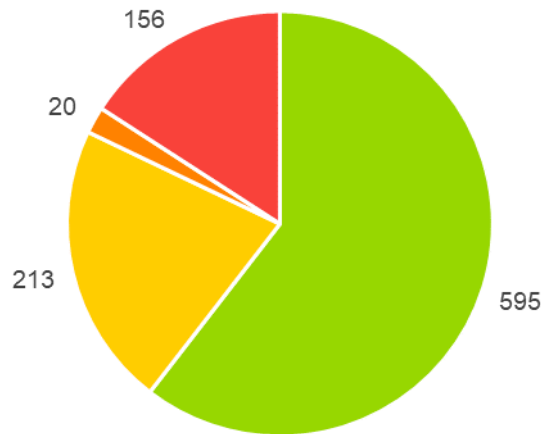


Figure 15. The distribution of all products that we analysed in 2020 that contained excessive levels of restricted substances (red), substances on the Candidate List (orange), low levels or unrestricted substances (yellow) and that contained none of the substances searched for (green).

The 156 articles and chemical products that contained forbidden substances in concentrations above limit values or did not meet the legal requirement in other ways corresponds to 16 per cent of all tested products. In previous compilations, the proportion of products with prohibited substances has been between 14 and 18 per cent. This indicates a largely unchanged percentage of articles and products that contain substances above limit values.

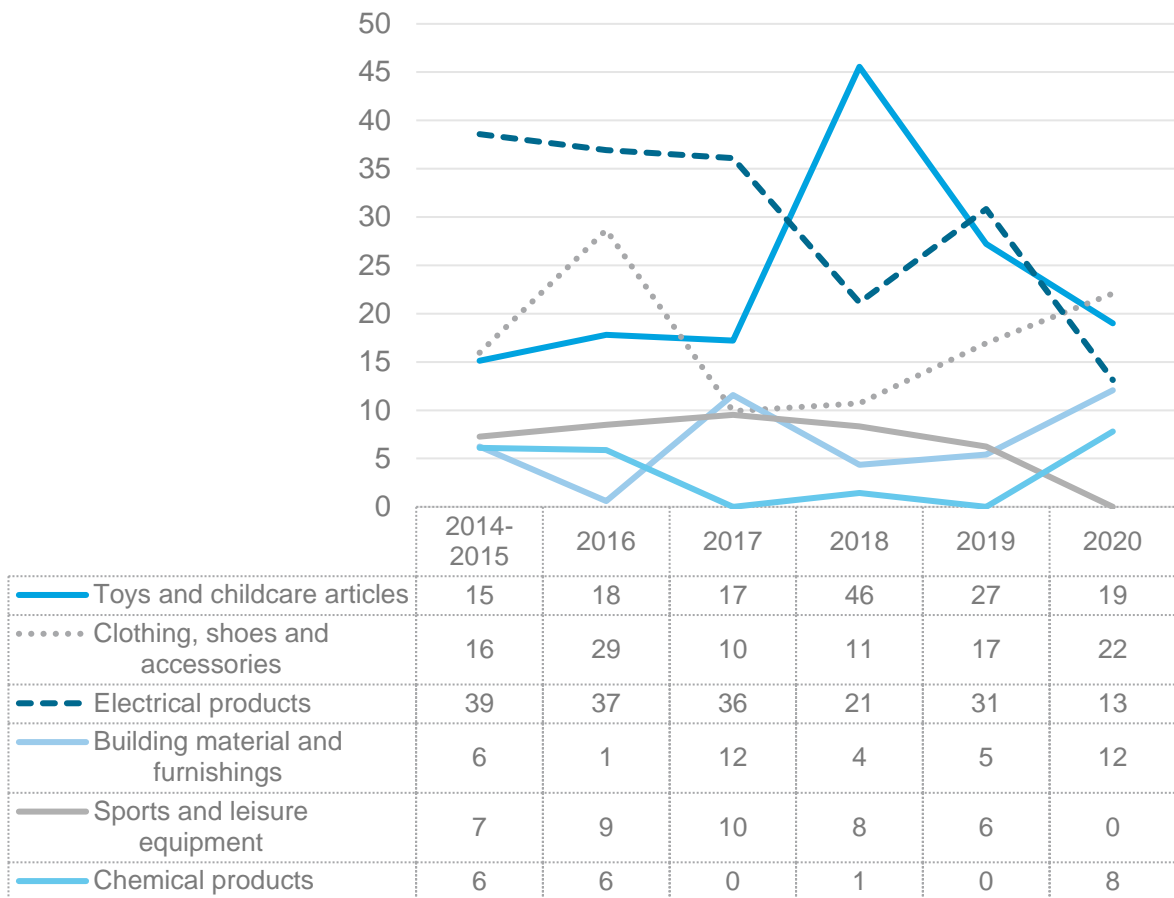


Figure 16. The proportion of products in different categories that our analyses have shown to contain excessive levels of restricted substances between 2014 and 2020.

Figure 16 above shows the trends over the years for the number of products that have contained excessive levels of restricted substances between 2014 and 2020. The figure shows that the proportion of products containing substances above limit values varies over the year, but overall, *electrical products, toys and childcare articles* and *clothing, shoes and accessories* have a higher proportion of products with substances above the limit than the other three categories. The reason for the differ in the trend for *toys and childcare articles* 2018 is that we tested so called squishies and came to the conclusion that all toys did not meet the legal requirements.

Why do some categories have a high respectively low proportion of products with prohibited substances? Partly, we believe that some product groups are subject to a greater number of substance restrictions, and it is therefore easier to find restricted substances in them. It may also be that the production of certain articles takes place in countries outside the EU where EU restricted substances are still allowed to be used, even though the articles are not allowed to be imported to the EU market. In the case of electrical products manufactured outside the EU, it still seems relatively common to use lead in the solder, since such solder has good technical properties, although lead has been limited in electrical products in the EU since 2006. Another reason may be that regulatory authorities have more knowledge and experience of certain product groups and can therefore more easily find prohibited substances in them.

The proportion of electrical products with restricted substances above limit values was lower 2020 compared with previous years. One explanation may be that the products controlled during the year, particularly the kitchen appliances, were products with higher quality and more from well-known brands compared with what we have controlled previous years.

3.1 Substances on the Candidate List

Our review of articles' content of substances of very high concern, substances on the so-called Candidate List, shows that there are many such articles sold to consumers in Sweden. It is mainly articles made of soft PVC plastic or foam plastic.

Substances on the Candidate List are substances that may require authorisation. The authorisation is needed if the substances should be used in manufacturing within the EU. Authorisations are already required today for many of these substances. However, if an article is manufactured outside the EU, the requirement for an authorisation does not apply. Instead, there is only a requirement that the importer of the article shall inform professional customers of the article about the content. Consumers have right to get the information on request.

Our controls show that customers very seldom actually receive this information. The most common reason for this is that the company that sells the article does not know what it contains. This means that professional customers, that should get the information automatically, and consumers requesting it, do not get to know what hazardous substances articles contain and how to handle them in a safe way.

Most of the articles with substances of very high concern are manufactured outside the EU, most often in China. The manufacturers are not obliged to tell the companies they sell to about the content. Therefore, it is important that the EU based company, that buys from for example China, puts requirements on the manufacturer. They can require either that they must receive information if articles contain substances of very high concern or that the articles shall not contain such substances. In the case of consumer products, in most cases, these days there are well-functioning alternatives to these substances. Companies may also perform testing of the articles to check if they contain substances of very high concern.

During 2020, we found 20 articles with substances of very high concern. This is significant less than 2019 when we found these substances in 76 articles, although the total number of articles (826 articles) is in the same size. One reason for this is what articles we have sampled for analyses and another reason can be that several of the substances on the Candidate List have been restricted in several types of articles. Such substances are the phthalates DEHP, DBP, BBP and DIBP which now are restricted in electrical products (through the RoHS Directive¹³) and many other consumer articles (through a restriction in the REACH Regulation¹⁴).

3.2 Cadmium

Cadmium is a hazardous substance that we wish to remove from our material cycle. However, we can see from our compilations that many kinds of consumer articles contain cadmium. During 2020, we have found cadmium in jewellery and electrical products. It is mostly imported cheap jewellery that we have found cadmium in. Many of these were sold online.

In our enforcement over the coming years, we will continue to look for the presence of cadmium in articles in an attempt to reduce people's and the environment's exposure to it.

3.3 What do the analyses lead to?

The main purpose of our analyses is to check whether companies, and others, that put products on the Swedish market comply with the legislation.

When the analytical results are ready, we inform the company about the results. The companies get an inspection letter where we inform them about what we have found and what rules that applies to the product. In those cases where substances have been found in concentrations that exceed the limit value set out in the legislation, the company is requested to provide an account of the measures it will be taking. In those cases where a company does not withdraw its product from the market voluntarily, the Swedish Chemicals Agency can order a sales ban. For those regulatory violations that are within the scope of the Environmental Code, the Agency is obliged to submit a report to the environmental prosecutor. This is the case for most of the substances that we control, and we submit a great number of reports to the environmental prosecutor every year. The prosecutor then assesses whether a preliminary investigation is to be initiated. In some cases, this leads to the company being fined or to a prosecution¹⁵.

If companies in other countries are affected by the analytical results (e.g. if the supplier of the product is based in another EU country) we contact the enforcement authority in that country so that it can take measures. Hazardous products are also reported to the joint EU systems

¹³ Directive 2011/65/EU of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

¹⁴ Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

¹⁵ More information about the Swedish Chemicals Agency's prosecutions may be found in Tillsyn 10/17 – Kemikalieinspektionens åtsanmälningar 2012-2016 [Tillsyn 10/17: Kemikalieinspektionens åtsanmälningar 2012-2016 - Kemikalieinspektionen](#)

Safety Gate¹⁶ and/or ICSMS¹⁷ so that other authorities, companies and consumers can obtain information and take measures themselves. These two databases are used by EU enforcement authorities to report products with deficiencies.

3.4 How do we share the results?

Primarily, we use the analytical results to control if articles and chemical products comply with the legal requirements. When we find a product that contains forbidden substances, we contact the producer or seller that must take measures.

We also use the analytical results to develop legislation, for example when new regulations are being drawn up or existing ones are reviewed. In Forum's¹⁸ working group for restrictions, the EU member states are to provide their points of view on proposals for future restrictions. The Swedish Chemicals Agency's experience is that analyses and enforcement results make a major contribution in providing good feedback on new proposed restrictions.

We also share the analytical results with other actors that may have an interest in them, for example companies that may want to know what substances that can be found in different articles and material to control their own articles. With this information, the companies can focus their internal control resources on those articles, products and provisions that are most relevant. Comprehensive analyses are relatively expensive for an individual business and therefore it is valuable to get support by get information from our analytical results.

Other enforcement authorities may also find this information useful. This is done via Safety Gate (formerly Rapex), where EU member states report products posing a risk to health and safety of consumers. The Swedish Chemicals Agency also distribute information about analytical results in our enforcement guidance to municipal authorities, which can have an enforcement function in this area.

3.5 Future need of analyses

In terms of analyses, they will continue to be primarily performed on consumer products, and mainly those that have a lower price. During 2020, we have also controlled articles used in public environment which the general public comes in contact with. We also base our selection on what materials the articles are made of and choose materials where we know there is a greater risk of finding hazardous and prohibited substances. We have published a strategy for enforcement of chemicals in articles¹⁹ and the prioritised categories of articles are the same as the categories we show results from in this report. Analyses will continue to be made primarily on the product groups in this strategy.

In our control of articles, we have chosen to perform chemical analyses to a large extent, but we also control labelling and documentation. Even though analyses require more resources,

¹⁶ Safety Gate = Rapid Alert System for non-food dangerous products. A joint EU system in which market control authorities in the EU notify of dangerous products. [Safety Gate for dangerous non-food products \(europa.eu\)](https://ec.europa.eu/safetygate/)

¹⁷ A joint EU system in which market control authorities in the EU notify of controlled products. [ICSMS - European Commission \(europa.eu\)](https://ec.europa.eu/icsms/)

¹⁸ The forum for information exchange on coordinating enforcement issues regarding Reach and CLP regulations.

¹⁹ Tillsyn nr 15/20 - Strategi för effektiv tillsyn över kemikalier i varor, 2020 ([Tillsyn 15/20: Strategi för tillsyn av farliga ämnen i varor - Kemikalieinspektionen](#))

we believe that it is more risk reducing, since it is the most reliable way to find out what eventual dangerous substances an article contains.

The Swedish Chemicals Agency intends to continuously publish the results from the analyses in our enforcement projects, partly in the form of compilations such as this report and partly as separate reports for each project.

3.6 Additional information

For more information about substances and rules, see www.kemikalieinspektionen.se.

Reports from the Swedish Chemicals Agency's enforcement projects²⁰ that are referred to in this report:

- Tillsyn 7/21: PFAS i kemiska produkter och varor
- Tillsyn 6/21: Tillsyn av desinfektionsmedel 2020
- Tillsyn 5/21 E-handel 2020 – Kontroll av bekämpningsmedel, kemiska produkter och varor som säljs via e-handel
- Tillsyn 4/21 Material i barns offentliga miljöer
- Tillsyn 2/21 Kontroll av växtskyddsmedel 2018-2020
- Tillsyn 1/21 Hemelektronik 2020
- Tillsyn 17/20 Analys av fyrverkerier 2020
- Enforcement 11/20 – The Swedish Chemicals Agency's Analyses in conjunction with Enforcement 2019
- Enforcement 11/19 – The Swedish Chemicals Agency's Analyses in conjunction with Enforcement 2018
- Enforcement 6/18 – The Swedish Chemicals Agency's Analyses in conjunction with Enforcement 2017
- Enforcement 7/17 – The Swedish Chemicals Agency's Analyses in conjunction with Enforcement 2016
- Enforcement 7/16 – The Swedish Chemicals Agency's Analyses in conjunction with Enforcement 2014-2015
- Enforcement 6/14 – The Swedish Chemicals Agency's Analyses in conjunction with Enforcement 2008-2013

There is more information on our enforcement activities in the Swedish Chemicals Agency's annual reports²¹.

²⁰ [Enforcement reports - Kemikalieinspektionen](#)

²¹ [Årsredovisningar och budgetunderlag - Kemikalieinspektionen](#)

4 Appendices

Appendix 1 – Substances

Group of substances	Examples of substances	Description
Phthalates	DEHP (di(2-ethylhexyl) phthalate) DBP (dibutyl phthalate) BBP (benzylbutyl phthalate) DINP (diisononyl phthalate) DIDP (diisodecyl phthalate) DNOP (di-n-octyl phthalate) DIBP (diisobutyl phthalate)	Phthalates are used as plasticisers in plastics, primarily polyvinyl chloride. Certain phthalates are toxic for reproduction, have environmentally hazardous properties or can have other negative effects on the human body. These are restricted in toys and child care articles and some are on the Candidate List. DEHP, DBP, BBP and DIBP are from 22 July 2019 also restricted in electrical products and from 8 July 2020 restricted in several types of consumer articles.
Chlorinated, persistent substances	SCCPs (Short-chain chlorinated paraffins) HCB (hexachlorobenzene)	<p>Plasticising and flame retardant substances that are used in plastics, primarily polyvinyl chloride. SCCPs are hazardous to aquatic organisms, do not decompose in nature and are suspected carcinogens. SCCPs are restricted in all types of products and are also on the Candidate List.</p> <p>HCB can be used in fireworks to enhance the colour effects. The substance is classified as cancerogenic, have specific target organ toxicity and is very toxic to aquatic life with long lasting effects.</p>
Elements	Lead Cadmium Nickel Mercury Boron Tin	<p>The metals lead, cadmium, nickel and mercury are used in various alloys or as salts in plastics or other materials.</p> <p>Lead, cadmium and nickel are restricted in jewellery.</p> <p>Lead, cadmium and mercury are restricted in electrical products.</p> <p>Boron and tin can be present in slime.</p> <p>The different elements have different hazardous properties. For example, lead can affect the central nervous system and impair the learning ability, cadmium can damage the skeleton and the kidneys and nickel can cause skin allergy.</p>
Substances on the Candidate List	ADCA (Azodicarbonamide) NPEO (Nonylphenol ethoxylates) DMFa (N,N-dimethylformamide)	<p>ADCA is used as a blowing agent in the manufacture of foamed plastic. It may cause allergy or asthma symptoms or breathing difficulties if inhaled. When manufactured correctly, the substance should not remain in the final product.</p> <p>NPEO is used in the manufacture of textiles. When the textiles are washed, NPEO goes with the washing water to the treatment plant and to the environment. There it breaks down into the hormone disrupting substance</p>

nonylphenol, which is very toxic to fish and other aquatic organisms.

DMFa is used in manufacturing of, among other things, polyurethan plastic. The substance has several hazardous properties, for example toxic for reproduction and eye irritating.

Polycyclic aromatic hydrocarbons (PAHs)		A large group of substances that are formed unintentionally during incomplete combustion or are present as pollutants in rubber and plastic. Several of them have carcinogenic properties.
Flame retardants	<p>PBDE (polybrominated diphenyl ethers)</p> <p>TCEP (tris(2-chloroethyl))</p> <p>TCPP (tris (1-chloro-2-propyl) phosphate)</p>	<p>PBDE is a group of brominated flame retardants that are used in different material to reduce the risk of fire. The substances are persistent and have hormone disrupting properties.</p> <p>TCEP and TCPP are two phosphorus-based flame retardants that are used in foam plastic to reduce the risk of fire. The substances have several hazardous properties, for example suspected to cause cancer.</p>
Perfluorinated substances (PFAS)		PFAS is a large group of substances which all contain fluorine. The substances are extremely persistent in the environment and have other hazardous properties. Only some of these substances are regulated in the legislation.
Nitrosamines and nitrosable substances		These substances can be formed unintentionally in some materials, for example rubber. They are restricted in some types of toys. The substances are cancerogenic.
Colouring substance	Quinoline	Quinoline is a substance that may be part of dispersion colours. Dispersion colours are used for colouring of textiles. The substance has several hazardous substances, for example suspected to cause cancer.

Appendix 2 – Legislation

Legislation that regulates the substances mentioned in the report are listed below.

EU regulations
Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
Regulation (EU) No 2019/2021 of the European Parliament and of the Council concerning Persistent Organic Pollutants (POPs)
Regulation (EC) No 1107/2009 of the European Parliament and of the Council on the placing of plant protection products on the market
Regulation (EU) No 528/2012 of the European Parliament and of the Council concerning the making available on the market and use of biocidal products
Regulation (EU) No 2017/852 of the European Parliament and of the Council on mercury
EU directives imposed into Swedish regulations
Directive 2011/65/EU of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) This directive has been imposed into Swedish legislation through the Regulation (2012:861) regarding hazardous substances in electrical and electronic equipment. The provisions are found within the framework of the Environmental Code in the Regulation (1998:944) regarding prohibitions etc. and in the Swedish Chemicals Agency's Regulation (KIFS) 2017:7.
Directive 2009/48/EC of the European Parliament and of the Council on the safety of toys This directive has been imposed into Swedish legislation through the Act (2011:579) on the safety of toys and the Regulation (2011:703) on the safety of toys, as well as the Swedish Chemicals Agency's Regulation (KIFS 2017:8) on chemical products and biotechnical products.
Directive 94/62/EC of the European Parliament and of the Council on packaging and packaging waste This directive has been imposed into Swedish legislation through the Act (1998:44) on prohibition etc. in certain cases in connection with the handling, import and export of chemical products.
Directive 2006/66/EC of the European Parliament and of the Council on batteries and accumulators and waste batteries and accumulators This directive has been imposed into Swedish legislation through the Act (1998:44) on prohibition etc. in certain cases in connection with the handling, import and export of chemical products.

The REACH Regulation (EC) no. 1907/2006

The REACH Regulation is the EU's most extensive regulation for chemicals and includes rules for individual substances, substances in mixtures and substances in articles.

Among other things, the regulation contains about seventy restrictions in which specific substances are restricted in various kinds of products and articles. These restrictions are found in Annex XVII and in most cases, there are limits that show what levels of each substance are prohibited. Examples of restrictions that the Swedish Chemicals Agency has investigated using analyses include phthalates in plastic toys, and lead, cadmium and nickel in jewellery.

The REACH Regulation also contains requirements for information about certain substances in articles. There is a requirement that customers of a product that contains more than 0.1 per cent by weight of a substance of very high concern (found on the so-called Candidate List) must be informed of this.

POPs Regulation (EU) no. 2019/2021

This regulation restricts a number of persistent organic pollutants (POPs). The restrictions apply to the pure substance, the substance in mixtures and the substance in articles. In most cases there is no specified limit, but very low levels of unintentional trace contaminants are not prohibited. Examples of substances that are restricted include hexachlorobenzene (HCB) which may be found in fireworks and short-chain chlorinated paraffins (SCCPs) which may be found in, for instance, soft plastics.

Plant Protection Product Regulation (EC) no. 1107/2009

This EU regulation establishes rules for releasing plant protection products onto the market. It contains rules stating that plant protection products and the active substances that they contain must be approved before they can be released onto the market.

Biocidal Product Regulation (EU) no. 528/2012

In the EU regulation on biocidal products, there are rules concerning authorization of biocidal products and articles treated with biocidal products. Among other things, there is a requirement that biocidal products and the active substances they contain must have authorization to be placed on the market.

Regulation on mercury (EU) no. 2017/852

The regulation imposes the global Minamata Convention that restricts the presence of mercury in products and articles. There is also a Swedish restriction for mercury in Regulation (1998:944) regarding prohibitions etc. and in Swedish Chemicals Agency's Regulation (KIFS 2017:7) on chemical products and biotechnical organisms. The rules apply to intentionally added mercury, not accidental contamination.

RoHS Directive 2011/65/EU

The RoHS Directive includes rules that restrict the presence of certain substances in electrical and electronic products. The substances that are restricted are cadmium, lead, mercury, hexavalent chromium and the two groups of brominated flame retardants polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs). From 22 July 2019, the phthalates DEHP, DBP, BBP and DIBP are also restricted in this directive. The upper limit is 0.1 per cent by weight for all these substances except cadmium, where the limit is 0.01 per cent by weight.

Toy Safety Directive (2009/48/EC)

The EU directive on toy safety includes several requirements for chemicals in toys. Among other things, there are limits for how much of certain metals can migrate from toys, restrictions on the level of CMR substances (classified as carcinogenic, mutagenic or toxic for reproduction) and fragrances. The directive also has requirements for the flammability of toys, which is also part of the Swedish Chemicals Agency's regulatory area.

The Packaging Directive 94/62/EC

Within the EU, there are rules for collection and restrictions on chemical substances used in packaging and packaging waste. Lead, cadmium, mercury and hexavalent chromium are substances that are restricted in packaging.

The Battery and accumulators Directive 2006/66/EC

The Directive 2006/66/EC on batteries and accumulators contains rules on the prohibition of placing batteries and accumulators on the market if they contain over a certain limit of the heavy metals mercury and cadmium.

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