

Enforcement of squishies

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KEMI

Swedish Chemicals Agency

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 improved environment. We monitor compliance of applicable rules on chemical products, pesticides and substances in articles and carry out inspections. We review and authorise pesticides before they can be used. Our environmental quality objective is A Non-toxic Environment.

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Introduction

The Swedish Chemicals Agency is an authority under the Swedish government. We operate in Sweden, the EU and internationally to develop legislation and other steering instruments in the field of chemicals to promote good health and a better environment. The inspections division checks that companies are following the rules for chemical products, pesticides and substances in products. We also provide supervision guidance to local and county authorities and collaborate with the regulatory agencies of other countries within the EU. Our environmental quality goal is a Non-Toxic Environment.

This report summarises the methodology and results of an enforcement project in which the Swedish Chemicals Agency has analysed the contents and emissions to air of certain chemical substances from toys called “squishies”. Thereafter, we performed a health risk assessment. The project was carried out by the Swedish Chemicals Agency’s Enforcement Department in cooperation with the unit of Proposals for Classification and Restriction. Frida Ramström, Camilla Westlund, Margareta Daho, Ilona Silins, and Anna-Karin Mörk have participated in the project.

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Glossary

CAS number	Chemical Abstracts Service (CAS), unique identification numbers of chemical compounds, polymers, biological sequences, mixtures and alloys.
CLP	Classification, Labelling and Packaging of substances and mixtures. Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures.
CMR substances	Substances that are Carcinogenic, Mutagenic (genotoxic) or toxic to Reproduction.
The Toy Safety Directive	The Toy Safety Directive 2009/48/EC contains a general requirement for toys to be safe and many specific requirements, for example for chemical substances in toys.
ECHA	European Chemicals Agency
Emission	Process when a substance leaks, or is emitted, from a material to the surrounding air.
EU-LCI	Lowest Concentration of Interest is a health-based reference concentration for inhalation exposure of chemical substances from construction products developed in the EU.
Exposure	How much (concentration or quantity) of a substance a person is exposed to over a defined period.
Exposure scenario	In risk assessment, an exposure scenario describes how a product or article is reasonably used.
Classification	Identification of the inherent hazardous properties of chemical substances.
The Toy Safety Act	Act (2011:579) on Toy Safety
LOAEC	Lowest Observed Adverse Effect Concentration. The lowest observed effect concentration, the lowest concentration at which toxic effects have been observed.
Mutagenic substance	Substance which may cause harm to genetic material.
NOAEC	No Observed Adverse Effect Concentration. No observed effect concentration, the highest concentration at which no toxic effects have been observed.
Substance toxic to reproduction	Substance which may cause harmful effects on sexual function and fertility, or on fetal development.
Reference value	The amount or concentration of a substance which should not be exceeded in order to avoid adverse effects on human health or the environment.
RCR	Risk Characterisation Ratio. If the RCR value is below 1, the risk is considered adequately controlled. An RCR value above 1 indicates an increased risk of negative health effects.
RISE	Research Institute of Sweden
VOC	Volatile Organic Compounds (VOC)

Summary

The Swedish Chemicals Agency has had 21 samples of squishy toys analysed. Based on the results, the health risk to children using these toys was assessed. For all squishies, measurements of total content and emissions to air of seven chemical substances were made. According to the findings in a study performed by the Danish Environmental Protection Agency in 2018, there is a risk that these substances may cause eye and respiratory irritation in children playing with squishies. The aim of our project was to determine if the squishies being sold on the Swedish market pose similar health risks.

Only one of the analysed substances has a specific limit value in the legislation concerning toys. The Toy Safety Directive does however contain a general wording that toys should be safe for children to use. This statement was the primary basis for inspections within this project.

Based on the results of the analytical tests and subsequent risk assessment, we concluded that the risk that the tested squishy toys pose to children is not compliant with current legislation regarding toys. We therefore consider there to be legal basis to prohibit the sale of the tested squishies. Given that all the squishies in this report constitute a risk, there are indications that the problem is general to toys made from polyurethane foam.

Our advice to consumers is that children should avoid keeping squishies close to their eyes and airways, such as when hugging or smelling them. Children should also avoid using squishies as cuddly toys and not sleep with them in bed. Squishies should not be given to small children who might bite or suck on the toy, as there is a risk that small pieces of the squishy get dislodged and caught in their throat, which might lead to suffocation.

There is no need to be worried if a child has played with squishies. Our findings do not mean that all children who have been in close contact with the toy experienced discomfort but rather, that children might under certain circumstances. If a child experiences irritation of the eyes or airways from substances emitted by squishies, these symptoms will subside once the child is no longer exposed to them. If you notice symptoms of irritation, we recommend that the child should avoid the toy.

Our analysis shows that squishies that have recently been removed from their packaging generally emit the highest concentration of irritating substances. Squishies that have been in use for a while emit lower concentrations. If you are concerned for your child's health, you may dispose of the squishy toys. They can be discarded as regular household waste.

The companies that manufacture squishies and toys of similar materials should look into the presence of volatile substances with hazardous properties in their products and assess whether it constitute a risk to children. According to the Toy Safety Directive, toy manufacturers are required to make a risk assessment, even if the legislation does not specify any limit values. Companies importing toys to the EU are required to ensure that the manufacturer has made such an assessment.

The results from this project, as well as from the one carried out by the Danish authority, indicate that the substances we have analysed are emitted by most squishies, and that it is a general problem for this type of toy. It is likely that other articles made from the same material emit these same substances and constitute a similar risk. We consider this to require further investigation. There is also a need to review how volatile substances and the risk attributed to them are regulated in the legislation concerning toys.

Sammanfattning

Kemikalieinspektionen har låtit utföra kemiska tester av 21 leksaker av typen squishy och utifrån testresultaten har vi bedömt hälsoriskerna för barn som använder dessa leksaker. Vi mätte totalhalt och hur mycket som läcker ut till luft av sju ämnen från alla squishies. Enligt en undersökning som den danska Miljøstyrelsen utförde 2018 kan dessa ämnen utgöra risker för ögon- och luftvägsirritation för barn under vissa omständigheter. Syftet med denna kontroll var att undersöka om det finns hälsorisker med att använda squishies som säljs på den svenska marknaden.

Endast ett av de ämnen som vi har undersökt har ett specifikt gränsvärde i lagstiftningen för leksaker. I direktivet om leksakers säkerhet finns dock en generell regel om att leksaker ska vara säkra för barn. Det är främst mot bakgrund av denna skrivning som vi bedriver tillsyn i detta projekt.

Utifrån testresultaten och riskbedömningarna är vår bedömning att de risker som de testade squishy-leksakerna kan utgöra för barn som använder dem inte är förenligt med leksakslagstiftningen. Vi anser därför att det finns lagstöd för att dessa squishies inte ska få säljas. Då samtliga squishies i denna undersökning utgör risker tyder det på att problemet med avgivning av dessa ämnen är generellt för leksaker som är gjorda av den här sortens material.

Våra råd till konsumenter är att barn bör undvika att ha squishies i närheten av ansiktet, till exempel krama och lukta på dem. Barn bör inte heller använda squishies som gosedjur och till exempel sova med dem i sängen. Squishies ska inte ges till små barn som kan bita och suga på leksaken, då bitar från squishyn kan lossna och fastna i halsen, vilket kan leda till att barnet kvävs.

Man behöver inte vara orolig om ett barn har lekt med squishies. Våra resultat betyder inte att alla barn som har nära kontakt med leksaken får besvär, utan att barn under vissa omständigheter skulle kunna uppleva obehag. Om ett barn har blivit irriterad i ögon och luftvägar på grund av ämnen som läcker ut från en squishy så kommer symptomen att gå över när barnet inte utsätts för ämnena längre. Om man märker att ett barn får besvär som man misstänker kan bero på kontakt med en squishy bör barnet undvika leksaken. Det är squishies som nyligen har tagits ur sin förpackning som avger högst halter av irriterande ämnen. Squishies som man har haft hemma ett tag avger med tiden lägre halter. Om man känner sig orolig kan man göra sig av med squishy-leksakerna. De kan då slängas som vanligt hushållsavfall.

Företag som tillverkar squishies eller liknande leksaker bör undersöka förekomsten av den här typen av ämnen i sina produkter och bedöma om de kan utgöra risk för barn. Tillverkare av leksaker är enligt direktivet om leksakers säkerhet skyldiga att göra sådana riskbedömningar, även om ämnena inte har specifika gränsvärden i lagstiftningen. Den som importerar leksaker till EU är skyldig att försäkra sig om att tillverkaren har gjort den här typen av bedömning.

Resultaten i den här och i den danska myndighetens undersökning tyder på att dessa ämnen läcker ut ur de flesta squishies och att det skulle vara ett generellt problem för den här typen av leksaker. Även andra varor som tillverkas av samma material (skummad polyuretanplast) skulle kunna avge dessa ämnen och innebära samma typer av risker. Detta behöver undersökas vidare. Det finns även behov av att se över hur denna typ av ämnen och risker regleras i leksakslagstiftningen.

1 Introduction

Squishies are soft squeeze toys in the shape of various characters made from polyurethane foam and are often scented. The toy has been very popular with school-age children, both for games and collecting.

For this project, we decided to measure substances emitted to air in order to investigate whether there are any associated health risks when using the squishies currently being sold on the Swedish market. We have also measured total content of the substances in the toys.

1.1 Previous reports on squishies

In the spring of 2018, The Danish Environmental Protection Agency surveyed hazardous substances in squishies and published a report¹ in the summer of 2018. The Danish EPA found several volatile organic compounds, which according to the risk assessment could constitute an increased risk for eye and respiratory irritation. The Danish survey attracted a lot of attention, both within the toy industry and in media, as well as among the public.

The Swedish Chemicals Agency conducted tests on squishies prior to the publication of the findings of the Danish EPA². The substances we analysed were certain phthalates and short-chain chlorinated paraffins used as softeners in plastics, as well as fragrances regulated in toys. None of these substances was detected in the toys. During these analyses, we measured the total content of the substances in the toys, however we did not measure emissions to air.

1.2 Current legislation

There are many regulations regarding chemicals in toys. The Toy Safety Directive³ is one of the most extensive among these. It concerns toy safety and contains regulations regarding chemicals among other things. The directive is implemented in Swedish toy legislation, where the following is stated:

9 § A toy may not pose any risk to a person's health or safety when it is used as intended or in a predictable way considering a child's behaviour. This assessment shall take into account the ability of the child, and when applicable, of those supervising the child to handle the toy. This applies especially to toys designed for children of a specified age group.

The Government, or the agency designated by the Government, may issue provisions with specific safety requirements regarding toys.

The safety requirements must, in accordance with the first and second paragraph, be fulfilled for the entirety of the period when the toy can normally be expected to be used.

Only one of the examined substances has a specific limit value in the legislation concerning toys – N,N-dimethylformamide (DMF⁴). The Toy Safety Directive does however contain a

¹ The Danish Environmental Protection Agency. (2018). *Undersøgelse og risikovurdering af parfume og andre organiske stoffer i squishy legetøj* <http://www2.mst.dk/Udgiv/publikationer/2018/06/978-87-93710-46-7.pdf>

² Enforcement 18/12 – Enforcement of e-commerce 2018, December 2018

³ 2009/48/EC implemented into Swedish law through the Act (2011:579) on Toy Safety and the Ordinance (2011:703) of Toy Safety, as well as the Swedish Chemicals Agency's Regulations (KIFS 2017:8) on the flammability and chemical properties of toys.

⁴ DMF is classified as a category 1B reproductive toxic substance, which means that it is limited to a 0.3 % concentration by weight in accessible parts of the toy.

general writing that toys should be safe for children to use as described above. This statement was the primary basis for inspections within this project.

1.3 The term “risk”

The term “risk” is used within various fields and may have slightly different meaning. In chemical risk assessment *the risk* that a chemical substance causes adverse health effects depends on both the *intrinsic properties* of the substance (how hazardous it is) and the *exposure* (how much of the hazardous substance a person is subjected to, for how long and how frequently).

When assessing the health risks of chemical substances, the exposure is compared to known reference values. These reference values are based on amounts or concentrations of substances at which negative health effects have previously been observed, for example in animal studies. By dividing the exposure by the reference value, a risk characterisation ratio (RCR) is obtained. If the RCR-value is below 1, the risk for adverse health effects is considered adequately controlled, and hence very low. If the RCR-value exceeds 1, it indicates a *risk* for adverse health effects. Read more about risk in Section 2.3.

The concept of *risk* is also used in legislation but is rarely clearly defined. Rather, it is up to those interpreting the legislation to determine how the concept should be understood. In the case of toy legislation, the legislator states: “*a toy should pose no risk to any person’s health or safety*”. The Swedish Chemicals Agency considers that established risk assessment models involving realistic exposure scenarios can be used to determine whether a toy fulfils this requirement.

2 Method

2.1 Sample selection

We purchased squishies from 13 different companies. Three of these companies had physical stores in Sweden, eight were Swedish web shops and two were foreign web-based marketing platforms. We bought 21 squishies in total and had them analysed in an external laboratory. A list of the squishies we had analysed can be found in Appendix 5. The samples costed between SEK 28 and SEK 189. One of squishies was a give-away sample. Eleven squishies were delivered to the laboratory in sealed plastic packages, seven in open packages, one in packaging provided with ventilation holes, and two squishies had been co-packaged in the same sealed package in accordance with our order.

2.2 Analysis

In this project, we analysed seven substances (Table 1), to which exposure previously had been reported to constitute a risk for eye and respiratory irritation in children⁵. For more information on the substances, see Appendix 4.

⁵ The Danish Environmental Protection Agency. (2018). *Undersøgelse og risikovurdering af parfume og andre organiske stoffer i squishy legetøj* <http://www2.mst.dk/Udgiv/publikationer/2018/06/978-87-93710-46-7.pdf>

Table 1. Substances we analysed..

Substance	CAS number
Dimethylaminoethanol	108-01-0
N,N-dimethylformamide (DMF)	68-12-2
Cyclohexanone	108-94-1
Triethylendiamine	280-57-9
Bis (2-(dimethylamino)ethyl)ether)	3033-62-3
1,1,4,7,7-pentamethyldiethylenetriamine	3030-47-5
Xylene	1330-20-7

We sent the squishies to an external laboratory⁶ in the packaging in which they were delivered to us. We did not open any sealed packages.

During the analyses, measurements were made of emissions to the surrounding air, as well as of the total content. Emissions were measured in accordance with the standard ISO16000-9:2006⁷. The analyses were performed using a device that measures volatile organic compounds, known as an emission chamber. One squishy at a time was analysed - a method known as single plating. For a more detailed description of the analytical methods, see Appendix 1. The measurements ($\mu\text{g}/\text{m}^3$) were made in the emission chamber at one hour and 72 hours after the toy was removed from its packaging and placed in the chamber. The emitted concentrations are presented in Appendix 2.

2.3 Risk assessment

A risk assessment of the seven volatile substances was performed. The risk that a chemical substance might cause adverse health effects depends on both the intrinsic properties of the substance (how hazardous it is) and the exposure (the level, duration and frequency). A methodological description of the risk assessment is given below.

2.3.1 Hazardous properties of analysed substances

One way of obtaining information on the hazardous properties of a given chemical is to investigate if it has a harmonised classification. A harmonised classification describes the hazardous properties of a substance that has been agreed upon within the EU. Five of the seven chemical substances that were analysed in this study have at least one harmonised classification for health hazards. Five of the substances found in the toys have a harmonised classification indicating that they may be harmful to inhale, swallow or when in contact with skin (see Appendix 4). Two of the substances have a harmonised classification indicating that they may cause chemical burn injuries to the skin and eyes. N,N-dimethylformamide (DMF), one of the substances emitted by all squishies that were tested in this study, has a harmonised classification indicating that the substance may damage the unborn child⁸. DMF is also included in the EU list of substances of very high concern, known as the Candidate List. It is

⁶ RISE – Research Institute of Sweden

⁷ Indoor air – Part 9: Determining volatile organic compounds (VOC) emitted from construction products and fixtures – Testing with emission chamber

⁸ Reprotoxicity caused by N,N-dimethylformamide (DMF) could constitute a risk of potential harm to the unborn child should a pregnant woman be exposed to it. We have also made a risk assessment regarding reproductive toxicity, see section 3.1.1. below.

important to note that Candidate listing is based on the intrinsic properties of the substance and not on the risk for adverse health effects.

A chemical substance may have hazardous properties without having a harmonised classification. Knowledge on the hazardous properties may in such cases be obtained from Industry's self-classifications according to the CLP Regulation⁹, as well as from published toxicological studies.

2.3.2 Exposure assessment

We carried out an exposure assessment in which we calculated how much of the chemical substance a child might be exposed to by being close to, or by using the toy. For DMF, we also calculated the risk of harmful effects to the foetus of a pregnant woman sleeping in the same bed as a child hugging a squishy.

The exposure calculations were based on the measurements of how much of the chemical substance that was emitted from the toy to the surrounding air and assumptions as to how the toy may be used. The substances analysed in this project may primarily cause irritation of the eyes and airways. Irritation is considered to be mainly due to the concentration of the substance in air, and thus the exposure duration is less relevant¹⁰. We have therefore not adjusted for the exposure duration in our calculations.

The concentration of the substances in air was measured at one hour and 72 hours after the toy was removed from its packaging and placed in the emission chamber.

We used two different exposure scenarios for children, similar to the ones described in the report by the Danish EPA¹¹:

1. A child holding a squishy close to their eyes and airways.
2. A child playing in a room where 42 different squishies are present.

Exposure Scenario 1. The concentration in the test chamber was used as a proxy for the concentration a child might inhale or have in contact with the eyes when in close contact with the squishy, for example when sleeping with a squishy or when smelling or hugging a squishy.

Exposure Scenario 2. Some children collect and play with multiple squishies at the same time¹². In Scenario 2, a child is playing in a room containing 42 squishies. The concentration of the substances in air is in this scenario assumed to be more diluted as compared to Scenario 1, since the child is farther away from the toy. The concentration of each chemical substance in the room was calculated according to a standard formula, based on the concentration level in the test chamber and a standard room volume (17.4 m³) (see Appendix 1 for more detail). In order to obtain the total exposure level of a substance, the concentration of the substance in the standard room from each tested squishy were added and multiplied by 2 (21 tested squishies multiplied by 2 = 42).

⁹ Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures.

¹⁰ ECHA 2012, Guidance on information requirements and chemical safety assessment Chapter R.8: Characterisation of dose [concentration]-response for human health.

¹¹ The Danish Environmental Protection Agency. (2018). *Undersøgelse og risikovurdering af parfume og andre organiske stoffer i squishy legetøj* <http://www2.mst.dk/Udgiv/publikationer/2018/06/978-87-93710-46-7.pdf>

¹² The Danish Environmental Protection Agency. (2018). *Undersøgelse og risikovurdering af parfume og andre organiske stoffer i squishy legetøj* <http://www2.mst.dk/Udgiv/publikationer/2018/06/978-87-93710-46-7.pdf>

2.3.3 To assess the risk of adverse health effects, we calculated a risk characterisation ratio (RCR)

In order to assess the risk for negative health effects, information regarding the level of exposure at which the chemical substances do not cause negative health effects, so-called *reference values*, is also required. In order to derive a reference value for a concentration in air, a so-called NOAEC (No Observed Adverse Effect Concentration) value for each substance was used as a basis. Information on NOAEC values usually comes from experimental animal studies. The reference value is then calculated by dividing the NOAEC value by a number of uncertainty factors that, among other things, compensate for differences between animals and humans. Most often, an uncertainty factor of 100 is used. This means that the level of exposure considered not to cause negative health effects in humans is around 100 times lower than the exposure level which does not cause negative health effects in animals. A reference value may also be determined based on exposure levels reported to have caused adverse effects in humans. This method generally uses a lower uncertainty factor than 100, and needs typically only to compensate for differences in sensitivity between individuals.

There may be several different reference values already available for the same chemical substance and health effect. The differences may be the result of differences in how the experimental studies were conducted or interpreted and/or differences in the uncertainty factors used to derive the reference values. The reference values may thus vary between different risk assessments due to different expert judgement. The choice of reference value may affect the outcome of a risk assessment.

The basis for the reference values we used in this report were gathered from various sources. For four substances, we obtained information on NOAEC values from the Reach registrations disseminated at the European Chemicals Agency's (ECHA's) website¹³:

- dimethylaminoethanol
- triethylendiamine
- bis (2-(dimethylamino) ethyl) ether
- 1,1,4,7,7-pentamethyldiethylenetriamine

For the substance DMF, we did not use the NOAEC value from ECHA's dissemination site, since the reference value given for the general public refers to workers. Instead, we used a so-called LOAEC value (Lowest Observed Adverse Effect Concentration) for DMF from a report published by the Danish Environmental Protection Agency¹⁴. We subsequently adjusted the chosen NOAEC and LOAEC values by using uncertainty factors according to the recommendations in ECHA's guidance documents¹⁵ for deriving reference values.

We used EU-LCI values as reference values for the calculation of risk for two substances:

- xylene
- cyclohexanone

LCI (Lowest Concentration of Interest) describes health-related reference values, developed in the EU, for the emission of chemical substances from construction products¹⁶. We chose to

¹³ <https://echa.europa.eu>

¹⁴ *Report from The Danish Environmental Protection Agency. N, N-dimethylformamide. Evaluation of health hazards and proposal of a health-based quality criterion for ambient air. Environmental Project No. 1543, 2014*

¹⁵ ECHA 2012, Guidance on information requirements and chemical safety assessment Chapter R.8: Characterisation of dose [concentration]-response for human health.

¹⁶ http://ec.europa.eu/growth/sectors/construction/eu-lci/about_en

use these reference values in our risk assessment as they relate to products which emit chemicals in the indoor environment (although there may be some differences between construction products and toys in terms of emission¹⁷). The two EU-LCI values we used in our risk assessment are lower than the reference values given by the Reach registrants of the substances. Our choice of reference values was justified by the precautionary principle, as well as by the fact that the subject of this report is exposure to children via toys.

In Appendix 4, we present information used in our risk assessment, for all seven substances.

In order to assess the risk that a chemical substance cause adverse health effects, we compared the calculated exposure level for each substance with its reference value. By dividing the exposure by the reference value, a risk characterisation ratio (RCR) is obtained. If the RCR-value is below 1, the risk for adverse health effects is considered to be adequately controlled and very low. If the RCR-value exceeds 1, it indicates a risk for an adverse health effect, which in this case is irritation of eyes and airways.

3 Results

3.1 Analysis and risk assessment

3.1.1 *Exposure Scenario 1: A child holding a squishy close to its eyes and airways*

The RCR-values of the analysed substances are reported in Table 2, for each tested squishy. An RCR-value above 1 indicates that there is an increased risk for eye and respiratory irritation when a child holds a squishy close to its eyes and airways, such as when the child smells it, uses it as a cuddly toy or keep it in bed during sleep. We obtained RCR-values above 1 for five of the substances. These were:

- dimethylaminoethanol
- N,N-dimethylformamide (DMF)
- cyclohexanone
- triethylenediamine
- bis(2-dimethylamino)ethyl)ether

All tested squishies emitted at least one of these five substances in such concentrations that the RCR-value exceeded 1.

For the substance xylene, the critical effect is not irritation but effects on the central nervous system, such as dizziness, nausea, and headache. The RCR-value for xylene was below 1 for all tested squishies, which means that the risk for adverse effects on the central nervous system as a result of exposure to xylene is very low.

¹⁷ http://publications.jrc.ec.europa.eu/repository/bitstream/JRC83683/eca%20report%2029_final.pdf

Table 2. Calculated RCR-values for Exposure Scenario 1. Values above 1 indicate an increased risk for eye and respiratory irritation and have been marked in bold. Exposure concentrations are reported in Appendix 2 and the reference values used in the calculations can be found in Appendix 4.

Tested toy	RCR-values (exposure divided by the reference value, 1 hour and 72 hours)													
	Dimethyl-amino-ethanol		N,N-dimethyl-formamide		Xylene		Cyclo-hexanone		Triethylene-diamine		Bis (2-(dimethylamino) ethyl) ether)		1,1,4,7,7-Pentamethyldiethylenetriamine	
	1 hour	72 hours	1 hour	72 hours	1 hour	72 hours	1 hour	72 hours	1 hour	72 hours	1 hour	72 hours	1 hour	72 hours
Squishy 1	2	<0.008	23	72	0.8	0.007	20	0.6	6	9	2	12	<0.03	<0.03
Squishy 2	<0.008	<0.008	0.09	0.07	0.02	0.004	72	2	0.4	12	<0.2	2	<0.03	<0.03
Squishy 3	72	0.2	7	2	0.03	0.006	8	1	7	16	2	19	<0.03	<0.03
Squishy 4	<0.008	<0.008	0.9	0.7	0.02	0.006	1	0.2	1	8	<0.2	<0.2	<0.03	<0.03
Squishy 5	0.2	<0.008	30	16	0.03	0.006	56	21	7	17	36	95	0.1	0.9
Squishy 6	<0.008	<0.008	7	1	0.08	0.006	12	1	<0.01	2	<0.2	<0.2	<0.03	<0.03
Squishy 7	<0.008	<0.008	4	72	0.02	0.005	72	2	5	14	0.7	5	<0.03	<0.03
Squishy 8	0.02	<0.008	2	1	0.02	0.004	72	1	14	26	2	1	<0.03	<0.03
Squishy 9	<0.008	<0.008	2	1	0.01	0.004	1	0.5	19	32	12	19	<0.03	<0.03
Squishy 10	0.08	<0.008	2	0.9	0.02	0.003	2	0.5	13	20	10	19	<0.03	<0.03
Squishy 11	6	2	19	13	0.3	0.04	39	19	30	36	2	1	<0.03	<0.03
Squishy 12	<0.008	<0.008	1	0.7	0.03	0.01	72	1	12	26	1	0.5	<0.03	<0.03
Squishy 13	0.2	0.08	13	7	0.02	0.004	8	72	4	15	<0.2	<0.2	<0.03	<0.03
Squishy 14	<0.008	<0.008	4	1	0.03	0.005	2	0.2	0.1	8	<0.2	7	<0.03	<0.03
Squishy 15	<0.008	<0.008	0.7	0.3	0.03	0.005	0.3	0.1	2	11	0.5	2	<0.03	<0.03
Squishy 16	0.04	<0.008	2	0.9	0.02	0.004	1	0.5	17	21	5	5	<0.03	0.1
Squishy 17	<0.008	<0.008	0.1	0.07	0.02	0.004	0.2	0.06	7	12	1	0.2	<0.03	<0.03
Squishy 18	<0.008	<0.008	0.1	0.05	0.02	0.004	0.2	0.06	4	11	<0.2	2	<0.03	<0.03
Squishy 19	<0.008	<0.008	21	1	0.7	0.08	1	0.1	<0.01	<0.01	<0.2	<0.2	<0.03	<0.03
Squishy 20	<0.008	<0.008	0.7	0.4	0.02	0.004	1	0.2	<0.01	0.2	0.2	0.2	<0.03	<0.03
Squishy 21	0.9	0.02	4	72	0.02	0.003	8	1	28	36	0.7	0.5	<0.03	<0.03

3.1.2 Exposure Scenario 2: A child playing in a room where 42 squishies are present

Some children collect and play with multiple squishies at the same time. In light of this, we calculated the risk for irritation effects due to the total exposure to each substance which leaked from the tested toys.

The exposure calculations are based on the concentration of the substance measured at the shorter period in the test chamber (one hour) and slightly longer (72 hours), following the removal of the toys from their packaging. The results show that there is a risk for eye and respiratory irritation (RCR-values above 1) for two substances; triethylenediamine and bis (2-(dimethylamino) ethyl) ether), see Table 3.

Table 3. Calculated RCR-values for Exposure Scenario 2. RCR values greater than 1 are marked in bold.

Chemical substance	CAS No.	EC No.	Exposure ($\mu\text{g}/\text{m}^3$)		Reference value used in the calculations ($\mu\text{g}/\text{m}^3$)	Risk characterisation ratio (exposure/reference value) RCR-value	
			1 hour	72 hours		1 hour	72 hours
Dimethylaminoethanol	108-01-0	203-542-8	69	12	1160	0.06	0.01
N,N-dimethylformamide (DMF)	68-12-2	200-679-5	225	77	270	0.8	0.3
Xylene	1330-20-7	215-535-7	5	0.6	500	0.01	0.001
Cyclohexanone	108-94-1	203-631-1	343	108	410	0.8	0.3
Triethylenediamine	280-57-9	205-999-9	202	386	240	0.8	1.6
Bis (2-(dimethylamino) ethyl) ether)	3033-62-3	221-220-5	8	24	20	0.4	1.2
1,1,4,7,7-pentamethyldiethylenetriamine	3030-47-5	221-201-1	1	2	280	0.005	0.009

The RCR-values are based on the concentrations of the substances in air measured shortly after the toys were removed from their packaging (at 1 and 72 hours). The levels emitted by most toys decreased over time. The analyses for three of the substances (triethylenediamine, bis (2-(dimethylamino) ethyl) ether) and 1,1,4,7,7-pentamethyldiethylenetriamine) showed that the emission levels increased from the measurement at one hour to the one at 72 hours. It is however likely that these concentrations also will decrease over a more extended time period.

We consider it unlikely that a child has 42 recently unpacked squishies (or squishies that have been opened at the exact same time) in one room, and therefore, that a child would be exposed to such high concentrations as those calculated for Scenario 2. As such, we conclude that the risk that a child experience irritation of the eyes and airways while spending time in a room containing 42 squishies is very low.

The substance N,N-dimethylformamide (DMF) may in addition to its irritant properties be toxic to reproduction. Hence, we included an assessment of the risk for adverse effects on

fetal development. The exposure scenario described a pregnant woman sleeping in the same bed as a child hugging a squishy that had recently been removed from its packaging.

Our calculations showed that the risk for toxic effects on reproduction from exposure to DMF emitted from the tested squishies is low, as the RCR values were below 1.

3.1.3 Total content

Only one of the substances we had analysed has a limit value specified in the Toy Safety Directive. That substance is DMF, which has a limit value for total content, seeing as it has a harmonised classification as toxic to reproduction. We had the total content of all seven substances measured. The results can be found in Appendix 3. The results of the analysis showed that the limit value for the total content of DMF was not exceeded in any of the tested toys.

3.2 Information for companies

We informed the 13 companies from which we had purchased the squishies of the results from the analysis and our conclusion is that these toys do not fulfil the requirements presented in the legislation concerning toys. The companies were also given the opportunity to answer certain questions regarding the toys. In addition to the companies that sold us the toys, we also contacted suppliers situated in Sweden and the rest of the EU. Most companies claimed they no longer had the toys in question available for purchase, and some had also stopped selling squishies altogether. Some claimed that they would stop selling the toys following our information. Other companies were of the opinion that their squishies were tested in accordance with applicable regulations and should therefore be considered safe. In these cases, a sales ban may be applicable. As of the publishing of this report, several cases are ongoing.

4 Conclusions

4.1 The tested toys pose a risk to children

Our conclusion is that the risk posed by the tested squishy toys to children who use them is not compliant with current legislation regarding toys. **We therefore consider there to be a legal basis to prohibit the sale of these squishies. Given that all the squishies included in this project constitute a risk, there are indications that the problem is general to toys made from the same material (polyurethane foam).**

We had seven different chemical substances which may be emitted to the surrounding air from squishies analysed. Exposure to these substances has previously been reported to pose a risk for eye and respiratory irritation. We had 21 different squishies tested. The measured levels in air were then used as starting points for health risk assessment of the substances, primarily regarding eye and respiratory irritation.

The health risk assessment showed an increased risk for eye and respiratory irritation caused by emission of hazardous volatile substances when a child holds a recently unpackaged squishy close to its eyes or airways, for example if the child sleeps with, smells or hugs a squishy. For two of the substances that emitted from the squishies there were an increased risk of irritation when a child spends time in a room with 42 recently unpackaged squishies. We do however consider such an exposure scenario unlikely, as it does not appear probable that a child has that many recently unpackaged squishies in one room, at the same time.

It should however be noted that the health effect for which we report an increased risk to children is irritation of the eyes and airways, a health effect which may be uncomfortable but temporary, and one that does not leave any permanent injuries.

4.2 Advice to consumers

Our analysis showed that irritant substances are emitted from squishies in such levels that there is a risk that children may experience discomfort. Children should therefore avoid having squishies close to their eyes and airways, such as when hugging or smelling them. Children should also avoid using squishies as a cuddly toy and not sleep with them in bed. Squishies should not be given to small children who might bite or suck on the toy, as there is a risk that small pieces of the squishy dislodge and get caught in their throat, which might lead to suffocation.

There is no need to be worried if a child has played with squishies. Our findings do not mean that all children who have been in close contact with the toy experienced discomfort, but rather that they might under certain circumstances. If a child experiences irritation of the eyes or airways from substances emitted by squishies, the symptoms will subside once the child is no longer exposed to them. If you notice symptoms of irritation, we recommend that the child should avoid the toy.

Our results show that squishies that have recently been removed from their packaging generally emit the highest concentration of irritating substances. Squishies that have been in use for a while emit lower concentrations. If you are concerned for your child's health, you may dispose of the squishy toys. They can be discarded as regular household waste.

4.3 Advice for companies

The companies that manufacture squishies or toys made of similar materials should look into the presence of volatile substances in their products and assess whether they constitute a risk to children. According to the Toy Safety Directive, toy manufacturers are required to make a risk assessment, even if the legislation does not specify any limit values. Companies importing toys to the EU are required to ensure that the manufacturer has made such an assessment.

In order to reduce the levels of substances emitted by recently produced products, the manufacturers should air the products before they are packaged. This does not exempt them from investigations into the substances emitted by the products, but it is one way of reducing the risks related to the chemical substances in the products. Another way of avoiding risk is to review which chemicals are used during production and substitute hazardous ones.

Out of the seven substances that were analysed in this study, only DMF has a set limit value when used in toys. DMF is regulated due to its harmonised classification as toxic to reproduction. Despite our assessment that the risk of adverse effects on the unborn child from exposure to DMF emitted from the tested squishies is low, manufacturers of the toys should review how much of the substance that is released. DMF could also be emitted from other articles made of similar materials as squishies. Combined exposure to DMF from different sources may increase the risk for harmful effects caused by this substance.

5 Discussion

5.1 General problem for squishies

All the squishies that were tested in this project emitted substances which may cause eye and respiratory irritation as a result of the uses described in this report. There were however large differences in the levels emitted by the various squishies. Nevertheless, the results from this

study, as well as the one carried out by the Danish EPA, indicate that the analysed substances are emitted by most squishies, and that it is a general problem for this type of toy. Other articles made of the same material (polyurethane foam) could be emitting the same substances and constitute a similar risk. We consider that this requires further investigation.

We compared the results from the analysis with the type of packaging that the squishies were delivered in. We were unable to find a correlation which indicate that toys in open packages emitted lower levels of irritant substances than those in sealed packages. For example, the squishy with the highest emission was in a package with ventilation holes, while the one with the lowest emission came in a sealed package. Hence, just airing the squishies before use does not seem sufficient in order to avoid the risk posed by these substances. Manufactures who wish to produce similar toys should therefore consider finding other ways of avoiding hazardous volatile substances, for example by using other chemicals during production.

5.2 Exposure via skin

Uptake via skin is a relevant pathway in terms of exposure to chemical substances in squishies, due to the nature of how the toy is used. The Danish study¹⁸ examined whether a number of substances could leak, i.e. migrate, from the toy to a liquid similar to sweat. Results showed that the substances could not be detected in the liquid, and hence no quantitative risk assessment for exposure via skin could be made. Our study did not include migration tests, nor did we perform risk assessment of skin exposure. Four of the chemical substances investigated in our study do however have harmonised classifications in the EU which indicate that they may be harmful in contact with skin (see Appendix 4).

5.3 Development of the legislation

Both the Danish EPA's report and the results from our project show that substances that may cause irritation of the eyes and airways leak out of squishies. In both studies, the squishies emitted substances at levels, which indicates an increased risk for eye and respiratory irritation in children who hold a squishy close to their eyes and airways, albeit to varying degrees. As such, it appears to be a general issue with this kind of toy, and possibly with other articles made from the same or similar materials as squishies.

Only one of the emitted substances, DMF, has a specific limit value in the Toy Safety Directive since it has a harmonised classification as toxic to reproduction. According to the directive, there is currently no possibility of limiting substances with hazardous properties other than carcinogenic, mutagenic (genotoxic) and toxic to reproduction, i.e. CMR properties. We consider that it is necessary to introduce the possibility to limit substances with harmful properties beyond CMR to the Toy Safety Directive. In addition, we consider that the directive must allow for the introduction of lower limit values for certain CMR substances for toys intended for children over the age of three years. In its current form, the directive only allows for lower limit values for substances in toys intended for children below the age of three years.

Another general issue with the regulations is that it takes time to develop the rules, so by the time new types of products or articles enter the market, the legislation may be unable to keep

¹⁸ The Danish Environmental Protection Agency. (2018). *Undersøgelse og risikovurdering af parfume og andre organiske stoffer i squishy legetøj* <http://www2.mst.dk/Udgiv/publikationer/2018/06/978-87-93710-46-7.pdf>

up. This is an issue which is particularly relevant for toys since the development cycle of toys is quick and the available products are largely dictated by trends.

Firmer regulations for volatile substances, such as the ones analysed in this project would make it easier for the toy manufacturers to prevent that such substances are being emitted from toys, and in turn pose a risk to the children playing with them.

6 Appendices

Appendix 1 – Methods for measurement of emissions and determining contents

Measurement of emissions

Carrying out the emission measurements

The squishy toy was unpacked and placed inside the emission chamber. The squishy toy was compressed and allowed to reassume its original shape ten times, after which the lid to the chamber was closed. Samples of the air inside the chamber were taken after 1 hour and 72 hours respectively.

Test condition inside the chamber

Chamber volume	0.00 m ³
Temperature	23 ± 0.5 °C
Relative humidity	50 ± 2% RF
Air change	0.68 times/hour
Unit specific air flow	0.021 m ³ /unit hour
Air velocity at sample plot	0.1 – 0.3 m/s

During the sampling of VOC (Volatile Organic Compounds) the absorbent used is Tenax TA. The absorbent has been thermally desorbed and analysed according to RISE method 0601, similar to ISO 16000-6: 2011 (Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA sorbent, thermal desorption and gas chromatography using MS or MS-FID). In short, this means a gas chromatographic analysis using a flame ionization detector and a mass spectrometer (GC-FID and GC-MS) The capillary column used has been coated with 5 % phenyl/95 % methylpolysiloxane. Emission values are calculated from the FID signal. Two samples per test session were carried out, the result being a mean. Sample volumes from 2.8 to 3.0 L.

Results of emission measurements

The results are presented as device-specific and as concentrations in a reference room (according to EN 16000-9). The reference room has a floor area of 7 m², a volume of 17.4 m³ and an air change of 0.5 h⁻¹.

Calculation of concentration from emission speed:

$$C = \frac{Eu \times U}{n \times V}$$

C = concentration of VOC in the reference room, in µg/m³
E_U = unit specific emission rate, in µg/unit x hour
U = number of units in reference room (here 1)
n = air change, in turn-over per hour
V = volume in reference room

Determination of total content

The duplicate of the test object in the emission test was used to determine the total content.

Small pieces of the test object was cut out, 0.5 g in total, whereupon the internal standard was added (DEHP-d4). The sample was extracted in 5 ml 50/50 vol% methanol/dichloromethane

for 60 minutes. The extract was centrifuged for 30 minutes and then analysed with GC/MS. The seven different substances were identified and quantified using external standards for each substance.

Appendix 2 – Emitted concentrations

The table below shows the measured concentrations ($\mu\text{g}/\text{m}^3$) in the test chamber for each substance 1 hour and 72 hours after the toy was removed from its packaging.

Tested toy	The concentration of the substance ($\mu\text{g}/\text{m}^3$) 1 hour/72 hours after the toy was removed from its packaging.													
	Dimethyl-amino-ethanol		N,N-dimethyl-formamide		Xylene		Cyclo-hexanone		Triethylene-diamine		Bis (2-(dimethyl-amino) ethyl) ether)		1, 1, 4, 7.7-pentamethyl-diethylenetri-amine	
	1 hour	72 hours	1 hour	72 hours	1 hour	72 hours	1 hour	72 hours	1 hour	72 hours	1 hour	72 hours	1 hour	72 hours
Squishy 1	2500	<9.5	6200	860	380	3.3	8100	240	1300	2200	48	240	<9.5	<9.5
Squishy 2	<9.5	<9.5	24	19	9.5	1.9	1100	670	95	2800	<4.3	48	<9.5	<9.5
Squishy 3	3100	190	1900	670	14	2.9	3500	480	1800	3900	48	380	<9.5	<9.5
Squishy 4	<9.5	<9.5	240	190	9.5	2.9	430	95	330	1900	<4.3	<4.3	<9.5	<9.5
Squishy 5	190	<9.5	8100	4400	14	2.9	23000	8600	1700	4000	710	1900	33	240
Squishy 6	<9.5	<9.5	2000	290	38	2.9	4800	430	<2.9	430	<4.3	<4.3	<9.5	<9.5
Squishy 7	<9.5	<9.5	1100	810	9.5	2.4	1190	710	1300	3300	14	95	<9.5	<9.5
Squishy 8	19	<9.5	620	380	9.5	1.9	1100	430	3300	6200	38	24	<9.5	<9.5
Squishy 9	<9.5	<9.5	520	290	4.8	1.9	570	190	4500	7600	240	380	<9.5	<9.5
Squishy 10	95	<9.5	520	240	9.5	1.4	950	190	3000	4800	190	380	<9.5	<9.5
Squishy 11	6900	2 300	5200	3400	140	19	16000	7600	7100	8600	48	24	<9.5	<9.5
Squishy 12	<9.5	<9.5	330	190	14	4.8	1100	430	3000	6200	29	9.5	<9.5	<9.5
Squishy 13	240	95	3600	2000	9.5	1.9	3400	1200	910	3600	<4.3	<4.3	<9.5	<9.5
Squishy 14	<9.5	<9.5	1100	330	14	2.4	670	95	29	1900	<4.3	143	<9.5	<9.5
Squishy 15	<9.5	<9.5	190	95	14	2.4	140	48	480	2600	9.5	33	<9.5	<9.5
Squishy 16	48	<9.5	430	240	9.5	1.9	520	190	4100	5000	95	95	<9.5	29
Squishy 17	<9.5	<9.5	33	19	9.5	1.9	95	24	1760	2900	19	4.3	<9.5	<9.5
Squishy 18	<9.5	<9.5	33	14	9.5	1.9	95	24	910	2700	<4.3	38	<9.5	<9.5
Squishy 19	<9.5	<9.5	5700	290	330	38	430	48	<2.9	<2.9	<4.3	<4.3	<9.5	<9.5
Squishy 20	<9.5	<9.5	190	95	9.5	1.9	480	95	<2.9	48	4.3	4.3	<9.5	<9.5
Squishy 21	1100	24	1100	910	9.5	1.4	3400	480	6700	8600	14	9.5	<9.5	<9.5

Appendix 3 – Total contents

The table below shows the measured total contents of the various squishy toys.

Tested squishy	Measured total content in weight percentage						
	Dimethyl-amino-ethanol	N,N-dimethyl-formamide	Xylene	Cyclo-hexanone	Triethylene-diamine	Bis (2-(dimethylamino) ethyl) ether)	1,1,4,7,7-Pentamethyl diethylenetriamine
Squishy 1	0.01	<0.01	<0.01	<0.01	0.05	0.03	<0.01
Squishy 2	0.04	<0.01	<0.01	0.03	0.19	0.04	<0.01
Squishy 3	0.05	<0.01	<0.01	<0.01	0.10	<0.01	0.03
Squishy 4	0.05	<0.01	<0.01	<0.01	0.09	<0.01	<0.01
Squishy 5	0.14	0.02	<0.01	0.04	0.13	0.09	0.05
Squishy 6	<0.01	0.04	<0.01	0.07	0.07	<0.01	<0.01
Squishy 7	0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Squishy 8	0.06	<0.01	<0.01	<0.01	0.17	<0.01	<0.01
Squishy 9	0.06	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Squishy 10	0.05	<0.01	<0.01	<0.01	0.08	0.03	<0.01
Squishy 11	0.02	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Squishy 12	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Squishy 13	0.42	0.04	<0.01	0.02	0.21	<0.01	<0.01
Squishy 14	<0.01	<0.01	<0.01	<0.01	0.04	0.02	<0.01
Squishy 15	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.01
Squishy 16	<0.01	<0.01	<0.01	<0.01	0.05	<0.01	0.01
Squishy 17	0.04	<0.01	<0.01	<0.01	0.04	<0.01	0.03
Squishy 18	0.02	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Squishy 19	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Squishy 20	0.28	<0.01	<0.01	0.03	0.16	0.04	0.05
Squishy 21	0.12	<0.01	<0.01	<0.01	0.11	<0.01	<0.01

Appendix 4 – Information on emitted substances

The table below lists the reference values, NOAECs, uncertainty factors and critical effects (the effect observed at the lowest exposure for the substance) for the seven chemical substances analysed in this report. Harmonised classification of the substances is also given.







Sub-stance	CAS No	EC No	Reference value µg/m ³	Choice of NOAEC and uncertainty factors used	Critical effect	Harmonised classification, (category) and hazard statements	Reference
Dimethyl-amino-ethanol	108-01-0	203-542-8	1160	Inhalation study on rats. NOAEC: 29 mg/m ³ . Uncertainty factors: <ul style="list-style-type: none"> • 2.5 – toxicokinetic differences between animals and humans • 10 intra-individual sensitivity 	Eye and respiratory irritation	Acute Tox. 4 Skin Corr. 1B Harmful if swallowed. Harmful in contact with skin. Harmful if inhaled. Causes severe skin burns and eye damage	Substance registration dossier ECHA's website.
N,N-dimethyl-formamide (DMF)	68-12-2	200-679-5	270	Study on workers. LOAEC: 8 mg/m ³ . Uncertainty factors: <ul style="list-style-type: none"> • 10 –intra-individual sensitivity • 3 – LOAEC to NOAEC 	Eye and respiratory irritation	Acute Tox. 4 Eye Irrit. 2 Repr. 1B Harmful in contact with skin. Harmful if inhaled. Causes serious eye irritation. May damage the unborn child	Report from the Danish Environmental Protection Agency ¹⁹ .
Xylene	1330-20-7	215-535-7	500		Neuro toxicity	Acute Tox. 4 Skin Irrit. 2 Harmful in contact with skin. Harmful if inhaled. Causes skin irritation.	EU-LCI: 500 µg/m ³ ²⁰ .
Cyclohexanone	108-94-1	203-631-1	410		Eye and respiratory irritation	Acute Tox. 4 Harmful if inhaled.	EU-LCI: 410 µg/m ³ ¹⁴ .
Triethylenediamine	280-57-9	205-999-9	240	Inhalation study on rats. NOAEC: 6 mg/m ³ . Uncertainty factors: <ul style="list-style-type: none"> • 2.5 – toxicokinetic differences between animals and humans • 10 – intraindividual sensitivity 	Eye and respiratory irritation	None	Substance registration dossier ECHA's website.
Bis (2-(dimethylamino)ethyl)ether	3033-62-3	221-220-5	20	Inhalation study on rats. LOAEC: 1.5 mg/m ³ . Uncertainty factors: <ul style="list-style-type: none"> • 2.5 – toxicokinetic differences between animals and humans • 10 – intraindividual sensitivity • 3 – LOAEC to NOAEC 	Eye and respiratory irritation	None	Substance registration dossier ECHA's website.
1,1,4,7,7-pentamethyldiethylethylenetriamine	3030-47-5	221-201-1	280	Inhalation study on rats. LOAEC: 21 mg/m ³ . Uncertainty factors: <ul style="list-style-type: none"> • 2.5 – toxicokinetic differences between animals and humans • 10 – intraindividual sensitivity • 3 – LOAEC to NOAEC 	Eye and respiratory irritation	Acute Tox. 3 Acute Tox. 4 Skin Corr. 1B Toxic in contact with skin. Harmful if swallowed. Causes severe skin burns and eye damage.	Substance registration dossier ECHA's website.







¹⁹ N,N-dimethyl-formamide Evaluation of health hazards and proposal of a health-based quality criterion for ambient air Environmental Project No. 1543, 2014.

²⁰ https://ec.europa.eu/growth/sectors/construction/eu-lci/values_en.

Appendix 5 – Summary of companies and squishies investigated

The table below lists the companies and squishies that were tested in this study. We have only performed spot checks on the companies' articles and only analysed for certain substances. We have not investigated whether the articles comply with all applicable legislations.

Place of purchase	Article	Image	Article number/ barcode	Designation in this report
Teknikmagasinet AB	I Love Squishy		10-pack 106762S33604	Squishy 1
Disney Store (Sweden)	Squish-Dee-Lish		FAC-069362-18131 461088806326	Squishy 2
Wish www.wish.com	Cute Jumbo Squishy Toy Strawberry			Squishy 3
Wish www.wish.com	Novelty Gifts Kawaii Unicorn		762550	Squishy 4
Bamba AB www.bamba.se	Squeezy Jumbo Deluxe, Blind bag		60-00010 5710948290894	Squishy 5
Bamba AB www.bamba.se	Micro Squishy Bestie, Blind bag		11-10098 5710948321925	Squishy 6

<p>iSecrets AB www.isecrets.se</p>	<p>Squishy Happy Avocado</p>		<p>033.006.153</p>	<p>Squishy 7</p>
<p>iSecrets AB www.isecrets.se</p>	<p>Squishy Sunflower Seed Hamster</p>		<p>033.006.150</p>	<p>Squishy 8</p>
<p>Sultana AB www.spelexperten.com Supplier: Invivo AB</p>	<p>Squishy Yoghurt Jumbo</p>		<p>1000107100015</p>	<p>Squishy 9</p>
<p>Sultana AB www.spelexperten.com Supplier: Invivo AB</p>	<p>Squishy Panda Jumbo</p>		<p>1000127100019</p>	<p>Squishy 10</p>
<p>Coolstuff AB www.coolstuff.se</p>	<p>Jumbo format Squishy (Piece of cake)</p>		<p>16086 7350074028244</p>	<p>Squishy 11</p>
<p>Digigatan www.squishy-fabriken.se</p>	<p>Jumbo Squishy White Lamb</p>		<p>GP165871</p>	<p>Squishy 12</p>
<p>Digigatan www.squishy-fabriken.se</p>	<p>Squishy Magical Unicorn</p>		<p>GP165871</p>	<p>Squishy 13</p>

Digigatan www.squishy-fabriken.se	Squishy Glass Keychain			Squishy 14
Krom Stockholm KB www.squishybox.se	Whale squishy		013	Squishy 15
Krom Stockholm KB www.squishybox.se	Melon squishy		031	Squishy 16
Mysebo Family AB www.busbjornen.se Supplier: Mitro Trading AB	Squishy slow rising citron		39.0001	Squishy 17
Mysebo Family AB www.busbjornen.se Supplier: Mitro Trading AB	Squishy Slow rising Panda		39.0018	Squishy 18
Webhallen Sverige AB www.webhallen.com Supplier: AMO Toys AB	MOJ MOJ Squishy Toy		283125 440260 554899E5C 0035051554899	Squishy 19
Lilla Hou www.lillahou.se	Puni Maru Baby Cheeki			Squishy 20
Ebay www.ebay.se	Jumbo Squishy Banana			Squishy 21

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