



Stockholms
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Hazardous substances in articles and materials

Short summary



”many old toys contain hazardous substances”

Tracking sources of hazardous substances is one part of the NonHazCity project. To learn more about the content of hazardous substances in articles and materials, a range of indoor items were analysed for a selection of chemicals, with a focus on items commonly found in preschools.

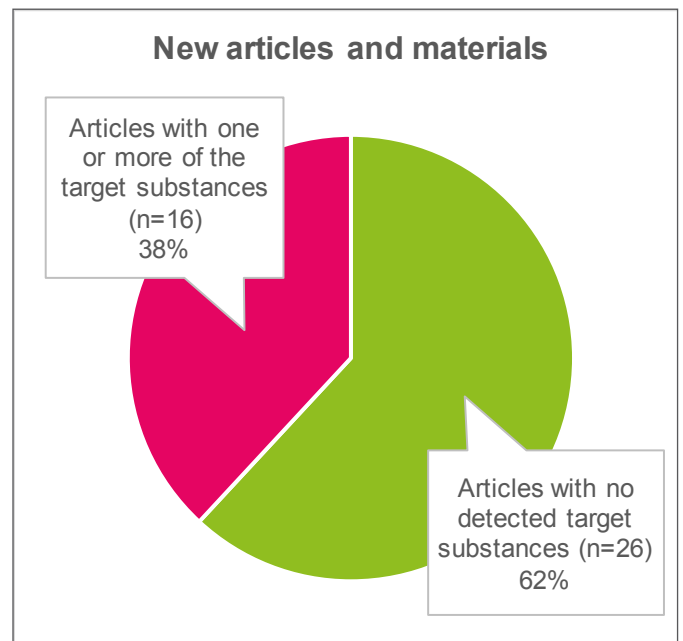
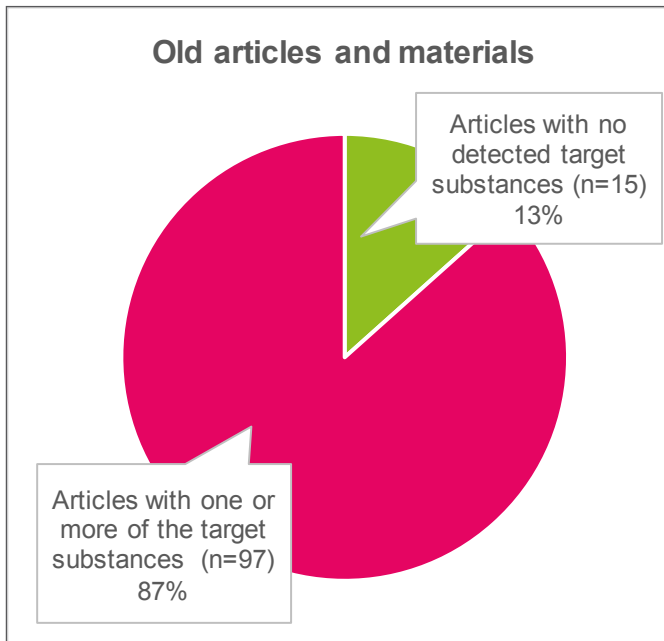
New and old toys, hobby materials, mattresses and furniture from preschools were analysed for a selection of hazardous substances including phthalates, flame retardants, chlorinated paraffins and formamide. The purpose was to:

- investigate to what extent hazardous substances are found in articles and materials used in preschools, and thereby
- motivate preschools to dispose of articles that may contain hazardous substances, and
- check compliance of contracted suppliers with set criteria and legislation.

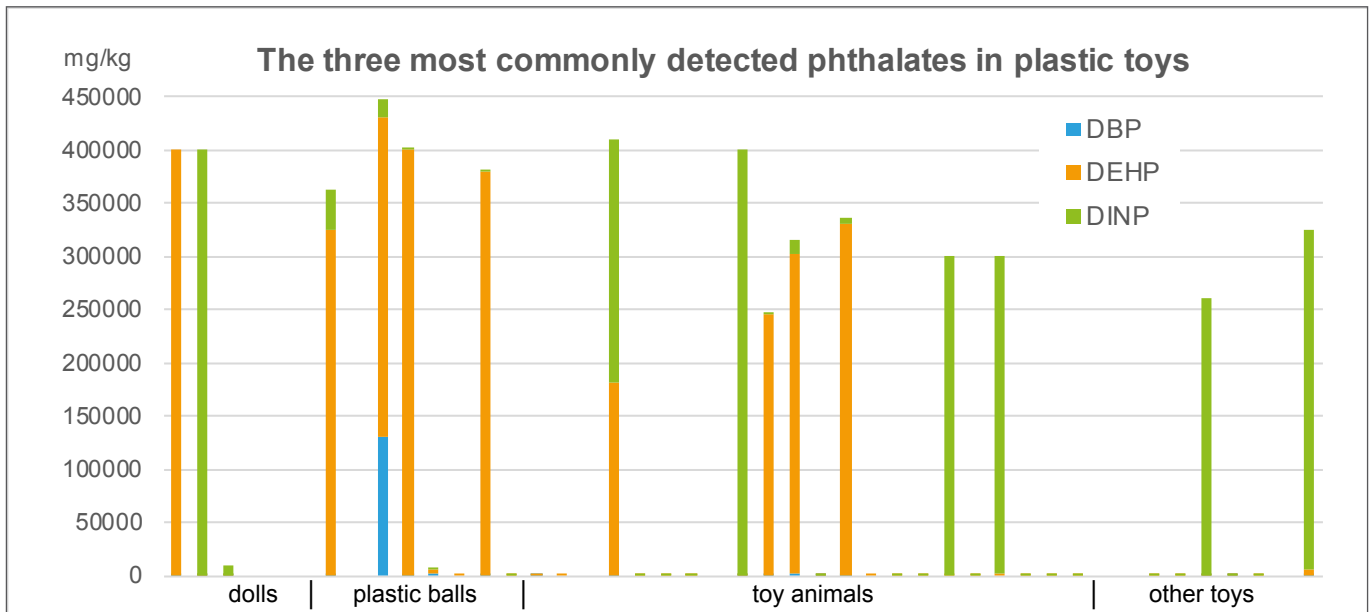
A total of 42 newly purchased items and 112 old articles and materials from preschools in Stockholm were analysed. Many of the items analysed had previously been discarded by the preschools, as they have already started to work according to the City of Stockholm’s Chemicals Centre guidance document for a “chemicals-smart preschool”.

The study showed that many old toys contain high levels of hazardous substances including dibutyl phthalate (DBP), diethylhexyl phthalate (DEHP) and diisononyl phthalate (DINP). Therefore, it is important to sort out and dispose of these toys in order to reduce hazardous substances at preschools.

The results from the study provide support for the recommendations in the “chemicals-smart preschool” guidance document. By discarding old items, as the preschools have done, the amount of hazardous substances present in the indoor environment has been reduced.



The distribution of articles and materials containing detectable levels above the limit of quantification (LOQ) of any target substance, and no detectable levels, respectively.



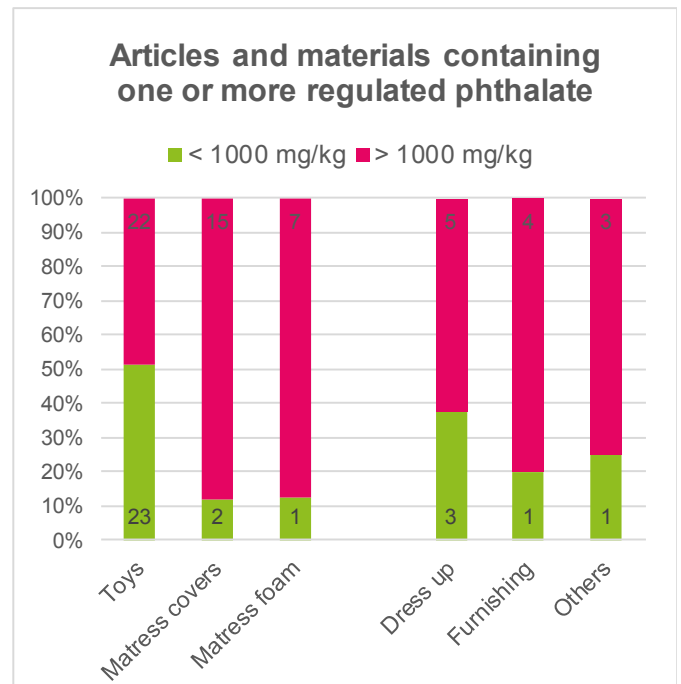
The distribution of the three most common phthalates, dibutyl phthalate (DBP), diethylhexyl phthalate (DEHP) and diisononyl phthalate (DINP) in plastic toys.

It is especially important that things children may play with are free of hazardous substances. Children are both more sensitive than adults and often use things in another way, such as sucking and chewing on them. Therefore, toys are subject to more stringent legislation concerning chemical content. The investigation showed that non-toys, that is, goods and materials that are not primarily intended to be used as toys, in many cases contain harmful substances. For example, DEHP and DINP were found in concentrations up to 40% by weight in bags and other items used for dress up. Furthermore, chlorinated paraffins and very high levels of DEHP and DINP were found in a garden hose used for water play.

The high content of phthalates in many of the old items means that, according to current legislation, they would not be allowed on the market. In 63% of the old toys and childcare articles, at least one restricted phthalate was found at a level above the limit allowed by current legislation (0.1% by weight). For dress up clothes, furnishings and more, 71% of the analyses showed levels above the current limit values. The items belonging to the latter group are not counted as toys or childcare articles, which means that, despite the high levels of phthalates, they would not be restricted in accordance with current legislation.

Nevertheless, it is important to limit the exposure of these substances to children regardless of the type of goods they are present in.

Chlorinated phosphorous flame retardants were found in both mattress foam, furnishings and toys. The highest concentrations were found for TDCPP and TCEP in foam from old mattresses and old sofa cushions. None of the analysed brominated flame retardants were found in either old or newly purchased items, which is positive.



The distribution of articles and materials containing one or more regulated phthalate above the limit of 1000mg/kg (0,1% by weight) according to current legislation.

Furthermore, the survey shows that new goods purchased from the municipality's procured product range are in most cases free from the harmful substances included in the survey. Prohibited substances were, however, found in some of the new samples, which demonstrates the need for chemical analyses, both of legally regulated substances and substances included in the criteria for the procurement process, to be included in the follow up of a procurement contract.

NonHazCity

The NonHazCity project wants to address small-scale emitters directly and try to reduce the emissions of hazardous substances at the source. Municipalities, small and medium sized enterprises and private households will be addressed by measures adapted to each specific target group, with the main goal of preventing hazardous substances from ending up in sewers, streams and lakes and, ultimately, in the Baltic Sea.

www.nonhazcity.eu

Group of activity 2.2

Chemical analysis for identification of indoor sources

City of Stockholm, May 2017

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Photo: Maria Pettersson



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