



FEBRUARY 2007

CLEANING UP OUR CHEMICAL HOMES CHANGING THE MARKET TO SUPPLY TOXIC-FREE PRODUCTS

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GREENPEACE

published by
date
project manager & author
editor

Greenpeace International : JN 029
February 2007
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CLEANING UP OUR CHEMICAL HOMES CHANGING THE MARKET TO SUPPLY TOXIC-FREE PRODUCTS

EXECUTIVE SUMMARY

Can we enjoy modern consumer products without their having to contain hazardous chemicals? Is it unrealistic to expect companies to substitute these substances with safer alternatives and achieve the same technical performance at a reasonable cost? Is substitution a vague aspiration for the future but not for the real world?

Greenpeace's Chemical Home database was launched in 2003 to demonstrate that the substitution of hazardous substances with safer alternatives is already happening. In many cases, the use of hazardous substances is not necessary, as suitable alternatives are already being used by innovative companies that want to be market leaders. Our database also supports the need for legislation by highlighting those companies who fail to act to phase harmful substances out of their products.

This report reviews the progress that companies have made towards substitution during the life of the database. It shows that consumers can choose from many products that are already free of these substances, and that many companies have embraced the process of substitution by phasing hazardous substances out of their brands. The EU's proposed REACH legislation could bring substitution into the mainstream if the substitution principle were at its heart, namely, that no harmful chemical should be authorised for continued use if safer substitutes are available.

The Development of the Chemical Home

The Chemical Home lists products such as cosmetics, household products, toys, sports shoes, pyjamas, paints and electronics. Based on correspondence with the manufacturers, those products likely to contain hazardous substances were graded red. Equivalent alternative products that the manufacturer stated are free from hazardous substances were listed as green. Where the manufacturer had made commitments to phase out the hazardous substances, an amber grade was given.

The database was available in six European language versions as well as the international version, and enabled consumers to identify products that might contain hazardous substances. This, in turn, encouraged manufacturers to give more priority to substituting hazardous substances with safer alternatives, thereby proving that substitution is possible. A number of companies made considerable progress in substituting hazardous substances, some of which have been upgraded to amber or green. Their actions should convince decision-makers of the workability of substitution.

Chemicals Out of Control

Hazardous substances that are commonly used as chemical additives in consumer products can migrate out of the product over time. These same chemicals are consistently found in breast milk and umbilical cord blood, which demonstrates their wide, uncontrolled and undesired dispersion. Greenpeace testing has shown that hazardous, man-made chemicals are also widespread in house dust, rainwater and the bodies of eels. These substances can cause a wide range of health effects, including effects on the reproductive system, immune system and impacts on the nervous system and behavioural development. Exposure of the unborn child to minute quantities of hazardous substances can result in permanent irreversible damage.

Inside the Chemical Home

To investigate the use of hazardous substances such as phthalates, synthetic musks, brominated flame retardants, organotins and nonylphenols, Greenpeace commissioned chemical analysis of a variety of everyday products. The results were presented in 11 reports, beginning in October 2003. One report focused on Disney children's garments throughout the world; another on 36 well-known perfumes. The product sampling showed the widespread presence of various hazardous chemicals in many products, sometimes at quite high levels.

Over the years that the Chemical Home has been live, some product sectors have made more progress towards substitution than others. In particular, sports shoe companies have shown themselves to be well informed and on the whole progressive, with the majority earning amber or green grades. Electronics companies have also been quick to respond to the challenge of substitution, and although many remain graded red, a significant few, including market leaders Dell and Nokia, have developed policies on chemicals and substitution¹. With a few exceptions, larger companies in the household products, cosmetics and perfumes sectors have been slow to change, in comparison to smaller, more alternative companies in these sectors.

The speed of change by some companies shows that alternatives for many uses of hazardous substances are already available or at least are already being evaluated for substitution. These companies prove that substitution is not a future goal but is possible and is happening today.

In contrast, the large number of companies and brands that remain graded red shows that some companies are unwilling to make any changes unless forced to do so by legislation, even amongst some of the larger companies on the database.

What the companies say

As part of this report, we undertook a small survey of 11 of the companies that were upgraded since the launch of the database. The biggest factor motivating companies to substitute hazardous substances with safer alternatives was increased customer confidence, followed by the benefits of being seen as a market leader. A company's core values and ethos, such as commitment to the precautionary principle, were also a major consideration for some.

For most businesses, substitution is not a quick fix but a long and complex process involving suppliers, customer feedback and external authorities, as well as a lot of work internally. It is also a process that encourages innovation.

Advantages included improvement in product quality, greater transparency and better goals and objectives, reduced environmental impact and the market advantage of being prepared for future market requirements as well as being competent at the substitution process. Immediate benefits were sometimes hard to evaluate, and some disadvantages were also mentioned.

In general, companies were in favour of the process of substitution and of the need for REACH to stimulate this, as well as to encourage innovation, create greater confidence in chemicals and provide better information about chemicals to assist the selection of materials.

Findings

By moving towards the use of safer alternatives to hazardous chemicals, companies are showing the workability of the substitution process and are leading a new trend towards products that don't contain harmful substances. However, substitution requires commitment and innovation; for most companies there are too few incentives, hence the large number of companies that remain red on the database. Current legislation, which is piecemeal in its approach, has not proved enough of an incentive and has failed to achieve substitution of hazardous substances with less hazardous alternatives.

REACH needs to create a single route to authorisation and a requirement for substitution, wherever possible, for 'substances of very high concern'. This will level the playing field and create demand for safer alternatives, increase consumer confidence and stimulate innovation and competitiveness of the chemicals industry and downstream users in Europe. Most importantly, an end to the unnecessary use of the most hazardous substances will begin to reduce the levels of such chemicals in the environment and, as a consequence, our exposure to them.

CLEANING UP OUR CHEMICAL HOMES CHANGING THE MARKET TO SUPPLY TOXIC-FREE PRODUCTS

Introduction

Although the widespread presence of hazardous man-made chemicals in the environment is increasingly being documented, few people are aware that many of these same chemicals are found in the home and that they are often present in everyday products.

Greenpeace undertook investigations to show that dangerous chemicals are out of control, turning up in house dust, in household products... and ultimately in our bodies. We commissioned testing of rainwater¹ and house-dust². We found that hazardous chemicals such as brominated flame retardants, phthalates, alkylphenols and organotins were widespread contaminants in both rainwater and house-dust. Greenpeace then commissioned independent laboratories to analyse products for these substances and found that they are common ingredients in a range of different household products.

Even the unborn child is exposed to harmful chemicals during its development in the womb, as we found when we investigated blood from the umbilical cords of new born babies³. At this critical stage of development, even minute amounts of hazardous substances have the potential to alter the development of a baby.

Alongside the testing, Greenpeace launched the Chemical Home database targeting a specific list of harmful chemicals, to show that substitution is possible. The database also serves to inform consumers and thus to increase their awareness of the toxic substances lurking in everyday products they use. The Chemical Home shows that some companies are undertaking substitution, and phasing out hazardous substances. On the flip side, the Chemical Home database also shows the reluctance of many companies to take measures to use existing alternatives to hazardous substances used in their products, emphasizing the need for across the board legislation.

Another key element of this exercise was the dialogue with companies, some of whose products we tested. The company talks served to educate companies on the toxic ingredients in their products and gave Greenpeace a better understanding of the obstacles and opportunities of substitution.

Much existing regulation is based on the premise that there is a 'safe dose' for hazardous substances; however, a 'safe dose' is impossible to establish for a baby in the womb, and for other vulnerable groups, particularly for hazardous chemicals that are capable of disrupting the hormonal system at key developmental windows. Moreover, we found the same hazardous groups of substances in a variety of products, resulting in multiple exposures and making nonsense of the concept of a 'safe dose'. Setting safe limits is therefore not an option; only the elimination of the use of these hazardous substances will protect future generations. Since much of our exposure to these substances comes from everyday products, it makes sense to explore the possibilities for substituting these substances with safer alternatives.



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THE DEVELOPMENT OF THE CHEMICAL HOME

As part of Greenpeace's campaign to show the need for a strong REACH chemicals regulation (see box - **The Politics – bringing Chemicals under Control**), and in particular one that requires substitution of the most hazardous substances, we contacted a range of companies that produce consumer products. The aim was to find out which products contain, or are likely to contain the hazardous substances that are of the highest concern, and to identify equivalent products that are free from hazardous substances, or where the manufacturer has made commitments to phase them out. Greenpeace is especially concerned about chemicals that are persistent, toxic or bioaccumulative, as well as chemicals which can disrupt the endocrine system which regulates hormonal balance, focusing in particular on a list identified by European Governments of chemicals for priority action (OSPAR list)², plus all synthetic musks, phthalates, alkylphenols and PVC³ (see Appendix 1 - List of Chemicals of Concern). Ultimately Greenpeace expects from the companies elimination of all such hazardous chemicals, particularly those that will require Authorisation under the EU's proposed REACH legislation.

Aims of the Chemical Home

- **to provide information to consumers about the hazardous substances that may be present in consumer products**, so they can avoid the products with hazardous chemicals in them. Consumers have a right to know precisely which chemicals (and other ingredients) are contained in the products they buy, and manufacturers and retailers should be both able and prepared to provide such information.
- **to encourage manufacturers to give more priority to substituting hazardous substances with safer alternatives.** This is done both by making the information about the substances public as well as by direct consumer pressure. Greenpeace on several occasions did encourage consumers to contact the companies and demand cleaner products. As this report will document, in certain cases this has resulted in commitments for a speedier phase out of hazardous substances, showing that substitution is possible when companies are given the incentive.
- **to prove that substitution of hazardous substances is possible** by disclosing these company commitments, and therefore **demonstrate the workability of substitution to decision makers**, as well as show them that the public demands cleaner products. In embracing substitution as part of their chemical policy, these progressive companies demonstrate that a strong REACH regulation which requires substitution of harmful chemicals can work in practice. However, the majority of companies resist change, showing the need for legislation to ensure **that all companies do the right thing.**

The results of correspondence with companies were compiled into an on-line database – The Chemical Home (see box), which gives consumers information about the content of hazardous substances in products that can be found in their homes. The house has a kitchen, bathroom, living room and bedroom, containing consumer products that might be found in these rooms. The products that we focused on are*:

- Household Products: dishwasher tablets, multi-surface cleaner, washing powder, washing up liquid, air fresheners
- Cosmetics: lipstick, perfume, shampoo, shaving foam/gel, skincare
- Pyjamas and Childrenswear
- Toys
- Trainers/Sports Shoes
- Paints
- Electronic Products: Mobile Phones, Computers, Televisions

GREENPEACE DATABASES ON CHEMICALS IN PRODUCTS

UK www.greenpeace.org.uk/Products/Toxics/index.cfm	The Chemical Kitchen/ Chemical Home	Sept 2003
International (on UK site)	The Chemical Home	May 2004
The Netherlands www.greenpeaceweb.org/lichaamzondergif/producten.asp	Koopwijzer	May 2004
Italy www.greenpeace.org/italy/ufficiostampa/rapporti/database-prodotti-chimica	Database prodotti toxic (pdf)	May 2004
France www.greenpeace.fr/vigitox/index.html	Vigitox	May 2004
Spain archivo.greenpeace.org/toxicos/html/chemicalhouse.html	La Casa Quimica	July 2004
Czech Republic www.toxickydomov.cz/	Toxicity Domov	Oct 2005

Products and companies are given a grade – red, amber or green (see box) – according to the information the company provided about their use of the hazardous substances on the OSPAR list.

Grading of products

Products have been allocated one of three colours (red, amber or green) to indicate whether or not they contain harmful pollutants. The three ratings are:

RED – products which manufacturers have told us contain harmful chemical pollutants OR products manufactured or retailed by companies who have not replied or refused to provide the information we have asked for, and which we therefore assume to contain harmful chemical pollutants.

AMBER – products which manufacturers or retailers have told us contain harmful chemical pollutants, but plan to remove these chemicals by a specified date.

GREEN – those products that manufacturers or retailers have told us explicitly do not contain harmful chemical pollutants.

Grading of companies

The original UK Chemical Home only graded products. The Dutch version of the database launched in May 2004 also gave a company grade based on overall policy on phasing out hazardous substances. In discussions with companies we found it was better and more consistent to talk about their overall policy on hazardous substances for their entire product range rather than focussing on individual products. Company grades were subsequently given to companies in many of the product categories on all the databases. The company grades are a better reflection of the campaigns aims to influence company-wide policies and thereby provide legislators with a positive example of how substitution can work for both business and the environment.

Where the company grade differs, this is indicated by the colour of the text.

RED – the company has confirmed that they use harmful chemical pollutants and have no plans to phase them out, OR the company has not replied or refused to provide the information.

AMBER – the company has confirmed that they use harmful chemical pollutants, but have committed to the removal of these chemicals by a certain date across their whole product range.

GREEN – the company has told us explicitly that they do not use harmful chemical pollutants across their whole product range.

Occasionally the company grade will be different from the product grade, for example, when a company has phased out hazardous substances in one product line but have not made the same commitment across their whole product range, the product is amber, but the company ranking is red.

Substitution in Action

Since the Chemical Home has been on-line many companies have made progress in substituting hazardous chemicals with safer alternatives. For some companies this has been an ongoing process for many years, for others the process is just beginning. Some of these decisions have undoubtedly been influenced by media and public interest in hazardous substances in consumer products, and an ongoing programme of product testing undertaken by independent laboratories on behalf of Greenpeace, as well as the direct dialogue between Greenpeace and the companies concerned.

Companies upgraded to amber or green

2004		2005		2006		
June	Nov	April	Sept	Feb	May/June	July/Aug
Samsung		Sony	The Body Shop	Hewlett Packard		Melvitacsm
	Nokia	Sony Ericsson	Motorola		Downgraded - Motorola	Unilever
	Puma		LG Electronics		New Balance	Reebok
	adidas		Melvitacsm		Dell	Puma
	Unilever		L'Occitane			
	Chicco		Alquima			

THE DEVELOPMENT OF THE CHEMICAL HOME

Companies going up...

- **9 June 2004.** One month after the launch of the Chemical Home, **Samsung** becomes the first company to be upgraded on the database, going from red to amber, after agreeing to a definite schedule for the phase out of PVC and brominated flame retardants in their products⁴.
- **23 November 2004.** Mobile phone manufacturer **Nokia** and sport-lifestyle brand **Puma** both earn amber grades on the Chemical Home database by making commitments to eliminate harmful chemicals from their products; in Puma's case this commitment applies to both its sports shoes and perfumes with immediate effect. **adidas** and **Unilever** also adopted policies to phase out harmful chemicals in some of their products, but have still to do this across their global product range; some products are upgraded to amber while the companies remain graded red. **Chicco**, a manufacturer of toys and baby products, also announced that it will eliminate the use of PVC within three years, earning the company an amber grade; small amounts of this plastic are still used by Chicco in components, accessories and packaging⁵.
- **29 April 2005.** **Sony** and **Sony Ericsson** committed to phase out specified hazardous chemicals across their entire product range. The companies & their products were upgraded on the Chemical Home database from red to amber⁶.
- **29 September 2005.** Five companies are upgraded on the Chemical Home database. Electronics firms **Motorola** and **LG Electronics** earn an amber grade with their commitment to phase out the use of hazardous substances. Beauty and bodycare company **Melvitacsm**, manufacturer of **Melvita's Iris Blue** perfume (which in the Greenpeace Valentine's Day perfume tests had the second highest quantity of phthalates of the 26 perfumes tested) were upgraded to amber after committing to phase out phthalates and synthetic musks. **L'Occitane** is also in the process of phasing out these substances, and earned an amber grade, while **Alquimia's** policy already forbids the use of these substances in their perfumes, earning them a green grade⁷. **The Body Shop** also publishes a new policy to phase out phthalates by the end of 2006 and synthetic musks by 2010.
- **9 March 2006.** PC industry leader **Hewlett Packard**, which has been the focus of Greenpeace's electronics campaign, committed to eliminate PVC and BFRs from their products, and was upgraded to amber on the Chemical Home database⁸.
- **1 June 2006.** Sports shoe company **New Balance** completes their phase out of the use of PVC.
- **15 June 2006.** PC company **Dell** commits to eliminate all remaining uses of BFRs and PVC by 2009.
- **July 2006.** **Melvitacsm** completes their phase out of phthalates and synthetic musks in all their products.

...and down

- **23 May 2006.** Mobile phone manufacturer **Motorola** reneges on its commitment to phase out BFRs and PVC, claiming that they need to focus on fulfilling the EU RoHS (Restriction of Hazardous Substances in electronic products) Directive globally. The EU RoHS Directive was agreed in 2002! So, Motorola was well aware of the requirements of this Directive when they made a commitment to Greenpeace to also phase out PVC and BFRs.



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CHEMICALS OUT OF CONTROL

From products to people and the environment

Hazardous substances are commonly used as chemical additives in everyday consumer products such as electronic goods, clothing, cosmetics, cleaning products, interior decoration and furnishings. Toxic and persistent brominated flame retardants are commonly used in computers, televisions, carpets and upholstered furniture. Chlorinated paraffins are in bathroom sealants and plastics; phthalates are in PVC plastics; perfume, shampoos and artificial musk compounds in detergents and air fresheners. Greenpeace commissioned independent research that found a hormone-mimicking group of chemicals called nonylphenols in children's pyjamas, toys, household paints and cleaners.

Hazardous chemicals - even if they are bound into the products that contain them - can migrate out over time during use. Hazardous chemicals are also discharged into the environment during production and at the end of a products life. The same chemicals that are added to commonly used consumer products are now consistently found in breast milk and umbilical cord blood⁹, which demonstrates their wide, uncontrolled and undesired dispersion: even before birth, an unborn baby is exposed to as many as one hundred hazardous, manmade chemicals. Greenpeace testing of house dust revealed that the ongoing use of hazardous chemicals in consumer products is leading to ubiquitous and complex contamination of the home environment across the EU¹⁰. Greenpeace has also found that hazardous, man-made chemicals are widespread in rainwater across European countries¹¹. A study of European eels from across Europe found that they contained persistent and bioaccumulative brominated flame retardants and polychlorinated biphenyls (PCBs), showing that these chemicals are also distributed widely across European freshwater systems¹². In 2005, Greenpeace and WWF testing of maternal and umbilical cord blood showed the ability of a number of commonly used chemicals to cross the placenta barrier¹³.

Damage to Health and Environment

Infants and children are exposed to the highest concentrations of hazardous chemicals and are the most vulnerable. Exposure begins in the womb through the umbilical cord and health effects caused during development may cause permanent irreversible damage; some effects may not even become apparent until later in life. This is no longer acceptable, particularly when safer product design and chemical substitution is feasible.

SUMMARY OF HEALTH AND ENVIRONMENTAL CONCERNS

Chemical group	Common uses	Environmental and health concerns
alkylphenols and related chemicals	<ul style="list-style-type: none"> formerly* in industrial and institutional cleaning sector (including domestic cleaning) textile and leather processing personal care products pesticide production sometimes used as an additive in PVC, eg. in plastisol prints on clothing 	<ul style="list-style-type: none"> over 25% of EU rivers have levels of nonylphenols "regularly in excess of the no effect concentration"¹⁴. nonylphenol is a hormone disrupter; preliminary studies also show that nonylphenol may disrupt the human immune system by adversely affecting groups of white blood cells¹⁵ reduced male fertility, testicular size, sperm quality
phthalates	<ul style="list-style-type: none"> plasticisers in PVC and special polymer applications gelling agents solvents and fixatives in cosmetics and other personal care products 	<ul style="list-style-type: none"> widespread contaminants in the global environment some phthalates are known to be reproductive and developmental toxicants, or are known to disrupt the endocrine system reduced male and female fertility foetal toxicity (possibly leading to death or malformations)
brominated flame retardants	<ul style="list-style-type: none"> as flame retardants in industrial and electrical appliances, vehicles, lighting, wiring as well as textiles, furnishing and insulating materials such as polystyrene 	<ul style="list-style-type: none"> widespread contaminants, detectable even in marine mammals from remote areas as well as more generally in human blood and breast milk Their toxicity includes birth defects, liver and kidney damage, thyroid imbalances and neurological damage to animals and humans. hormone disrupter, mimicking oestrogen impacts on nervous system and behavioural development
organotin compounds	<ul style="list-style-type: none"> PVC UV stabilisers Agrochemicals and biocides Antifoulants Catalysts 	<ul style="list-style-type: none"> tributyl tin (TBT) has caused "abundant, undisputed and world-wide population-level effects in wildlife... Over 100 species of marine molluscs have been adversely affected by TBT, and in at least some cases it... has led to total disappearance of species..."¹⁶ inhibition of steroid hormone production adverse impact on <i>in utero</i> development of foetus including abnormalities in genital development in male foetuses
chlorinated paraffins	<ul style="list-style-type: none"> flame retardant used in soft furnishings or in plastic sometimes used as an additive in PVC plastic used in sealants 	<ul style="list-style-type: none"> short chain chlorinated paraffins are now detected in "higher predatory animals and human breast milk, which may produce irreversible effects in humans (e.g. cancer)"¹⁷.
artificial musks	<ul style="list-style-type: none"> fragrance mixtures for detergents, fabric, conditioners, cleaning agents, air fresheners and other household products cosmetic products such as soaps, shampoos and perfumes 	<ul style="list-style-type: none"> persistent and bioaccumulative chemicals linked with reproductive toxicity and affects on the endocrine system in humans¹⁸. oestrogenic activity anti-oestrogenic activity

INSIDE THE CHEMICAL HOME

Product testing

Product and company grades are given based on the information provided by the manufacturer in response to standard questions about their chemicals policy, and their use and phase out plans for hazardous chemicals. In addition, we commissioned laboratory analyses of a selection of the consumer products⁷ on the database, which would also influence the grade of a product on occasions, as an additional check to the information provided to us by the companies. Testing looked for the presence of the following groups of chemicals (where appropriate): brominated flame retardants, phthalates, PVC, organotins, synthetic musks, alkyl phenols and alkyl phenol ethoxylates.

RESULTS OF TESTING CONSUMER PRODUCTS		
Date of Report	Consumer products tested	Hazardous substances found
20 October 2003 ¹⁹	<ul style="list-style-type: none"> - children's pyjamas - toys - baby feeding bottles - perfumes - shampoo & body care - paints, - car interior cleaners - air fresheners 	<ul style="list-style-type: none"> - alkylphenols, phthalates - phthalates - low levels of bisphenol-A - phthalates, artificial musks - lower levels of phthalates, artificial musks than perfumes - alkylphenols - alkylphenols - phthalates, artificial musks
December 2003 ²⁰	<ul style="list-style-type: none"> - electronic products - sports shoes and vinyl flooring - food packaging - mattresses 	<ul style="list-style-type: none"> - Brominated flame retardants - Phthalates - low levels of alkylphenols - alkylphenols, phthalates
15 April 2004 ²¹ 'Toxic Childrenswear by Disney'	various Disney garments, including T-shirts, pyjamas and underwear, which were bought in retail outlets in 19 countries around the world*	alkylphenols, phthalates, organotins. This study also found lead, cadmium, formaldehyde
10 February 2005 ²² 'My toxic Valentine: Eau de toxines'	- 36 well-known perfumes	virtually all perfumes tested contained phthalates and synthetic musks, some at high levels
March 2005 ²³	<ul style="list-style-type: none"> - lipstick - perfume - toothpaste - skin care products - shampoo & skin care for babies - deodorant 	<ul style="list-style-type: none"> - Low levels of phthalates, synthetic musks - high levels of synthetic musks, phthalates - Triclosan - Synthetic musks, phthalates, alkylphenols - Formaldehyde, synthetic musks, low levels of phthalates, alkylphenols - triclosan
29 April 2005 ²⁴ 'The Chemical Shopping Basket'	<ul style="list-style-type: none"> - toys, - t-shirts, - DVD players - baby body care products 	consumer goods aimed at children and babies contained the highest levels of toxic substances
27 June 2005 ²⁵	- five perfumes intended for children	three of the perfumes are comparable to ordinary perfumes and contain high concentrations of the phthalate DEP and the synthetic musk HHCB.
September 2005 ²⁷	- seven toy and baby products	the presence of phthalates of between 0.2 and 74% by weight. Other hazardous substances present were bisphenol-A, alkylphenols and lead
7 November 2005 ²⁸ Chemikaze Shopping	<ul style="list-style-type: none"> - electronics, - perfumes, - textiles - children's school accessories (selected by four well known politicians in the Nordic countries) 	<ul style="list-style-type: none"> - brominated flame retardants, phthalates - synthetic musks, phthalates - phthalates, lead cadmium - phthalates
20 June 2006 ²⁹ Red Card for Beckham	12 perfumes, deodorants and body lotions, including 'Instinct' promoted by David Beckham	Some of the products contained high levels of phthalates. All products contained synthetic musks. The David Beckham deodorant spray also contained the phthalate DEHP, which is forbidden in all cosmetic products in the EU.

* As a consequence of this work, H & M committed to eliminating alkylphenols in their garments.

Appendix 2, Rating the Brands, lists all the individual company and product grades, gives details of company positions and progress, and the results of product tests on brands.

WHAT THE COMPANIES SAY ABOUT SUBSTITUTION AND REACH

Greenpeace surveyed fourteen of the companies that have been upgraded during the lifetime of the Chemical Home, to understand better the issues that they dealt with and their motivation. We had replies from eleven.

1. What were the factors that led to your decision to substitute the use of the specified hazardous substances with safer alternatives?

- a) future regulatory requirements 4
- b) increased customer confidence 7
- c) the benefits of being seen as a market leader 5
- d) the benefit of being upgraded on the Chemical Home 3
- e) other factors 7

The single most common factor was increased customer confidence (although for Dell these were not only current customer demands but also future customers) with the benefits of being seen as a market leader not far behind.

Most companies cited a number of factors, such as Puma who stated:

- *'For sure it is future regulatory requirements as well as an increased customer confidence and the benefit of being upgraded on the Greenpeace Chemical Home.'*

Among the 'other factors', a number of replies cited the company's core values as a major consideration.

- For El Taller de Alqvimia the main factor was *'the great conscience of our company against the use of harmful or possibly harmful substances that could imply a negative effect for the cosmetics user.'*
- The Body Shop states that: *'Our chemicals policy is part of our commitment to apply the precautionary principle. The decision was therefore made considering carefully available scientific evidence as well as feedback from customers and NGO's.'*
- adidas also cites *'own brand philosophy and core values'*.
- *'Dell's chemical policy is based on a precautionary approach. Dell believes that if reasonable scientific grounds indicate a substance (or group of substances) could pose significant environmental or human health risks, even if the full extent of harm has not yet been definitively established, precautionary measures should be taken to avoid use of the substance(s) in products unless there is convincing evidence that the risks are small and are outweighed by the benefits.'*

Companies have clearly struggled with the lack of guidance from existing regulations, and simply choose to avoid risks through substitution when possible.

- Nokia states that *'Our decision is based on long term studies mainly in Europe and Asia. Several different risk assessments made on the topic show very contradictory results and thus leave open the undisputable risk of these substances to Environmental Health & Safety. In order to avoid any possible risk together with the possibility to substitute these substances, actions have been taken.'*

2. How difficult was the process of substitution once you had decided to go ahead? What were the main obstacles?

COMPANY	DIFFICULTY	OBSTACLES
COSMETICS & HOUSEHOLD GOODS		
The Body Shop	Easier for new products More resource intensive for existing products	Restrictions on the number of chemicals available. Increased costs. Numerous steps, engaging with suppliers. Research to find substitute which customers found acceptable.
El Taller de Alqvimia		Finding an alternative to phthalates used in alcohol. Need for customs legal approval.
L'Occitane en Provence		Working without polycyclic musks. Tests for stability and skin tolerance, labelling requirements. Negotiating with Customs Regional Management on removing DEP from alcohol.
Melvitacosc	Long, onerous and complex	Technical difficulties such as obtaining identical scents, solubility. Need for customs authorisation to procure non-denatured alcohol.
Unilever	Challenging process	No single substitute can be used across a range of products – eg. the role of polycyclic musks is not the same in laundry as in fine fragrances. Free riders within the industry. Broad portfolio of products adds complexity to substitution and impacts the speed of innovation.
SPORTS SHOES & COSMETICS		
adidas		Low level impurities in products due to ubiquity of hazardous substances need a pragmatic continuous improvement approach over time.
Puma		Convincing suppliers not to use hazardous substances. Finding corresponding alternatives.
ELECTRONICS		
Dell	Substantial alignment and development effort inside Dell, with suppliers & industry groups	Multiple aspects – Quality Availability of viable alternatives Scalability Performance End of life processing considerations.
Nokia		We wanted to do the substitution globally, even though there was not a legal requirement, despite the challenges to get global volume availability covered.
Samsung	Long process, requires significant resources	Cost. Technical compatibility and reliability issues. Business case including speed of market transition. Ensuring alternatives represent a significant improvement in terms of health and environmental impact.
Sony	Substitution not yet completely achieved	Technical performance. Availability. Economic aspects.

WHAT THE COMPANIES SAY ABOUT SUBSTITUTION AND REACH

Clearly, for most companies substitution is not a quick fix but a long, complex and sometimes onerous process which involves suppliers, customer feedback and outside authorities such as customs, as well as a lot of work internally.

- Samsung *'Ensuring that substitutes meet the required technical and quality standards at reasonable cost across all product categories is a long process which requires significant resources and cannot be undertaken overnight.'*

Most companies on the database are at the end of the supply chain, which makes it very costly for them to first find out if a hazardous chemical is being used in their consumer products, then to work with their suppliers to find safer alternatives. The process would be easier if regulation required all companies to substitute hazardous substances, as this would even out the cost differences of phasing in safer alternatives.

- Unilever *'Furthermore, a critical success factor is to get the whole industry to move at an acceptable pace towards more proactive substitution. Free riders within the industry can be an obstacle to ensuring progress in substitution when they are reluctant to follow trendsetters in order to create and exploit some (unfair) competitive advantages eg. cost.'*

3. What advantages have you gained from the process of substitution?

COMPANY	ADVANTAGES
COSMETICS & HOUSEHOLD GOODS	
The Body Shop	More visible internal dialogue on chemicals and externally with our suppliers, with clearer understanding, targets and objectives. Still waiting customer reactions.
El Taller de Alqvimia	The improvement in our products quality, its complete safety now that phthalates are removed. The green rating from Greenpeace certifies the product's quality, also confirms our company's policy.
L'Occitane en Provence	Consumer benefits difficult to evaluate. Importance of responding to environmental organisations and preserving the planet for our children.
Melvitacism	No immediate benefit. Have gained in coherence and Eaux de Toilette have an explicit guarantee.
Unilever	Enhanced consumer confidence in chemicals, trust in our brand. Within the company, creates positive mindset of constantly challenging the use of some chemicals and fostering innovation.
SPORTS SHOES & COSMETICS	
adidas	Better performing products in some areas for more or less the same prices (after a while). Good feedback and awareness of international stakeholders, analysts.
Puma	Major advantage is PVC free products & final disposal can be better controlled, especially in Germany. Being able to minimise the pollution of the environment through our products.
ELECTRONICS	
Dell	Being prepared for future market requirements. Still plenty of research needed to ensure the right decisions are made along the way.
Nokia	It has given us a lot of expertise and competence in the material substituting process.
Samsung	Value in adopting a pro-active, precautionary approach which goes above and beyond legal requirements.
Sony	No direct advantage in the business aspect. Sony may have acquired certain appreciation by important stakeholders for substitution activities. May have influenced parts or material suppliers on importance of substituting hazardous substances.

adidas also pointed out some disadvantages: *'In other areas, there was nothing but trouble, quality problems, price increases and dissatisfied customers'*.

WHAT THE COMPANIES SAY ABOUT SUBSTITUTION AND REACH

4. Do you think that the proposed REACH regulation should stimulate the substitution of hazardous substances with safer alternatives whenever safer alternatives are available?

In general companies were in favour of substitution and for the need for REACH to assist this.

- Puma 'Yes, definitely. Through the implementation of REACH the process of re-thinking the use of certain chemicals in the supply chain will be initiated. This will at least make sure that so called "non-label brands" have to ensure that their products which are being imported into the EU do have to undergo the REACH process of accreditation and therefore a better control instrument for the importation of harmful chemicals will be in place. This will benefit the consumer ultimately.'
- Melvitacosc '...the proposal for REACH must evidently lead to the removal of problematic substances and contribute to stimulating research for alternative solutions if they exist.'
- L'Occitane also supported this, stating 'REACH.. must bring an important contribution to the reduction of chemical risks, in permitting to identify and eliminate the most harmful products', but was concerned that it shouldn't also result in a ban on natural substances which have been tried and tested over the years.
- adidas considers that 'it has been becoming much more practicable again in the last version. Also, "substitution of hazardous substances" as (a) general aim for sure everyone can agree on. So there could be some major successes for the few worst chemicals (by either substitution or product termination), but hopefully this doesn't end with a bureaucratic monster for 10,000nds of others.'

The ability for REACH to encourage innovation was also noted:

- El Taller de Alqvimia stated '...it will enhance the competitiveness of the EU chemicals industry by fostering innovation and ensuring high safety standards for its products...'
- Unilever considered that 'It will also introduce a new paradigm throughout the industry in Research and Development stimulating substitution through innovation.'

Greater confidence in chemicals and less uncertainty was considered by some to be the main benefit:

- The Body Shop stated 'Naturally, a review of all chemicals, as proposed by REACH is likely to clarify the debate, creating less uncertainty amongst consumers, retailers and manufacturers.'

Better information about chemicals was considered the main benefit by Sony:

- 'Those assessments (of safety information generated by the requirements of REACH) will lead to valuable knowledge on the impact of those chemicals on the environment and will then be hopefully also accepted by all stakeholders. This will enable us to take a well based material selection.'
- Nokia also stated: 'Possibly, REACH is definitely giving more valuable information for us as well. The effects of substitution of hazardous substances will be seen when the REACH regulation is at a later stage.'

For Dell, substitution with alternatives would be stimulated when

- '...the safer alternative(s) achieve all requirements such as environmental performance, health and safety standards, reliability standard, functionality and scalability.'

THE POLITICS – BRINGING CHEMICALS UNDER CONTROL

It is widely recognised that the current legislative system has failed to address the problem of chemicals out of control, permitting the most dangerous chemicals to stay on the market despite the high risks for human health and the environment and at the same time hindering safe and innovative products from entering the market.

At European level Member States and Community institutions have recognised the urgency of solving this problem. Over the last few years the European Commission, the European Parliament and the EU Member States have debated a proposed new legislation (known as REACH – Registration, Evaluation, and Authorisation of Chemicals) to control the manufacture, marketing and use of chemicals across Europe. This proposed legislation, among the other things, requires the chemicals industry to provide health and safety information on the chemicals it produces and sets up a procedure for authorising the use of very hazardous chemicals (substances identified to be of 'very high concern') only if specific authorisation is granted.

The European Parliament voted to include, as part of this authorisation clause, a requirement to substitute substances of very high concern wherever safer alternative substances or technologies are available. However, the Council of the European Union voted to allow many of these hazardous chemicals to continue to be used - even when safer alternatives are available - if it can be demonstrated that they would be 'adequately controlled'. Under the Council's proposal:

- companies will be granted authorisations for some uses of chemicals which are carcinogenic, mutagenic, toxic to reproduction or endocrine disruptors, even if safer alternatives without these properties are already on the market; the consistency of the Council's proposal with the precautionary principle is therefore doubtful.
- a high level of evidence would be required for identification of e.g. endocrine disruptors as substances of equivalent concern
- authorisations will be subject only to a flexible time-limited review period rather than a fixed lifetime.

Instead, a more robust, defensible and protective approach to the management of 'substances of very high concern', would include:

- a requirement (along the lines of the Parliament's proposals) to address the availability of alternatives in all cases, to use them when available and to initiate their development when not.

As a result:

- Limited resources would be better targeted towards substitution than on costly and unnecessary assessment of thresholds.
- The possibility for authorisation of essential uses would remain, while all avoidable uses and exposures would progressively be prevented and sustainable innovation supported.

In the long run, this can only lead to a more sustainable future for the chemical industry in Europe, as well as delivering benefits of increased protection for our environment and health for generations to come.

FINDINGS

The database shows how companies who are innovative and want to be market leaders can and do adopt substitution as a positive step.

- > The speed of change by some companies shows that **alternatives for many uses of these hazardous substances are already available** or at least are already being evaluated for substitution. These companies prove that substitution is not a future goal but is possible and is happening today.
- > In contrast, the large number of companies and brands that remain graded red shows that **some companies are unwilling to make any changes** unless forced to by legislation, even amongst some of the larger companies on the database (eg. Disney). There will also be greater numbers of smaller companies who will only respond to legislation and won't necessarily have awareness of which are the issues of most concern. This is why REACH is needed and why the requirement to substitute when alternatives are available is so essential.
- > The database has shown that the pace of change varies for the different product groups. Some sectors are more innovative, such as electronics, or sports shoes, and are more ready to engage in the substitution process. REACH should encourage less innovative sectors to innovate.
- > Current legislation which only addresses individual substances **has failed to achieve substitution of hazardous substances with less hazardous alternatives**. Most often, substances are replaced with another substance from the same chemical group, which may exhibit similar properties. A 'candidate list' of chemicals awaiting authorisation⁹ will provide companies looking for substitutes with a heads up on which potential candidates for substitutes should be avoided, as they are already suspect. REACH will generate safety data on some 30,000 chemicals; any chemical not requiring authorisation will be a candidate for a safer substitute.

The process of substitution can be a long and complex process which needs to be intensively managed. Clearly, most companies are not willing to engage in the substitution of hazardous substances if they do not have at least one of the following incentives.

- > Consumer pressure is a major incentive; retailers are often ahead in the substitution process because of their sensitivity to the demands of consumers, also brand names are vulnerable where one scandal can destroy the name and waste the millions of euro spent on marketing.
- > Legislation is another major incentive, whether the legislation is already in place (such as the RoHS Directive on electronics) or is proposed, like REACH.
- > The desire to be a market leader can also be a big incentive, when the substitution of hazardous substances can differentiate between products and give one brand an advantage, especially in sectors which are very innovative such as electronics or close to consumers like cosmetics.
- > Dialogue with environmental NGO's or other organisations about substitution of hazardous substances can encourage the process, as well as the possibility of getting a higher grade for a product, as has happened during the lifetime of the Chemical Home database.
- > A company philosophy or ethos which implements the precautionary principle and aims to minimize the impacts of the company's products and processes on the environment and human health.

There are many difficulties and obstacles to adopting substitution, which were highlighted in our survey of companies. These include technical difficulties, availability of alternatives, costs, quality and performance. The chemical industry also pressures downstream users to continue using chemicals known to be harmful (e.g. brominated flame retardants) as do public relations bodies, such as the Bromine Science and Environmental Forum, which represents the bromine industry.

In its current form REACH won't deliver substitution of hazardous substances. In order to make substitution work REACH needs to:

- > help to level the playing field and create demand for safer alternatives. As a result costs for safer substitutes will come down, and greater quantities will become available, thus removing a major obstacle to substitution.
- > remove the uncertainty surrounding chemicals, including consumer confidence.
- > through assessments, generate information about problem chemicals and alternatives to them which will allow for better selection of safer materials.
- > Stimulate innovation and competitiveness of the chemicals industry and downstream users

If drafted correctly, incorporating a single route to authorisation and a requirement for substitution, wherever possible, for 'substances of very high concern', REACH could act not only to protect our health and environment for the future but also as a driver for innovation and positive change within the European chemical industry and users of chemicals, with benefits to all levels of society.

APPENDIX 1 - List of chemicals of concern

OSPAR List +

OSPAR List of Chemicals for Priority Action (1998)

Polychlorinated dibenzodioxins (PCDDs)

Polychlorinated dibenzofurans (PCDFs)

Polychlorinated biphenyls (PCBs)

Polyaromatic hydrocarbons (PAHs)

Pentachlorophenol (PCP)

Short chained chlorinated paraffins (SCCP)

Hexachlorocyclohexane isomers (HCH)

Mercury and organic mercury compounds

Cadmium

Lead and organic lead compounds

Organic tin compounds

Nonylphenol/ethoxylates (NP/NPEs) and related substances

Musk xylene

Brominated flame retardants

Certain Phthalates – Dibutylphthalate and Diethylhexylphthalate

In addition, Greenpeace includes ALL synthetic musks, phthalates and alkylphenols on the banned substances list and has added PVC because some of these substances are mainly used as additives for PVC or created during its production, and because PVC hampers recyclability of products.



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APPENDIX 2 - Rating the Brands

Cosmetics and Household products

This is the largest of all the product groups on the database. Cosmetics and household goods can contain a variety of different hazardous substances: phthalates are commonly found in cosmetic and personal care products, especially in nail polish, perfumes, hair sprays, household cleaners and deodorizers; artificial musks are cheap, easy-to-produce fragrances that are added to personal care and household products such as laundry detergents, shower gels, soaps, hand lotions and perfumes. Organotins can also be found in certain products.

There are a large number of different brands, most of them owned by the same large multinational companies, such as Procter & Gamble and Unilever. Quite a few companies in this sector failed to reply or refused to supply information about their products when requested. Others referred to the responses given by trade associations on behalf of the industry as a whole, rather than giving product specific information, or referred to the relevant regulations, which permit the use of many of these substances in 'safe' doses. Currently, only a few of the major brands can be classified as amber and none are green, although there are numerous products made by smaller companies such as Ecover and Weleda that are graded green, showing that its possible to avoid the use of hazardous substances in these products.

There are nine different product categories related to the cosmetics and household products industry:

KITCHEN	BATHROOM	LIVING ROOM
Dishwasher Tablets Multi-Surface Cleaner Washing Powder Washing-up Liquid	Lipstick Perfume Shampoo Shaving Foam/Gel Skincare	Air Fresheners

For simplicity, these are further divided into three sections; household products, cosmetics and perfume.



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Household products

(dishwasher tablets, multi-surface cleaner, washing powder, washing-up liquid, air fresheners)

Company & Grade	Brand	Grade 2004	Grade 2005	Grade 2006
Ecover	Ecover, dishwasher tablets, washing powder, washing up liquid	Green	Green	Green
Co-op UK	Co-op citrus dishwasher powder	Green	Green	Green
Laboratoire Gravier	Lerutan, dishwasher tablets, multi-surface cleaner, washing powder, washing up liquid		Green	Green
Sonnet	Sonnet, dishwasher tablets, multi-surface cleaner, washing powder, washing-up liquid		Green	Green
Bufalo Werner & Mertz SA	Froggy, washing up liquid, washing powder, multi-surface cleaner		Green	Green
Botanicals	Botanicals washing up liquid		Green	Green
Dri-Pak	Dri-Pak traditional cleaning products, bicarbonate of soda, borax, soda crystals, white vinegar, soap flakes, laundry starch			Green
Air Therapy	Air Therapy air fresheners	Green	Green	Green
Asda	Asda multi-surface cleaner	Green	Green	Green
Marks & Spencer	Marks & Spencer Naturally Inspired cleaners		Green	Green
Safeway	Safeway Vecta all purpose cleaner	Green	Green	Green
Waitrose	Waitrose all purpose cleaner, citrus & forest	Green	Green	Green
Waitrose	Waitrose Aqua cleaner	Amber	Amber	Green
Sainsbury's	Sainsbury's liquid cleaner, citrus	Amber	Amber	Green
Sainsbury's	Sainsbury's Air Fresheners	Amber	Amber	Green
Tesco	Tesco all purpose cleaner, citrus	Amber	Amber	Amber
Unilever	Cif Oxygel, Persil (UK), Surf	Red/Amber	Red/Amber	Amber
Procter & Gamble	Fairy, Ariel, Bold, Daz	Red	Red	Red
Colgate Palmolive	Ajax	Red	Red	Red
Sara Lee	Ambi Pur	Red	Red	Red
SC Johnson	Glade	Red	Red	Red
Reckitt Benckiser	Haze	Red	Red	Red
Neutrodol	Neutrodol	Red	Red	Red

Products graded red in this sector are mostly dominated by the big brands of the multinational companies, such as Procter & Gamble, Reckitt Benckiser and Sara Lee

With the exception of Unilever, brands which are graded green and amber are mostly smaller, alternative brands, which are known as ecological products, such as Ecover, or retailers own brand products.

- **Unilever** - the only multinational company in this sub-sector to be upgraded is Unilever, whose brands are Surf, Persil (UK) and Cif-Oxygel. Unilever gained an amber grade for these products in November 2004 after presenting Greenpeace with a commitment to phase out artificial musks and phthalates. This commitment didn't include their perfume products, however, after Unilever sold their perfume brands to Coty in 2006, their company grade was upgraded to amber.
- **Sara Lee** – In recent discussions with Greenpeace in the Netherlands, Sara Lee informed us that most of their cosmetics brands are already free from these hazardous substances, so these brands would therefore be green. However, their commitment only applies to their cosmetics products, so brands such as the air freshener Ambi Pur remain red for the moment, as does the overall company ranking.
- **UK retailer Co-op** - Before the launch of the international version of the Chemical Home, the Co-op announced that it was banning a range of toxic chemicals still permitted for use in everyday products like washing up liquid and household cleaners, as part of a new ethical drive. Their products are graded green.
- **SC Johnson** - Despite having phased out PVC from their packaging and having a progressive 'Greenlist™' policy which received the Annual Environmental Responsibility Award in 2004³⁰, the company failed to answer our questions about their Glade product and are graded red. Product tests on Natural Breezes Cool Air showed that it contained 122 mg/kg phthalates.
- **Reckitt Benckiser** has told us that they have removed artificial musks from their products and that they are removing phthalates, but they have declined to provide a list of ingredients for their Haze brand. The product packaging contains the warning: 'Harmful to Aquatic organisms. May cause long-term adverse effects in the aquatic environment'. The manufacturer has failed to supply information about which chemicals this warning relates to and is graded red.
- **Retailers** – UK retailers Waitrose and Sainsbury's removed phthalates from all of their cleaners in 2005, and
- **Marks & Spencer** launched a new range of cleaning products containing no hazardous substances called Naturally Inspired.

Four brands of air fresheners, Sara Lee's Ambi Pur and Reckitt's Glade, were analysed in 2003³¹, phthalates were found in all four products and synthetic musks were found in two¹⁰. In another study, the levels of phthalates, synthetic musks and alkylphenols in household products from Procter and Gamble and Unilever were all below detection levels³².

Cosmetics

(lipstick, shampoo, shaving gel, skin care)

Company & Grade	Brand	Grade 2004	Grade 2005	Grade 2006
Dr Hauschka	Dr Hauschka		Green	Green
Lavera	Lavera		Green	Green
Logona	Logona		Green	Green
Sante	Sante		Green	Green
Boots	Boots Lipstick	Green	Green	Green
Botanicals	Botanicals		Green	Green
Ciel d'Azur	Ciel d'Azur		Green	Green
Laboratoire Gravier	Cosmo naturel, Lise du Castelet		Green	Green
Naturaleza y Vida	Naturaleza y Vida		Green	Green
Primavera	Primavera		Green	Green
Weleda	Weleda	Green	Green	Green
King of Shaves	King of Shaves alpagel	Green	Green	Green
Green People	Green People moisturisers	Green	Green	Green
Melvitacosc	Melvita		Green	Green
Body Shop	Body Shop lipstick, shaving foam/gel	Green	Green	Green
Body Shop	Body Shop shampoo, body and hand lotion	Red	Red/Amber	Amber
Unilever	Organics, Timotei, Lynx, Dove	Red/Amber	Red/Amber	Amber
Estee Lauder	Clinique lipstick	Red	Red	Red
L'Oreal	Mabelline, Elvive, L'Oreal, Plenitude	Red	Red	Red
Procter & Gamble	Head & Shoulders, Pantene Pro V, Vidal Sassoon, Wash & Go, Oil of Olay	Red	Red	Red
Shiseido	Shiseido	Red	Red	Red
Wella	Wella	Red	Red	Red
Gillette	Gillette	Red	Red	Red
Beiersdorf	Nivea	Red	Red	Red
Colgate Palmolive	Palmolive	Red	Red	Red
adidas	adidas Body Care	Red	Red	Red
Johnson & Johnson	Clear & Clear	Red	Red	Red
Pure & Simple	Pure & Simple	Red	Red	Red
Avon	Skin so Soft	Red	Red	Red

- **Body Shop** – Despite having a 'green' image some Body Shop products are formulated with phthalates and synthetic musks, although lipstick has been graded green from the start of the Chemical Home. However the company now intends to stop using toxic substances and was upgraded from red to amber in 2005. Body Shop has stated that none of their products will contain phthalates by the end of 2006, and that synthetic musks will be phased out by 2010.

- **Unilever** – The only other brands to be upgraded belong to Unilever. In November 2004 Unilever confirmed that its new personal care products, such as the Organics and Timotei shampoo lines, and household products in Europe do not contain hazardous chemicals such as most phthalates, nitro musks or polycyclic musks. However, it has yet to phase out these substances worldwide, so they are still graded amber. Although four of Unilever's Dove body lotion lines are already free of hazardous substances, one still contains the phthalate DEP.

- The Dutch company Rituals, which is rapidly expanding and now has shops in other European countries, has made a full commitment not to use these hazardous substances.

- **Beiersdorf** – Although Beiersdorf has already phased out some types of synthetic musks (nitromusks) and appear to be a good candidate to be upgraded to amber, they are reluctant to commit to phase out phthalates and synthetic musks completely and therefore remain red.

- **Johnson & Johnson** – The Dutch branch of this company has informed Greenpeace in the Netherlands that they phased out synthetic musks, phthalates, alkylphenols and Bisphenol A as from March 2005. However, they have not confirmed whether this phase out applies to their products globally and so they remain red for the moment.

- **L'Oreal** declined to supply information about the hazardous substances used in any of its products.

Three brands of shampoo were sampled in 2003³³, the only brand containing hazardous substances was L'Oreal³¹ with both phthalates and synthetic musks. Low levels of phthalates were found in Dove Body Lotion and Nivea Body Milk¹². Levels of phthalates in baby shampoo were mostly at below detection limits, but Johnsons and L'Oreal products contained synthetic musks¹³. Two Italian branded baby body care products were analysed in a study in 2005³⁴; synthetic musks, phthalates and nonylphenol ethoxylates were found¹⁴.

In another study done in France³⁵, phthalates were found in after shave, deodorants, shower gel and Body Shop beurre corporeale, while synthetic musks were also found in the Daniel Hechter and Body Shop products. Synthetic musks were also in L'Oreal nutrivissime, four brands of baby products and a deodorant¹⁵. This study also looked for other substances such as formaldehyde and triclosan; formaldehyde was found in L'Oreal nutrivissime and two baby shampoos¹⁶; the highest levels of triclosan were found in the Sara Lee deodorant Sanex Dermo, it was also found in three brands of toothpaste and another deodorant¹⁷. In contrast, the Sara Lee deodorant had extremely low levels of phthalates and synthetic musks.

Other observers have also noted a change in the ingredients used in cosmetics. The market research company Mintel reports that cosmetics companies are increasingly using natural ingredients in skin and face creams; market research has detected a "noticeable" rise in the use of herbs and plants in the £6 billion-a-year British beauty industry. The research by Mintel comes amid concerns from pressure groups about the exposure of consumers to the cocktail of chemicals used in cosmetics³⁶.

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Perfume

Company & Grade	Brand	Grade 2004	Grade 2005	Grade 2006
Alquimia	Agua Natural Perfume		Green	Green
Sante	Sante perfume		Green	Green
Melvitacsm	Iris Blue Perfume		Amber	Green
Puma	Jamaica Man, Puma Woman		Amber	Green
Body Shop	Body Shop perfumes	Red	Amber	Green
L'Occitane	Magnolia perfume		Amber	Amber
adidas	adidas Floral Dream Perfume		Red	Red
Etienne Aigner	Aigner in Leather		Red	Red
L'Oreal	Armani She, Ralph Lauren, Lancome	Armani, Lancome, Red	Red	Red
Wella AG	Gucci, Naomi Campbell, Mexx, Bogner		Red	Red
Bulgari GmbH	Notte Pour Homme		Red	Red
Unilever/Coy Inc	Calvin Klein CK One, Eternity for Men, Eternity for Women		Red	Red
Coty Inc.	Joop!, Nightflight, Celine Dion, Isabelle Rosselini, adidas Floral Dream	Joop! Red	Red	Red
Chanel	Chanel Chance, Chanel No 5	Red	Red	Red
Louis Vuitton Moet Hennessy	Dior Poison, Dior Pure Poison, Givenchy, Guerlain	Givenchy, Guerlain Red	Red	Red
FCUK	FCUK Him		Red	Red
Henkel	Fiorucci Loves You		Red	Red
Procter & Gamble	Hugo Boss, Boss in Motion		Red	Red
Shiseido	Jean Paul Gaultier, Classique, Le Male		Red	Red
Cartier	Le Baiser du Dragon		Red	Red
Puig Group	Paco Rabanne, XS Pour Homme		Red	Red
Estee Lauder	Tommy Hilfiger True Star		Red	Red
Van Gils	Van Gils		Red	Red
Jones Apparel Group	Gloria Vanderbilt		Red	Red
Gucci Group	Yves St Laurent Cinema		Red	Red

This section also includes many companies that specialize in perfumes, as well as brands from some of the same multinationals from the household good and cosmetics sections.

The Greenpeace report 'My Toxic Valentine'³⁷ released in February 2005, confirms that some synthetic musks (most notably the polycyclic musks galaxolide (HHCB) and tonalide (AHTN), and some phthalates, especially diethyl phthalate (DEP), are widely used by the perfume industry. DEP was found in 34 out of the 36 perfumes tested and with widely varying levels. Only Gloria Vanderbilt's Vanderbilt and Bogner's High Speed contained no detectable levels of DEP. The highest levels of DEP were found in Calvin Klein's Eternity for Women, Mevita's Iris Blue and Jean-Paul Gaultier's Le Male¹⁸.

The lowest levels of synthetic musks (polycyclic and nitromusks) were found in Puma's Puma Jamaica Man, Alquimia's Aqua Natural, Naomi Campbell's Sunset and Christian Dior's Pure Poison¹⁹. The highest total quantities of these synthetic musks were found in Cartier's Le Baiser du Dragon, Gaultier's Le Male and the Body Shop's White Musk²⁰.

Although no single perfume was free from both phthalates and synthetic musks, the absence of these chemicals at detectable limits in some brands suggested that it was possible to manufacture and successfully market perfumes without their deliberate use. The fact that three brands have been upgraded to green since the report was released proves that this is possible.

- For example, the **Alquimia** perfume Aqua Natural had very low levels of galaxolide (HHCB) at 0.4 mg/kg, but 1785.5 mg/kg of phthalates, mostly DEP. Alquimia reacted directly and removed the phthalates from their product. The company identified the presence of phthalates as due to the use of these substances in denaturing alcohol, and committed to substituting with an alcohol free from phthalates. The company also identified the source of the trace levels of synthetic musks. Their products are now free from these hazardous substances and were upgraded to green in September 2005.
- In addition, **Melvitacsm**, the manufacturers of Iris Blue, were upgraded to amber when they committed to phase out phthalates and synthetic musks from their Eaux de Toilette by October 2005, and when they phased out these substances from all their remaining products before their deadline of June 2006, all their products and the company were upgraded to green.
- **Puma** is also committed to eliminating these hazardous substances from both their sports shoes and perfumes across their whole product range. When Greenpeace found phthalates in Puma perfume the company identified their source in the plastic tubing used in the packaging. This has now been phased out and their perfumes earned a green rating.
- **The Body Shop** perfume, White Musk, also contained relatively high levels of phthalates at 3019 mg/kg, but Body Shop now intends to phase them out (see Cosmetics above), so this product is upgraded to amber.

- Although adidas bans the use of hazardous substances and PVC in their sports wear and sports shoes, adidas branded perfume still contains phthalates and synthetic musks. Coty Inc. the manufacturer of adidas perfumes, is aware of the problems with hazardous substances, but the company does not have a plan to phase out these substances.
- Despite meeting with Greenpeace to discuss the use of hazardous substances in their products, Coty Inc. have so far failed to follow up in any way.

In a study done in France³⁸, Calvin Klein One and JP Gaultier perfumes both contained phthalates and synthetic musks²¹.

Two further studies on hazardous chemicals were commissioned by Greenpeace in Central and Eastern Europe. In the first³⁹, four perfumes were analysed (Aigner in leather, Chanel No.5, Dior Poison, Calvin Klein Eternity), all contained phthalates, predominantly the phthalate DEP. In addition, low concentrations of the phthalates DEHP and DBP were found, showing how continued use of these substances can directly or indirectly lead to product contamination even after their prohibition from April 1 2005, under the EU Cosmetics Directive.

The second analysed five perfumes intended for children⁴⁰. Three of the perfumes (Barbie, Mattel; Jacadi, Eau Douce; Pomme de Reinette, Yves Rocher) contained high concentrations of the phthalate DEP and the same three perfumes also contained high concentrations of galaxolide (HHCB). The composition of these perfumes is comparable to those of ordinary perfumes reported in previous studies.

More recently, the prohibited phthalate DEHP was also found in David Beckham's Instinct deodorant spray⁴¹, and synthetic musks were found in all of the 12 celebrity products tested.

The global influence of legislation in the EU can be seen clearly in the case of the Cosmetics Directive bans on the use of the phthalates DEHP and BBP; Revlon, L'Oreal and Estee Lauder have agreed to reformulate globally to meet these new standards⁴². However, the Cosmetics Directive only addresses individual substances, and does not prevent them from being substituted with substances from the same chemical group. Most companies have replaced DEHP and BBP with the phthalate DEP, which may share some of their hazardous properties and lead to low level contamination with other phthalates; it may also be a future candidate to be banned itself. This shows that legislating for substances individually is not a systematic solution and leads to very slow progress.

Fortunately, not all companies are prepared to only comply with legislation, some, like Puma, Alquimia and Melvitacosc, are phasing out groups of hazardous substances like synthetic musks and phthalates before there is a legal requirement.



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BEDROOM

Bed Linen
Mattresses
Pyjamas & Childrenswear
Toys
Trainers

Pyjamas and Childrenswear

Company & Grade	Brand	Grade 2004	Grade 2005	Grade 2006
Green Baby	Green Baby organic cotton pyjamas	Green	Green	Green
Marks & Spencer	M & S childrenswear		Green	Green
Hennes & Mauritz	H & M pyjamas		Amber	Amber
Asda	Disney pyjamas	Red	Red	Red
Debenhams	Disney pyjamas	Red	Red	Red
Disney	Disney pyjamas	Red	Red	Red
Mothercare	Bob the Builder pyjamas	Red	Red	Red
The Disney Store	Buzz Lightyear pyjamas	Red	Red	Red
Woolworths	Disney pyjamas	Red	Red	Red

Before a garment reaches the shops it has been through many processing steps that contribute to its overall chemical footprint and the final chemical residues remaining in the finished product. Manufacture of fibres and yarn, pre-treatment, dyeing, printing, aftercare and preservation all involve the use of chemicals, including inevitable direct releases to the environment during manufacture and the potential for long-term dispersive releases of chemicals from the finished textiles during wear, laundering and final disposal.

A significant source of hazardous substances in clothing is found in the PVC plastic print (plastisol) often used in children's clothing, used to create motifs. Greenpeace first identified that children's clothing contained these substances when we commissioned independent analysis of a variety of different products bought in the UK and the Netherlands, including children's pyjamas, toys and baby feeding bottles, perfumes, paints, car interior cleaners and air fresheners⁴³. Five pairs of Disney branded pyjamas and one pair of Bob the Builder pyjamas were tested. Nonylphenol, which is thought to interfere with human DNA and affect sperm production in mammals, was found in all the pyjamas, along with high levels of the closely related nonylphenol ethoxylate. Phthalates were also found in all the pyjamas, with high levels of the phthalate DINP in three of them.

Following these findings, we commissioned further analysis of Disney garments, including T-shirts, pyjamas and underwear, which were bought in retail outlets in 19 countries around the world and analysed by the Danish independent laboratory Eurofins⁴⁴. The report found that most of the garments contained hazardous chemicals; all of the printed sections of the fabrics contained phthalates, however, the amounts varied enormously. The printed section of the Danish Tigger vest bought in H & M had a total phthalate concentration of 1.4 mg/kg, indicating low level contamination rather than deliberate addition of phthalates to the clothing, while the Slovak Tigger bib contained 200,000 mg/kg, more than 20% by weight of the sample. The Danish Tigger vest used a printing method without using PVC, showing that its possible to print colourful T shirts without using hazardous chemicals.

Alkylphenol ethoxylates were also found in all the products tested, as was lead. Organotins, cadmium and formaldehyde were found in some of the products. As with the phthalates, the concentrations of all substances varied.

Really necessary?

Many of the chemicals identified in this study are likely to be present as a result of the use of PVC plastisol printing techniques which, through comparison of products, prove to be by no means essential. Such prints may be relatively cheap to apply in complex and attractive designs but other printing techniques which do not rely on the use of phthalates, alkylphenol ethoxylates and other hazardous chemicals are widely available. Much of the chemical exposure which could result from the wearing and laundering of many of the Disney garments analysed can be avoided entirely by the mandatory substitution of hazardous chemicals when they are unnecessary.

Retailers driving change

An important player in reducing the presence of hazardous chemicals in products is the retailer.

- **Hennes & Mauritz.** The Danish Tigger vest was bought at Hennes & Mauritz (H & M), a global clothes retailer which in 2002 decided to substitute PVC and PVC prints in all their products, which explains the low or non-detectable levels of PVC additives. Following the release of these test results, H & M also set themselves a target to phase out alkylphenols, which were present at higher levels in the Tigger vest. H & M report good progress on the phase out of alkylphenols. H & M state that⁴⁵:

'Lead by the precautionary principle, we strive to phase out substances that may conceivably be harmful to man or the environment at an early stage. ...we actively seek to substitute hazardous substances with better alternatives.'

- **Marks & Spencer.** Another retailer, the UK company Marks & Spencer, has eliminated the use of phthalates and alkylphenols in their childrenswear, thus earning themselves a green rating for these products.
- **Disney.** In response to Greenpeace's many letters to them, Disney confirms that they react only to legislation, stating: "We take all comments on this subject seriously and constantly review our policies and procedures to make certain that they continue to be in full conformity with all relevant legislation". The high levels of the hazardous substances found in Disney childrenswear are legally allowed. Following the release of the Greenpeace sample results the products concerned were removed from sale.
- The British retailer Mothercare was one of several other retailers that removed the specific products which were analysed on behalf of Greenpeace. However, in recent correspondence⁴⁶ it is apparent that they are still using PVC motifs/prints on their current products, in accordance with the Phthalates Directive, which permits the use of the phthalates DINP, DIDP and DPHP and nonylphenol in children's products which are not designed to be put into the mouth (see section on Toys).

Although market leaders such as H & M and M & S are showing that it is possible to phase out hazardous substances in their products by substitution, the majority of retailers and manufacturers will only aim to comply with legislation.

Moda Sin Toxicos

On 19 June 2006 sixteen fashion designers including Carmen March, Antonio Pernas and Jocomomola linked with Greenpeace to lobby the EU in a catwalk show in Madrid, when they unveiled one-off creations designed to avoid the use of toxic chemicals which are currently widely used in clothing.

- Meanwhile, high-street fashion giant **Mango** announced a long-term commitment to remove hazardous chemicals from its entire production world-wide, following talks with Greenpeace. "Our suppliers ask for higher prices because we make their process more complex, because we ask for the use of more difficult to find chemicals, and sometimes even more expensive chemicals, so at the end it's somebody has to pay for that, and it's in our case we are the ones, but we feel it as an investment for the society, not just an extra cost for our garments,"⁴⁷
- Mallorcan family firm-turned-global brand **Camper**, too, is going to stop using dangerous substances in its shoes.
- **Inditex** (owner of **Zara**, **Massimo Dutti** and other stores), supported designers in the search for toxic-free fabrics. "Our company is sensitive to the environment and anything we can do that's possible for us in this regard, we will".⁴⁸

The challenges of finding suitable alternatives are clearly highlighted by Mango. Companies like Mango, who are actively seeking alternatives to hazardous substances would benefit enormously from a REACH regulation where suitable alternatives are investigated and information is made available. Prices of these substitutes would also come down with more widespread use, making substitution more economically justifiable for many companies.

Phasing out the use of hazardous substances is not necessarily always more expensive however, as shown by the experience of one of the fashion designers:

*"When I went looking for fabrics that didn't have those toxics, they were – the same price more or less – and working with them was just as easy"*⁴⁹.

Completely avoiding the use of hazardous substances which are not an essential use, such as formaldehyde for easy care, or nickel for plating, is more likely to result in lower costs, than the process of substituting one chemical with a safer alternative substance, which is a more complex process.

CLEANING UP OUR CHEMICAL HOMES CHANGING THE MARKET TO SUPPLY TOXIC-FREE PRODUCTS

BEDROOM

Bed Linen
Mattresses
Pyjamas & Childrenswear
Toys
Trainers

Toys

Company & Grade	Brand	Grade 2004	Grade 2005	Grade 2006
Playmobil	Playmobil	Green	Green	Green
Lego	Lego	Amber	Amber	Amber
Chicco	Chicco	Amber	Amber	Amber
Mattel	Fisher Price	Red	Red	Red
Majorette	Majorette	Red	Red	Red
Hasbro	Playskool	Red	Red	Red
Superjouet	Superjouet	Red	Red	Red
VTech	VTech	Red	Red	Red

The main substances of concern found in toys are likely to be present through the use of soft PVC containing phthalate plasticisers. In 1999 the EU enacted emergency legislation to ban six phthalates from toys for children under three, designed to be put in the mouth. This ban became permanent in July 2005, following a decision by the European Parliament, banning the phthalates DEHP, DBP and BBP, which are classified as toxic to reproduction, in all toys and childcare articles. DINP, DIDP and DNOP have been banned in toys and childcare articles that can be put in the mouth. The new rules will be mandatory a year after the legislation was published, by autumn 2006.

However, toys that could quite easily be chewed by children, but which aren't designed to be put in the mouth, such as squeazy toys, dolls and certain types of modelling clay, as well as childcare articles such as changing mats and pushchair covers, can still contain the phthalates DINP, DIDP and DNOP. As a result, a committee has now been set up to investigate which toys are likely to be put into children's mouths.

Greenpeace first raised the issue of phthalates in soft PVC baby toys in September 1997 with an analytical report into the levels of additives present in these products⁵⁰. The analyses of soft PVC toys found that 71 toys from 17 countries around the world contained 10-40% by weight of phthalates.

Further tests conducted by independent laboratories in the US found that many soft PVC children's products contain high levels of the hazardous metals lead and cadmium⁵¹. Reports from the Danish and Dutch Governments had already shown the leaching of these substances from soft PVC toys, and a number of retailers in Europe had removed soft PVC toys from their shelves.

The issue of phthalates in infant toys foreshadows the development of REACH and is an interesting case study of substitution in action. After the concerns were first raised, the industry response was to focus the debate on migration levels and substituting phthalates with other additives which could also leach out, rather than material substitution. The chemical industry itself played a big part in attempting to prevent legislation, with the phthalate manufacturer Exxon involved in the tests on levels of migration, as well as working with the US government to convince the EU that there are no hazards associated with soft PVC toys⁵². However, over the years there was a gradual shift, as more and more companies phased out soft PVC in favour of alternative polymers to avoid the need for additives altogether, to the point where the discussion on migration levels became less relevant and the much more wide-ranging permanent ban became possible.

The market and legislation also have an influence on each other, as shown by the issue of phthalates in soft PVC baby toys. A number of companies responded quickly in response to the Danish and Dutch studies and the Greenpeace campaign, which raised consumer concerns about phthalates in baby toys and was followed by proposed legislation. The proposal met with a great deal of resistance over the years, however, once big players in the market, such as Chicco in Italy, had changed their policy, there was less of a block to legislation, and the emergency ban on phthalates was agreed in 1999. It took a further six years of debate for the emergency ban to become permanent.

Despite these big steps in legislation over the years, the database has shown that little has changed in the attitude of the larger toys companies, who continue to use PVC wherever the legislation allows them to. This shows that despite the availability of alternatives, demonstrated by companies that have already phased out hazardous substances or are in the process of doing so, certain companies will continue to use these substances, unless they are required to replace them by legislation such as REACH.

- **Mattel** - Although market leader Mattel eventually responded to the 1997 campaign on toys by announcing a phase out of phthalates in soft PVC baby toys by 1999⁵³ and then entered into a dialogue with Greenpeace which resulted in a proposal to investigate plant-based plastics as an alternative that would eventually replace traditional plastics⁵⁴, it appears that no progress has been made since then. In response to our letter, they simply evaded the question of what hazardous substances are used in their Fisher Price products by saying they comply with relevant safety regulations, earning themselves a red grade. However, Mattel has recently written to us to inform us that their policy to phase out phthalates from all mouth toys for children under 3 has been extended to include all Fisher-Price toys for under 3's. We are awaiting clarification from them on whether this involves a phase out of PVC, and so their product remains red for the moment. Earlier sampling of Mattel products, including children's perfume (see perfumes) and a Barbie doll, showed the presence of hazardous substances (see below).

- **Hasbro** – the second largest toy company, responded with a letter identical to Mattel’s first letter, saying that they comply with ‘all relevant national and international safety regulations and standards’.
- **Playmobil** - On the other hand, there are toy companies who take the lead on avoiding hazardous substances in their products, such as Playmobil, who use none of the OSPAR hazardous substances and eliminated PVC from their products over 20 years ago.
- **Lego** - Lego is very supportive of the REACH initiative and has a long history of restricting the use of hazardous substances in their products. Lego began phasing out PVC in 1985 and completed a phase out of PVC and phthalates in all toys and equipment for children under three in 1999. However, they are still in the process of phasing out PVC in data and transformer cables and so can only earn themselves an amber grade.
- **Chicco** – since 1998 Chicco has limited the use of PVC to only a few of its products, such as rigid parts, accessories and packaging. Following correspondence with Greenpeace about the launch of the database, in June 2004 the company announced that they would phase out all uses of PVC within three years, and was entered onto the database classified as amber.

Product sampling has also shown that high concentrations of phthalates as well as other hazardous substances are still being used in the manufacture of toys and children’s articles.

- Four samples of toys were analysed in a study commissioned by Greenpeace in the Netherlands and the UK⁵⁵. High concentrations of phthalates were detected in modelling clay²². Lower concentrations of phthalates were detected in bath ducks, as well as the presence of another softener, di-iso-octyl adipate, estimated to be at least 20% by weight. The bath ducks also contained 2306 mg/kg of nonylphenol. It is likely that the use of phthalates has been substituted with an alternative softener, an adipate, with less health or environmental concerns. However, the fact that phthalates are still present and the presence of another hormone disrupter, nonylphenol, shows that this piecemeal approach has not prevented the use of hazardous substances. An alternative approach would be to substitute PVC with another plastic which does not need such large quantities of additives.
- Another study analysed two toys and two children’s articles⁵⁶; both toys contained high levels of the phthalate DINP²³. Lower levels of other phthalates were found. One of the children’s articles, marketed by Gnochi Preziosi) contained almost 900 mg/kg of DEHP, which is toxic to reproduction. Nonylphenol, nonylphenol ethoxylates and organotins were also found among the toys and children’s articles. The most worrying findings of this study, which looked at 12 consumer products, was that the products intended for children and babies, such as toys, printed T shirts and baby body care products, contained the highest levels of hazardous substances.
- Further analysis of seven toys and children’s articles⁵⁷ found a similar picture; all products contained phthalates, between 0.2 and 74% by weight, which is exceedingly high, in a bouncing ball from Toys R Us. This was mostly DINP, but some samples also had high concentrations of DEHP, such as a rain hood, with 11%. Nonylphenol was also found in all the products, and 46 mg/kg of lead was present in a Disney Princess doll.

- Laboratory tests of consumer products⁵⁸ found that Nordic children are heavily exposed from school accessories such as pencil cases, drinking bottles and school bags to a range of substances classified as toxic to their reproduction. A Batman plastic bottle contained 13% DEHP. DEHP was also found in high concentrations in pencil cases and schoolbags²⁴.

Once the new EU legislation on toys and children’s products comes into force in the Autumn of 2006, the use of some of these phthalates in some products will be prohibited. However, children will still be exposed to many other sources of phthalates, for example, in flooring, wallpapers, furnishings and electronic equipment, so a partial ban in toys only is not a complete solution. The child is already exposed to phthalates in the womb of its mother at the most vulnerable stage of development, so only substitution which addresses all sources of phthalate exposure can help.

CLEANING UP OUR CHEMICAL HOMES CHANGING THE MARKET TO SUPPLY TOXIC-FREE PRODUCTS

BEDROOM

Bed Linen
Mattresses
Pyjamas & Childrenswear
Toys
Sports Shoes

Sports Shoes

Company & Grade	Brand	Grade 2004	Grade 2005	Grade 2006
Asics	Asics	Green	Green	Green
New Balance	New Balance	Amber	Amber	Amber/Green
Reebok	Reebok	Green	Green	Green/Red
Puma	Puma	Amber	Amber	Amber/Green
Nike	Nike	Amber	Amber	Amber
adidas	adidas	Red/Amber	Amber	Amber
Skechers	Skechers	Red	Red	Red

PVC is commonly used in sports shoes, and therefore organotins, phthalates and other hazardous chemicals that are used as additives can be present. In addition, hazardous substances like brominated flame retardants and triclosan can be used in sports shoes.

Following a campaign by Greenpeace in the USA which focused on the use of PVC in sports shoes, many of the companies that manufacture well-known brands, such as Nike, adidas, and Asics are in the process of phasing out PVC. Reebok have completely phased out PVC, and have banned some other substances of concern. Most of these companies also have lists which restrict or ban some of the substances of concern, although there is a lack of clarity in some of the information presented.

In general, there are a large proportion of green and amber grades among the sports shoes companies, perhaps due to their past experiences with consumer campaigns on child labour.

- Nike began a phase out of PVC in 1998, and has completed this phase out in shoes for children under three, however, shoes and other products for older children and adults could still contain phthalates, organotins and alkylphenols, as we found in our product testing (see below). Nike is still committed to phase these out and remain amber.
- Both Asics and Reebok state that they have completed a phase out of these hazardous substances and entered the database on a green rating. Since then Reebok has been bought by adidas, which has brought their company grade down to red, although their products remain green.
- adidas also bans the use of these hazardous substances in their products, however their presence was found in product tests (see below). In addition, adidas perfume, manufactured by Coty Inc. can still contain phthalates and artificial musks, so their company rating is red.
- Although these substances were found in product tests, Puma identified their source and now bans their use in these products, earning them a green grade. Puma's commitment on hazardous substances includes their perfume brands, so their company rating is green.
- New Balance recently completed their phase out of PVC and were upgraded to green.
- As the only company that gives no date for the phase out of these substances, and provides very sketchy information on their use of hazardous substances, Skechers remain red.

Three samples of sports shoes were analysed in December 2004⁵⁹; the Nike sports shoes contained 1700 mg/kg of the phthalate DIBP, the Puma brand contained 3,300 mg/kg of DEHP and much lower quantities were found in the adidas shoes. All brands of sports shoes contained alkylphenol ethoxylates, the highest quantity being 2100 mg/kg in the Nike shoes, and all contained lower amounts of organotins.

LIVING ROOM

Air Fresheners
Carpets
Computers
Mobile Phones
Paints
Upholstered Furniture

Paints

Company & Grade	Brand	Grade 2004	Grade 2005	Grade 2006
Livos	Livos Paints		Green	Green
Biodur	Biodur Paints		Green	Green
B & Q	B & Q minimal VOC emulsion, & quick dry all purpose primer and under coat, & quick dry metal paint	Green	Green	Green
Akzo Nobel	Crown 'minimal VOC' emulsion paints	Green	Green	Green
Akzo Nobel	Crown paint – expressions colourants	Amber	Amber	Amber
Dulux	Dulux	Red	Red	Red
Sigma Coatings	Sigma Coatings paint	Red	Red	Red
Homebase	Homebase C24 coloured emulsions	Red	Red	Red

The main substances of concern likely to be found in paints are alkyl phenol ethoxylates, chlorinated paraffins and phthalates. The levels of VOCs (Volatile Organic Compounds) are also an issue, especially during application of the paint.

Some of the major brands, such as Crown, have taken some of these issues on board, and it is now possible to buy paints which don't contain substances like alkyl phenols and with a low VOC content. It's also possible to buy paints made from natural substances from Livos, Biodur and other alternative paint manufacturers.

- Some of Akzo Nobel's **Crown** products are already free from hazardous substances, while they are still in the process of phasing out alkylphenols from other products (waiting to hear back from them).
- ICI's **Dulux** brand in the UK uses a hazardous substance listed on the OSPAR priority list in the manufacture of the polymers used in water based paint. This substance isn't used in Dulux paints made in France however. ICI recently informed us that they have reformulated their Dulux paint products and are phasing out its use. We are waiting for ICI to confirm the phase out date, so that they can be upgraded to amber.
- Sigma Kalon say that they do use phthalates and nonyl phenols, but that they will be substituting these with alternatives. However, a deadline has not been given, so they don't qualify for an amber rating.

Two B&Q own-brand products were analysed⁶⁰, and concentrations of 246 mg/kg and 350 mg/kg of nonylphenol ethoxylates were found, as well as lower levels of phthalates. B & Q successfully removed phthalates from another of their products, (the quick dry all purpose primer and undercoat & quick dry metal paint).

CLEANING UP OUR CHEMICAL HOMES CHANGING THE MARKET TO SUPPLY TOXIC-FREE PRODUCTS

LIVING ROOM

Air Fresheners
Carpets
Computers
Mobile Phones
Paints
Upholstered Furniture

Electronic Products

Mobile phones, computers and televisions can contain a number of hazardous substances, such as brominated flame retardants, lead, mercury and hexavalent chromium. PVC is used in mobile phones, which can contain phthalates, organotins and other hazardous substances, as well as in electrical cables. An EU Directive⁶³, on the Restriction of Hazardous Substances (RoHS) requires the phase out of many of these hazardous substances by 1 July 2006; mercury, lead, hexavalent chromium, cadmium and some brominated flame retardants are included. This Directive has been a major catalyst for research and the adoption of alternatives, especially for lead-free solder in electronic equipment.

All the companies contacted are in the process of restricting the hazardous substances we are concerned about; some of these are simply to comply with the EU RoHS Directive. However, some manufacturers are implementing phase outs for these specific substances ahead of the RoHS Directive and addressing related substances that are not included in the Directive. Several companies have earned amber grades for their products, but there are no green grades for any of the electronic products as yet, which reflects the complexity of the technology and its historic use of hazardous substances.

In late August 2006, Greenpeace released a separate new ranking system for the top mobile and PC producers, called the Guide to Greener Electronics. The Guide scores companies not only on their chemicals policy and practice, but also on their policies and practice regarding end-of-life management of their products. More information can be found at www.greenpeace.org/electronics in the section How the companies line up.

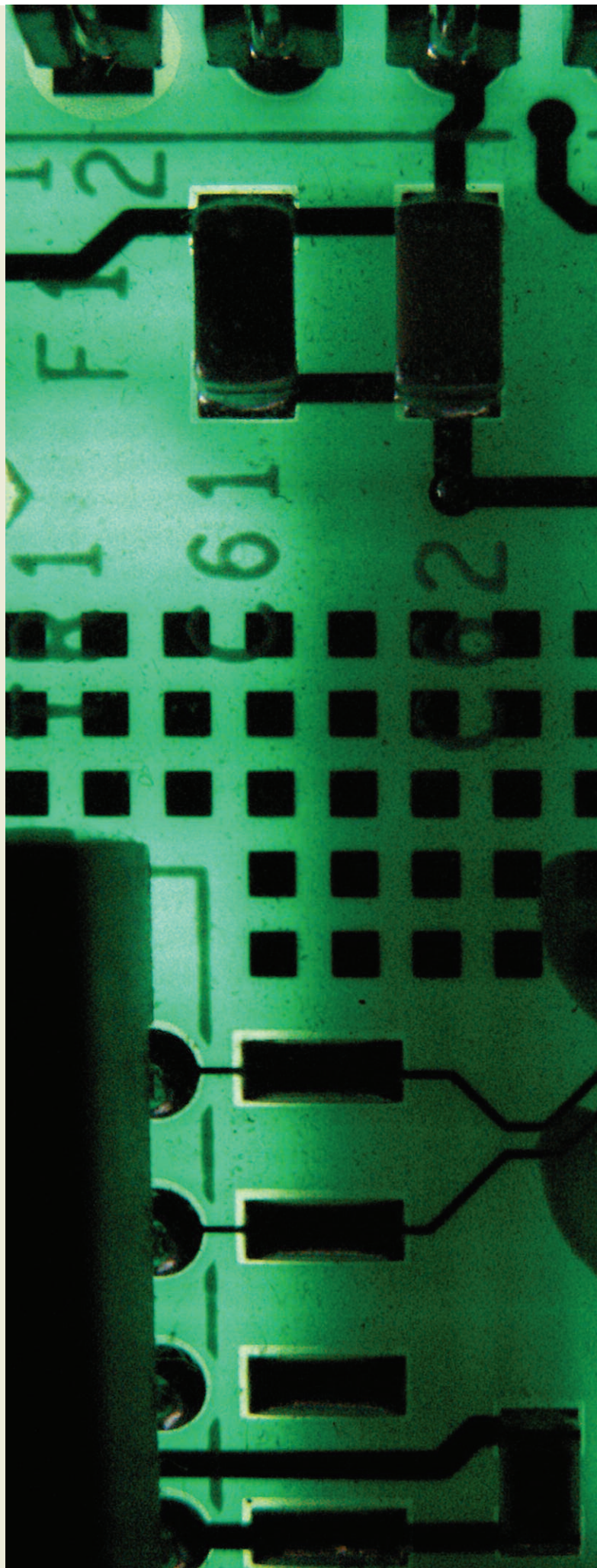
Televisions

Company & Grade	Brand	Grade 2004	Grade 2005	Grade 2006
Samsung	Samsung	Amber	Amber	Amber
Sony	Sony	Red	Red/Amber	Amber
LG Electronics	LG Electronics		Amber	Amber
Hitachi	Hitachi	Amber	Amber	Amber
Philips	Philips	Amber	Amber	Amber
Panasonic	Panasonic	Red	Red	Red
Akai	Akai		Red	Red
Bang & Olufsen	Bang & Olufsen		Red	Red
Daewoo	Daewoo		Red	Red
Grundig	Grundig		Red	Red
Sanyo	Sanyo	Red	Red	Red
Sharp	Sharp	Red	Red	Red
Toshiba	Toshiba	Red	Red	Red

- **Sony** is working hard to remove hazardous chemicals from its products. Following discussions, the company informed Greenpeace in March 2005 that it is aiming to remove PVC & all brominated flame retardants from all its products worldwide as specified in the publicly available Sony Standard SS-00259, which is being yearly revised considering latest technical developments and available alternative materials. Sony will keep Greenpeace updated on developments. Sony was upgraded to an amber ranking in 2005.
- **LGE** has committed to phase out brominated flame retardants and PVC. All LGE products will be free of PVC by the end of 2008. LGE committed to providing Greenpeace with a substitution plan and phase out date for all brominated flame retardants by the end of 2005. Disappointingly, LGE has now told Greenpeace that they will be unable to present a substitution plan and timeline for phasing out all BFRs in their products anytime soon.
- **Bang & Olufsen** have a progressive phase out policy for PVC. By 1 January 2006, televisions including cables will be PVC-free. Although B&O are committed to phasing out brominated flame retardants (BFRs), the company still lacks a time frame for the phase-out of TBBA; hence, the red status.
- **Philips** have banned the use of some hazardous substances in order to comply with EU legislation, and are planning to eliminate all brominated flame retardants by January 2006. The company has indicated that in 2005 some BFR-free products will probably come on the market. As from 1 January 2006, BFRs will be eliminated from printed circuit boards in consumer articles. They have also stated they are confident that their products do not contain hexavalent chromium. However, Philips will only commit to the 'decreasing use' of PVC; there is no clear timeframe to phase out PVC completely.

Chemical analysis done in 2003⁵³ on three television sets, by Philips, Samsung and Panasonic found only one brominated flame retardant being used, TBBA⁵⁹. Much lower levels of brominated flame retardants were found in analysis of two DVD players (by Voxson and Hitachi), released in April 2004⁶⁴, however, the authors noted that the lower levels of TBBA reflects only the free, non-polymerised TBBA, whereas the majority of TBBA would be chemically bound in the epoxy material of the printed circuit board³⁰. Phthalates were also found in the DVD players³¹.

In a survey of various products in the Nordic countries⁶⁵, all electronic products sampled contained TBBPA. A SCAN radio bought in Sweden contained five additional brominated flame retardants including OctaBDE (banned in Sweden 2004). The phthalate DEHP was found in the SCAN radio and Philips MP3/CD player, and cables for both Game Boys contained DEHA and DINP/DIDP.



CLEANING UP OUR CHEMICAL HOMES CHANGING THE MARKET TO SUPPLY TOXIC-FREE PRODUCTS

Mobile Phones

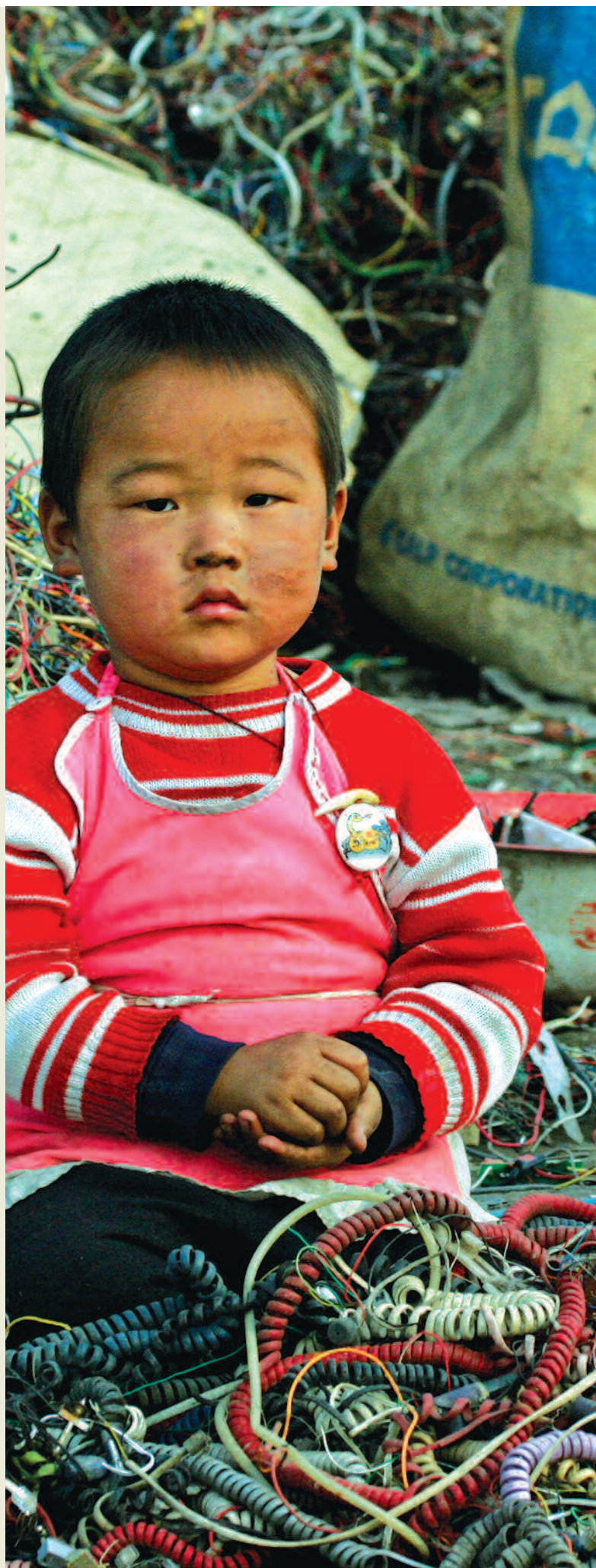
Company & Grade	Brand	Grade 2004	Grade 2005	Grade 2006
Samsung	Samsung mobile phones	Amber	Amber	Amber
Nokia	Nokia	Amber	Amber	Amber
Sony Ericsson	Nokia	Red	Red/Amber	Amber
LGE	LGE mobiles		Amber	Amber
Motorola	Motorola mobile phones	Red	Red/Amber	Amber/Red
Siemens	Siemens mobile phones	Red	Red	Red
Sharp	Sharp mobile phones	Red	Red	Red
Panasonic	Panasonic mobile phones	Red	Red	Red

- Samsung** was the first electronics company to commit to eliminate hazardous substances in their entire product range, which includes mobile phones, computers and TVs, and is currently working on a phase out programme which sets dates for a ban on PVC, organotins and brominated flame retardants, thus earning an amber rating. Despite a long delay, Samsung is shortly to announce timelines for the phase out of BFRs and PVC.
- Nokia** is the world's largest producer of mobile phones. Nokia has pursued an active environmental policy since 1994, and suppliers have to comply with the strict environmental demands that Nokia requires. Nokia works with a list of substances that have already been banned or will be banned. At the end of 2006, all brominated flame retardants will be eliminated from printed circuit boards in new models. Other products will follow as soon as possible. All new models of Nokia phones are now PVC-free. In Greenpeace's new 'Guide to Greener Electronics' Nokia shares the top spot in the ranking with Dell²⁵.
- Motorola** reneged on a commitment it made to phase out brominated retardants and PVC. The company has now told us that they are unable to meet their commitment to phase out brominated flame retardants by mid-2007 and that they cannot give us a phase-out date for eliminating PVC. They claim that this is due to the need to focus their activities on complying with the EU RoHS (Restriction of Hazardous Substances in electronic products) Directive globally. The EU RoHS Directive was agreed in 2002! So, Motorola was well aware of the requirements of this Directive when they made a commitment to Greenpeace to also phase out PVC and BFRs.

Chemical analysis of three mobile phones (Sony Ericsson, Samsung, and Siemens) was done in December 2003²². The brominated flame retardant TBBA²⁶ and various phthalates²⁷ were found in all three phones.

A child sits amongst a pile of wires and electronic trash in Guiyu in Guangdong province.

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Computers

Company & Grade	Brand	Grade 2004	Grade 2005	Grade 2006
Samsung	Samsung	Amber	Amber	Amber
Sony	Sony	Red	Red/Amber	Amber
LGE	LGE Computers		Amber	Amber
Hewlett Packard/Compaq	Hewlett Packard/Compaq	Red	Red	Red/Amber
Dell	Dell	Red	Red	Red/Amber
Fujitsu Siemens	Fujitsu Siemens	Red	Red	Red
Apple	Apple	Red	Red	Red
Acer	Acer	Red	Red	Red
IBM	IBM	Red	Red	Red
Tulip	Tulip	Red	Red	Red

- **Hewlett Packard/Compaq** has committed to substituting materials when there are concerns due to their potential effects on people and the environment. By the end of 2006, all BFRs will be eliminated from the external case parts of all new HP products. HP has set itself a goal for 2007 to eliminate the remaining uses of BFRs and PVC as acceptable alternatives are identified. HP is working on a pan-industry solution to BFR alternatives in circuit boards, by working through consortia, such as iNEMI (International Electronics Manufacturing Initiative) which is likely to drive change throughout the whole sector.
- **Dell** has committed to apply precautionary measures to avoid the use of "substances of concern", which include substances that are persistent and bioaccumulative. To demonstrate this commitment, Dell already bans the use of PVC and BFRs in all plastic mechanical parts, like casings, of new products. Dell has committed to eliminate all remaining uses of BFRs and PVC by 2009 in new products, as acceptable alternatives are identified that will not compromise product performance and will lower product health and environmental impacts.
- **Apple** has decided to phase out hazardous substances in its products, but does not say when PVC and BFRs will be banned. So Apple stays red until a clear timeline has been given for eliminating hazardous substances.
- **Fujitsu Siemens** is working hard to phase out hazardous substances, as well as PVC. An increasing number of computer parts, produced by the company itself, are free from BFRs. Fujitsu Siemens has brought out a 'green' computer with a BFR-free printed circuit board. However, a definite timeframe has not been given for the phase out of hazardous substances, so Fujitsu Siemens, for the time being, is rated red.

Product tests on three computers (HP, Dell and IBM) done in 2003 found that the main fire retardant being used was TBBA; the levels found were generally much higher than in mobile phones and televisions. The brominated flame retardant HBCD was found in the IBM computer²⁸.

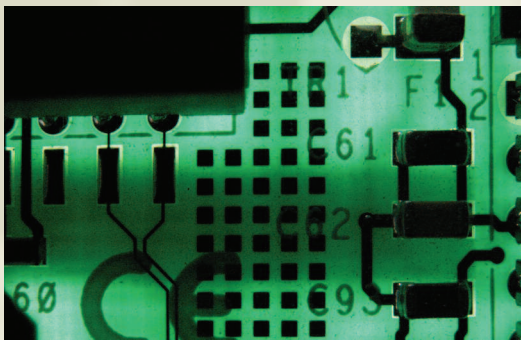
CLEANING UP OUR CHEMICAL HOMES CHANGING THE MARKET TO SUPPLY TOXIC-FREE PRODUCTS

Mattresses (UK)

Company & Grade	Brand	Grade 2004	Grade 2005	Grade 2006
IKEA mattresses		Green	Green	Green
Vi Spring		Green	Green	Green
The Futon Company		Red	Red/Green	Green
Silentnight Group	Layazee Beds, Sealy Silentnight	Amber	Amber	Amber/Green
Hilding Anders	Slumberland Dunlopillo	Amber	Amber	Amber
Airsprung Beds	Airsprung Beds	Amber	Amber	Amber

Other product sectors were also included in the original UK version of the Chemical Home, such as floorcoverings, shower curtains, mattresses, bed linen, carpets and soft furnishings.

Originally two mattress companies were graded green and the remaining were amber, having all made a commitment to phase out brominated flame retardants by 30 June 2005. One company, VI Spring, contacted us in November 2004 to inform us that no halogenated substances (including chlorinated paraffins and brominated flame retardants) were used in their beds. However, after contacting the remaining companies at the end of 2005 to ask whether we could now upgrade them to green we were met with a varied response. After a small delay Silentnight Group (Silentnight, Layazee Beds and Sealy mattresses) informed us that they expect all mattress ticking fabric to be free from brominated flame retardants by 1st August 2006. Slumberland and Dunlopillo have informed us that the vast majority of their ticking supplies are free of brominated flame retardants, and that they are in the process of investigating costs and alternatives for the ticking that still contains BFRs. We are still waiting a reply from Airsprung Beds.



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