



An Analysis of Corporate Restricted Substance Lists (RSLs) and Their Implications for Green Chemistry and Design for Environment



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Companies are increasingly being called upon to demonstrate the safety of their products, particularly their chemical constituents. In the face of concerns about environmental and public exposures to some chemicals, many regional and national governments have issued regulations restricting or prohibiting such chemicals. Further, given the often slow pace of government regulations in response to emerging science, many companies have taken actions to restrict chemicals of elevated concern in their products and processes, in an effort to foresee future regulations or public opinion. Finally, given the general lack of information on many chemicals in commerce, some companies have developed screening programs and criteria to guide hazardous materials restrictions. The result has been the creation of multiple corporate and sectoral lists of restricted materials.

Despite the development of these lists and publication by certain sectors or companies, there has been no effort to date to pool restricted substances lists across sectors and companies to better understand the types of chemicals restricted and rationale for their restriction. The Lowell Center for Sustainable Production (the Lowell Center) issued a call to companies in the Green Chemistry and Commerce Council (GC3) for lists of chemicals that firms have deemed restricted in some way, based on concerns about negative environmental or health impacts or some other factor. The Lowell Center also did an Internet search for lists of chemicals of concern or restricted substances that have been made publicly available by individual companies or by representative associations. With the assurance that all information would be kept confidential and would be non-attributable to any particular company, 19 lists of restricted substances were made available for analysis: 15 from individual companies and 4 from industrial sectors. The Lowell Center compiled these restricted substance lists by substance name, and when made available, by CAS number. Notes were made as to the sector restricting the chemical (textiles, electronics, etc.), the type of restriction (restricted above a certain threshold, banned for use, etc.), and when given, the reasons behind the restriction (regulation, corporate policy, etc.). The 19 lists compiled represented the following chemical use sectors: retail (2); electronics (3); textiles (1); apparel (3); building products (1); consumer products such as soaps, detergents, etc. (2); automotive (2); flooring (1); commercial cleaning products (1); aerospace (1); pharmaceuticals (1); and personal care products, such as cosmetics, and retail (1).

Findings

Below we present findings from our analysis of the restricted materials lists. The actual compiled list is in Appendix 1. These findings are divided by: (1) general observations; (2) types of restrictions; (3) rationale for restrictions; and (4) drivers for chemical restrictions.

General Observations. Depending on the firm, restricted substance lists varied in detail from very basic (chemical name without CAS and casual rationale for its restriction) to more detailed (chemical name, CAS number, restriction by use, by the country in which the product will be sold, and reason for restriction). Some substances were restricted as a category (phthalates,

brominated flame retardants, etc.), but the majority were restricted as individual substances. Some companies listed the same substance multiple times in their restriction list depending on how it was used; for instance, the substance lead (II) chromate might appear on a list once as a “hexavalent chromium compound” and again as a “lead compound.” In this instance, when CAS numbers assured that the same substance was indeed listed multiple times, it was entered into the master list as one consolidated entry.

Chemical nomenclature was a reoccurring issue in this analysis. CAS numbers are intended to give each distinct chemical its own identification number, an important feature when the same substance can be known by several different names. In instances where firms supplied a list of chemical names (or classes) without CAS numbers it is possible that the same chemical is listed more than once in the master list that was created. Additionally, several entries in the master list are of a category, for instance, “phthalates,” while several individual phthalates are also listed. Because of this trend toward duplicative entries it is difficult to know the exact number of substances listed across all of the firms participating. However we estimate that between 700 and 800 individual chemicals had been identified as having a use restriction of some kind.

Types of Restrictions. In general, the restriction lists gathered for this project were not standardized in any way. They varied greatly by company and sector in terms of what substances were covered, allowable levels in a product, and the level of detail for the information provided. However, there is significant overlap across sectors in individual chemicals and types of chemicals restricted, such as ozone depleting substances. This makes sense as these types of chemicals are/were widely used across sectors and are now subject to government regulations globally. Nonetheless, a restricted chemical may have different allowable levels depending on its use. Antimony in apparel, for instance, is restricted to 30mg/kg in natural fibers, but 260 mg/kg in polyester. Many of the substances where the chemical use data was provided were flame retardants, dyes and pigments, and solvents.

In general, information about a chemical’s use was not provided as part of the restriction lists (such data are included in Appendix 1 when readily available). This makes developing a use based categorization of restricted chemicals challenging. Such data on uses are not readily available, for example in government databases. Some government product registries, such as those in the Scandinavian countries or data to be collected under the European Union’s Registration, Evaluation and Authorization of Chemicals (REACH) legislation may help to fill in these gaps. In general, today such data can only be collected through significant industry research – for example using the Chemical Economics Handbook. In some cases, substances may have fairly similar uses across sectors, such as solvents. However, some substances, such as formaldehyde, are used in tens or hundreds of applications making understanding the uses restricted in a particular sector challenging.

Rationale for Restrictions. Most companies did not include their reasoning for restricting a substance. When a reason for a restriction was given, more often than not companies noted that it was due to a regulatory obligation, either in the nation of manufacture or of sale. Some companies and sectors noted basing their restrictions on the strictest restriction in the world, ensuring compliance worldwide. Where regulation was cited as the reason for a restriction, the regulation came from one or more of the following governments: California state (Proposition 65

specifically), Canada, China, European Union (including RoHS and OSPAR), Finland, Germany, Japan, the Netherlands, and Switzerland. When regulation was not given as the driver to restrict a substance's use, those companies that noted them identified environmental, animal cruelty, or human health concerns as the rationale for restrictions. Often restrictions, particularly for firms selling directly to consumers or with a brand image, occur due to public or scientific concerns, what might be termed as scientific and social concern.

Drivers for Restrictions. Our analysis identified three key drivers for chemical restrictions at the firm level: regulatory drivers, marketing drivers, and advocacy drivers.

Regulatory Drivers

As noted, regulation appears to be the most influential driver in firms identifying a chemical as a restricted material. Regulations can be restrictive or proscriptive. For example, many states and localities have preferential purchasing regulations that specify types of products to be purchased, which may lead to a company restricting a particular material to maintain or increase market share. Some restrictions occur in the context of media specific regulations (air, water, waste), while others are part of broad chemicals or product regulations (which may be sector specific in nature). Several laws/policies appear to have a strong influence on materials restrictions (a compilation of particular lists that are commonly used by firms is in Appendix 2):

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).

Proposition 65 was passed as a protective measure to keep known carcinogens, mutagens, and reproductive toxins (CMRs) away from the public. The California Executive Office publishes annually an updated list of these chemicals, which are prohibited from any knowing release into state waterways or onto any terrain which way lead to the subsequent contamination of drinking water. The Act also states that a person may not be exposed to substances classified as a CMR without being given clear and reasonable warning. Products containing substances listed as CMR must therefore be labeled as such.¹

Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS.) The RoHS Directive places restrictions on certain chemicals used in new electrical and electronic equipment sold in the European Union (EU): lead, mercury, cadmium, hexavalent chromium, and polybrominated diphenylether (PBDE) and polybrominated biphenylether (PBB) flame retardants. The law entered into force in 2006 and applies to firms manufacturing in the EU and to firms manufacturing elsewhere, but who wish to sell their products there.² RoHS requires that firms show due diligence in preventing excessive amounts of relevant substances from entering the marketplace. To accomplish this, steps must be taken to ensure the materials and production processes include mechanisms to prevent regulatory infractions, including consideration of the use of restricted chemicals from the design of products through the end of their useful life.³ Similar restrictions on hazardous substances regulations have come in force in China and Korea.

In addition, the European Union's list of restricted substances under its former limitations directive listed about 900 chemicals restricted in a variety of consumer available preparations and products. These restrictions have been carried over into the new REACH regulation. Under REACH, chemicals that are very persistent and very bioaccumulative, are persistent,

bioaccumulative and toxic, are carcinogenic mutagenic or toxic to reproduction, or otherwise extremely toxic will be subject to an authorization process, where firms will have to seek permission for their continued use. The list of Substances of Very High Concern will likely be seen as a defacto restrictions list by many firms. The non-profit Chemical Secretariat in Sweden (KEMI) is developing a Substances of Very High Concern list of its own to present to companies before the REACH list is developed.⁴ This first iteration by KEMI includes 267 substances considered to be CMRs, PBTs, and vPvBs.⁵

In that respect, government lists of substances of concern can be an important motivator for firm level restrictions, regardless of a regulatory restriction. Two notable examples include:

OSPAR Convention. The Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention) was signed in 1992 by 15 European nations to prevent pollution, including hazardous substances from entering the sea.⁶ As of 2006, 310 chemicals were listed as being of possible concern,⁷ either because they are recognized for being persistent, bioaccumulative, or toxic, or because they show potential to be equally damaging to the marine environment.⁸ The Convention has also generated a list of Chemicals for Priority Action, on which heavy metals, brominated flame retardants, and phthalates are listed.⁹

Canadian Environmental Protection Act. The Canadian Environmental Protection Act (CEPA) was passed in 1999 and includes provisions for controlling toxic substances. The Act required the Ministries of Environment and Health to prioritize the almost 25,000 chemicals¹⁰ listed on Canada's Domestic Substance List (a listing of chemicals on the market between 1984 and 1986, used in manufacturing, or manufactured or imported into the country in the amount of 100kg/year or more¹¹) based on the relative risk of public exposure, and by each chemical's persistent, bioaccumulative, or toxic properties.¹² Chemicals assessed to be toxic can be placed on a List of Toxic Substances, which while not a guarantee of regulation, does open the door for federal actions, including regulation and plans for pollution prevention and emergency management.¹³ The current list contains 85 chemicals, including lead, mercury, vinyl chloride and PBDE flame retardants.¹⁴

Market Drivers

While not explicitly mentioned in the data supplied to the Lowell Center, it is clear that companies using chemicals in production or selling chemical products can have a strong influence in manufacturing choices. For example, retail giant Wal-Mart, has stated that, "plans to inspire innovation in chemicals used in various product selections" and announced in October of 2007 that the company will begin using their "Preferred Chemical Principles" to establish a clear set of preferred chemical characteristics for product ingredients... to drive the development of more sustainable products for mother, child, and the environment."¹⁵ However, Wal-Mart continues to lack a formal chemicals policy, instead addressing problematic chemicals one at a time and with media attention. As a May 2008 Wall Street Journal article points out that the company's motivation for taking action on chemicals such as lead and other metals, and phthalates is to "restore consumer confidence" following a long list of recalls of toys made in China, and to limit their liability after recalled toys could still be found on store shelves.¹⁶ Wal-Mart's decision to take action on lead and phthalates follows well publicized arguments between

trade associations and environmental and public health advocates over the safety of these chemicals.

Another potential driver for individual firms to take action on potentially problematic chemicals is the role that industry associations can play in restricting substances as an industrial sector. Three of the contributors to the Lowell Center restricted substance list were from trade associations. In each case there was overlap between the chemicals of concern outlined by the industry group and those described in individual company's lists that belonged to that sector. This suggests that when trade associations act to publish restricted chemicals lists, firms represented by these associations may be encouraged to do the same.

Trade associations have a strong interest in staying current with substances governments are classifying as problematic as supply chains and markets are increasingly global. One association specified the need for an RSL due to the disparate nature of their industry, spread over 5 continents. The objectives identified by the organization internally— to provide quality, safety, and low environmental impact products while remaining efficient and low cost— necessitated a proactive approach to compliance. Substances regulated by any government within their supply chain were restricted, but beyond that, any substance projected to be regulated by a government or is associated with significant human or environmental harm needs to be declared. An oversight committee meets annually to evaluate the list against an internal set of criteria, and update it accordingly. The goal of the RSL and the evaluation process is to facilitate communication within the supply chain in as transparent a way as possible.

Additionally, as consumers become more sophisticated and increasingly demand environmentally preferable products, a growing number of firms see taking action on problematic chemicals as good business and are working to go beyond what is required to move toward a more sustainable supply chain. Two particular examples include:

- *SC Johnson*. SC Johnson and Son, Inc has established their GreenList program to assess each of the ingredients used in SC Johnson products against a range of information sources, and rate each ingredient on a 0 to 3 scale. Chemicals earning a 0 are restricted substances and any use requires sign off of a high level corporate officer, those earning a 1 are deemed “acceptable”, 2 is a rating of “better”, and those given a 3 are the “best” substances available. The company is currently evaluating six categories of ingredients which make up the majority of the products on the market: detergents, insecticides, packaging, propellants, resins, and solvents. SC Johnson has been recognized by the US Environmental Protection Agency for being the first company to develop such a program.¹⁷
- *Nike*. Beginning in the 1990s, Nike began substituting the petroleum-based solvents used in the manufacture of its sneakers to a safer water-based alternative. Through partnerships with consulting agencies, Nike began a “positive list” of chemicals used in manufacture which are not known or suspected to be hazardous to people or the environment. This is a list of preferred chemicals; Nike is working to phase out those chemicals which did not make the list. An example of this commitment is polyvinyl chloride (PVC) which is no longer used in Nike footwear. In 2001 the company set the

goal of “eliminating all substances that are known or suspected to be harmful to human health or the health of biological or ecological systems.”¹⁸

Moving Beyond Lists

Lists of chemicals of concern represent a relatively simple approach to determining which substances should be avoided in product design. For product designers, the certainty and simplicity in such lists is an advantage. As previously noted, the vast majority of substances on restricted substances lists are result of regulatory requirements in some part of the world. These lists tend to be limited to chemicals have undergone some type of government assessment or have raised concern, a small part of the chemical universe. As such, developing such lists in a company or sector represents a compliance strategy and not necessarily a “green chemistry” strategy. As noted in the previous section, some firms are viewing lists as possibly constraining a more holistic approach to safer product chemistry.

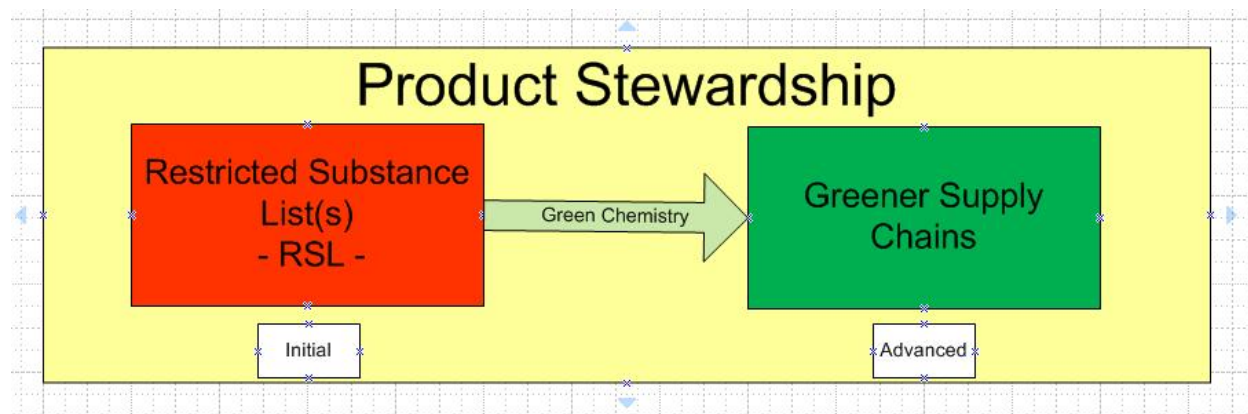
Rather than allocate resources to building lists of individual chemicals restricted for use in specific applications (which limit attention to a broader chemical universe), some companies are instead looking to institute criteria by which their chemical choices can be measured. One consumer product firm, for example, provided a list of 11 standards outlining their commitment to products that are conscious of their impact on the environment, human health, and animal suffering: vegetable derived ingredients, phosphate-free, and without volatile organic compounds are examples of these criteria. Where appropriate, the company ties their criteria to government or other reputable definitions of the standard, for example, products must be “biodegradable as defined by European Union Standard OECD 301,” and “not acutely toxic as defined by the Consumer Product Safety Commission or oral, dermal, or inhalation routes of exposure.” Given the popularity of environmentally friendly consumer products (many of which use essentially meaningless terms such as “all natural” in marketing), these types of standards which include specific language and definitions endorsed by governments allow the company to have credibility in the marketplace when compared to others.

Other firms are taking an approach to avoid chemicals with certain types of hazard properties, for example persistence and bioaccumulation or all carcinogens or reproductive toxicants. One electronics company has established specific criteria to guide materials choices, in addition to following legal concerns and market demands, including: Substances with hazardous properties that are a known threat to human health or the environment; substances with hazardous properties that show strong indications of significant risks to human health or the environment; and substances with hazardous properties that are known to biopersist and bioaccumulate in humans or the environment.

More mainstream firms seem to continue to look to government, in part, when outlining their criteria for chemical decision-making. One firm participating in this analysis outlined 5 criteria by which their firm screens their chemicals: 2 criteria were based on federal legislation; 1 based on industry assessments of chemicals; and the other 2 based on potentially problematic categories of chemicals (pesticides, brominated substances). Two other firms based their criteria on endpoints similar to what would be considered by a regulatory agency: acute toxicity, carcinogenicity, its classification as a PBT, whether or not it is a heavy metal, etc.

Despite an increasing focus on development of criteria for chemicals of concern decisions, there is little consistency across sectors or firms on how determinations should be made on which chemicals are of higher or lower concern or even the hazard/toxicity endpoints that should be used in making such determinations. While there is general agreement that substances with some properties (for example persistence and bioaccumulation) should be avoided, for the most part firms have developed their own individual schemes for chemical evaluation and prioritization. Some firms have chosen to use a hazard based approach to making determinations of acceptable/unacceptable chemicals with technological feasibility being the main determinant of whether to substitute or not, while other firms use a more risk-based approach. Within the more risk-based approach some firms undertake extensive exposure assessments while others define uses of higher concern as a surrogate for exposure.

To many leading companies, lists represent the baseline but a more effective approach to green chemistry focuses on the negative, and more importantly positive criteria in more sustainable chemicals. The following chart represents the relationship between restricted substance lists and a more green chemistry based approach.



In this context, green chemistry criteria for chemicals design can more effectively green supply chains as it not only focuses on eliminating chemicals of concern (which an RSL focus does) but rather continuous improvement towards chemistries that fulfill the 12 principles of green chemistry across uses.

The Role of Non-Government Organizations

Non-government organizations (NGOs) are also working to create a supportive environment for companies to make the changes necessary to realize their vision of sustainable supply chains. Several non-profits have developed lists of criteria for chemicals of concern or lists of preferred chemicals.

CleanGredients. CleanGredients is an online subscription-based database for the formulators of cleaning products which brings together corporate sustainability goals and broad goals for environmental and public health. The program is intended to assist firms in determining which of their current product ingredients might have environmental or human health risks, and to provide a platform for makers of more benign cleaning ingredients to promote their work.¹⁹ GreenBlue manages CleanGredients and takes care to ensure that stakeholder participation is

maximized, including representatives from industry and industry associations, and government and non-government organizations.²⁰

Green Screen for Safer Chemicals. Clean Production Action has developed a chemical evaluation system by which chemicals are assessed on their environmental and human health performance and categorized into one of four benchmarks. Through Green Screen, chemicals pass from one benchmark to the next by meeting a set of criteria specific to each benchmark. To do so, the chemical in question and its breakdown products will need to meet increasingly demanding criteria, and eventually be recognized as a safer chemical.²¹ In addition, Clean Production Action is also working to better define what constitutes a hazardous chemical; those that should be avoided because they result in one of several negative health or environmental endpoints.

Conclusions

This article explores the use of Restricted Substances Lists (or RSLs) among a small subset of firms from a number of sectors. While this analysis found more than 900 substances restricted across firms and sectors, we expect that examination of lists from firms in other sectors would identify additional, though not significantly more restricted substances. Those substances restricted tend to fall into a number of particular categories, some of which are consistent across sectors. Our analysis found that it is difficult to know how restricted chemicals are used in particular sectors or the rationale for a particular restriction.

While most restrictions listed are due to government regulations or policies, there is increasing interest among many firms in going beyond traditional lists into a broader chemicals categorization and prioritization process that focuses on higher and lower concern chemicals. While the basis for prioritization differs across firms, many have established specific criteria, such as persistence and bioaccumulation, for the types of substances they wish to avoid. Some firms have gone on to specify “positive” criteria for chemicals in products they manufacturer.

This analysis is the first of its kind examining corporate chemicals restrictions. A broader cross sectional analysis with attention to types of uses restricted, etc. would be a useful addition to this analysis. Further, comparisons of corporate chemical assessment and prioritization process would provide useful information in an attempt to establish more consistent and broadly applicable processes that can help firms move towards safer chemicals and processes.

¹ “Proposition 65,” California Office of Environmental Health Hazard Assessment website <http://www.oehha.ca.gov/prop65.html> accessed 17 Dec 2007.

² RoHS webpage, <http://www.rohs.gov.uk/>. Accessed 17 Dec 2007.

³ “Due Diligence” RoHS webpage, <http://www.rohs.gov.uk/content.aspx?id=7>. Accessed 17 Dec 2007.

⁴ International Chemical Secretariat website, “REACH SIN List 1.0”. See <http://www.sinlist.org/>

⁵ International Chemical Secretariat website, “What is On the REACH SIN List 1.0?” See http://www.chemsec.org/list/documents/081021_what_is_on_the_sin_list.pdf.

⁶ OSPAR Commission webpage, <http://www.ospar.org/eng/html/welcome.html> Accessed 17 Dec 2007.

⁷ OSPAR List of Substances of Possible Concern, <http://www.ospar.org/eng/html/welcome.html>. Accessed 17 Dec 2007.

⁸ OSPAR List of Substances of Possible Concern, <http://www.ospar.org/eng/html/welcome.html>. Accessed 17 Dec 2007.

⁹ OSPAR List of Chemicals for Priority Action, http://www.ospar.org/documents/dbase/decrecs/agreements/04-12e_List%20of%20Chemicals%20for%20Priority%20action.doc. Accessed 17 Dec 2007.

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- ¹⁰ Guide to Understanding the Environmental Protection Act, http://www.ec.gc.ca/CEPARegistry/the_act/guide04/s5.cfm Accessed 18 Dec 2007.
- ¹¹ Domestic Substance List Categorization and Screening Program, <http://www.ec.gc.ca/substances/ese/eng/dsl/dslprog.cfm>.
- ¹² Canadian Environmental Protection Act website, "Controlling Toxic Substances." http://www.ec.gc.ca/CEPARegistry/the_act/Part5_d.cfm. Accessed 17 Dec 2007.
- ¹³ Guide to Understanding the Environmental Protection Act, http://www.ec.gc.ca/CEPARegistry/the_act/guide04/s5.cfm Accessed 18 Dec 2007.
- ¹⁴ CEPA Environmental Registry, "List of Toxic Substances" http://www.ec.gc.ca/CEPARegistry/the_act/Schedules_1.cfm Accessed 18 Dec 2007
- ¹⁵ "Wal-Mart Stores, Inc. Launches Innovative Program to Inspire Use of Preferred Substances in Chemical Intensive Products." www.walmartfacts.com/articles/4556.aspx, accessed Jun. 21 2007.
- ¹⁶ Pereira, Joseph. "Wal-Mart Raises Bar on Toy-Safety Standards" *The Wall Street Journal online* 14 May 2008; p B1. Available <http://online.wsj.com/article/SB121072388800090155.html>
- ¹⁷ "Making Environmental Choices: GreenList." SC Johnson and Sons website, <http://www.scjohnson.com/community/greenlist.asp> Accessed 19 Dec 2007.
- ¹⁸ Liroff, Richard, "Benchmarking Corporate Management of Safer Chemicals in Consumer Products: A Tool for Investors with Senior Executives." *International Journal of Corporate Sustainability*, 12(1) 2005; 25-36.
- ¹⁹ "About CleanGredients" CleanGredients website <http://cleangredients.org/about> Accessed 19 Dec 2007.
- ²⁰ "Process and Organizational Model" CleanGredients website <http://cleangredients.org/about/process> Accessed 19 Dec 2007.
- ²¹ The GreenScreen for Safer Chemicals: Evaluating Flame Retardants in TV Enclosures. Clean Production Action website <http://www.cleanproduction.org/library/Green%20Screen%20Report.pdf>

CAS #	Chemical Name	Chemical Use	Type of Restriction	Restriction Driver(s)	Sectors Restricting															
					Apparel	Aerospace	Automotive	Building Products	Cleaning Products	Consumer Products	Electronics	Flooring	Personal Care/ Retail	Pharmaceuticals	Retail	Textiles				
50293	benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-		subject to total prohibition	Canada							x									
62759	dimethylnitrosamine		subject to total prohibition	Canada							x									
87683	1,3-butadiene, 1,1,2,3,4-hexachloro-		subject to total prohibition	Canada							x									
92875	(1,1'-biphenyl)-4,4'-diamine		prohibited based on concentration and use	Canada							x									
107302	methyl chloromethyl ether		subject to total prohibition	Canada							x									
118741	benzene hexachloride		prohibited based on concentration and use	Canada							x									
531851	benzidine dihydrochloride, (C12 H12 N2 2HCl)	pigment/dye/colorant	prohibited based on concentration and/or use	Canada							x									
542881	bis(chloromethyl) ether		subject to total prohibition	Canada							x									
2385855	dodecachloropentacyclo[5.2.1.02.6.03.9.05.8]decane		subject to total prohibition	Canada							x									
5956651	Firemaster Bp-6	flame retardant	subject to total prohibition	Canada							x									
94097888	4-chlorophenylcyclopropylmethanone, o-[(4-nitrophenyl)methyl]oxime		subject to total prohibition	Canada							x									
10025-91-9	antimony trichloride		restricted										x							
100-41-4	ethylbenzene	solvent	[migration solvent] restricted over 1 mg/L (toys); [inhalation solvent] restricted over 5000 ug/m3 (toys)	legislated	x															
100-42-5	styrene	thinning agent	restricted over .75 mg/L (toys); material of high concern (flooring)		x	x							x	x						
10045-94-0	mercuric nitrate		restricted										x							
100-61-8	n-methylaniline		banned over 1 mg/kg		x								x							
100-97-0	hexamethylenetetramine		black list with some exceptions																	x
10108-64-2	cadmium chloride		restricted										x							
10112-94-4	selenium selenate		restricted										x							
101-14-4	4,4'-methylene-bis(2chloroaniline)	press pad, pigment/dye/colorant	not detected in final product (apparel); restricted (electronics); no intentional use (apparel)	EU and China	x									x						
10124-36-4	cadmium sulfate		restricted											x						
10124-50-2	potassium arsenite		restricted											x						
101-55-3	bromobiphenylether	flame retardant	restricted											x						
101-68-8	diphenylmethane diisocyanate (MDI)				x															
101-77-9	4,4'-methylenedianiline (MDA)	preliminary and intermediate product of resins, adhesives, dyes, curing agents, and accelerator, hardener in paints, pigment/dye/colorant	not detected in final product (apparel); prohibited over .01% (automotive)	legally required, EU and China	x	x	x							x						
101-80-4	4,4'-oxydianiline	pigment/dye/colorant	not detected in final product (apparel); restricted (electronics)	EU and China	x									x						
1024-57-3	epoxy-heptachlorine	pesticide	not detected in final product	Swiss and Finnish regulation	x															
102-71-6	ethenol, 2,2,2-nitritoltris		black list with some exceptions																	x
102738-79-4	2-chloro-1,3-difluoropropane		restricted											x						
10294-40-3	barium chromate		restricted											x						
1030-28-2	arsenic pentoxide		restricted											x						
10361-44-1	bismuth nitrate		restricted											x						
10588-01-9	sodium dichromate		restricted											x						
106-42-3	p-xylene	solvent	[migration solvent] 2 mg/L (toys) (sum total o,m,p-xylene); [inhalation solvent] restricted over 870 ug/m3 (toys) (sum total o,m,p-xylene); material of high concern (flooring)	legislated	x															
106-44-5	p-cresol		no intentional use		x															
106-47-8	4-chloroaniline	pigment/dye/colorant	restricted (electronics), not detected in final product (apparel), not detected in final product (toys)	EU and China	x									x						
1066-30-4	chromic acetate		restricted											x						
106-93-4	ethylene dibromide (EDB)	pesticide	not detected in final product		x															
106-94-5	n-propylbromide, 1-bromopropane (NPB)					x									x					
107-06-2	1,2-dichloroethane	solvent, fuel additive	limited use (automotive); should be avoided and limited to 5ppm (pharmaceuticals)	toxic				x												
107-13-1	acrylonitrile		banned over 1 mg/kg (apparel); banned (cleaning products)		x						x									
107-21-1	ethylene glycol		black list with some exceptions																	x

CAS #	Chemical Name	Chemical Use	Type of Restriction	Restriction Driver(s)	Sectors Restricting											
					Apparel	Aerospace	Automotive	Building Products	Cleaning Products	Consumer Products	Electronics	Flooring	Personal Care/ Retail	Pharmaceuticals	Retail	Textiles
1072-35-1	lead stearate		restricted									x				
107-41-5	hexylene glycol		black list with some exceptions													x
107555-93-1	1,2,3,4,7,8-hexabromodibenzo-p-dioxin	impurities in products	unavoidable traces acceptable up to 5 ug/kg for sum of groups 4 & 5 (apparel); 5 ug/kg sum of groups 4 & 5 (apparel)	German regulation	x											
107-64-2	distearyl dimethylammonium chloride (DSDMAC)	rinsing agent	limited use				x									
108-10-1	methyl isobutyl ketone (MIBK)	solvent in paint, primer or adhesive, cleaner	on risk management list			x			x		x					
108-38-3	m-xylene	solvent	[migration solvent] 2 mg/L (toys) (sum total o,m,p-xylene); [inhalation solvent] restricted over 870 ug/m3 (toys) (sum total o,m,p-xylene); material of high concern (flooring)	legislated	x								x			
108-39-4	m-cresol		no intentional use		x											
108-45-2	n-phenylenediamine	catalyst				x						x				
108-67-8	mesitylene	solvent	restricted over 2500 ug/m3	legislated	x											
108-88-3	toluene	solvent in primers, adhesives, paints and inks, cleaner	no intentional use (apparel); [migration solvent] restricted over 2 mg/L (toys); [inhalation solvent] restricted over 260 ug/m3 (toys); material of high concern (flooring); on risk management list (cleaning products); limited use and limited to 890 ppm (pharmaceuticals)	legislated, inherently toxic	x	x			x		x	x		x		
108-94-1	cyclohexanone	solvent	[migration solvent] restricted over 46 mg/L (toys); [inhalation solvent] restricted over 136 ug/m3 (toys); limited use and limited to 3880 ppm	legislated, inherently toxic	x										x	
108-95-2	phenol	solvent in primers, adhesives and resins for nylons and plastics, molding components, paint	restricted (consumer products); no intentional use (apparel); [monomer] restricted over 15 mg/L (toys); [preservative] not detected (toys); material of high concern (flooring)	human health concerns (consumer products)	x				x			x				
109333-34-8	1,2,3,7,8-pentabromodibenzo-p-dioxin	impurities in products	unavoidable traces acceptable up to 1 ug/kg for group 4	German regulation	x											
109-86-4	2-methoxyethanol	solvent	banned over 80 mg/kg (apparel); restricted (automotive); limited use and limited to 50 ppm (pharmaceuticals)	inherently toxic	x		x								x	
110-49-6	2-methoxyethanol acetate	solvent	banned over 300 mg/kg (apparel); restricted over .06 mg/L (toys); restricted (automotive)	legislated	x		x									
110-54-3	n-hexane	solvent cleaner	no intentional use (apparel); restricted over 1800 ug/m3 (toys); limited use (automotive)	legislated	x		x									
110-80-5	2-ethoxyethanol	solvent	restricted over .06 mg/L (toys); restricted (automotive); limited in use and limited to 160 ppm (pharmaceuticals)	legislated, inherently toxic	x		x								x	
110-80-5	ethoxyethanol	solvent	banned over 80 mg/kg		x											
11096-82-5	chlorodiphenyl (Aroclor 1260)		restricted									x				
11097-69-1	Aroclor 1254		restricted									x				
110999-44-5	1,2,3,4,7,8-hexabromodibenzo-p-dioxin	impurities in products	unavoidable traces acceptable up to 5 ug/kg for sum of groups 4 & 5		x											
110999-45-6	1,2,3,6,7,8-hexabromodibenzo-p-dioxin	impurities in products	unavoidable traces acceptable up to 5 ug/kg for sum of groups 4 & 5		x											
110999-46-7	1,2,3,7,8,9-hexabromodibenzo-p-dioxin	impurities in products	unavoidable traces acceptable up to 5 ug/kg for sum of groups 4 & 5		x											
111-15-9	2-ethoxyethyl acetate	solvent	restricted over .5 mg/L (apparel); restricted (automotive); banned over 80 mg/kg (apparel)	legislated	x		x									
111-40-0	Diethylenetriamine		banned over 50 mg/kg		x											
111-42-2	diethanolamine		limited use				x									
111-46-6	diethylene glycol		black list with some exceptions													x
111512-56-2	1,1-dichloro-1,2,3,3,3-pentafluoropropane (HCFC 225eb)		restricted										x			
111-76-2	ethylene glycol ether	PWB solder mask, coatings, flux, solvent cleaner	no intentional use (apparel); on risk management list (cleaning products); black list with some exceptions (electronics); restricted		x	x			x	x	x					x
111-96-6	bis(2-methoxyethyl)ether		restricted over .5 mg/L (toys)	legislated	x											
115-25-3	perfluorocyclobutane - c-C4 F8		may not be used	EU Directive	x											
115-29-7	endosulfan (thiosulfan)	pesticide	not detected in final product		x											

CAS #	Chemical Name	Chemical Use	Type of Restriction	Restriction Driver(s)	Sectors Restricting															
					Apparel	Aerospace	Automotive	Building Products	Cleaning Products	Consumer Products	Electronics	Flooring	Personal Care/ Retail	Pharmaceuticals	Retail	Textiles				
115-32-2	dicofol	pesticide	not detected in final product		x															
115-86-6	triphenyl phosphate	flame retardant, antioxidant	not detected in final product (toys); limited use (automotive)	legislated	x	x														
116-06-3	aldicarb	pesticide	not detected in final product		x															
1163-19-5	decabromobipheylether	flame retardant	restricted over 1000 mg/kg (toys); .1% by weight (apparel)	legislated; Swedish legislation	x		x					x								
117-81-7	di(ethylhexyl) phthalate (DEHP)	PVC	banned over 1000 mg/kg total phthalate (apparel); sum total of all phthalic acid esters not detected (toys); restricted (electronics); not for use in consumer products; limited use (automotive)	legislated	x		x					x		x						
117-82-8	di(methoxyethyl)phthalate (DEMP)	PVC	limited use				x													
117-84-0	di-n-octyl phthalate (DNOP)	PVC	sum total of all phthalic acid esters not detected (toys); restricted (electronics); limited use (automotive)	legislated	x		x					x								
118685-33-9	navy blue	dye	not detected in final product (apparel); .1% by mass (apparel)	EU regulation	x															
118-74-1	hexachlorobenzene	pesticide	not detected in final product (apparel); prohibited based on concentration and/or use (consumer products)	Swiss and Finnish regulation, Canada	x						x									
118-79-6	2,4,6-tribromo-phenol	flame retardant	restricted									x								
119-15-3	disperse yellow 1	disperse dye	not detected in final product		x															
119-90-4	3,3'-dimethoxybenzidine	pigment/dye/colorant	not detected in final product (apparel); restricted (electronics); not detected in final product (toys)	EU and China	x								x							
119-93-7	3,3'-dimethylbenzidine	pigment/dye/colorant	not detected in final product (apparel); restricted (electronics); not detected in final product (toys)	EU and China	x								x							
12001-28-4	crocidolite	friction pads, gaskets, insulators	restricted (electronics); not detected in final product (apparel)	EU Directive	x	x							x							
12001-29-5	chrysotile	friction pads, gaskets, insulators	restricted (electronics); not detected in final product (apparel)	EU Directive																
1202-17-4	lead sulfate, tribasic		restricted										x							
12035-72-2	nickel subsulfide		restricted										x							
12054-48-7;																				
1111-74-9	nickel hydroxide		restricted										x							
12060-00-3	lead (II) titanate		restricted										x							
12069-00-0	lead selenide		restricted										x							
120-71-8	6-methoxy-m-toluidine	pigment/dye/colorant	restricted (electronics); not detected in final product (apparel)	EU and China	x								x							
12172-73-5	amosite (grunerite)	friction pads, gaskets, insulators	restricted (electronics); not detected in final product (apparel)	EU Directive	x	x							x							
121-75-5	malathion	pesticide	not detected in final product		x															
122223-33-5	disperse orange 37/59/76	disperse dye	not detected in final product		x															
12222-75-2	disperse blue 35	disperse dye	not detected in final product		x															
12222-97-8	disperse blue 102	disperse dye	not detected in final product		x															
12223-01-7	disperse blue 106	disperse dye	not detected in final product (apparel) (toys)	legislated; German regulation	x															
12223-33-5	disperse orange 37	disperse dye	not detected in final product (toys)	legislated	x															
12236-29-2	disperse yellow 39	disperse dye	not detected in final product		x															
12239-34-8	disperse blue 79	disperse dye	black list with some exceptions																	x
122-39-4	diphenylamine	anti-rust agent	limited use				x													
12270-46-1	disperse red 73	disperse dye	black list with some exceptions																	x
122-99-6	2-phenoxyethanol	solvent	banned over 400 mg/kg		x															
123-91-1	1,4-dioxane		black list with some exceptions																	x
123-95-5	octadecanoic acid, butyl ester		black list with some exceptions																	x
124-73-2	dibromotetrafluoroethane (Halon 2402)	fire retardant	restricted				x						x							
125997-20-8	chlorinated and brominated phosphate ester	flame retardant	restricted										x							
12640-89-0	selenium oxide		restricted										x							
126-72-7	tris (2,3-dibromopropyl) phosphate (TRIS)	flame retardant	banned over 5 mg/kg (apparel); prohibited over .01% (automotive); not detected (apparel)	legally regulated; EU Directive	x		x													
1271-28-9	nickelocene		restricted										x							

CAS #	Chemical Name	Chemical Use	Type of Restriction	Restriction Driver(s)	Sectors Restricting													
					Apparel	Aerospace	Automotive	Building Products	Cleaning Products	Consumer Products	Electronics	Flooring	Personal Care/ Retail	Pharmaceuticals	Retail	Textiles		
127-18-4	tetrachloroethene (perchloroethylene)	solvent cleaner	banned over 10 mg/kg (electronics); no intentional use (apparel); banned (cleaning products); .1% by mass (apparel); restricted (automotive)	German and Japanese regulation	x	x	x		x		x							
127-19-5	n,n-dimethylacetamide	solvent in primers, adhesives and resins	no intentional use		x													
127564-83-4	dichlorotetrafluoropropane (HCFC 234)		restricted								x							
127564-92-5; (2713-09-9)	dichloropentafluoropropane (ethyne, fluoro-) (HCFC 225)		restricted								x							
12767-79-2	Aroclor		restricted								x							
12770-50-2	beryllium-aluminum alloy		restricted								x							
128903-21-9	2,2-dichloro-1,1,1,3,3-pentafluoropropane (HCFC225aa)		restricted								x							
1302-52-9	beryl ore		restricted								x							
1303-00-0	gallium arsenide		restricted								x							
1304-56-9	beryllium oxide		restricted								x							
1304-76-3	bismuth trioxide		restricted								x							
1306-19-0	cadmium oxide		restricted								x							
1306-23-6	cadmium sulfide		restricted								x							
1309-60-0	lead (IV) oxide		restricted								x							
1309-64-4	antimony trioxide		restricted								x							
131-11-3	dimethyl phthalate	hardeners, paints	limited use															
131166-92-2	2,3,4,7,8-pentabromodibenzofuran	impurities in products	unavoidable traces acceptable up to 1 ug/kg for group 4	German regulation	x													
1313-85-5	sodium selenide		restricted								x							
1313-99-1	nickel oxide		restricted								x							
1314-41-6	lead (II, IV) oxide		restricted								x							
1314-60-9	antimony pentoxide		restricted								x							
1314-87-0	lead (II) sulfide		restricted								x							
1314-87-0	lead sulfide										x							
1317-36-8	lead (II) oxide		restricted								x							
1319-46-6	lead hydrocarbonate		restricted								x							
1319-77-3	cresol	nylon and plastic primers and resins	restricted (consumer products); no intentional use (apparel)	human health concerns	x						x							
1321-64-8	pentachlorophthalene		restricted								x							
1321-65-9	trichloronaphthalene		restricted								x							
1327-53-3	arsenic trioxide		restricted								x							
13301-61-6	disperse orange 76	disperse dye	not detected in final product (toys); not detected in final product (apparel)	legislated; German regulation	x													
1330-20-7	xylene (all isomers)	solvent in primers, adhesives, paints and inks, cleaner	no intentional use (apparel); restricted (consumer products); material of high concern (flooring); on risk management list (cleaning products); limited use and limited to 2170 ppm (pharmaceuticals)	human health concerns, carcinogen, inherently toxic	x	x			x	x	x	x			x			
1330-45-6	chlorotrifluoroethane (HCFC 133)		restricted								x							
1332-21-4	asbestos	friction pads; gaskets; insulators	intentional addition (electronics); restricted (electronics); not present (electronics); intentional addition prohibited (automotive); restricted (automotive)	legally required		x	x				x							
13327-32-7	beryllium hydroxide		restricted			x												
1333-82-0	chromium (VI) oxide		restricted			x												
1333-82-0	chromium trioxide		restricted			x												
1335-88-2	tetrachloronaphthalene		restricted			x												
1336-36-3	polychlorinated biphenyls (PCBs)	insulation oil, lubricant oil, electrical insulation medium, solvent, electrolytic solution	intentional addition (electronics); restricted (electronics); 5 ppm (electronics); prohibited over .01% (automotive); restricted (automotive); banned over 1 mg/kg (apparel); not detected in final product (apparel)	legally required, Swiss and Finnish regulation	x	x	x					x						
134190-48-0	pentachlorofluoropropane (HCFC 231)		restricted									x						
134190-49-1	tetrachlorofluoropropane (HCFC 241)		restricted									x						

CAS #	Chemical Name	Chemical Use	Type of Restriction	Restriction Driver(s)	Sectors Restricting												
					Apparel	Aerospace	Automotive	Building Products	Cleaning Products	Consumer Products	Electronics	Flooring	Personal Care/Retail	Pharmaceuticals	Retail	Textiles	
134190-50-4	chlorotetrafluoropropane (HCFC 244)		restricted									x					
134190-51-5	trichlorofluoropropane (HCFC 251)		restricted									x					
134190-52-6	dichlorodifluoropropane (HCFC 252)		restricted									x					
134190-53-7	chlorodifluoropropane (HCFC 262)		restricted									x					
134190-54-8	chlorofluoropropane (HCFC 271)		restricted									x					
134237-31-3	pentachlorotrifluoropropane (CFC 213)		restricted									xx					
134237-32-4	tetrachlorofluoroethane (HCFC 121)		restricted									x					
134237-35-7	hexachlorofluoropropane (HCFC 221)		restricted									x					
134237-36-8	pentachlorodifluoropropane (HCFC 222)		restricted									x					
134237-37-9	tetrachlorotrifluoropropane (HCFC 223)		restricted									x					
134237-38-0	trichlorotetrafluoropropane (HCFC 224)		restricted									x					
134237-39-1	tetrachlorodifluoropropane (HCFC 232)		restricted									x					
134237-40-4	trichlorotrifluoropropane (HCFC 233)		restricted									x					
134237-41-5	chloropentafluoropropane (HCFC 235)		restricted									x					
134237-42-6	trichlorodifluoropropane (HCFC 242)		restricted									x					
134237-43-7	dichlorotrifluoropropane (HCFC 243)		restricted									x					
134237-44-8	chlorotrifluoropropane (HCFC 253)		restricted									x					
134237-45-9	dichlorofluoropropane (HCFC 261)		restricted									x					
134308-72-8	chlorohexafluoropropane (HCFC 226)		restricted									x					
1344-36-1	lead hydroxidecarbonate		restricted									x					
1344-48-5	mercuric sulfide		restricted									x					
1345401-87-5	heptachlorofluoropropane (CFC 211)		restricted									x					
13463-39-3	nickel carbonyl		restricted									x					
13474-88-9	1,1-dichloro-1,2,2,3,3-pentafluoropropane (HCFC 225cc)		restricted									x					
13510-49-1	beryllium sulfate		restricted									x					
135229-48-0	brominated epoxy resin end capped with tribromophenol	flame retardant	restricted									x					
13530-65-9	zinc chromate	pigment	restricted (electronics); limited use (automotive)				x					x					
135-88-6	phenyl-b-naphthylamine	antioxidant	restricted				x										
13598-15-7	beryllium phosphate		restricted									x					
136013-79-1	1,3-dichloro-1,1,2,2,3,3-pentafluoropropane (HCFC 225ea)		restricted									x					
13654-09-6	decabromobiphenyl	flame retardant	restricted									x					
137-17-7	2,4,5-trimethylaniline	pigment/dye/colorant	not detected in final product (apparel); restricted (electronics)	EU and China			x										x
137-26-8	thiram (TMTD)	paint, cleaning agents	limited use														
13765-19-0	calcium chromate		restricted														x
138495-42-8	HFC-41-10mee - C5 H2 F10		may not be used	EU Directive			x										
139638-58-7	brominated epoxy resin end capped with tribromophenol	flame retardant	restricted														x
139-65-1	4,4'-thiodianiline	pigment/dye/colorant	not detected in final product (apparel); restricted (electronics)														x
140-88-5	ethyl acrylate		banned over 10 mg/kg														x

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					Apparel	Aerospace	Automotive	Building Products	Cleaning Products	Consumer Products	Electronics	Flooring	Personal Care/ Retail	Pharmaceuticals	Retail	Textiles		
141-32-2	butyl acrylate		banned over 50 mg/kg		x													
141-43-5	2-Aminoethanol		banned over 1000 mg/kg		x													
14275-57-1	bis(tributyltin) maleate		restricted															
143-50-0	kepone (chlordecone)	pesticide	not detected in final product	Swiss and Finnish regulation	x													
1461-22-9	tributyltin chloride		restricted															
1461-23-0	tributyltin bromide		restricted															
1461-25-2	tetrabutyltin (TeBT)		chemical of concern	OSPAR	x													
149-44-0	sodium formaldehyde sulfoxylated		black list with some exceptions															x
1511-62-2	bromodifluoromethane and isomers (HBFCs)		restricted															
15432-85-6	sodium antimoniite		restricted															
1570-64-5	chlorocresol (ortho-)	cutting fluids	limited use															
15739-80-7	lead sulfate, sulphuric acid, lead salt		restricted															
1589-47-5	2-methoxypropanol	solvent	banned over 1,000 mg/kg (apparel); limited use (automotive)		x													
1599-41-3	trichloropentafluoropropane (CFC 215)		restricted															
1649-08-7	1,2-dichloro-1,1-difluoroethane (HCFC 132b)		restricted															
1694-09-03	acid violet 49	dye	not detected in final product (toys)	legislated	x													
171091-06-8	dibromo-styrene grafted p p	flame retardant	restricted															
1717-00-6	1,1-dichloro-1-fluoroethane (HCFC-141b)		restricted; on both restricted and limited use lists depending on application (automotive)															
1717-00-6; (25167-88-8)	dichlorofluoroethane (HCFC 141)	cooling agent, blowing agent, solvent	restricted															
1746-01-6	2,3,7,8-tetrachlorodibenzo-p-dioxin	impurities in products	unavoidable traces acceptable up to 1 ug/kg;	German regulation	x													
1803-12-9	triphenyltin N,N'-dimethyldithiocarbonate		restricted															
1842-05-3	1,1-dichloro-1,2-difluoroethane (HCFC 132c)		restricted															
18540-29-9	hexavalent chromium/hexavalent chromium compounds	absorption refrigerators in motorcaravans; anti-corrosion coatings for metal parts; chromium pigments; residues from dyeing and leather tanning; ink; catalyst; adhesion enhancement; anodizing, primers, surface treatment	above 1000 ppm or intentional addition (electronics); not present in metal applications, 1000 ppm in non-metallic applications (electronics); prohibited over .01% (automotive); not detected (apparel); limited use (automotive); not detected in natural leather; not detected in metal parts (apparel)	RoHS compliance; legally required; German regulation	x	x												
1901-42-5	paraquat	pesticide	not detected in final product		x													
19186-97-1	tris(tribromo-neopentyl) phosphate	flame retardant	restricted															
1937-37-7	direct black	dye	not detected in final product		x													
19408-74-3	1,2,3,7,8,9-hexachlorodibenzo-p-dioxin	impurities in products	unavoidable traces acceptable up to 5 ug/kg for sum of groups 1 & 2	German regulation	x													
1983-10-4	tributyltin fluoride		restricted															
2050-47-7	dibromobiphenylether	flame retardant	restricted															
2052-07-5	2-bromobiphenyl	flame retardant	restricted															
20566-35-2	2-hydroxyl-propyl-2-(2-hydroxyl-ethoxy)-ethyl-TBP	flame retardant	restricted															
2113-57-7	3-bromobiphenyl	flame retardant	restricted															
2155-70-6	tributyltin methacrylate		restricted															
21850-44-2	TBBA-(2,3-dibromo-propyl-ether)	flame retardant	restricted															
21908-53-2	mercuric (II) oxide		restricted															
2234-13-1	octachlorophthalene		restricted															
2268-46-4	1,1,1,3-tetrachlorotetrafluoropropane		restricted															
23355-64-8	disperse brown 1	disperse dye	not detected in final product		x													
23355-68-3	brown 1		black list with some exceptions															
2354-06-5	pentachlorotrifluoropropane (CFC 213)		restricted															
2385-85-5	mirex	pesticide	not detected in final product (apparel); subject to total prohibition (consumer products)	Finnish regulation, Canada	x													
2475-45-8	disperse blue 1	disperse dye	not detected in final product (apparel) (toys)	legislated, EU and China	x													
2475-46-9	disperse blue 3	disperse dye	not detected in final product (apparel) (toys)	legislated	x													

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					Apparel	Aerospace	Automotive	Building Products	Cleaning Products	Consumer Products	Electronics	Flooring	Personal Care/ Retail	Pharmaceuticals	Retail	Textiles	
25154-52-3 (84852-15-3)	nonylphenol	used ethoxylated	chemical of concern (apparel); restricted (automotive)	European Union	x		x										
25167-83-3	tetrachlorophenol (TeCP), salts and compounds of TeCP	pesticide	not detected in final product	Swiss and Finnish regulation	x												
25322-68-3	polyethylene glycol		black list with some exceptions														x
25327-89-3	TBBA-bis -(allyl-ether)	flame retardant	restricted										x				
25357-79-3	TBPA Na salt	flame retardant	restricted										x				
25496-72-4	9-octadecenoic acid (9Z), monoester with 1,2,3-popanetriol		black list with some exceptions														x
25497-29-4	1-chloro-1,2-difluoroethane (HCFC 142a)		restricted										x				
2551-62-4	sulphur hexafluoride - SF6	tire inflation systems	may not be used	EU Directive	x												
2581-69-3	disperse orange 1	disperse dye	not detected in final product		x												
25915-78-0	dichlorodifluoroethane (HCFC 132)		restricted										x				
2602-46-2	direct blue	dye	not detected in final product		x												
26040-51-7	bis(2-ethylhexyl)tetrabromo-phthalate	flame retardant	restricted										x				
26140-60-3	Terphenyls		restricted										x				
26172-55-4	sensitizing isothiazolinones	biocide, aqueous solutions	50 mg/kg (apparel); limited use (automotive); 15 mg/kg sum total (toys)	legislated	x		x										
2634-33-5	1,2 benzisothiazolin-3-one	preservative	black list with some exceptions (textiles); not detected in final product (toys)	legislated	x												x
26377-33-3	disperse blue 301	disperse dye	black list with some exceptions														x
26530-20-1	sensitizing isothiazolinones	biocide	50 mg/kg		x												
26761-40-0;																	
68515-49-1	di-iso-decyl phthalate (DIDP)	plasticizer	sum total of all phthalic acid esters not detected (toys); restricted (electronics)	legislated	x								x				
26762-91-4	tribromo-phenyl-allyl-ether, unspecified	flame retardant	restricted										x				
2682-20-4	sensitizing isothiazolinones	biocide, cutting fluids	50 mg/kg (apparel); limited use (automotive); 15 mg/kg sum total (toys)	legislated	x		x										
27152-57-4	calcium arsenite		restricted										x				
27154-33-2;																	
(134237-34-6)	trichlorofluoromethane (HCFC 131)		restricted										x				
27193-28-8	octaphenol	used ethoxylated	chemical of concern (apparel); restricted (automotive)	European Union	x												
27323-18-8	Kanechlor 500		restricted										x				
27753-52-2	nonabromobiphenyl	flame retardant											x				
2778-42-9	tetramethylxylene diisocyanate (TMXDI)				x												
2795-39-3	perfluorooctane sulfonate (PFOS)		banned over 1 mg/kg (apparel); banned (cleaning products)		x				x								
2832-40-8	disperse yellow 3	disperse dye	not detected in final product (apparel) (toys)	legislated; German regulation	x												
2837-89-0	2-chloro-1,1,1,2-tetrafluoroethane		restricted										x				
28553-12-0	disperse blue 301	disperse dye	black list with some exceptions														x
28553-12-0;																	
68515-48-0	di-iso-nonyl phthalate (DINP)	plasticizer	banned over 1000 mg/kg total phthalate (apparel); sum total of all phthalic acid esters not detected (toys); restricted (electronics)	legislated	x								x				
2872-48-2	disperse red 11	disperse dye	not detected in final product		x												
2872-52-8	disperse red 1	disperse dye	not detected in final product (apparel) (toys)	legislated; German regulation	x												
28906-13-0	TBBA carbonate oligomer	flame retardant	restricted										x				
29255-31-0	tetrachlorotetrafluoropropane (CFC 214)		restricted										x				
297-78-9	telodrin	pesticide	not detected in final product	Swiss and Finnish regulation	x												
298-00-0	methyl parathion	pesticide	not detected in final product		x												
301-04-2	lead acetate		restricted										x				
302-01-2	hydrazine	propellant					x										
30496-13-0	TBBA, unspecified	flame retardant	restricted										x				
3064-70-8	methane, sulfonylbis...		black list with some exceptions														x
306-83-2	2,2-dichloro-1,1,1-trifluoroethane		restricted										x				
309-00-2	aldrin	pesticide	not detected in final product	Swiss and Finnish regulation	x												
3090-36-6	tributyltin laurate		restricted										x				
31454-48-5	tetrabromo-chyclo-octane	flame retardant	restricted										x				
31482-56-1	disperse orange 25	disperse dye	black list with some exceptions														x
31732-71-5	bis(tributyltin)2,3-dibromosuccinate		restricted										x				
31780-26-4	poly-dibromo-styrene	flame retardant	restricted										x				
3179-89-3	disperse red 17	disperse dye	not detected in final product		x												
3179-90-6	disperse blue 7	disperse dye	not detected in final product		x												
3182-26-1	hexachlorodifluoropropane (CFC 212)		restricted										x				
3194-55-6	hexabromocyclododecane (HBCCD), unspecified	flame retardant	restricted										x				
3234-02-4	2,3-dibromo-2-butene-1,4-diol	flame retardant	restricted										x				

CAS #	Chemical Name	Chemical Use	Type of Restriction	Restriction Driver(s)	Sectors Restricting																
					Apparel	Aerospace	Automotive	Building Products	Cleaning Products	Consumer Products	Electronics	Flooring	Personal Care/ Retail	Pharmaceuticals	Retail	Textiles					
32534-81-9	pentabromobiphenyl ether	flame retardant	banned over 50 mg/kg (apparel); restricted (electronics); restricted (automotive); restricted over 1000 mg/kg (toys); prohibited over .01% (automotive); may not be used (apparel)	legislated, legally regulated, EU Directive	x		x														
32536-52-0	octabromodiphenyl ether (OctaBDE)	flame retardant	restricted over 1000 mg/kg (toys); prohibited over .01% (automotive); may not be used (apparel); restricted (automotive)	legislated; legally regulated; EU Directive	x		x							x							
32588-76-4	N, N'-ethylen-bis(tetrabromo-phthalimide)	flame retardant	restricted											x							
3268-87-9	1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin	impurities in products	unavoidable traces acceptable up to 100 ug/kg for sum of groups 1, 2, and 3	German regulation	x																
3278-89-5	2,4,6-tribromo-phenyl-allil-ether	flame retardant	restricted																		x
32844-27-2	TBBA-bisphenol A-phosgene polymer	flame retardant	restricted																		
3296-90-0	dibromo-neopentyl-glycol	flame retardant	restricted																		
3322-93-8	1,2-dibromo-4-(1,2-dibromo-methyl)-cyclo-hexane	flame retardant	restricted																		x
3333-67-3	nickel carbonate		restricted																		x
33631-63-9	mercuric chloride		restricted																		x
3380-34-5	triclosan		restricted (consumer products); chemical of concern (apparel); on risk management list (cleaning products); prohibited for use in plastic articles and clothing but used in cosmetics (personal care products/retail); not used (retail)	human health concerns; OSPAR	x																x
338-75-0	2,3-dichloro-1,1,1-trifluoropropane		restricted																		x
34077-87-7	dichlorotrifluoroethane (HCFC 123)		restricted																		x
3424-82-6	o,p-dichlorodiphenyldichloroethylene (o,p-DDE)	pesticide	not detected in final product		x																
34375-28-5	2(hydroxymethyl)aminoethanol		black list with some exceptions																		
353-59-3	bromochlorodifluoromethane (Halon 1211)	fire retardant	restricted				x														x
354-11-0	1,1,1,2-tetrachloro-2-fluoroethane (HCFC 121a)		restricted																		
354-14-3	1,1,2,2-tetrachloro-1-fluoroethane		restricted																		
354-21-2	1,2,2-trichloro-1,1-difluoroethane		restricted																		
354-23-4	1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a)		restricted																		
354-25-6	1-chloro-1,1,2,2-tetrafluoroethane (HCFC 124a)		restricted (electronics); may not be used (apparel)	EU Directive	x																x
354-56-3	pentachlorofluoroethane (CFC 111)		restricted																		
354-58-5	trichlorotrifluoroethane (CFC 113)		restricted																		
355-25-9	perfluorobutane - C4 F10		may not be used	EU Directive	x																
355-42-0	perfluorohexane - C6 F14		may not be used	EU Directive	x																
35822-46-9	1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin	impurities in products	unavoidable traces acceptable up to 100 ug/kg for sum of groups 1, 2, and 3	German regulation	x																
359-28-4	1-fluoro-1,2,2-trichloroethane		restricted																		
359-35-3	HFC-134 - C2 H2 F4		may not be used	EU Directive	x																
3618-73-3	disperse blue 79 methoxy	disperse dye	black list with some exceptions																		
36355-01-8	hexabromo-1,1'-biphenyl	flame retardant	restricted																		x
36483-57-5	tribromo-neopentyl-alcohol	flame retardant	restricted																		x
36483-60-0	hexabromobiphenylether	flame retardant	restricted																		x
3687-31-8	lead arsenate		restricted																		x
373-02-4	nickel acetate		restricted																		x
3761-53-3	acid red 26	dye	not detected in final product (apparel) (toys)	legislated	x																
37853-59-1	1,2-bis(2,4,6-tribromo-phenoxy) ethane	flame retardant	restricted																		x
37853-61-5	TBBA-dimethyl-ether	flame retardant	restricted																		x
379-52-2	triphenyltin fluoride		restricted																		x
3825-26-1	perfluorooctanoic acid, ammonium salt (PFOA)		banned over 1 mg/kg		x																
38521-51-6	pentabromo-benzyl bromide	flame retardant	restricted																		x
3860-63-7	disperse blue 26	disperse dye	not detected in final product		x																
39001-02-0	1,2,3,4,6,7,8,9-octachlorodibenzofuran	impurities in products	unavoidable traces acceptable up to 100 ug/kg for sum of groups 1, 2, and 3	German regulation	x																
39227-28-6	1,2,3,4,7,8-hexachlorodibenzo-p-dioxin	impurities in products	unavoidable traces acceptable up to 5 ug/kg for sum of groups 1 & 2	German regulation	x																
39635-79-5	tetrabromo-bisphenol S	flame retardant	restricted																		x
40039-93-8	TBBA-epichlorhydrin oligomer	flame retardant	restricted																		x
40088-45-7	tetrabromobiphenyl	flame retardant	restricted																		x
40088-47-9	tetrabromobiphenylether	flame retardant	restricted																		x
40321-76-4	1,2,3,7,8-pentachlorodibenzo-p-dioxin	impurities in products	unavoidable traces acceptable up to 1 ug/kg	German regulation	x																
406-58-6	HFC-36mfc - CF3 CH2 CF2 CH3		may not be used	EU Directive	x																
4080-31-3	1-(3-chloroallyl)-3,5,7-triaza-1-azonia-adamantene chloride		black list with some exceptions																		

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4098-71-9	isophorone diisocyanate (IPDI)																	
4162-45-2	TBBA bis(2-hydroxy-ethyl-ether)	flame retardant	restricted		x													
41834-16-6	trichlorodifluoroethane (HCFC 122)		restricted															
420-44-0	2-chloro-2-fluoropropane		restricted															
420-46-2	HFC-143 - C2 H3 F3		may not be used	EU Directive	x													
422-44-6	1,2-dichloro-1,1,2,3,3-pentafluoropropane (HCFC 225bb)		restricted															
422-48-0	2,3 -dichloro-1,1,1,2,3-pentafluoropropane (HCFC 225ba)		restricted															
422-56-0	3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC 225ca)		restricted															
422-78-6	heptachlorofluoropropane (CFC 211)		restricted															
422-86-6	monochloroheptafluoropropane (CFC 217)		restricted															
4234-79-1	kelevan	pesticide	not detected in final product	Swiss and Finnish regulation	x													
4259-43-2	1,1,1-trichloropentafluoropropane		restricted															
42757-55-1	TBBS-bis-(2,3-dibromo-propyl-ether)	flame retardant	restricted															
430-57-9	1,2-dichloro-1-fluoroethane		restricted															
431-06-1	1,2-dichloro-1,2-difluoroethane		restricted															
431-63-0	HFC-236ea - CHF2 CHF2CF3		may not be used	EU Directive	x													
431-86-7	1,2-dichloro-1,1,3,3,3-pentafluoropropane (HCFC 225da)		restricted															
431-89-0	HFC-227ea - C3 HF7		may not be used	EU Directive	x													
4342-36-3	tributyltin benzoate		black list with some exceptions															x
460-35-5	3-chloro-1,1,1-trifluoroethane (HCFC 253fb)		restricted															
460-69-5	3,3-dichloro-1,1,1-trifluoroethane		restricted															
460-73-1	HFC-245fa - CHF2 CH2 CF3		may not be used	EU Directive	x													
460-92-4	1-chloro-1,1,3,3,3-pentafluoropropane		restricted															
465-73-6	isodrin	pesticide	not detected in final product	Swiss and Finnish regulation	x													
470-46-6	HFC-143a - C2 H3 F3		may not be used	EU Directive	x													
471-43-2	1,1-dichloro-2,2-difluoroethane		restricted															
47672-31-1	triphenyltin fatty acid salts (C=9-11)		restricted															
4782-29-0	bis(tributyltin) phthalate		restricted															
49690-63-3	tris(2,4-dibromo-phenyl) phosphate	flame retardant	restricted															
49690-94-0	tribromobiphenyl ether	flame retardant	restricted															
50-00-0	formaldehyde	solvent cleaner, anti-shrinkage resin, mold inhibitor	banned over 20 mg/kg (kids); over 75 mg/kg (adults); over 30 mg/kg (leather products for kids); over 150 mg/kg (leather products for adults); must be below .05 absorbency limit (baby products intended for Japanese market); not used except when alternatives aren't available but still may be naturally occurring (wood products); restricted (consumer products); no intentional use (apparel); [monomer] restricted over 2.5 mg/L (toys); [preservative] restricted over 500 mg/kg (toys); material of high concern (flooring); 5 ppm (electronics); on risk management list (cleaning products)	carcinogen (consumer products)	x	x			x	x	x	x						
50-29-3	p,p-dichlorodiphenyltrichloroethane (p,p-DDT)	pesticide	not detected in final product (apparel); subject to total prohibition (consumer products)	Swiss and Finnish regulation, Canada	x													
50-29-4	DDT	pesticide	subject to total prohibition	Canada														
50-29-5	DDT (1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane)	pesticide	subject to total prohibition	Canada														
50-29-6	DDT (dichlorodiphenyltrichloroethane)	pesticide	subject to total prohibition	Canada														
50-29-7	dichlorodiphenyltrichloroethane (DDT)	pesticide	subject to total prohibition	Canada														
50-29-8	clofenotane	pesticide	subject to total prohibition	Canada														
50585-41-6	2,3,7,8-tetrabromodibenzo-p-dioxin	impurities in products	unavoidable traces acceptable up to 1 ug/kg for group 4	German regulation	x													
506-64-9	cyanide compounds	plating				x												
507-55-1	1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC 225cb)		restricted															
51207-31-9	2,3,4,7,8-pentachlorodibenzofuran	impurities in products	unavoidable traces acceptable up to 1 ug/kg	German regulation	x													
52315-07-8	cypermethrin	preservative	not detected in final product (toys)	legislated	x													
52434-90-9	tris-(2,3-dibromo-propyl)-isocyanurate	flame retardant	restricted															
52645-53-1	permethrin	preservative	not detected in final product (toys)	legislated	x													
52697-38-3	disperse violet 93:1	disperse dye	black list with some exceptions															
52697-38-8	disperse violet 93:1	disperse dye	black list with some exceptions															
52907-07-0	ethylene-bis(5,6-dibromo-norborene-2,3-dicarboximide)	flame retardant	restricted															
52918-63-5	deltamethrin	preservative	not detected in final product (toys)	legislated	x													
53-19-0	o,p-dichlorodiphenyldichloroethane (o,p-DDD)	pesticide	not detected in final product		x													

CAS #	Chemical Name	Chemical Use	Type of Restriction	Restriction Driver(s)	Sectors Restricting																
					Apparel	Aerospace	Automotive	Building Products	Cleaning Products	Consumer Products	Electronics	Flooring	Personal Care/Retail	Pharmaceuticals	Retail	Textiles					
53469-21-9	polychlorinated biphenyl (PCB)	insulation fluid in electrical systems, switch boards, transformers, and condensers; in wood and paper impregnation as a softening agent.	banned over 1 mg/kg (apparel); not used as a direct ingredient (personal care products/retail)	Food quality regulations	x												x				
537-58-0	direct red 28	dye	not detected in final product		x																
5412-25-9	bis (2,3-dibromopropyl) phosphate		banned over 5 mg/kg; not detected	Japanese regulation	x																
5455-55-1	tris (1-aziridinyl)-phosphine oxide (TEPA)	flame retardant	banned over 5 mg/kg (apparel); prohibited over .01% (automotive); not detected (apparel)	legally regulated; EU Directive	x		x														
54824-37-2	disperse yellow 49	disperse dye	not detected in final product		x																
548-62-9	basic violet 3	dye	not detected in final product (toys)	legislated	x																
55481-60-2	bis(methyl)tetrabromo-phthalate	flame retardant	restricted										x								
55673-89-7	1,2,3,4,7,8,9-heptachlordibenzofuran	impurities in products	unavoidable traces acceptable up to 100 ug/kg for sum of groups 1, 2, and 3	German regulation	x																
55965-84-9	kathon CG	paints	limited use				x														
56-18-8	dipropylene triamine		banned over 50 mg/kg		x																
56-23-5	carbon tetrachloride (tetrachloromethane)	cleaner, solvent	restricted (electronics); prohibited over .01% (automotive); .1% by mass (apparel); restricted (automotive)	German and Japanese regulation										x							
563-04-2	tri-m-cresyl phosphate	plasticizer	not detected in final product (toys)	legislated	x																
56307-79-0	pentabromobiphenyl	flame retardant																		x	
56-35-9	bis(tri-n-butyltin) oxide		restricted																	x	
56-35-9	tributyltin oxide		restricted (electronics); banned (cleaning products)									x									
56-36-0	tributyltin acetate		restricted																	x	
56-38-2	parathion	pesticide	not detected in final product		x																
56523-76-6;	disperse blue 35	disperse dye	not detected in final product	German regulation	x																
56524-76-6																					
56573-85-4	tributyl tin (TBT)	stabilizer, antioxidant, antibacterial and antifungal agents, antifoulant, antiseptic, paint, pigment, ant staining	intentional addition; not detected in final product (Japanese apparel market only); 5 ppm (electronics); banned in dyeing and finishing, not used but may be present as trace contaminants (retail)	Japanese law	x																x
569-61-9	basic red	dye	not detected in final product (apparel) (toys)	legislated	x																
57117-41-6	1,2,3,7,8-pentachlorodibenzofuran	impurities in products	unavoidable traces acceptable up to 5 ug/kg for sum of groups 1 & 2	German regulation	x																
57117-44-9	1,2,3,6,7,8-hexachlorodibenzofuran	impurities in products	unavoidable traces acceptable up to 5 ug/kg for sum of groups 1 & 2	German regulation	x																
57137-10-7	poly tribromo-styrene	flame retardant	restricted																	x	
57648-21-2	timiperone (DTTB)	pesticide	not detected in final product		x																
57653-85-7	1,2,3,6,7,8-hexachlorodibenzo-p-dioxin	impurities in products	unavoidable traces acceptable up to 5 ug/kg for sum of groups 1 & 2	German regulation	x																
57-74-9	chlordanes	pesticide	not detected in final product	Swiss and Finnish regulation	x																
58213-06-2	poly[oxy(methyl-1,2-ethanediyl)]....triammonium salt		black list with some exceptions																		x
584-84-9	2,4-toluene diisocyanate	activator in some polyurethane foams, foaming agent, PUR foams, adhesives	no intentional use, restricted (automotive)		x	x	x														
58-89-8	lindane	preservative	not detected in final product (toys) (apparel)	legislated, Swiss and Finnish regulation	x																
58965-66-5	tetra-decabromo-diphenoxy-benzene	flame retardant	restricted																	x	
59080-40-9	hexabromobiphenyl	flame retardant	restricted																	x	
593-53-3	HFC-41 - CH3F		may not be used	EU Directive	x																
593-60-2	vinylbromide	flame retardant	restricted																	x	
593-70-4	chlorofluoromethane (HCFC 31)		restricted																	x	
593-79-3	dimethyl selenide		restricted																	x	
59447-55-1	pentabromo-benzyl-acrylate, monomer	flame retardant	restricted																	x	
59447-57-3	pentabromo-benzyl-acrylate, polymer	flame retardant	restricted																	x	
59-50-7	chlorocresol (meta-)	lubricants, paints	limited use				x														

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					Apparel	Aerospace	Automotive	Building Products	Cleaning Products	Consumer Products	Electronics	Flooring	Personal Care/ Retail	Pharmaceuticals	Retail	Textiles		
59536-65-1	polybrominated biphenyls (PBBs)	flame retardant	above 1000 ppm or intentional addition (electronics); prohibited over .01% depending on individual substance (automotive); banned over 50 mg/kg (apparel); restricted (electronics); may not be used (apparel); subject to total prohibition (consumer products); restricted (automotive)	legally required, EU Directive, Canada	x	x	x				x	x						
59789-51-4	brominated trimethylphenyl-lindane	flame retardant	restricted									x						
598-63-0	lead (II) carbonate		restricted									x						
5989-27-5	cyclohexane, 1-methyl-4-(methylethenyl)-(4R)		black list with some exceptions															x
60-00-4	(ethylenedinitrilo) tetraacetic acid (EDTA)		black list with some exceptions (textiles); restricted (consumer products); on risk management list (cleaning products)	aquatic toxin					x	x								x
60-09-3	4-amino azobenzene	pigment/dye/colorant	not detected in final product (apparel); restricted (electronics); not detected in final product (toys)	EU and China	x							x						
60-11-7	solvent yellow 2	pigment/dye/colorant	not detected in final product (toys); not detected in final product (apparel)		x													
60-57-1	dieldrin	pesticide	not detected in final product	Swiss and Finnish regulation	x													
6080-56-4	lead (II) acetate, trihydrate		restricted									x						
60851-34-5	2,3,4,6,7,8-hexachlorodibenzofuran	impurities in products	unavoidable traces acceptable up to 5 ug/kg for sum of groups 1 & 2	German regulation	x													
608-71-9	pentabromo-phenol	flame retardant	restricted									x						
608-73-1	hexachlorocyclohexane (HCH), all isomers including alpha, beta, delta, epsilon and gamma (lindane)	pesticide	not detected in final product (except lindane in medical products)	Swiss and Finnish regulation	x													
61288-13-9	octabromobiphenyl	flame retardant	restricted									x						
61368-34-1	tribromo-styrene	flame retardant	restricted									x						
615-05-4	4-methoxy-m-phenylenediamine	pigment/dye/colorant	restricted (electronics); not detected in final product (apparel)	EU and China	x							x						
615-58-7	2,4-dibromo-phenol	flame retardant	restricted									x						
6164-98-3	chlordimeform	pesticide	not detected in final product		x													
61789-80-8	dihydrogenated tallow dimethyl ammonium chloride (DHTDMAC)	softener	limited use				x											
61951-51-7	disperse blue 124	disperse dye	not detected in final product (apparel) (toys)	legislated; German regulation	x													
62-53-3	aniline		not detected in final product (toys)	legislated	x							x						
62-56-6	thiourea or thiocarbamide	rubbers and plastics	banned over 10 mg/kg (apparel); restricted (automotive)		x		x											
630-20-6	1,1,1,2-tetrachloroethane		.1% by mass (apparel)	German and Japanese regulation	x							x						
632-79-1	tetrabromo phthalic-anhydride	flame retardant	restricted									x						
632-99-5	basic violet 14	dye	not detected in final product (apparel) (toys)	legislated	x													
63449-39-8	chlorinated paraffins		banned over 1 mg/kg (apparel); 1000 ppm (electronics)		x							x						
6373-73-5	disperse yellow 9	disperse dye	not detected in final product		x													
63936-56-1	nonabromobiphenylether	flame retardant	restricted				x					x						
63938-10-3	chlorotetrafluoroethane (HCFC 124)		restricted									x						
639-58-7	triphenyltin chloride		restricted									x						
64-17-5	ethyl alcohol	hand wipe					x											
6454-35-9	bis(tributyltin) fumarate		restricted				x											
64742-46-7	paraffin oil		black list with some exceptions															x
64742-56-9	mineral oil, etc.		black list with some exceptions															x
64748-46-7	mineral oil		black list with some exceptions															x
6517-25-5	tributyltin sulfamate		restricted									x						
661-97-2	dichlorohexafluoropropane (CFC 216)		restricted									x						
668-34-8	triphenyl tin (TPT)	stabilizer, antioxidant, antibacterial and antifungal agents, antifoulant, antiseptic, paint, pigment, ant staining	intentional addition (electronics); not detected in final product (Japanese apparel market only); restricted (electronics); not detected (apparel)	Japanese law	x							x						
67-56-1	methanol	solvent, hand wipe	restricted over 5 mg/L (toys); limited use and limited to 3000 ppm (pharmaceuticals); black list with exceptions (textiles)	legislated, inherently toxic	x	x											x	x

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67562-39-4	1,2,3,4,6,7,8-heptachlorodibenzofuran	impurities in products	unavoidable traces acceptable up to 100 ug/kg for sum of groups 1, 2, and 3	German regulation	x																
67-66-3	trichloromethane (chloroform)	solvent cleaner	no intentional use (apparel); .1% by mass (apparel); limited use (automotive)	German and Japanese regulation	x	x	x						x								
67674-22-0	disperse blue 291 part 2	disperse dye	black list with some exceptions																		x
67-68-5	dimethylsulfoxide	solvent cleaner	no intentional use (apparel); limited use (pharmaceuticals)	no long term toxicity or carcinogenicity data	x																x
67774-32-7	Firemaster FF-1	flame retardant	restricted										x								
67-8-26-2	perfluoropentane - C5 F12		may not be used	EU Directive	x																
67933-57-7	2,3,7,8-tetrabromodibenzofuran	impurities in products	unavoidable traces acceptable up to 1 ug/kg for group 4	German regulation	x																
679-85-6	3-chloro-1,1,2,2-tetrafluoropropane		restricted										x								
679-86-7	HFC-245ca - C3 H3 F5		may not be used	EU Directive	x																
68-12-2	dimethyl formamide	electrical contact cleaners, solvent cleaner	no intentional use; banned over 2000 mg/kg (apparel)		x	x															
68359-37-5	cyfluthrin	preservative	not detected in final product (toys)	legislated	x																
68411-30-3	sodium alkylbenzene sulfonate		black list with some exceptions																		x
68441-46-3	1,3-butadiene homopolymer, brominated	flame retardant	restricted										x								
68441-83-8	formaldehyde, polymer with 1-phenylethanone, hydrated		black list with some exceptions																		x
68783-78-8	dimethyl ditallow ammonium chloride (DTDMAC)	vehicle care products	limited use				x														
68928-80-3	heptabromobiphenylether	flame retardant	restricted										x								
68955-41-9	bromo-/chloro-paraffins	flame retardant	restricted										x								
690-39-1	HFC-236fa - C3 H2 F6		may not be used	EU Directive	x																
69882-11-7	poly(2,6-dibromo-phenylene oxide)	flame retardant	restricted										x								
70648-26-9	1,2,3,4,7,8-hexachlorodibenzofuran	impurities in products	unavoidable traces acceptable up to 5 ug/kg for sum of groups 1 & 2	German regulation	x																
70657-70-4	2-methoxypropyl acetate	solvent	banned over 2,000 mg/kg (apparel); restricted over .5 mg/L (toys)	legislated	x																
70682-74-5	TBBA-TBBA-diglycidyl-ether oligomer	flame retardant	restricted										x								
70776-03-3	polychlorinated naphthalenes (more than 3 chlorine atoms)	lubricant, paint, stabilizer, electric characteristic, flame-resistant, water-resistant insulator, flame retardant	intentional addition; 5 ppm																		x
7094-94-2	triphenyltin chloroacetate		restricted										x								
7125-83-9	1,1,1-trichloro-3,3,3-trifluoropropane		restricted										x								
7125-99-7	1,1-dichloro-1,2,2-trifluoropropane		restricted										x								
71342-77-3	TBBA carbonate oligomer, 2,4,6-tribromo-phenol terminated	flame retardant	restricted										x								
71-43-2	benzene	solvent; fuel additive; solvent cleaner	banned over 5 mg/kg (apparel); restricted (consumer products); no intentional use (apparel); restricted over 5 mg/kg (toys); material of high concern (flooring); banned (cleaning products); prohibited over .01% (automotive); not used as an active ingredient, solvent, or in the manufacture of raw materials (personal care products/retail); restricted (automotive); should be avoided and limited to 2 ppm (pharmaceuticals)	carcinogen, human health concerns, legislated, legally required, Food Standards Agency, carcinogen	x	x	x		x	x			x	x	x						
71-55-6	1,1,1,-tetrachloroethane (methyl chloroform) and its isomers except 1,1,2-trichloroethane	solvent cleaner	restricted				x						x								
71-55-6	1,1,1-trichloroethane	solvent	no intentional use (apparel); banned (cleaning products); prohibited over .01% (automotive); .1% by mass (apparel); should be avoided and limited to 1500ppm; restricted (electronics)	legally required; German and Japanese regulation; environmental hazard	x	x	x		x				x								x
72-20-8	endrin	pesticide	not detected in final product	Swiss and Finnish regulation	x																
72-43-5	methoxychlor	pesticide	not detected in final product	Swiss and Finnish regulation	x																
72-54-8	p,p-dichlorodiphenyldichloroethane (p,p-DDD)	pesticide	not detected in final product	Swiss and Finnish regulation	x																
72-55-9	p,p-dichlorodiphenyldichloroethylene (p,p-DDE)	pesticide	not detected in final product	Swiss and Finnish regulation	x																
72-56-0	perthane	pesticide	not detected in final product	Swiss and Finnish regulation	x																
72918-21-9	1,2,3,7,8,9-hexachlorodibenzofuran	impurities in products	unavoidable traces acceptable up to 5 ug/kg for sum of groups 1 & 2	German regulation	x																
730-40-5	disperse orange 3	disperse dye	not detected in final product (apparel) (toys)	legislated; German regulation	x																

CAS #	Chemical Name	Chemical Use	Type of Restriction	Restriction Driver(s)	Sectors Restricting													
					Apparel	Aerospace	Automotive	Building Products	Cleaning Products	Consumer Products	Electronics	Flooring	Personal Care/ Retail	Pharmaceuticals	Retail	Textiles		
7439-92-1	lead		banned over .2 mg/kg (electronics); not detected in natural leather, other restrictions in metal parts (apparel); restricted over 90 mg/kg (toys); restricted (electronics); chemical of high concern (flooring); banned (cleaning products); 100 ppm (apparel); not used in batteries (retail)	legislated; Danish regulation	x	x				x		x	x				x	
7439-97-6	mercury		banned over .02 mg/kg (electronics); .02 mg/kg in natural leather (apparel); restricted over 60 mg/kg (toys); restricted (electronics); use of mercury containing processing chemicals banned in dyeing and finishing, not used in batteries (retail)	legislated	x							x						x
7440-02-0		surface treatment, nickel plating	1000 ppm (external applications only); banned over 1 mg/kg; other restrictions for metal parts; restricted (electronics); not used in external surfaces (electronics); .5 ug/cm3/week (apparel); limited use (automotive)	EU Directive	x		x					x						
7440-24-6	strontium											x						
7440-36-0	antimony (metallic)		30 mg/kg (natural fibers); 260 mg/kg (polyester); 30 mg/kg (natural leather); 60 mg/kg (metal parts); restricted (consumer products); restricted over 60 mg/kg (toys); restricted (electronics)	eco toxicant (consumer products); legislated (toys)	x						x	x						
7440-38-2	arsenic		banned over .2 mg/kg (electronics); not detected in natural leather (apparel); restricted over 25 mg/kg (toys); restricted (electronics); banned (cleaning products)		x				x			x						
7440-39-3			restricted over 1000 mg/kg (toys)	legislated	x													
7440-41-7	beryllium		restricted			x						x						
7440-43-9	cadmium		banned over .1 mg/kg (electronics); 75 mg/kg in natural leather (apparel); 75 mg/kg in metal parts (apparel); restricted over 75 mg/kg (toys); restricted (electronics); chemical of high concern (flooring); 100 ppm (apparel); not used in batteries (retail) limited use in batteries (automotive)	legislated; Dutch regulation; EU Directive	x		x					x	x					x
7440-46-2	cesium											x						
7440-47-3			banned over 1 mg/kg (apparel), 60 mg/kg in metal parts (apparel); restricted over 60 mg/kg (toys); banned (cleaning products); on risk management list [metal treatment] (cleaning products)	legislated	x				x									
7440-48-4			banned over 1 mg/kg; 1 mg/kg in natural leather		x													
7440-50-8			banned over 25 mg/kg; 25 mg/kg in natural leather		x													
7440-69-9	bismuth		restricted										x					
7446-08-4	selenium dioxide		restricted										x					
7446-14-2	lead (II) sulfate		restricted										x					
7446-27-2	lead (II) phosphate		restricted										x					
7446-27-7	lead (II) phosphate		restricted										x					
7446-27-7	lead phosphate		restricted										x					
74-83-9	bromomethane (methyl bromide)		restricted										x					
7487-94-7	mercury (II) chloride		restricted										x					
75-01-4	vinylchloride	residual monomer in polymers	banned over 1 mg/kg (apparel); banned (cleaning products); prohibited over 5ppm in materials (automotive)	legally regulated	x		x		x									
75-09-2	dichloromethane	solvent, paint stripper	[migration solvent] restricted over .06 mg/L (toys); [inhalation solvent] restricted over 3000 ug/m3 (toys); limited use and limited to 600 ppm (pharmaceuticals)	legislated, inherently toxic	x	x							x				x	
75-09-2	methylene chloride	solvent cleaner	no intentional use (apparel); restricted (automotive)		x		x						x					
75-10-5	HCFC-32 - CH2 F2		may not be used	EU Directive	x													

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75-35-4	1,1-dichloroethene	solvent, solvent cleaner	no intentional use (apparel); .1% by mass (apparel); should be avoided and limited to 8 ppm (pharmaceuticals)	German and Japanese regulation; toxic	x															
75-37-6	HFC-152a - C2 H4 F2		may not be used	EU Directive	x															
75-43-4	dichlorodifluoromethane (HCFC 21)		restricted																	
75-45-6	chlorodifluoromethane (HCFC 22)	blowing agent, solvent	restricted; on both restricted and limited use lists depending on application (automotive)																	
75-46-7	HCFC-23 - CHF3		may not be used	EU Directive	x															
75-63-8	bromotrifluoromethane (Halon 1301)	fire retardant	restricted																	
75-68-3	1-chloro-1,1-difluoroethane (HCFC 142b)	solvent, blowing agent	restricted; on both restricted and limited use lists depending on application (automotive)																	
75-69-4	trichlorofluoromethane (CFC 11)	cooling agent	restricted																	
75-71-8	dichlorodifluoromethane (CFC 12)	cooling agent	restricted																	
75-72-9	chlorotrifluoromethane (CFC 13)		restricted																	
75-73-0	perfluoromethane - CF4		may not be used	EU Directive	x															
75790-69-1	TBPA, glycol-and propylene-oxide esters	flame retardant	restricted																	
75-88-7	2-chloro-1,1,1-trifluoroethane (HCFC-133a)		restricted																	
76-01-7	pentachloroethane		.1% by mass (apparel)	German and Japanese regulation	x															
76-12-0	tetrachlorodifluoroethane (CFC 112)		restricted																	
76-13-1	1,1,2 trichloro-1,2,2 trifluoroethane (CFC 113)	solvent cleaning, foaming agent, refrigerant formulation, semiconductor manufacturing, cooling agent	restricted																	
76-14-2	dichlorotetrafluoroethane (CFC 114)	cooling agent	restricted																	
76-15-3	monochloropentafluoroethane (CFC 115)	cooling agent	restricted																	
76-16-4	perfluoroethane - C2 F6		may not be used	EU Directive	x															
76-17-5	1,2,3-trichloropentafluoropropane		restricted																	
76-19-7	perfluoropropane - C3 F8		may not be used	EU Directive	x															
76253-60-6	monomethyl-tetrachloro-diphenyl methane (also Ugilec 141)		banned over 1 mg/kg (apparel); not detected in final product (apparel)	Swiss and Finnish regulation	x															
7632-00-0	sodium nitrite		limited use																	
76-44-8	heptachlor	pesticide	not detected in final product	Swiss and Finnish regulation	x															
7664-39-3	hydrofluoric acid	etchant, chemical milling	limited use (automotive)																	
7664-41-7	ammonia		black list with some exceptions; restricted	human health concerns (consumer products)																
7681-57-4	disulfurous acid, disodium salt		black list with some exceptions																	
76-87-9	triphenyltin hydroxide		restricted																	
77536-66-4	actinolite	friction pads, gaskets, insulators	restricted (electronics); not detected in final product (apparel)	EU Directive	x	x														
77536-67-5	anthophyllite	friction pads, gaskets, insulators	restricted (electronics); not detected in final product (apparel)	EU Directive	x	x														
77536-68-6	tremolite	friction pads, gaskets, insulators	restricted (electronics); not detected in final product (apparel)	EU Directive	x	x														
7758-97-6	lead (II) chromate	pigment	restricted																	
7775-11-3	sodium chromate		restricted																	
7778-44-1	calcium arsenate		restricted																	
7778-50-9	potassium dichromate		restricted																	
7782-49-2	selenium	photoreceptor, pigment, ink, catalyst, oxidizer, photocell	restricted over 500 mg/kg (toys); restricted (electronics)	legislated	x															
7783-07-5	hydrogen selenide		restricted																	
7783-35-9	mercuric sulfate		restricted																	
7784-41-0	potassium arsenate		restricted																	
7787-47-5	beryllium chloride		restricted																	
7787-49-7	beryllium fluoride		restricted																	
7787-56-6	beryllium sulfate tetrahydrate		restricted																	
7789-00-6	potassium chromate		restricted																	
7789-06-2	strontium chromate	pigment	restricted; limited use (automotive)																	
7799-56-6	1,1-dichloro-1-fluoropropane		restricted																	

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78-21-7	N-cetyl morpholinium Quat DES		black list with some exceptions																		x
78-30-8	tri-o-cresyl phosphate	flame retardant	banned over 5 mg/kg (apparel); not detected (toys)	legislated	x																
78-32-0	tri-p-cresyl phosphate	plasticizer	not detected in final product (toys)	legislated	x																
78-59-1	isophorone	solvent	[migration solvent] restricted over 3 mg/L (toys); [inhalation solvent] restricted over 200 ug/m3 (toys)	legislated	x																
78763-54-9	monobutyltin (MBT)		chemical of concern (apparel); not used but may be present as a trace contaminant (retail)	OSPAR	x															x	
789-02-6	o,p-dichlorodiphenyltrichloroethane (o,p-DDT)	pesticide	not detected in final product		x																
78-93-3	methyl ethyl ketone	solvent in paint, primer or adhesive, cleaner	on risk management list			x				x											
79-00-5	1,1,2-trichloroethane	solvent, solvent cleaner	no intentional use (apparel); 1% by mass (apparel); limited use and limited to 80 ppm (pharmaceuticals)	German and Japanese regulation, inherently toxic	x						x					x					
79-01-6	trichloroethylene (TCE)	solvent cleaner	banned over 50 mg/kg (apparel); no intentional use (apparel); [migration solvent] restricted over .06 mg/L (toys); [inhalation solvent] not detected (toys); limited use (automotive)	legislated	x	x	x		x		x										
79-06-1	acrylamide		banned over 100 mg/kg (apparel); not detected (toys); banned (cleaning products)	legislated	x				x												
79-07-2	2-chloroacetamide	biocide	50 mg/kg		x																
79-34-5	1,1,2,2-tetrachloroethane		.1% by mass (apparel)	German and Japanese regulation	x						x										
79-94-7	3,5,3',5'-tetrabromo-bisphenol A (TBBA)	flame retardant	restricted								x										
8001-35-2	toxaphene	pesticide	not detected in final product	Swiss and Finnish regulation	x																
8001-50-1	strobane	pesticide	not detected in final product	Swiss and Finnish regulation	x																
8001-58-9	creosote	distillation product, filler	limited use				x														
80-05-7	bisphenol-A	distillation product, filler	restricted (consumer products); restricted over .1 mg/L (toys); chemical of concern (apparel); seeking alternatives to use in tin can linings (retail)	human health concerns; legislated; OSPAR	x					x									x		
8007-45-2	coal tar		limited use				x														
8012-95-1	paraffin oil		black list with some exceptions																		x
8050-09-7	colophony	adhesives, paints, cutting fluids	limited use				x														
80-62-6	methyl methacrylate		banned over 50 mg/kg		x																
81161-70-8	monomethyl-dichloro-diphenyl methane (also Ugilec 121 or Ugilec 21)		banned over 1 mg/kg (apparel); not detected in final product (apparel)	Swiss and Finnish regulation	x								x								
811-95-0	1,1,1-trichloro-2-fluoroethane (HCFC 131b)		restricted										x								
811-97-2	HFC-134a - CH2 FCF3		may not be used	EU Directive	x																
812-04-4	1,1-dichloro-1,2,2-trifluoroethane (HCFC-123b)		restricted										x								
818-99-5	1,1,3-trichloro-1-fluoropropane		restricted										x								
822-06-0	hexamethylene diisocyanate (HDI)				x																
82-28-0	disperse orange 11	disperse dye	not detected in final product		x																
82600-56-4	bromo/chloro-alpha-olefin	flame retardant	restricted										x								
82-68-8	quintozene	pesticide	not detected in final product	Swiss and Finnish regulation	x																
828-00-2	2,6 dimethyl-m-dioxan-4-ol acetate		black list with some exceptions																		x
838-88-0	3,3'-dimethyl-4,4'-diamino-diphenylmethane	pigment/dye/colorant	not detected in final product (apparel); restricted (electronics)	EU and China	x									x							
84122-50-6	C12-14 secondary alcohol		black list with some exceptions																		x
84-66-2	diethyl phthalate (DEP)	plasticizer	removed from use in fragrances as a precautionary measure; on risk management list in fragrances							x						x					
84-74-2	dibutyl phthalate (DBP)	adhesives, paints	sum total of all phthalic acid esters not detected (toys); restricted (electronics); phase out (cleaning products); limited use (automotive)	legislated	x		x		x				x								
84852-53-9	decabromo-diphenyl-ethane	flame retardant	restricted										x								
85535-84-8	chlorinated paraffins (C10-13)	oils, fire retardants	may not be used (apparel); restricted (automotive)	EU Directive	x		x							x							

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85-68-7	butyl benzyl phthalate (BBP)	adhesives, paints	sum total of all phthalic acid esters not detected (toys); restricted (electronics); phase out (cleaning products); limited use (automotive)	legislated	x		x		x			x					
872-50-4	N-methylpyrrolidone (NMP)	solvent, solvent cleaner	banned over 10 mg/kg (apparel); no intentional use (apparel); on risk management list (cleaning products); limited use and limited to 530 ppm (pharmaceuticals); black list with some exceptions (textiles)	inherently toxic	x	x			x						x		x
87-62-7	2,6-xylydine	pigment/dye/colorant	not detected in final product	EU and China	x												
87-68-3	hexachlorobutadiene	solvent	subject to total prohibition (consumer products); restricted (automotive)	Canada			x			x							
87-83-2	pentabromo-toluene	flame retardant	restricted									x					
87-86-5	pentachlorophenol (PCP), salts, esters and compounds of PCP	wood preservative; salts used in leather treatment; stabilizer for latex; dyeing and finishing of fabrics	not detected in final product (apparel); prohibited over .01% (automotive); banned in dyeing and finishing and in pesticides (retail)	legally regulated; Swiss and Finnish regulation	x		x										x
9002-93-1	octaphenol ethoxylate		chemical of concern	European Union	x												
9003-27-4	1-propane, 2-methyl-, homopolymer		black list with some exceptions														x
90-04-0	o-anisidine	pigment/dye/colorant	not detected in final product (apparel); restricted (electronics); not detected in final product (toys)	EU and China	x							x					
9008-64-4	naphthalenesulfonic acid, methyl-, sodium salt, polymer with formaldehyde		black list with some exceptions														x
90093-37-1	polyethoxylated polyaryphenol phosphate		black list with some exceptions														x
900-95-8	triphenyltin acetate		restricted									x					
9016-45-9	nonyl phenol ethoxylates (NPE)	cleaning agent	restricted (consumer products); chemical of concern (apparel); restricted (automotive)	become a more sustainable company (retail); aquatic toxin and suspected endocrine disruptor (consumer products); European Union (apparel)	x		x			x							x
90-43-7	o-phenylphenol	solvent	banned over 50 mg/kg		x												
90454-18-5	dichloro-1,1,2-trifluoroethane		restricted									x					
91-08-7	toluene-2,6-diisocyanate	activator in some polyurethane foams, adhesives	no intentional use; limited use (automotive)		x		x										
91-59-8	2-naphthylamine	pigment/dye/colorant	not detected in final product (apparel); restricted (electronics); not detected in final product (toys); prohibited over .01% (automotive)	EU and China	x		x					x					
91-94-1	3,3'-dichlorobenzidine	pigment/dye/colorant	not detected in final product (apparel); restricted (electronics); not detected in final product (toys)	EU and China	x							x					
92-66-0	4-bromobiphenyl	flame retardant	restricted									x					
92-67-1	4-aminodiphenyl	rubber dye, pigment/dye/colorant	not detected in final product (apparel); restricted (automotive), restricted (electronics)	EU and China	x		x					x					
92-86-4	dibromobiphenyl	flame retardant	restricted									x					
92-87-5	benzidine	rubber dye, pigment/dye/colorant	not detected in final product (apparel); restricted (electronics); prohibited over .01% (automotive); restricted (automotive); not detected in final product (toys); prohibited based on concentration and/or use (consumer products)	legally required, EU and China, Canada	x		x				x	x					
929-06-6	ethanol, 2-(2-aminoethoxy)-		black list with some exceptions									x					
93-72-1	2-(2,4,5-trichlorophenoxy) propionic acid, salts, compounds	pesticide	not detected in final product	Swiss and Finnish regulation	x												
93-76-5	2,4,5-trichlorophenoxyacetic acid (2,4,5-T), salts, compounds	pesticide	not detected in final product	Swiss and Finnish regulation	x												
94334-64-2	TBBA carbonate oligomer, phenoxy end capped	flame retardant	restricted									x					

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95-47-6	o-xylene	solvent	[migration solvent] 2 mg/L (toys) (sum total o,m,p-xylene); [inhalation solvent] restricted over 870 ug/m3 (toys) (sum total o,m,p-xylene); material of high concern (flooring)	legislated	x											x					
95-48-4	o-cresol		no intentional use		x																
95-53-4	o-toluidine	pigment/dye/colorant	not detected in final product (apparel and toys); restricted (electronics)	EU and China	x							x									
95-68-1	2,4-xylydine	pigment/dye/colorant	not detected in final product	EU and China	x																
95-69-2	4-chloro-o-toluidine	pigment/dye/colorant	not detected in final product (apparel); restricted (electronics)	EU and China	x							x									
95-80-7	2,4-toluenediamine	pigment/dye/colorant	not detected in final product (apparel); restricted (electronics)	EU and China	x							x									
96-12-8	1,2-dibromo-3-chloropropane (DBCP)	pesticide	not detected in final product		x																
96-13-9	dibromo-propanol	flame retardant	restricted										x								
97-56-3	o-aminoazotoluene	pigment/dye/colorant	not detected in final product (apparel and toys); restricted (electronics)	EU and China	x							x									
97-63-2	ethyl methacrylate		banned over 50 mg/kg		x																
97-75-7	2,4-dichlorophenoxyacetic acid, its salts and compounds	pesticide	not detected in final product		x																
97-88-1	butyl methacrylate		banned over 50 mg/kg		x																
98908-15-1	sulfonic acid, alkane, Na+		black list with some exceptions																		x
98-95-3	nitrobenzene	solvent	[migration solvent] not detected (toys); [inhalation solvent] not detected (toys)	legislated	x																
99-55-8	2-amino-4-nitrotoluene	pigment/dye/colorant	not detected in final product (apparel); restricted (electronics)	EU and China	x							x									
99688-47-8 not available	monomethyl-dibromo-diphenyl methane (also DBBT)		banned over 1 mg/kg (apparel); not detected in final product (apparel)	Swiss and Finnish regulation	x								x								
not available	1,2,3,7,8,9-hexabromodibenzo-p-dioxin		5 ug/kg sum of groups 4 & 5	German regulation	x																
not available	1,2,3,6,7,8-hexabromodibenzo-p-dioxin		5 ug/kg sum of groups 4 & 5	German regulation	x																
not available	1,2,3,7,8-pentabromodibenzofuran	impurities in products	5 ug/kg sum of groups 4 & 5	German regulation	x																
RR016115	polychlorinated terphenyls		subject to total prohibition	Canada								x									
several	all brominated flame retardants	flame retardant in textiles, plastics	1000 ppm (electronics); seeking alternatives, used minimally (personal care products/retail); banned in childrenswear and phasing out other uses (retail); limited use (automotive)	RoHS compliance				x				x				x				x	
several	organotin compounds	cooling water	limited use					x													
several	colophony (rosin)		limited use					x													
several	limonene	solvent	limited use					x													
several	octaphenoethoxylates	cleaning agent	restricted					x													
various	chlorinated benzenes		banned over 4 mg/kg		x																
various	chlorinated toluenes		banned over 4 mg/kg		x																
various	halogenated diarylalkanes		banned over 1 mg/kg	Swiss and Finnish regulation	x																
various	halogenated naphthalenes		banned over 1 mg/kg; not detected in final product	Swiss and Finnish regulation	x																
various	halogenated terphenyls		banned over 1 mg/kg		x																
various	polychlorinated terphenyl (PCT)	insulation fluid in electrical systems, switch boards, transformers, and condensers; in wood and paper impregnation as a softening agent.	banned over 1 mg/kg (apparel); 5 ppm (electronics); prohibited over .01% (automotive); not detected in final product (apparel)	legally regulated; Swiss and Finnish regulation	x		x					x									
various	all esters of phthalic acid	plasticizer	sum total of all phthalic acid esters not detected (toys)	legislated	x																
various	certain azocolourants and azodyes	pigment, dyes, colorants	intentional addition; 30 ppm (electronics); not used in food, 4 specific dyes not used in new cosmetic products but others continue to be used (personal care products/retail); use of 21 azo dyes banned	EU Directive									x			x				x	
various	disperse dyes		not detected in final product		x																
various	other dyes		not detected in final product		x																

CAS #	Chemical Name	Chemical Use	Type of Restriction	Restriction Driver(s)	Sectors Restricting																
					Apparel	Aerospace	Automotive	Building Products	Cleaning Products	Consumer Products	Electronics	Flooring	Personal Care/ Retail	Pharmaceuticals	Retail	Textiles					
		pigment, paint, catalyst, lead-free solder, stabilizer, n-type dopant, flame retardant, catalyst																			
	antimony/antimony compounds		1000 ppm																		
various	other antimony compounds																				
		pigment, paint, dye, antifoamer for glass, III-V group semiconductor substrate (GaAs), flame retardant, electroplating, wood preservative, drying agent																			
	arsenic/arsenic compounds		1000 ppm (electronics); limited use (automotive)				x	x													
various	other arsenic compounds		banned (cleaning products)							x											
		ceramics, metal alloy, copper-beryllium alloy, catalyst, precipitation hardening alloy, solder																			
	beryllium/beryllium compounds		1000 ppm																		
various	other beryllium compounds																				
		lead-free solder, solder																			
	bismuth/bismuth compounds		1000 ppm																		
various	other bismuth compounds																				
		batteries; optical components in glass used for driver assistance systems; surface protection of metals; stabilizers in polymers, pigments in paints and plastics in electronics; stabilizer for PVC; electronic materials; plating, accumulators																			
	cadmium/cadmium compounds		above 75 ppm or intentional addition (electronics); 100 ppm (electronics); banned (cleaning products); prohibited over .01% (automotive); restricted (automotive)	RoHS compliance; legally required			x	x			x										
various	other cadmium compounds		restricted																		
various	chromium salts		banned																		
	dilute chromic acid																				
various	other hexavalent chromium compounds		restricted					x													
		component in metals and alloys processed in automated machines; lead-containing stabilizers and pigments; corrosion inhibitors; bonding agents; solder in electrical boards; batteries; hardens rubber; plastics stabilizer; X-ray shielding; resin additive; jewellery; pigment in paint																			
	lead/lead compounds		above 1000 ppm or intentional addition (electronics); 300 ppm (for PVC cables only); 1000 ppm, 100 ppm in paint (electronics); prohibited over .01% (automotive); limited use (automotive)	RoHS compliance, legally required																	
	lead in PVC coating for cable, wire, and cords		300 ppm for external, 1000 ppm for internal																		

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various	other lead compounds		restricted (electronics); banned (cleaning products)							x		x						
	mercury/mercury compounds	inorganic and organic mercury compounds used in HID lamps, electrical switches, luminescent material for instrument lighting, pyrotechnic initiators; anti-corrosion switches; antibacterial treatment, gauges	above 1000 ppm or intentional addition (electronics); 1000 ppm (electronics); prohibited over .01% (automotive); restricted (automotive)	RoHS compliance, legally regulated		x	x					x						
	other mercury compounds		restricted									x						
	other nickel compounds		restricted									x						
various	ozone depleting substances	refrigerant; foaming agent; extinguishant; solvent cleaner	class I: intentionally added (electronics and apparel); class II: HCFCs: 1000 ppm (electronics); not used of present (electronics)										x					
	CFCs	coolants; propellants; cleaners; solvents; impregnating agents; blowing agents	prohibited over .01% (automotive); banned (cleaning products)	legally required		x	x		x									
various	halons	fire extinguishers, fire suppressant	prohibited over .01%	legally required		x	x											
	HBFCs	refrigerant	prohibited over .01%	legally required			x											
	HCFCs	refrigerant, cleaner, solvent	prohibited over .01%	legally required		x	x											
	HCFCs/isomers											x						
	HFC-236cb - CH2 FCF2 CF3		may not be used	EU Directive	x													
	heptabromobiphenyl	flame retardant											x					
	polybrominated biphenyl ether, poly brominated biphenyl oxide	flame retardant											x					
various	polybrominated diphenylethers (PBDEs)	flame retardant	above 1000 ppm or intentional addition (electronics); chemicals of high concern (flooring)			x						x	x					
various	other polychlorinated naphthalenes											x						
various	brominated flame retardants (other than PBBs or PBDEs)	flame retardant	1000 ppm									x						
	brominated flame retardant which comes under notation of ISO 1043-4 code number FR(14) [aliphatic/alicyclic brominated compounds]	flame retardant	restricted										x					
	brominated flame retardant which comes under notation of ISO 1043-4 code number FR(15) [aliphatic/alicyclic brominated compounds in combination with antimony compounds]	flame retardant	restricted										x					
	brominated flame retardant which comes under notation of ISO 1043-4 code number FR(16) [aromatic brominated compounds excluding brominated diphenyl ether and biphenyls]	flame retardant	restricted										x					
	brominated flame retardant which comes under notation of ISO 1043-4 code number FR(17) [aromatic brominated compounds excluding brominated diphenyl ether and biphenyls in combination with antimony compounds]	flame retardant	restricted										x					
	brominated flame retardant which comes under notation of ISO 1043-4 code number FR(22) [aliphatic/alicyclic chlorinated and brominated compounds]	flame retardant	restricted										x					
	brominated flame retardant which comes under notation of ISO 1043-4 code number FR(42) [brominated oraganic phosphorus compounds]	flame retardant	restricted										x					
various	other brominated flame retardants		restricted										x					
	radioactive substances		not present										x					
	americum												x					

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	plutonium													x				
	radon													x				
	thorium													x				
	uranium													x				
various	radioactive substances	optical properties	intentional addition			x								x				
various	certain shortchain chlorinated paraffins	plasticizer for PVC, flame retardant	intentional addition											x				
various	other short chain chlorinated paraffins		prohibited over .01% (automotive)	legally required			x							x				
	alkyltins	dyeing and finishing textile fabrics	not used as a direct ingredient (personal care products/retail), banned from use in dyeing and finishing fabrics (retail)												x		x	
	monooctyltin (MOT)		chemical of concern	OSPAR	x													
	dioctyltin (DOT)		chemical of concern	OSPAR	x													
	copolymer of alkyl acrylate, methyl methacrylate and tributyltin methacrylate(alkyl: C=8)		restricted											x				
	mixture of tributyltin 1,2,3,4,4a,4b,5,6,10,10a-decahydro-7-isopropyl-1,4a-dimethyl-1-phenanthlenecarboxylate and its analogs (tributyltin rosin salt)		restricted											x				
	mixture of tributyltin cyclopentanecarboxylate and its analogs (tributyltin naphthenate)		restricted											x				
various	other tributyl tins		restricted											x				
various	other triphenyl tins		restricted											x				
	isocyanates		on risk management list							x								
	polyisocyanates		on risk management list							x								
	butadiene monomer		banned							x								
	ethylene glycol monoethyl ether		banned							x								
	ethylene glycol monoethyl ether acetate		banned							x								
	ethylene glycol monomethyl ether		banned							x								
	ethylene glycol monomethyl ether acetate		banned							x								
various	solvents	manufacture of footwear, dying and finishing	controls for dyeing and finishing														x	
	1,2-dimethoxyethane	solvent	limited use and limited to 100 ppm	inherently toxic													x	
	1,4-dioxane	solvent	limited use and limited to 380 ppm	inherently toxic													x	
	1-butanol	solvent	limited use	no long term toxicity or carcinogenicity data													x	
	1-pentanol	solvent	limited use	no long term toxicity or carcinogenicity data													x	
	1-propanol	solvent	limited use	no long term toxicity or carcinogenicity data													x	
	2-butanol	solvent	limited use	no long term toxicity or carcinogenicity data													x	
	2-methyl-1-propanol	solvent	limited use	no long term toxicity or carcinogenicity data													x	
	2-propanol	solvent	limited use	no long term toxicity or carcinogenicity data													x	
	3-methyl-1-butanol	solvent	limited use	no long term toxicity or carcinogenicity data													x	
	acetic acid	solvent	limited use	no long term toxicity or carcinogenicity data													x	
	acetone	solvent	limited use	no long term toxicity or carcinogenicity data													x	
	acetonitrile	solvent	limited use and limited to 410 ppm	inherently toxic													x	
	anisole	solvent	limited use	no long term toxicity or carcinogenicity data													x	
various	benzene derivatives	solvent	restricted	carcinogen, human health concerns						x								
	butyl acetate	solvent	limited use	no long term toxicity or carcinogenicity data													x	
	carbon tetrachloride	solvent	should be avoided and limited to 4 ppm	toxic and environmental hazard													x	
various	chlorinated solvents	solvents	banned			x				x								
	chlorobenzene	solvent	limited use and limited to 360 ppm	inherently toxic													x	
	chloroform	solvent	limited use and limited to 60 ppm	inherently toxic													x	

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	cumene	solvent	limited use	no long term toxicity or carcinogenicity data												x
	ethanol	solvent	limited use	no long term toxicity or carcinogenicity data												x
	ethyl acetate	solvent	limited use	no long term toxicity or carcinogenicity data												x
	ethyl ether	solvent	limited use	no long term toxicity or carcinogenicity data												x
	ethyl formate	solvent	limited use	no long term toxicity or carcinogenicity data												x
	ethylene glycol	solvent	limited in use and limited to 620 ppm	inherently toxic												x
	ethylene solvents		banned over 50 mg/kg (apparel); restricted	human health concerns						x						
	formamide	solvent	limited use and limited to 220 ppm	inherently toxic												x
	formic acid	solvent	limited use	no long term toxicity or carcinogenicity data												x
	heptane	solvent	limited use	no long term toxicity or carcinogenicity data												x
	hexane	solvent	limited use and limited to 290 ppm	inherently toxic												x
	isobutyl acetate	solvent	limited use	no long term toxicity or carcinogenicity data												x
	isopropyl acetate	solvent	limited use	no long term toxicity or carcinogenicity data												x
	methyl acetate	solvent	limited use	no long term toxicity or carcinogenicity data												x
	methylbutyl ketone	solvent	limited use and limited to 50 ppm	inherently toxic												x
	methylcyclohexane	solvent	limited use and limited to 1180 ppm	inherently toxic												x
	methylethyl ketone	solvent	limited use	no long term toxicity or carcinogenicity data												x
	methylisobutyl ketone	solvent	limited use	no long term toxicity or carcinogenicity data												x
	N,N-dimethylacetamide	solvent	limited use and limited to 1090 ppm	inherently toxic												x
	nitromethane	solvent	limited use and limited to 50 ppm	inherently toxic												x
	N-N-dimethylformamide	solvent	limited use and limited to 880 ppm	inherently toxic												x
	pentane	solvent	limited use	no long term toxicity or carcinogenicity data												x
	propyl acetate	solvent	limited use	no long term toxicity or carcinogenicity data												x
	pyridine	solvent	limited use and limited to 200 ppm	inherently toxic												x
	sulfolane	solvent	limited use and limited to 160 ppm	inherently toxic												x
	tert-butylmethyl ether	solvent	limited use	no long term toxicity or carcinogenicity data												x
	tetrahydrofuran	solvent	limited use and limited to 720 ppm	inherently toxic												x
	tetralin	solvent	limited use and limited to 100 ppm	inherently toxic												x
	PFOS and related chemicals as described in EPA SNUR		banned													x
	1-methyl-2-pyrrolidinone		material of high concern										x			
	2-ethyl-1-hexanol		material of high concern										x			
	2-ethylhexanoic acid		material of high concern										x			
	4-aminobiphenyl and its salts		prohibited over .01%	legally required			x									
	4-nitrobiphenyl and its salts		prohibited over .01%	legally required			x									
	4-phenylcyclohexene (4-PCH)		material of high concern										x			
	acetaldehyde		material of high concern										x			
	acetone		restricted	human health concerns										x		
	alkylphenol ethoxylates (APEOs) (all)	dyeing and finishing textile fabrics	restricted (consumer products); phase out (cleaning products); banned in dyeing and finishing and ensure no other uses [due to limitations of chemical SDSs for chemicals below 1% they may actually be in widespread use] (retail)	aquatic toxin and suspected endocrine disruptor												x
	all brominated compounds		chemicals of high concern										x			
	allyl alcohol		banned							x						
	amyl acetate		restricted	human health concerns							x					
various	animal derivatives or by-products (animal gelatin, beeswax, tallow, etc.)		restricted	against animal cruelty							x					
	aziridines (except polyfunctional aziridine)		banned						x							
	benzothiazole		material of high concern										x			

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					Apparel	Aerospace	Automotive	Building Products	Cleaning Products	Consumer Products	Electronics	Flooring	Personal Care/ Retail	Pharmaceuticals	Retail	Textiles
	biocides	food crop production, textile finishes and cleaning activities	banned in childrenswear													x
	bisphenol-a branched stillbene brighteners	tin can linings	when products are intended for food contact, not used as a direct ingredient, avoided when alternatives exist restricted	eco toxic						x						x
	caprolactam		material of high concern									x				
various	carcinogens as listed by International Agency for Research on Cancer (IARC) and National Toxicology Program (NTP) caustic soda chlorinated isocyanurates		avoided restricted except as in situ reagent on risk management list	Prop 65 acute human toxin									x			
	chlorine bleach		restricted	human and aquatic toxin, chlorine complexes bioaccumulate						x						
	chlorine dioxide		on risk management list						x							
	crystalline silica		restricted (consumer products); on risk management list (cleaning products)	carcinogen					x	x						
	cyanide and cyanogens		banned						x							
	dimorpholino optical brighteners		restricted	eco toxic						x						
	dioxane		restricted	human health concerns						x						
	d-limonene		on risk management list						x							
	enzymes		on risk management list						x							
	epichlorohydrin		banned						x							
	ethylene oxide		banned						x							
	fluorescers		on risk management list						x							
	fluorotelomers and fluoropolymers		on risk management list						x							
	gluteraldehyde		on risk management list						x							
	glyoxal		on risk management list						x							
	hydrofluoric acid and derivatives		on risk management list						x							
	imidazoline fabric softeners		on risk management list						x							
	isooctylacrylate		material of high concern										x			
	methylbiphenyl		material of high concern										x			
	methylene chloride		restricted (consumer products); banned (cleaning products)	carcinogen, human and mammalian toxin					x	x						
	microorganism based ingredients		on risk management list						x							
	mineral oil with PAHs	base oils, lubricants, etc.	restricted				x									
	monobromoacetic acid		phase out						x							
	monoethanolamine		restricted	human health concerns						x						
	morpholine		restricted	human health concerns						x						
	naphthalene		restricted (consumer products); material of high concern (flooring)	human health concerns						x		x				
	nitritoltri (acetic acid)		restricted	aquatic toxin						x						
	nitromusks	beauty and homecare products	phase out (cleaning products); prohibited for use in all products (personal care products/retail); substituted out of products							x			x		x	
	nitrosamines		on risk management list (cleaning products); not used as an active ingredient (personal care products/retail)							x			x			
	nonanal		material of high concern									x				
	nitrioltriacetic acid (NTA) and salts		on risk management list						x							
	octanal		material of high concern									x				
	oxalic acid and derivatives		on risk management list						x							
various	parabens	beauty and homecare products	restricted (consumer products); continue to use as a preservative but monitoring research and public concern (consumer products/retail); no plans to phase out but watching evolving scientific knowledge (retail)	suspected carcinogen									x			x
	paradichlorobenzene		banned							x						
	peroxyacetic acid		on risk management list							x						
various	persistant, bioaccumulative, toxic chemicals (PBTs)		chemicals of high concern, avoided	TRI								x				

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various	phosphates		restricted (consumer products); chemical of high concern (flooring); on risk management list (cleaning products)	aquatic toxin						x	x		x				
	phosphoric acid		restricted	human health concerns						x							
	polyaziridines		on risk management list							x							
	polycyclic musks	beauty and homecare products	prohibited for use in all products (personal care products/retail); use is minimized in favor of macrocyclic musks (retail)										x			x	
	polyvinyl chloride (PVC)	insulator, chemical resistance, sheath material, packaging, textiles, footwear, accessories	1000 ppm (electronics); restricted (consumer products); not used in external case plastic parts (electronics); continue to use in packaging and where it makes technical sense but are seeking alternative additives and measures to reduce long term use of PVC (personal care products/retail); ban on use in packaging, phasing out PVC products (retail)	endocrine disruptor and eco toxin						x	x		x			x	
	permethrin			become a more sustainable company													x
various	propellants		restricted	suspected chronic effects						x							
	propoxur			become a more sustainable company													x
various	reproductive toxins		chemicals of high concern	Prop 65									x				
	resorcinol		used as active ingredient in hair dye but watching research and public concern											x			
various	selected carcinogenic amines which are formed from Azo-dyes	dyes in textiles	prohibited above 30 ppm	legally regulated			x										
	selenium/selenium compounds		1000 ppm									x					
	sulfur hexafluoride		prohibited over .01%	legally regulated			x										
	sulfuric acid		restricted	human health concerns						x							
various	surfactants less than 80% biodegradable		on risk management list						x								
	triglycidylisocyanurate	powder paints	limited use				x										
	triscarbomoyl triazine (Cytec 2000)		banned						x								
	vinyl acetate		material of high concern										x				
	vinyl cyclohexene		material of high concern										x				
various	volatile organic compounds (VOCs)		researching which products are believed to emit VOCs as a precautionary measure											x			
various	dioxins		not used as a direct ingredient	Food quality regulations										x			
various	chlorinated or brominated dioxins or furans	impurities in products	prohibited over .01%	legally regulated			x										
various	pesticides	food crops, cotton, and wool production	chemicals of high concern (flooring); 60 pesticides banned, 19 being phased out, sum total of residue on fabrics between .05 and .5 ppm (retail)										x				x
	halogenated diphenyl methanes		banned over 1 mg/kg (apparel); 1000 ppm (electronics); not detected in final product (apparel)	Swiss and Finnish regulation	x									x			
various	phthalates	plasticizer, dye, pigment, paint, ink, adhesive, lubricant, in PVC	prohibited for use in consumer products, seeking alternatives for use in plastic packaging (personal care products/retail); banned in food packaging and childrenswear (retail)											x			x
various	all phthalates	plasticizer	restricted	endocrine disruptor						x							
various	certain phthalates	plasticizer	1000 ppm									x					
	dinonyl phthalate		phase out						x								
	pentachlorophenol (PCP) and its salts	preservative	not detected in final product (toys)	legislated	x												
various	chlorinated hydrocarbons		1000 ppm											x			