

**M&S**

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**ECP**

**MINIMUM STANDARDS**

**MANUFACTURING RESTRICTED**

**SUBSTANCES LIST**

**(MRSL) v1.2**

**RESTRICTED SUBSTANCES LIST**

**(RSL) v2.3**

## MANUFACTURING RESTRICTED SUBSTANCES LIST (MRSL)

Introduction .....	3
<b>1 Implementation: Roles and Responsibilities .....</b>	<b>5</b>
1.1 Primary Supplier .....	5
1.2 Wet Processor .....	5
1.3 Compliance with the MRSL .....	7
1.4 Non-compliance with the MRSL .....	7
1.5 Chemical Supplier.....	8
<b>2 Manufacturing Restricted Substances List .....</b>	<b>9</b>
Alkylphenols (AP) and Alkylphenol ethoxylates (APEO) .....	9
Azo dyes: Restricted amines .....	10
Navy Blue Colourant .....	11
Carcinogenic dyes and dyes of equivalent concern.....	11
Skin-sensitising disperse dyes .....	11
Flame Retardants .....	12
Short-chain chlorinated paraffins.....	12
Glycols .....	12
Halogenated solvents .....	12
Organotins .....	13
Polycyclic aromatic hydrocarbons (PAH) .....	13
Phthalates.....	14
Volatile organic compounds (VOC) .....	14
Pesticides/Insecticides .....	15
Per and polyfluorinated chemicals (PFC).....	16
Heavy metals .....	16
Chlorobenzenes and chlorotoluenes.....	17
Chlorophenols.....	17
Appendix 1 Chemical Inventory formats.....	18

## MRSL - IMPLEMENTATION AND COMPLIANCE

### INTRODUCTION

The Marks & Spencer Restricted Substances List (RSL) is well-established, and defines the limits for residues of hazardous chemicals allowed on the finished product.

However, it is possible that some chemicals may be used within the manufacturing process which may not be present in the final product, but which may be of concern to worker safety and the environment.

For example, chemicals which are applied at an earlier stage of manufacture may be washed out of the substrate during the course of wet processing. While residues of these chemicals on the final product may be compliant with the RSL, their use may provide a risk to workers, and their presence in effluent may cause local environmental problems.

Also, there may be chemicals (for example machine cleaning chemicals), which have no direct contact with the substrate, but which may cause worker exposure and environmental issues.

In conjunction with the Zero Discharge of Hazardous Chemicals Group (ZDHC), Marks & Spencer has compiled a **Manufacturing Restricted Substances List (MRSL)** of hazardous chemicals.

The purpose of the MRSL is to restrict the input of hazardous chemicals to the manufacturing process. The chemicals listed are banned from deliberate use in formulations.

In general, the MRSL reflects the requirements of the RSL, and therefore compliance with the MRSL will lead to more certain compliance with the RSL.

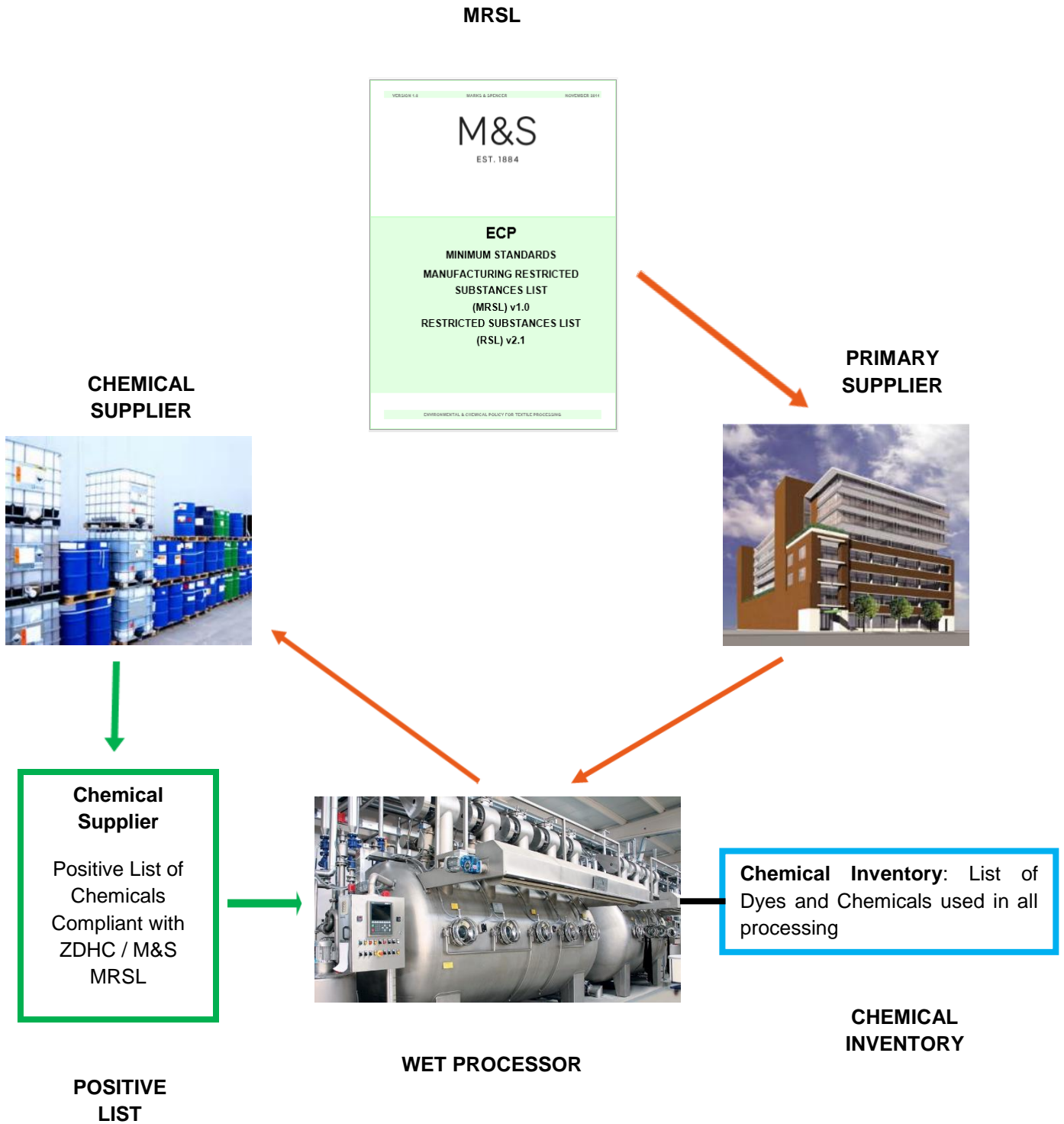
**Note: THE MRSL DOES NOT REPLACE THE RSL.** Compliance with the RSL is required as part of the business Terms and Conditions.

In addition, **THE MRSL DOES NOT REPLACE APPLICABLE NATIONAL AND LOCAL ENVIRONMENTAL OR WORKPLACE SAFETY RESTRICTIONS.**

**Note:** The Zero Discharge of Hazardous Chemicals group (ZDHC) has compiled an MRSL for discretionary use by its members. The content of the Marks and Spencer MRSL is based on the ZDHC document, with additions specific to Marks and Spencer's requirements.

**Note :** the requirements of the MRLS and RSL must be underpinned by testing to the ZDHC Wastewater guidelines

### MRSL IMPLEMENTATION PROCESS



## 1 IMPLEMENTATION: ROLES AND RESPONSIBILITIES

### 1.1 PRIMARY SUPPLIER

#### Responsibility

It is the responsibility of the Primary Supplier to ensure that the wet processing mill has a current copy of the MRSL.

Compliance with the MRSL is a minimum requirement for overall compliance with the Environmental and Chemical Practice (ECP). **(Please refer to the Minimum Standards questions of the ECP Self Audits for Textile Wet Processing and for Tanneries).**

### 1.2 WET PROCESSOR

#### Responsibility

Compliance with the MRSL depends on good chemical management by the wet processing facility (Dyer, Finisher, Printer, Laundry Tannery etc). This compliance must be confirmed as a minimum requirement in the Self Audits of the ECP for Wet Processors and Tanneries. **The MRSL applies to all goods processed for Marks and Spencer.**

It is the responsibility of the wet processing mills to share the MRSL with their chemical suppliers, and only to use formulations compliant with the MRSL. This includes all dyes, pigments and auxiliary formulations and chemicals used in processing, and chemicals used for ancillary activities such as machine cleaning, print screen cleaning etc.

#### Chemical Inventory

To comply with the Minimum Standards of the Marks and Spencer Environmental and Chemical Policy (ECP), the mill must have a **Chemical Inventory (please refer to the Minimum Standards question of the Self Audit for Textile Wet Processing and question 30 of the Self Audit for Tanneries of the ECP)**. For transparency, all dyes and chemicals used in all of the mill's processing must be recorded. The Chemical Inventory must be available on demand. The Chemical Inventory format may take many structures, but it will contain the following minimum information:

**CHEMICAL INVENTORY: DYES**

Facility name: \_\_\_\_\_

Date: \_\_\_\_\_

DYE SUPPLIER	DYE NAME	DYE TYPE	CI NUMBER	MRSL COMPLIANT Yes/No

Name of supplier, eg .Dystar, Everlight, Huntsman etc.

Full dye name eg. Acid F Red 2BL etc.

Eg. Acid, Disperse, Reactive etc.

Colour Index Number

**CHEMICAL INVENTORY: AUXILIARIES**

Facility name: \_\_\_\_\_

Date: \_\_\_\_\_

AUXILIARY SUPPLIER	AUXILIARY NAME	AUXILIARY TYPE	MRSL COMPLIANT Yes/No

Name of supplier, eg. Rudolf, CHT, Archroma etc.

Full auxiliary name eg. Leveller ABC

Eg. Detergent, Levelling Agent, Softener etc.

**CHEMICAL INVENTORY: CHEMICAL SUBSTANCES**

Facility name: \_\_\_\_\_

Date: \_\_\_\_\_

CHEMICAL SUPPLIER	CHEMICAL NAME	CAS NUMBER

Name of local chemical supplier

Full chemical substance name eg. Acetic acid, Sodium hydroxide, Common salt etc.

Chemical Abstracts Services number

Wet Processors who already have a Chemical Inventory should continue to use their own format, provided it contains the minimum information shown above.

For Wet Processors who need to introduce a Chemical Inventory procedure, please refer to Appendix 1 on pages 15-17 for suggested formats to gather minimum information.

## Definition of inventory categories

**Dyes:** Dyes and pigments used in any colouration process.

**Auxiliaries:** Proprietary formulations from auxiliary manufacturers used for specific process applications, such as scouring agents, levelling agents, lubricants, resins, water repellents, softeners etc.

**Chemical substances:** Non-formulated individual chemicals from local chemical suppliers, such as sodium hydroxide, acetic acid, hydrogen peroxide, sodium chloride etc.

### 1.3 COMPLIANCE

For a mill to be compliant, it must be able to demonstrate that all formulations within its chemical inventory meet the requirements of the MRSL. Written declarations to this effect must be obtained from the chemical suppliers, and be available on demand.

Some suppliers issue lists of dyes and auxiliaries that are compliant with the limits stated on the MRSL. Formulations in these lists are declared to be compliant. These are commonly known as '**Positive Lists**'.

The written confirmation should be obtained **directly** from the dye or chemical supplier, **not through an agent**.

The wet processor should retain the right to have any formulation analysed for MRSL content as a form of Due Diligence, and discuss the results with the supplier. Please refer to the general analysis techniques in the MRSL table.

### 1.4 NON-COMPLIANCE WITH THE MRSL

Compliance with the MRSL is a minimum requirement for overall compliance with the Environmental and Chemical Practice (ECP). **(Please refer to the Minimum Standards questions of the ECP Self Audits for Textile Wet Processing and for Tanneries).**

#### Examples of non-compliance

- A formulation containing listed chemicals greater than the specified limits and
- Non-disclosure of formulation limits by a chemical supplier.

In the case of non-compliance, please contact the relevant Marks and Spencer Technologist **immediately** for advice.

## 1.5 CHEMICAL SUPPLIER

### Responsibility

It is the responsibility of the chemical supplier, on the request of the wet processor, to provide up-to-date information on the compliance of their formulations with the MRSL i.e the chemicals in their formulations are within the limits specified in the MRSL.

On request, the chemical supplier must provide in-house or third party test reports to confirm the claims in their declarations of compliance.

### Material Safety Data Sheet - caution

Please note that chemical suppliers are obliged only to declare concentrations of hazardous chemicals of over 1000 ppm on the Material Safety Data Sheet (MSDS) for their formulations. The MSDS is therefore not a reliable guide for the purpose of identifying the hazardous chemical content of a formulation, and the MRSL requires **no intentional presence of the chemicals listed**. Written confirmation of compliance must be requested.



## 2.0 Manufacturing Restricted Substances List

GROUP	CAS NUMBER	CHEMICAL NAME	FORMULATION LIMIT	TEST METHOD (PREFERRED)	STATUS OF ELIMINATION
<b>ALKYLPHENOLS (AP) and ALKYLPHENOL ETHOXYLATES (APEO)</b>  APEOs can be found in: detergents, scouring agents, spinning oils, wetting agents, softeners, emulsifier/dispersing agents for dyes and prints, impregnating agents, degumming for silk, dye and pigment preparations, polyester padding and down/feather fillings	104-40-5, 11066-49-2 25154-52-3 84852-15-3	Nonylphenol (NP) Mixed isomers	250ppm	With Reference To DIN EN ISO 18857 And Followed by Liquid Chromatography – Mass Spectrometry (LC-MS) Analysis. NPEO(1+2): GC/MS	Banned  No intentional use
	140-66-9 1806-26-4 27193-28-8	Octylphenol (OP) Mixed isomers	250ppm		
	9016-45-9 26027-38-3 37205-87-1 68412-54-4 127087-87-0	Nonylphenol ethoxylates (NPEO)	500ppm		
	9002-93-1 9036-19-5 68987-90-6	Octylphenol ethoxylates (OPEO)	500ppm		

GROUP	CAS NUMBER	CHEMICAL NAME	FORMULATION LIMIT	TEST METHOD (PREFERRED)	STATUS OF ELIMINATION
<p><b>AZO DYES: RESTRICTED AMINES</b></p> <p>Azo dyes and pigments are colourants that incorporate one or several azo groups (-N=N-) bound with aromatic compounds. Thousands of azo dyes exist, but only those which degrade to form the listed cleavable amines are restricted. Azo dyes that release these amines are regulated and should no longer be used for dyeing of textiles.</p>	101-14-4	4,4'-methylene-bis-(2-chloroaniline)	150ppm	<p>With Reference To EN 14362:1&amp;3 And Followed By Gas Chromatographic – Mass Spectrometric (GC-MS) And High Performance Liquid Chromatographic (HPLC) Analysis.</p>	<p>Banned</p> <p>No intentional use</p>
	101-77-9	4,4'-methylenedianiline			
	101-80-4	4,4'-oxydianiline			
	106-47-8	4-chloroaniline			
	119-90-4	3,3'-dimethoxybenzidine			
	119-93-7	3,3'-dimethylbenzidine			
	120-71-8	6-methoxy-m-toluidine			
	137-17-7	2,4,5-trimethylaniline			
	139-65-1	4,4'-thiodianiline			
	60-09-3	4-aminoazobenzene			
	615-05-4	4-methoxy-m-phenylenediamine			
	838-88-0	4,4'-methylenedi-o-toluidine			
	87-62-7	2,6-xylydine			
	90-04-0	o-anisidine			
	91-59-8	2-naphthylamine			
	91-94-1	3,3'-Dichlorobenzidine			
	92-67-1	4-aminodiphenyl			
	92-87-5	Benzidine			
	95-53-4	o-toluidine			
	95-68-1	2,4-Xylydine			
95-69-2	4-chloro-o-Toluidine				
95-80-7	4-methyl-m-phenylenediamine				
97-56-3	o-aminoazotoluene				
99-55-8	5-nitro-o-toluidine				

GROUP	CAS NUMBER	CHEMICAL NAME	FORMULATION LIMIT	TEST METHOD (PREFERRED)	STATUS OF ELIMINATION
<b>NAVY BLUE COLOURANT</b> Navy Blue colourants are regulated and should no longer be used for dyeing of textiles.	118685-33-9	Component 1: C39H23ClCrN7O12S:3Na	250ppm	Solvent extraction and analysis by LC/DAD	Banned No intentional use
	Not allocated	Component 2: C46H30CrN10O20S2:3Na			
<b>CARCINOGENIC DYES and DYES OF EQUIVALENT CONCERN</b>  Most of these substances are regulated and should no longer be used for dyeing of textiles.	1937-37-7	Direct Black 38	250ppm	Solvent extraction and analysis by LC/DAD	Banned No intentional use
	2602-46-2	Direct Blue 6			
	3761-53-3	Acid Red 26			
	569-61-9	Basic Red 9			
	573-58-0	Direct Red 28			
	632-99-5	Basic Violet 14			
	82-28-0	Disperse orange 11			
	2475-45-8	Disperse Blue 1			
	2475-46-9	Disperse Blue 3			
	2580-56-5	CI Basic Blue 26 (with Michler's Ketone >0.1%)			
	569-64-2	CI Basic Blue 26 (with Michler's Ketone >0.1%)			
	2437-29-8	CI Basic Green 4 (Malachite green)			
10309-95-2	CI Basic Green 4 (Malachite green oxalate)				
<b>SKIN -SENSITISING DISPERSE DYES</b>  Disperse dyes are a class of water-insoluble dyes that penetrate the fibre system of synthetic or manufactured fibres and are held in place by physical forces without forming chemical bonds. Disperse dyes are used in synthetic fibre (e.g., polyester, acetate, polyamide). Restricted disperse dyes are suspected of causing allergic reactions and should no longer be used for dyeing of textiles.	3179-90-6	Disperse Blue 7	250ppm	Solvent extraction and analysis by LC/DAD	Banned No intentional use
	3860-63-7	Disperse Blue 26			
	12222-75-2	Disperse Blue 35			
	12222-97-8	Disperse Blue 102			
	12223-01-7	Disperse Blue 106			
	61951-51-7	Disperse Blue 124			
	119-15-3	Disperse Yellow 1			
	2832-40-8	Disperse Yellow 3			
	6373-73-5	Disperse Yellow 9			
	12236-29-2	Disperse Yellow 39			
	54824-37-2	Disperse Yellow 49			
	2581-69-3	Disperse Orange 1			
	730-40-5	Disperse Orange 3			
	13301-61-6	Disperse Orange 37/59/76			
	2872-52-8	Disperse Red 1			
	2872-48-2	Disperse Red 11			
	3179-89-3	Disperse Red 17			
	23355-64-8	Disperse Brown 1			
56524-77-7	Disperse Blue 35 A				

GROUP	CAS NUMBER	CHEMICAL NAME	FORMULATION LIMIT	TEST METHOD (PREFERRED)	STATUS OF ELIMINATION
<b>FLAME RETARDANTS</b>  Flame retardant chemicals are rarely used to meet flammability requirements in children's clothing and adult products. They should no longer be used in apparel and footwear.	3194-55-6	Hexabromocyclododecane (HBCCD)	HBCCD 100ppm	By Toluene Extraction And Followed By Liquid Chromatography - Mass Spectrometry (LC-MS) And Gas Chromatography - Mass Spectrometry (GC-MS) Analysis	Banned in all Clothing. No intentional use  Use for other textiles by agreement with M&S Technologist ONLY
	126-72-7	Tris-(2,3,-dibromopropyl)-phosphate (TRIS)	250ppm		
	13674-87-8	Tris(1,3-dichloro-isopropyl) phosphate (TDCP)			
	32534-81-9	Pentabromodiphenyl ether (PentaBDE)			
	32536-52-0	Octabromodiphenyl ether (OctaBDE)			
	1163-19-5	Decabromodiphenyl ether (DecaBDE)			
	5412-25-9	Bis(2,3-dibromopropyl)phosphate (BIS)			
	59536-65-1	Polybrominated biphenyls (PBB)			
	79-94-7	Tetrabromobisphenol A (TBBPA)			
	545-55-1	Tris(1-aziridinyl)phosphine oxide (TEPA)			
	115-96-8	Tris(2-chloroethyl)phosphate (TCEP)			
	3296-90-0	2,2-Bis(bromomethyl)-1,3-propanediol (BBMP)			
<b>SHORT CHAIN CHLORINATED PARAFFINS</b>	85535-84-8	Short chain chlorinated paraffins C10-C13		50ppm	Dichloromethane extraction GC/MS or LC/MS(-MS)
<b>GLYCOLS</b>  In apparel and footwear, glycols have a wide range of uses including as solvents for finishing/cleaning, printing agents, and dissolving and diluting fats, oils and adhesives (e.g., in degreasing or cleaning operations).	111-96-6	Bis(2-methoxyethyl)-ether	50ppm	Solvent extraction and GC-MS analysis	Banned No intentional use
	110-80-5	2-Ethoxyethanol			
	111-15-9	2-Ethoxyethyl acetate			
	110-71-4	Ethylene glycol dimethyl ether			
	109-86-4	2-Methoxyethanol			
	110-49-6	2-Methoxyethylacetate			
	70657-70-4	2-Methoxypropylacetate			
	112-49-2	Triethylene glycol dimethyl ether			
<b>HALOGENATED SOLVENTS</b>  In apparel and footwear, solvents are used as finishing/cleaning and printing agents, for dissolving and diluting fats, oils and adhesives (e.g., in degreasing or cleaning operations).	107-06-2	1,2-dichloroethane	5ppm	By Headspace Gas Chromatography Mass Spectrophotometric (HS-GCMS) analysis	Banned No intentional use
	75-09-2	Dichloromethane	40ppm		
	127-18-4	Tetrachloroethylene	5ppm		
	79-01-6	Trichloroethylene			

GROUP	CAS NUMBER	CHEMICAL NAME	FORMULATION LIMIT	TEST METHOD (PREFERRED)	STATUS OF ELIMINATION
<p><b>ORGANOTINS</b></p> <p>Organotins are a class of chemicals combining tin and organics such as butyl and phenyl groups. Organotins are predominantly found in the environment as antifoulants in marine paints, but they can also be used as biocides (e.g., antibacterials), catalysts in plastic and glue production and heat stabilizers in plastics/rubber. In textiles and apparel, organotins are associated with plastics/rubber, inks, paints, metallic glitter, polyurethane products and heat transfer material.</p>	Multiple	Dibutyltin (DBT)	20ppm	ISO 17353, Derivatisation with NaB(C <sub>2</sub> H <sub>5</sub> ) GC/MS	Banned No intentional use
	Multiple	Dimethyltin (DMT)	5ppm		
	Multiple	Monobutyltin (MBT)			
	Multiple	Monooctyltin (MOT)			
	Multiple	Diocetyl tin (DOT)			
	Multiple	Tricyclohexyltin (TCyHT)			
	Multiple	Triocetyl tin (TOT)			
	Multiple	Tripropyltin (TPT)			
	Multiple	Tributyltin (TBT)			
	Multiple	Triphenyltin (TPhT)			
	Multiple	Tetrabutyltin (TeBT)			
<p><b>POLYCYCLIC AROMATIC HYDROCARBONS (PAH)</b></p> <p>Polycyclic aromatic hydrocarbons (PAHs) are natural components of crude oil and are a common residue from oil refining. PAHs have a characteristic smell similar to the smell of car tyres or asphalt. Oil residues containing PAHs are added to rubber and plastics as a softener or extender and may be found in rubber, plastics, lacquers and coatings. PAHs are often found in the outsoles of footwear and in printing pastes of screen prints. PAHs can be present as impurities in Carbon Black. They also may be formed from thermal decomposition of recycled materials during reprocessing.</p> <p>Naphthalene: Dispersing agents for textile dyes may contain high residual naphthalene concentrations due to the use of low quality naphthalene derivatives (e.g., poor quality naphthalene sulphonate formaldehyde condensation products).</p>	50-32-8	Benzo(a)pyrene	20ppm	Solvent extraction and GC-MS analysis	Banned No intentional use
	120-12-17	Anthracene	Sum = 200ppm		
	129-00-0	Pyrene			
	191-24-2	Benzo(ghi)perylene			
	192-97-2	Benzo(e)pyrene			
	193-39-5	Indeno(1,2,3-cd)pyrene			
	205-82-3	Benzo(j)fluoranthene			
	205-99-2	Benzo(b)fluoranthene			
	206-44-0	Fluoranthene			
	207-08-9	Benzo(k)fluoranthene			
	208-96-8	Acenaphthylene			
	218-01-9	Chrysene			
	53-70-3	Dibenz(a,h)anthracene			
	56-55-3	Benzo(a)anthracene			
	83-32-9	Acenaphthene			
	85-01-8	Phenanthrene			
	86-73-7	Fluorene			
91-20-3	Naphthalene				

GROUP	CAS NUMBER	CHEMICAL NAME	FORMULATION LIMIT	TEST METHOD (PREFERRED)	STATUS OF ELIMINATION
<p><b>PHthalATES</b> Including all other esters of ortho-phthalic acid</p> <p>Esters of ortho-phthalic acid (phthalates) are a class of organic compounds commonly added to plastics to increase flexibility. They are sometimes used to facilitate moulding of plastic by decreasing its melting temperature.</p> <p>Phthalates can be found in:</p> <ul style="list-style-type: none"> <li>• Flexible plastic components (e.g., PVC)</li> <li>• Print pastes</li> <li>• Adhesives</li> <li>• Plastic buttons</li> <li>• Plastic sleeveings</li> <li>• Polymeric coatings</li> </ul>	117-81-7	Di-(ethylhexyl) phthalate; DEHP	Sum of all phthalates = 250ppm	Toluene Extraction And Followed by Gas Chromatography- Mass Spectrometry (GC-MS) Analysis resp. LC/MS. Extraction with toluene at pH6, GC/MS*	Banned  No deliberate use
	117-82-8	Bis(2-methoxyethyl) phthalate (DMEP)			
	117-84-0	Di-n-octyl phthalate (DnOP)			
	26761-40-0	Di-isodecyl phthalate (DIDP)			
	28553-12-0	Di-sononyl phthalate (DINP)			
	84-75-3	Di-n-hexyl phthalate (DnHP)			
	84-74-2	Di-n-butyl phthalate (DBP)			
	85-68-7	Butyl benzyl phthalate (BBP)			
	84-76-4	Dinonyl phthalate (DNP)			
	84-66-2	Diethyl phthalate (DEP)			
	131-16-8	Di-n-propyl phthalate (DPRP)			
	84-69-5	Di-isobutyl phthalate (DIBP)			
	84-61-7	Di-cyclohexyl phthalate (DCHP)			
	27554-26-3	Di-isooctyl phthalate (DIOP)			
	68515-42-4	1,2-Benzenedicarboxylic acid, di C7-C11 branched and linearalkyl esters (DHNUP)			
71888-89-6	1,2-Benzenedicarboxylic acid, di C6-C8 branched alkyl esters, C7 rich (DIHP)				
<p><b>VOLATILE ORGANIC COMPOUNDS (VOC)</b></p> <p>These volatile organic compounds should not be used in textile auxiliary chemical preparations. They are associated with solvent-based processes like solvent-based polyurethane coatings and glues/adhesives. They should not be used for any kind of facility cleaning or spot cleaning.</p>	71-43-2	Benzene	50ppm	Direct analysis by Headspace GC-MS	Banned  No intentional use
	1330-20-7	Xylene	500ppm		
	95-48-7	o-cresol			
	106-44-5	p-cresol			
	108-39-4	m-cresol			

GROUP	CAS NUMBER	CHEMICAL NAME	FORMULATION LIMIT	TEST METHOD (PREFERRED)	STATUS OF ELIMINATION
<p><b>PESTICIDES / INSECTICIDES</b></p> <p><b>MOTHPROFING</b></p> <p>These substances may be found in mothproofing formulations for animal fibres such as wool and cashmere.</p>	Various	Permethrin	Sum total 0.5ppm	Reference to EPA 8270D, GCMS/ LCMS analyses	Banned No intentional use
	68359-37-5	Cyfluthrin			
	52315-07-8	Cypermethrin			
	52918-63-5	Deltamethrin			
	Various	Polychloro chloromethyl sulphonomido diphenyl ether			
	370-50-3	Fluocofuron			
	24019-05-4	Sulcofuron			
	60-57-1	Dieldrin			
<p><b>PESTICIDES / INSECTICIDES</b></p> <p><b>GENERAL</b></p> <p>These can be found in natural fibres of vegetable origin (eg cotton, linen, ramie) and natural fibres of animal origin (eg wool, cashmere, silk).</p> <p>They should never be used by our Wet Processing suppliers (Dyers, Finishers, Printers, Laundries and Tanneries).</p>	309-00-2	Aldrin	Sum total 0.5ppm	Reference to EPA 8270D, GCMS/ LCMS analyses	Banned No intentional use
	2425-06-1	Captafol			
	57-74-9	Chlordane			
	72-54-8	DDD (Dichlorodiphenyldichloroethane)			
	50-29-3	DDT (dichlorodiphenyltrichloroethane)			
	72-20-8	Endrin			
	76-44-8	Heptachlor			
	118-74-1	Hexachlorobenzene			
	93-76-5	2,4,5-T(richlorophenoxyacetic acid)			
	94-75-7	2,4-D(ichlorophenoxyacetic acid)			
	6164-98-3	Chlorodimeform			
	510-15-6	Chlorobenzilate			
	88-85-7 + salts	Dinoseb (and its salts)			
	6923-22-4	Monocrotophos			
	Various	Hexachlorocyclohexane			
	319-84-6	Alpha-Hexachlorocyclohexane			
	319-85-7	Beta- Hexachlorocyclohexane			
	58-89-9	Gamma-Hexachlorocyclohexane (Lindane)			
	31218-83-4	Propetamphos			
	333-41-5	Diazinon			
	97-17-6	Dichlofenthion			
	299-84-3	Fenclorphos			
	Various	Chlorofenvinphos			
Various	Cyhalothrin				
Various	Fenvalerate				

GROUP	CAS NUMBER	CHEMICAL NAME	FORMULATION LIMIT	TEST METHOD (PREFERRED)	STATUS OF ELIMINATION
<p><b>PER and POLYFLUORINATED CHEMICALS</b></p> <p>PFOA and PFOS may be present as unintended by-products in long-chain commercial water, oil and stain repellent agents. PFOA also may be in use for polymers like polytetrafluoroethylene (PTFE). Please follow the link to the M&amp;S PFC Policy: <a href="https://supplierexchange1.marksandspencer.com/articles/ecp-policies">https://supplierexchange1.marksandspencer.com/articles/ecp-policies</a></p>	2795-39-3, 56773-42-3	Perfluorooctane sulphonate (PFOS) and derivatives	2ppm (Sum)	Solvent extraction, LC/MS-MS	Banned from 1 <sup>st</sup> July 2016
	335-67-1	Perfluorooctanoic acid (PFOA) and derivatives	2ppm		No intentional use
	29420-49-3	Perfluorobutane Sulfonate (PFBS)	2ppm		
	3871-99-6	Perfluorohexane Sulfonate (PFHxS)	2ppm		
	375-92-8	Perfluoroheptane Sulfonate (PFHpS)	2ppm		
	126105-34-8	Perfluorodecane Sulfonate (PFDS)	2ppm		
	754-91-6	Perfluorooctane Sulfonamide (PFOSA) 1H, 1H, 2H, 2H, H4PFOS; 6:2	2ppm		
	375-22-4	Perfluorobutane Acid (PFBA)	2ppm		
	307-24-4	Perfluorohexane Acid (PFHxA)	2ppm		
	375-85-9	Perfluoroheptane Acid (PFHpA)	2ppm		
	375-95-1	Perfluorononane Acid (PFNA)	2ppm		
	335-76-2	Perfluorodecane Acid (PFDA)	2ppm		
	4234-23-5	Perfluoroundecanoic Acid (PFUnA)	2ppm		
	307-55-1	Perfluorododecanoic Acid (PFDoA)	2ppm		
	72629-94-8	Perfluorotridecanoic Acid (PFTrA)	2ppm		
	376-06-7	Perfluorotetradecanoic Acid (PFTeA)	2ppm		
	172155-07-6	Perfluoro-3,7 – dimethyloctanoic Acid (PF-3,7-DMOA)	2ppm		
	1546-95-8	7H-Dodecanefluoroheptane Acid (HPFHpA)	2ppm		
	-	2H, 2H-perfluorodecane Acid (H2PFDA)	2ppm		
	34598-33-9	2H, 2H, 3H, 3H-Perfluoroundecanoic Acid (H4PFUnA)	2ppm		
	17527-29-6	1H, 1H, 2H, 2H – Perfluorooctylacrylate (6:2 FTA)	2ppm		
	27905-45-9	1H, 1H, 2H, 2H-Perfluorodecylacrylate (8:2 FTA)	2ppm		
	17741-60-5	1H, 1H, 2H, 2H-Perfluorododecylacrylate (10:2 FTA)	2ppm		
	2043-47-2	1H, 1H, 2H, 2H-Perfluoro-1-hexanol (4:2 FTOH)	2ppm		
	647-42-7	1H, 1H, 2H, 2H-Perfluoro-1-oktanol (6:2 FTOH)	2ppm		
	678-39-7	1H, 1H, 2H, 2H-Perfluoro-1-decanol (8:2 FTOH)	2ppm		
	865-86-1	1H, 1H, 2H, 2H-Perfluoro-1-dodecanol (10:2 FTOH)	2ppm		
	2448-09-7	2-(N-methylperfluoro-FASE 1 octanesulfonamido) – ethanol (MeFOSE)	2ppm		
	1691-99-2	2-N-ethylperfluoro-1-octanesulfonamido) – ethanol (EtFOSE)	2ppm		
	31506-32-8	N-methylperfluoro -1- octanesulfonamide (MeFOSA)	2ppm		
	4151-50-2	N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	2ppm		
	27619-97-2	1H, 1H, 2H, 2H-Perfluorooctanesulphonic acid (H4PFOS 6-2)	2ppm		
	Various	All other Perfluorinated or Polyfluorinated compounds (fully or partially fluorinated compounds)	2ppm		



GROUP	CAS NUMBER	CHEMICAL NAME	FORMULATION LIMIT	TEST METHOD (PREFERRED)	STATUS OF ELIMINATION
<p><b>HEAVY METALS</b></p> <p><b>The following metals are banned from intentional use in textile manufacturing and finishing:</b></p> <p><b>Arsenic</b> and its compounds can be used in some preservatives, pesticides and defoliants for cotton. It may also be found in synthetic fibres, paints, inks, trims, and plastics.</p> <p><b>Cadmium</b> compounds are found in or used as: pigments (particularly red, orange, yellow and green), a stabilizer for PVC plastic, in fertilizers, biocides and in surface paints on zippers and buttons.</p> <p><b>Mercury</b> compounds can be present in pesticides and in sodium hydroxide. Mercury compounds may be used in surface paints on zippers and buttons.</p> <p><b>Lead</b> may be found in plastics, paints, inks, pigments and surface coatings.</p> <p><b>Chromium VI</b> can be found in the after-chroming process for the dyeing of wool and cashmere, and in leather tanning. In addition, residual traces of antimony, barium, chromium, cobalt, copper, iron, manganese, nickel, selenium, silver, tin and zinc are expected to comply with the Ecological and Toxicological Association of Dye and Organic Pigment Manufacturers (ETAD) concentration limits as listed.</p> <p><b>Metal-complex dyes</b> Complex bonded copper, chromium, and – to a lesser extent- cobalt and nickel are essential components of metal complex dyes and pigments. Metal complexes are often unavoidable to achieve the desired fastness levels and in certain cases the desired hue. The complex bonded metal is an inherent part of the dyestuff molecule. It will be fixed on the fibre with the dyestuff. Any small percentage of the metal will be removed by any technique used for the decolourization of dye house effluents.</p> <p><b>The ETAD trace metal limit recommendations do not refer to metal complex colorants.</b></p> <p><b>For Pigments</b>, the total content of Cadmium, Lead, Chromium (VI) and Mercury is not to exceed 100ppm.</p>	7440-38-2	Arsenic	50ppm Dyes and Pigments	Digestion, ICP analysis.	<p>Banned</p> <p>No intentional use other than content in metal-complex dyes and pigments.</p> <p>These should be substituted by alternative colourants where technically possible</p>
	7440-43-9	Cadmium	20ppm Dyes 50ppm Pigments		
	7439-97-6	Mercury	4ppm Dyes 25ppm Pigments		
	7439-92-1	Lead	100ppm Dyes and Pigments		
	18540-29-9	Chromium VI	10ppm Dyes and Pigments		
	7440-36-0	Antimony	50ppm Dyes 250ppm Pigments		
	7440-39-2	Barium	100ppm Dyes and Pigments		
	7440-47-3	Chromium	100ppm Dyes and Pigments		
	7440-48-4	Cobalt	500ppm Dyes		
	7440-50-8	Copper	250ppm Dyes		
	7439-89-6	Iron	2500ppm Dyes		
	7439-96-5	Manganese	1000ppm Dyes		
	7440-02-0	Nickel	200ppm Dyes		
	7782-49-2	Selenium	20ppm Dyes 100ppm Pigments		
	7440-22-4	Silver	100ppm Dyes		
7440-31-5	Tin	250ppm			
7440-66-6	Zinc	1500ppm Dyes 1000ppm Pigments			

GROUP	CAS NUMBER	CHEMICAL NAME	FORMULATION LIMIT	TEST METHOD (PREFERRED)	STATUS OF ELIMINATION
<b>CHLOROBENZENES and CHLOROTOLUENES</b> Chlorobenzenes and chlorotoluenes (chlorinated aromatic hydrocarbons) can be used as carriers in the dyeing process of polyester or wool/polyester fibres. They can also be used as solvents.	95-50-1	1,2-Dichlorobenzene	1000ppm	Solvent extraction GCMS analysis.	Banned
	Other mono-, di-, tri-, tetra-, hexa- and penta-chlorobenzenes and di-, tri-, tetra-, penta- and hexa chlorotoluenes		Sum = 200ppm		No intentional use
<b>CHLOROPHENOLS</b> Chlorophenols are polychlorinated compounds used as preservatives or pesticides. Pentachlorophenol (PCP) and tetrachlorophenol (TeCP) are sometimes used to prevent mould and kill insects when growing cotton and when storing/transporting fabrics. PCP/TeCP can also be used as a preservative in print pastes.	25167-83-3	Tetrachlorophenol (TeCP)	Sum = 20ppm	Solvent Extraction / Derivatisation followed by GC-MS analysis	Banned
	87-86-5	Pentachlorophenol (PCP)	Sum = 50ppm		No intentional use
	Mono-, di-, and tri- chlorophenols				







## RESTRICTED SUBSTANCES LIST (RSL)

Introduction .....	22
Restricted Substances List .....	23
Dye and chemical selection .....	29
Appendix 1 Aromatic amines.....	30
Appendix 2 Dyes that cleave to form banned amines .....	31
Appendix 3 Skin sensitising disperse dyes .....	32
Appendix 4 Pesticides/insecticides .....	33
Appendix 5 Organic solvents .....	34
Appendix 6 Chemical testing notes .....	35
Appendix 7 Childrenswear: Clarification of chemical restrictions .....	36
Appendix 8 Best practice notes .....	36
Product yellowing.....	36
Sequestering agents .....	37
Mould .....	37
Chlorine: Bleaching.....	37
Chlorine: Wool shrink resisting .....	37
Potassium permanganate .....	37
Nanotechnology .....	38
Ozone .....	38
pH control .....	39
Sandblasting.....	39

## RESTRICTED SUBSTANCES LIST (RSL)

### INTRODUCTION

Marks & Spencer launched its first Restricted Substances List (RSL) in the late 1990's – the first major UK retailer to do so. The current edition of the RSL is a mandatory requirement of our Garment Makers' Terms & Conditions.

Details are provided of the chemical, its risk, acceptable levels of presence in the finished product, and preferred test method for identification and quantity present.

A suitably qualified member of each Garment Maker's management team should take responsibility to ensure that all chemicals deliberately applied by the Wet Processor to products contracted for M&S conform to this list, and the stated performance standards.

Wet Processors should ensure that their own chemical, dyestuff, print and laundry chemical suppliers are clear about our requirements, and can supply proof of compliance in relation to deliveries. Wet Processors should check the Material Safety Data Sheet (MSDS) against the RSL requirements for each product used to assist in the selection of chemicals which will ensure compliance with the RSL.

To ensure ongoing compliance with this RSL, Marks & Spencer carries out random unannounced Due Diligence testing of product in our Stores. If any product is found to be non-compliant with the RSL, there is a fine chargeable to the Garment Maker (see T&Cs), which may be passed on to the Wet Processor. We reserve the right to RTM the product at the supplier's cost. In cases where non-compliance leads to a Product Recall, associated responsibilities or charges will be applied to the Garment Maker.

We expect that suppliers will carry out Due Diligence Testing to ensure compliance with the Restricted Substances List, and to ensure that their upstream suppliers also carry out Due Diligence Testing as appropriate. Please refer to the Due Diligence section of the M&S Supplier Exchange website. <http://supplierexchange.marksandspencer.com>

***There are many thousands of chemicals that are not mentioned in the RSL that are known to be harmful to humans or the environment. They are not mentioned because there is little chance they would ever be used on the type of products we sell. However, we do not expect any harmful chemicals to be present in our products. Marks and Spencer will continue to promote the minimisation of harmful chemicals in our products and the responsible use of safer technology.***

## RESTRICTED SUBSTANCES LIST

Chemical	What M&S products are most likely to be affected?	What is the origin of the controlled chemical?	Why is it banned or restricted?	Retail legal status	Supply base legal status	Maximum limit on finished product	'Practical' Limit of Detection	Test method (preferred method)
<p><b>REACH</b> - the use of products or preparations containing SVHCs (Substances of Very High Concern) as listed on the current edition of REACH is not permitted by Marks &amp; Spencer where viable alternatives are available. M&amp;S must be notified of the presence of any SVHCs in product at the time of contract, these must be less than 0.1% W/W. See <b>Module 2</b> – REACH for further details.</p>								
<p><b>Banned Azo dyes and pigments</b> <i>No deliberate use</i></p>	All fibre types	Banned amines listed in appendix 1 Examples of dyes that can form such amines listed in appendix 2	Dyes can split to form carcinogenic amines	Sale of products containing > 30 ppm is illegal Regulation No 1907/2006 of the European Parliament and of the Council	Use of products containing > 30 ppm is illegal	<b>20 ppm</b>	5 ppm	<p><b>Textiles:</b> EN 14362:2012 <b>Leather :</b> EN ISO 17234:2010</p>
<b>WARNING: Azo pigments</b>	CI Pigment Orange 13 and CI Pigment Orange 34, when used in combination with CI Pigment Black 7, can release the banned aromatic amine 3,3' – dichlorobenzidine. Do not use these pigments in combination.							
<p><b>Skin Sensitising Disperse Dyes</b> <i>No deliberate use</i></p>	Polyester, Acetate, and disperse-dyed nylon	Disperse Dyes listed in appendix 3	Once sensitised to a dye, people can react violently to trace quantities	No Legal restriction	No Legal restriction	<b>20 ppm</b>	5 ppm	DIN 54231:2005-11
<p><b>Alkyl phenol ethoxylates and Alkyl phenols (APEOs, APs)</b> <i>No deliberate use</i></p>	All fibre types	In widespread use as detergents, Wetting agents, and as emulsifying agents	Endocrine disruptors (sex change chemicals) for aquatic species	Regulation 1907/2006 (EU) Annex XVII	Use of formulations containing over 0.1% of NPEO is illegal in Europe	<b>100 ppm combined total of NPEO and OPEO 10ppm NP and OP</b>	100 ppm	Solvent Extraction GCMS/LCMS
<b>APEO technical notes</b>	Refer to <b>Chemical Guidance and Best Practice for APEOs and APs</b> of the Environmental & Chemical Policy for Textile Processing							
<p><b>Organo tin compounds</b> <i>No deliberate use</i></p>	All fibre types	Preservative for fabrics and chemical formulations. Occasionally used as stabilizers and catalysts	Tributyl tin is highly toxic, and related products have toxicity issues	Commission Decision 2009/425/EC	Use is effectively prohibited via water authority regulations	<b>0.5 ppm TBT, TPT (in extract) 1ppm DBT, DOT and MBT (in extract)</b>	0.05 ppm	<p><b>Textiles:</b> Solvent extraction + GC-MS (ISO 17353:2005-11 or in-house methods) <b>Leather:</b> SATRA TM277</p>



Chemical	What M&S products are most likely to be affected?	What is the origin of the controlled chemical?	Why is it banned or restricted?	Retail legal status	Supply base legal status	Maximum limit on finished product	'Practical' Limit of Detection	Test method (preferred method)
<b>Chlorinated Phenols</b> <b>Including PCP and derivatives, TeCP</b> <i>No deliberate use</i>	Cotton, Viscose	Preservative for cotton and viscose. Main risk is on imported greige fabrics	Highly Toxic	No formulations containing over 0.1% can be placed on the market in Europe (Commission Regulation EC 552/2009)	Use is effectively prohibited via water authority regulations	<b>Total of PCP plus TeCP</b> <b>Adults and Leather 0.5ppm</b> <b>Childrenswear 0.05ppm</b>	0.05ppm	<b>Textiles:</b> LMBG B82.02.8 Analysed on GC-ECD <b>Leather:</b> EN TS 14494:2003
<b>Mercury</b> <i>No deliberate use</i>	Cotton	Caustic soda that is made by the 'mercury cell process'	Highly toxic	Could be governed by biocidal substances directive	Use is effectively prohibited via water authority regulations	<b>0.02 ppm</b>	0.01 ppm	Any appropriate technique e.g. Combustion amalgamation with cold vapour detection
<b>Mothproofing: Permethrin &amp; Analogues of these</b> <i>No deliberate use</i>	Wool, (Cashmere, Angora)	Commonest chemical is permethrin - found on wool and cashmere	Nerve agent, and toxic to aquatic species	No Legal restriction	Use is effectively prohibited via water authority regulations	<b>Contamination limit 10ppm</b>	1 ppm	Solvent extraction + GCMS/LCMS
<b>PFOS</b> <i>No deliberate use</i>	All fibre types	Water-repellent '8-chain' fluorocarbon finishes based on electrofluorination (old generation products)	Proven health risks, and persistent in the environment	Articles should not contain more than 1 ug/m <sup>2</sup> of PFOS (Commission Regulation EC 552/2009)	Formulations containing more than 50mg/kg (0.005%) cannot be placed on the market (EC 552/2009)	<b>1 µg/m<sup>2</sup></b>	1 ppm	Solvent extraction + GCMS/LC-MS
<b>PFOA</b> <i>No deliberate use</i>	All fibre types	Water-repellent finishes based on telemerisation	Persistent in the environment and suspected health risks	No Legal restriction	No Legal restriction	<b>1 µg/m<sup>2</sup></b>	1ppm	Solvent extraction + GCMS/LC-MS
<b>PFC notes</b>	<b>PFCs are banned for use in apparel and footwear</b>							
<b>Dye Carriers</b> <b>Including Chlorobenzenes, BPP and OPP</b> <i>No deliberate use</i>	Polyester	Used to dye polyester and blends at low temperatures in machinery not capable of being pressurised	Various depending on type of carrier - generally toxic, irritants or carcinogens	No Legal restriction	Some chemical types are prohibited	<b>1 ppm total for halogenated aromatic hydrocarbons, biphenyl or ortho phenyl phenol</b>	1 ppm	Solvent extraction + GC-MS

Chemical	What M&S products are most likely to be affected?	What is the origin of the controlled chemical?	Why is it banned or restricted?	Retail legal status	Supply base legal status	Maximum limit on finished product	'Practical' Limit of Detection	Test method (preferred method)
<b>Chromium VI</b> <i>Consent Required</i>	Wool, (Cashmere, Angora) Leather	Chromium compounds used in 2-stage 'after-chrome' wool dyeing	Highly toxic / carcinogenic both to humans and aquatic species	No Legal restriction – new German legislation banning use in leather above limit of detection	Large scale use is effectively prohibited via water authority regulations	<b>Textiles and Leather 3ppm</b>	3 ppm EN ISO 17075:2007	EN ISO 17075:2007
<b>Organic solvents including chlorinated solvents</b> <i>Consent Required</i>	Panel Printed or solvent-scoured fabrics	Organic solvents listed in Appendix 5. Used in some adhesives, print formulations, solvent scouring and spot cleaning	Various depending on type of solvent	Some solvents are restricted	Some solvents are banned - e.g. carcinogens	<b>Limit of detection 1 ppm</b>	Varies according to chemical type	GCMS / Head Space for volatile solvents. Solvent extraction GCMS for semi-volatile solvents
<b>Organic solvent technical notes</b>	Where solvents are used suppliers should always work to change to water based alternatives. Where this is not possible e.g. dry pigment discharge printing there must be adequate extraction of fumes, good ventilation, and workers must be provided with appropriate Personal Protective Equipment. Solvents are permitted for scouring greige, but these must be in fully enclosed zero emission systems. No residual solvent is permitted on any finished product. <b>Trichloroethylene</b> is classified as a carcinogen (REACH article 57a). It can be found in preparations for spot cleaning, and the MSDS may quote one of many synonyms used for trichloroethylene. Do not use the product if it has the CAS number 79-01-6. Alternative preparations for spot cleaning, eg citrus- or water-based products are recommended							
<b>Biocidal Finishes</b> <i>Consent Required</i> <u>Not permitted in Childrenswear unless by consent</u>  <u>Triclosan is not permitted for use in any M&amp;S products</u>	All fibre types Leather	Deliberate application on fabrics	Toxic Can cause severe skin irritation e.g. DMFu (see below)	Some chemical types are restricted e.g. DMFu is <u>banned</u> in EU and UK	Some chemical types are restricted by water authorities – all biocides have to be registered under the biocides directive – 98/8/EC	<b>Limit of detection unless agreed in writing by technologist</b>	Varies according to type. Report result as ppm	Analytical – Solvent extraction (test lab own method) followed by GC-MS
<b>Biocidal finish notes</b>	Deliberately applied biocidal finishes to impart customer benefit must be permanent, non-leaching, and work only on the fabric and not on customers' skin, and must not be implicated in antibiotic resistance. Biocidal finishes should not be confused with odour absorbers such as cyclodextrins.							
<b>DMFu – dimethyl fumarate</b> <u>Not permitted for use in any M&amp;S products</u>	Leather for furniture, footwear, or accessories etc.	Silica gel sachets which also contain banned DMFu to stop mould growth in transit	Causes severe irritation when in human skin contact	EU Decision banning its use 2009/251/EC	EU Decision banning its use 2009/251/EC	0.1 mg/kg in products	0.1 mg/kg	Solvent extraction followed by GC-MS

Chemical	What M&S products are most likely to be affected?	What is the origin of the controlled chemical?	Why is it banned or restricted?	Retail legal status	Supply base legal status	Maximum limit on finished product	'Practical' Limit of Detection	Test method (preferred method)
<b>Flame retardants</b> <i>Consent Required</i> <u>Not permitted in Childrens and Adult Clothing</u>	Cotton	Deliberate application on fabrics	Depends on exact chemistry - Toxic, not biodegradable and suspected health risks	Legal restrictions for penta and octa BDE of 0.1% (EC Regulation 552/2009)	Legal restrictions for penta and octa BDE of 0.1% (EC Regulation 552/2009)	<b>5ppm for penta-, hexa- and octa - brominated biphenyl ethers, PCB's and PCT's</b>	5 ppm	Solvent extraction + GC-MS or LC-MS
<b>Flame retardant notes</b>	Flame retardant finishes should only be applied where there is a legislative need with written consent from M&S. Penta, Hexa and Octa –brominated types must not be deliberately applied and must not be present above 5 ppm. Suppliers using deca brominated types should follow VECAP best practice - <a href="http://www.bsef.com/product_stew/vecap/">http://www.bsef.com/product_stew/vecap/</a>							
<b>Phthalates</b> <b>(as softener for eg PVC)</b> <u>Not permitted in Children's and Adult Clothing Footwear and Accessories</u>	PVC mock leather and plastisol prints	Used to soften rigid PVC	Suspected sex change chemicals /suspected carcinogen	6 phthalates now illegal in children's clothing and toys in Europe Directive 2005/84/EC	PVC containing DBP, DEHP, BBP, DINP, DIDP, DNOP are banned in REACH directive above set limits	<b>250 ppm combined total of the 6 legislated phthalates</b> <b>100 ppm maximum for each phthalate</b>	100 ppm	Solvent extraction + GCMS
<b>Phthalate and PVC notes</b>	It is essential that all suppliers who are using PVC based products familiarise themselves with, and comply with the current <b>M&amp;S PVC policy</b> . DEHP, DBP and BBP are SVHCs, and are banned above 1000ppm in <u>all</u> childcare articles and toys. DINP, DIDP and DNOP are banned above 1000ppm in articles that are intended for children under 36 months and can be mouthed. Another phthalate has been notified on the REACH SVHC list – Diisobutyl phthalate (cas 84-69-5) is an SVHC but not on toy legislation, but should be avoided							
<b>Formaldehyde</b> <u>Not permitted in Children's underwear or any baby wear</u>	Resinated Cotton and Viscose	Most commonly found in resinated products (and in lower levels in fixing agents for cotton and nylon)	Known irritant to skin and mucous membranes Reclassified as carcinogen by WHO	No Legal restriction	Controls on workplace airborne quantities	<b>Free 75ppm Released 300ppm Baby wear 20ppm</b>	Less than 20 ppm	<b>Textiles:</b> BS EN ISO 14184:2011 Parts 1 and 2. <b>Leather:</b> EN ISO TS 17226 HPLC
<b>Pesticides / Insecticides</b>  <i>No deliberate use</i>	Wool (and lower levels on cotton)	Pesticides and Insecticides listed in Appendix 4. Used to protect sheep and cotton crops from parasite infestation.	Toxic	Selected chemicals are banned under POP convention	Strict controls on effluent	<b>Total 0.5ppm for wool Total 0.05ppm for cotton</b>	0.05 ppm	Analytical – HPLC or GCMS

Chemical	What M&S products are most likely to be affected?	What is the origin of the controlled chemical?	Why is it banned or restricted?	Retail legal status	Supply base legal status	Maximum limit on finished product	'Practical' Limit of Detection	Test method (preferred method)
<b>pH of Textiles and Leather</b>	All fibre types. Leather	Acidity or alkalinity arising from the final process	Extreme values can cause skin irritation	No Legal restriction	No Legal restriction	Childrenswear and direct skin contact <b>pH 4.0 – 7.5</b> No direct skin contact <b>pH 4.0 – 8.5</b>	-	Textiles: ISO 3071 (2005). Leather: EN ISO 4045 (2008)
<b>Metals in Textiles Technical Notes</b>	The figures contained in this document refer to M&S acceptable limits of heavy metals on finished textiles. There is specific legislation relating to specific metals in all end uses (e.g. Cadmium Directive) and also legislation for metals in toys (EN71). Please note that acceptable limits in EN71 are significantly higher than for M&S textiles - the standards in this ECP document apply to M&S textile based toys. Metal is used as an integral part of some dye chromophores to impart technical performance. Where metal-free dyes will meet M&S performance requirements these should be used as the preferred option. In addition to these textile standards, M&S have specific policies and standards relating to metal in componentry (see <b>Nickel Policy and Childrenswear Safety Manual</b> )							
<b>Cadmium</b>	Various	Pigments, Dyes, Fibres, Alloys	Toxic	EN 71 + Cadmium directive	Strict controls on effluent	<b>0.1 ppm</b>	<b>0.03 ppm</b>	ISO 105 E04 (2009) acid. ICP-MS Total BSEN 1122
<b>Nickel</b>	Various	Green and turquoise dyes	Allergenic	EN 71 + see nickel policy there is a nickel directive	Strict controls on effluent	<b>Adults 4 ppm</b> <b>Infants 1ppm</b>	<b>1 ppm</b>	ISO 105 E04 (2009) acid. ICP-MS
<b>Antimony</b>	Various	Fibres, flame retardants	Toxic	EN 71	Strict controls on effluent	<b>30 ppm</b>	<b>30 ppm</b>	ISO 105 E04 (2009) acid. ICP-MS
<b>Lead</b>	Various	Pigments / water pipes	Toxic	EN 71	Strict controls on effluent	<b>Adults 1 ppm</b> <b>Infants 0.2ppm</b>	<b>0.3 ppm</b>	ISO 105 E04 (2009) acid. ICP-MS
<b>Copper</b>	Various	-	Toxic	None	Strict controls on effluent	<b>Adults: 50ppm</b> <b>Infants: 25ppm</b>	<b>0.3 ppm</b>	ISO 105 E04 (2009) acid. ICP-MS
<b>Chromium</b>	Various	-	Toxic	-	Strict controls on effluent	<b>Adults: 2 ppm</b> <b>Infants: 1 ppm</b>	<b>0.3 ppm</b>	ISO 105 E04 (2009) acid. ICP-MS
<b>Other Heavy Metals</b>	Various	Various	Toxic	EN 71	Strict controls on effluent	<b>1ppm</b>	<b>0.3 ppm</b>	ISO 105 E04 (2009) acid. ICP-MS
<b>Short Chained Chlorinated Paraffins (SCCP)</b> <i>No deliberate use</i>	Leather, Natural and Coated	Used in flame retardants, plasticisers, adhesives. Fat liquoring agent in leather processing.	Toxic to aquatic organisms	Europe – Regulation 552/2009 REACH Annex XV11 No. 42	REACH Annex XV11 No. 42  Restriction on preparations containing >1.0%	<b>100ppm</b>	<b>100 ppm</b>	Solvent extraction + GCMS
<b>Chlorine based bleach</b> <b>Sodium Chlorite is not permitted</b>	Cotton	Deliberate application	Toxic in high concentrations. Concerns over AOX formation in effluent	No Legal restriction	No Legal restriction. May form AOX in effluent, and these are controlled.	<b>Use chlorine-free bleach where practicable</b>	<b>N/A</b>	-

Chemical	What M&S products are most likely to be affected?	What is the origin of the controlled chemical?	Why is it banned or restricted?	Retail legal status	Supply base legal status	Maximum limit on finished product	'Practical' Limit of Detection	Test method (preferred method)
<b>Chlorine Technical notes</b>	The use of alternative bleaching systems based on, eg hydrogen peroxide are recommended. The use of sodium chlorite in particular is prohibited by M&S. See Appendix 8 for further notes on best practice processing.							

Chemical	What M&S products are most likely to be affected?	What is the origin of the controlled chemical?	Why is it banned or restricted?	Retail legal status	Supply base legal status	Maximum limit on finished product	'Practical' limit of detection	Test method (preferred method)
<b>Polycyclic Aromatic Hydrocarbons</b>	Footwear outsoles, screen prints	Used to soften rigid rubber and plastic materials. Can be found in print pastes.	Toxic Some PAHs are carcinogens	Draft Commission Regulation EU amending Annex XVII to Regulation (EC) No 1907/2006. No. 50	Strict controls on effluent and air emissions	<b>Benzo(a)pyrene</b> 1ppm <b>Combined total of all other PAHs</b> 10ppm	<b>0.1ppm</b>	Solvent extraction, determination with GC-MS

## DYE AND CHEMICAL SELECTION – AVOIDANCE OF NON-COMPLIANCE

With the exception of some contaminants that are brought in on raw materials most chemical safety and environmental issues are caused by the dyes and chemicals that are deliberately used for the manufacture of products.

Dyehouses, printers, finishers, laundries and tanneries must take care to select products that do not harm textile workers, the environment or Marks & Spencer customers.

Earlier versions of our chemical policy specified ETAD (Ecological and Toxicological Association of Dyes and Organic Pigments Manufacturers [www.etad.com](http://www.etad.com)) as recommended to ensure compliance with our policy. We no longer require membership of this organisation to supply dyes, chemicals, or print inks, but it is our preference that products sourced from ETAD members are used.

***It is mandatory that any supplier of dye, chemical, or print chemical fully complies with the Marks & Spencer RSL, and any related REACH requirements. Membership or listing on a third party organisation will not be taken as approval to use the supplier's product.***

**Compliant dyes and chemicals** – Products selected from responsible suppliers will give compliance if applied appropriately. The following suppliers are given as examples. **Please note that the list is not exhaustive, and other suppliers may offer compliant products.**

- **Dystar** (owned by Longshen/Kiri) dyes and chemicals [www.dystar.com](http://www.dystar.com).
- **Huntsman Textile Effects** dyes and chemicals [www.huntsman.com](http://www.huntsman.com)
- **Archroma** dyes and chemicals [www.archroma.com](http://www.archroma.com).
- **CHT/Bezema** dyes and chemicals [www.cht-group.com](http://www.cht-group.com).
- **Magna** print and speciality chemicals [www.magnacolours.com](http://www.magnacolours.com)
- **BASF** chemicals (owned by Archroma) [www.basf.com](http://www.basf.com)
- **Rudolf** chemicals [www.rudolf.de](http://www.rudolf.de)
- **Nearchimica** chemicals [www.nearchimica.it](http://www.nearchimica.it)
- **Tanatex** chemicals [www.tanatexchemicals.com](http://www.tanatexchemicals.com)
- **Jintex** [www.jintex.com.tw](http://www.jintex.com.tw)
- **Pidilite Industries** <http://www.pidilite.com>

The following Appendices (1, 2 & 3) highlight the dyestuffs that are **BANNED** for use in Marks & Spencer products. These chemicals must **NOT** be used for Marks & Spencer production. If any product is found to be non-compliant with the RSL, there is a fine chargeable to the Garment Maker (see T&Cs), which may be passed on to the Wet Processor.

## Childrenswear Panel Prints – see Appendix 7

The following companies' ranges of panel printing chemicals comply with our general requirements for chemicals and the stringent Childrenswear standards of PVC-free and Phthalate-free. It is strongly recommended that products utilising new technology from these companies are used to minimise the risk of non-conformance.

- **Magna, Print Kimya, Zydex, CHT/Bezema**

## APPENDIX 1

## BANNED Aromatic Amines Specified in EC 2002/61

TEST METHOD EN 14362:2012 USED TO DETECT BANNED AMINES (1-21 ON THIS LIST). If aniline, or 1,4 – phenylenediamine is detected, see amine number 22 (below) for special test method				
	CAS Number	Index Number	EC Number	Substances
1	92-67-1	612-072-00-6	202-177-1	4-aminobiphenyl
2	92-87-5	612-042-00-2	202-199-1	Benzidine
3	95-69-2	612-196-00-0	202-441-6	4-chloro-o-toluidine
4	91-59-8	612-022-00-3	202-080-4	2-naphthylamine
5	97-56-3	611-006-00-3	202-591-2	o-aminoazotoluene
6	99-55-8	612-210-00-5	202-765-8	5-nitro-o-toluidine
7	106-47-8	612-137-00-9	203-401-0	4-chloroaniline
8	615-05-4	612-200-00-0	210-406-1	2,4-diaminoanisole
9	101-77-9	612-051-00-1	202-974-4	4,4'-diaminodiphenylmethane
10	91-94-1	612-068-00-4	202-109-0	3,3'-dichlorobenzidine
11	119-90-4	612-036-00-X	204-355-4	3,3'-dimethoxybenzidine
12	119-93-7	612-041-00-7	204-358-0	3,3'-dimethylbenzidine
13	838-88-0	612-085-00-7	212-658-8	4,4'-methylenedi-o-toluidine
14	120-71-8	612-209-00-X	204-419-1	p-cresidine
15	101-14-4	612-078-00-9	202-918-9	4,4'-methylene-bis-(2-chloro-aniline)
16	101-80-4	612-199-00-7	202-977-0	4,4'-oxydianiline
17	139-65-1	612-198-00-1	205-370-9	4,4'-thiodianiline
18	95-53-4	612-091-00-X	202-429-0	o-toluidine 2-aminotoluene
19	95-80-7	612-099-00-3	202-453-1	4-methyl-m-phenylenediamine
20	137-17-7	612-197-00-6	205-282-0	2,4,5-trimethylaniline
21	90-04-0	612-035-00-4	201-963-1	o-anisidine 2-methox aniline
22	60-09-3	611-008-00-4	200-453-6	p-aminoazobenzene German Test No. 64 LFGB B82.02-9 September 2006 may be used to detect presence of Amine 22. If 4-amino azobenzene (para amino benzene) is detected: <20PPM = PASS, >20PPM = FAIL
23	95-68-1	-	202-440-0	2,4-xylidine
24	87-62-1	612-161-00-X	201-758-7	2,6-xylidine

## APPENDIX 2

**Examples of Dyes which Potentially Cleave to form BANNED Aromatic Amines (listed in Appendix 1) under reducing conditions**

CI Acid Orange 45	22195
CI Acid Red 24	16140
CI Acid Red 85	22245
CI Acid Red 114	23635
CI Acid Red 115	27200
CI Acid Red 128	24125
CI Acid Red 148	26665
CI Acid Red 158	20530
CI Acid Red 167	
CI Acid Red 265	18129
CI Acid Black 29	
CI Acid Black 209	
Azoic Diazo Component 12	37105
Basic Brown 4 (= Solvent Brown 12)	21010
Developer 14 (=Oxidation Base 20)	76035
Direct Yellow 1	22250
Direct Yellow 24	22010
Direct Yellow 48	23660
Direct Orange 1	22370
Direct Orange 6	23375
Direct Orange 7	23380
Direct Orange 8	22130
Direct Orange 10	23370
Direct Orange 108	29173
Direct Red 1	22310
Direct Red 2	23500
Direct Red 7	24100
Direct Red 10	22145
Direct Red 13	22155
Direct Red 17	22150

Direct Red 21	23560
Direct Red 22	23565
Direct Red 28	22120
Direct Red 37	22240
Direct Red 39	23630
Direct Red 44	22500
Direct Red 46	23050
Direct Red 62	29175
Direct Red 67	23505
Direct Red 72	29200
Direct Violet 1	22570
Direct Violet 12	22550
Direct Violet 21	23520
Direct Violet 22	22480
Direct Blue 1	24410
Direct Blue 2	22590
Direct Blue 3	23705
Direct Blue 6	22610
Direct Blue 8	24140
Direct Blue 9	24155
Direct Blue 10	24340
Direct Blue 14	23850
Direct Blue 15	23790
Direct Blue 22	24280
Direct Blue 25	23790
Direct Blue 35	24145
Direct Blue 76	24411
Direct Blue 151	24175
Direct Blue 160	

Direct Blue 173	
Direct Blue 192	
Direct Blue 201	
Direct Blue 215	24115
Direct Blue 295	23820
Direct Green 1	30280
Direct Green 6	30295
Direct Green 8	30315
Direct Green 8.1	
Direct Green 85	30387
Direct Brown 1	30045
Direct Brown 1:2	30110
Direct Brown 2	22311
Direct Brown 6	30140
Direct Brown 25	36030
Direct Brown 27	31725
Direct Brown 31	35660
Direct Brown 33	35520
Direct Brown 51	31710
Direct Brown 59	22345
Direct Brown 79	30056
Direct Brown 95	30145
Direct Brown 101	31740
Direct Brown 154	30120
Direct Brown 222	30368
Direct Black 4	30245
Direct Black 29	22580
Direct Black 38	30235
Direct Black 154	



## APPENDIX 3

**BANNED Dyestuffs implicated in Contact Dermatitis by Consumers, which include:**

CI	Disperse Blue	1
CI	Disperse Blue	3
CI	Disperse Blue	7
CI	Disperse Blue	26
CI	Disperse Blue	35
CI	Disperse Blue	102
CI	Disperse Blue	106
CI	Disperse Blue	124
CI	Disperse Yellow	1
CI	Disperse Yellow	3
CI	Disperse Yellow	9
CI	Disperse Yellow	23
CI	Disperse Yellow	39
CI	Disperse Yellow	49
CI	Disperse Orange	1
CI	Disperse Orange	3
CI	Disperse Orange	37
CI	Disperse Orange	59
CI	Disperse Orange	76
CI	Disperse Red	1
CI	Disperse Red	11
CI	Disperse Red	17
CI	Disperse Brown	1

## APPENDIX 4

**Pesticides / Insecticides include the following:**

<b>Cotton and Natural Cellulosic Fabrics &amp; Blends of these with Other Fibres</b>	<b>Wool and Other Keratin Fabrics &amp; Blends of these with Other Fibres</b>
<b>Max Limits for each Product Listed <u>0.05ppm</u></b>	<b>The Sum Total should Not Exceed <u>0.5ppm</u></b>
Aldrin	Alpha-Hexachlorocyclohexane
Captafol	Beta- Hexachlorocyclohexane
Chlordane	Gamma- Hexachlorocyclohexane
DDT	Lindane
Dieldrin	Aldrin
Endrin	Endrin
Heptachlor	Dieldrin
Hexachlorobenzene	DDT
Hexachlorocyclohexane (total Isomers)	DDD
2,4,5-T(richlorophenoxyacetic acid)	Propetamphos
2,4-D(ichlorophenoxyacetic acid)	Diazinon
Chlordimeform	Dichlofenthion
Chlorobenzilate	Fenchlorphos
Dinoseb (and its salts)	Chlorfenvinphos
Monocrotophos	Cyhalothrin
	Cypermethrin
	Deltamethrin
	Fenvalerate

## APPENDIX 5

Depending on their type, organic solvents may be legally restricted e.g as carcinogens. No residual solvent is permitted on any finished product.

Organic solvents include the following but are not limited to:

Solvent	CAS Number
Benzene	71-43-2
Phenol	108-95-2
Cresol (and isomers)	1319-77-3
Toluene	108-88-3
Xylene (and isomers)	1330-20-7
Dimethyl formamide (DMF)	68-12-2
Methyl ethyl ketone	78-93-3
Bromodichloromethane	75-27-4
Bromoform	75-25-2
Tetrachloromethane (Carbon tetrachloride)	56-23-5
Chlorodibromomethane	124-48-1
Chloroethane	75-00-3
Chloroform	67-66-3
Dibromomethane	74-95-3
1,1-Dichloroethane	75-34-3
1,2-Dichloroethane	107-06-2
1,1-Dichloroethene	75-35-4
cis-1,2-Dichloroethene	159-59-2
trans-1,2-Dichloroethene	156-60-5
trans-1,3-Dichloropropene	10061-02-6
Dichloromethane	75-09-2
1,1,2,2-Tetrachloroethane	79-34-5
1,1,1-Trichloroethane	71-55-6
Tetrachloroethene (Tetrachloroethylene)	127-18-4
Trichloroethene (Trichloroethylene)	79-01-6
Vinyl chloride	75-01-4
Hexachloroethane	87-68-3

## APPENDIX 6

### Chemical testing notes

#### General Remarks

Chemicals can be detected in amounts that fall into 3 categories:

- *Background* levels – amounts found in nature
- *Contamination* – low levels present
- *Deliberate application* – higher levels present through deliberate application

There are two broad types of test:

- Qualitative – tells you something is definitely there in high, medium or low amounts.
- Quantitative – tells you exactly how much there is.

For any test there will be a 'limit of detection' below which a chemical cannot be detected. (Where methods use solvent extraction the limits of detection and permissible levels may refer to the extract and not the test fabric/component – see chemicals on product table).

In some instances the M&S 'Acceptable limit' refers to the acceptable limit in the solvent extract and not the total amount on the fabric under test.

#### Testing Requirements

All tests must be conducted in UKAS accredited laboratories or those that operate a mutual recognition scheme (e.g. HOKLAS, COFRAC).

Certain laboratories will carry out screening tests for families of similar chemicals before doing specific targeted quantitative tests. A negative screening test result from an accredited laboratory is normally sufficient, and no further testing is required.

Chemical tests from non-accredited laboratories may need to be re-tested and will at best be submissable as qualitative evidence only.

#### Approved Global Test House Organisations For RSL And REACH Chemical Testing

##### UK/EU/TURKEY REGION

Intertek, SGS, UL

##### INDIA/SRI LANKA/BANGLADESH REGION

Intertek, SGS, UL, Texanlab

##### CHINA/HK, FAR EAST REGION

Intertek, SGS, UL

## APPENDIX 7

### Childrenswear: Clarification of Chemical Restrictions

The following extra restrictions apply to Childrenswear merchandise:

- **Formaldehyde** – deliberate use of Formaldehyde containing products not permitted in underwear or babywear.
- **PVC and Phthalates** – not permitted
- **Biocidal finishes** – not permitted unless by consent.
- **Flame Retardant finishes** – not permitted.

All product must comply with EN71 (relevant parts), however the levels specified in this legislation for certain chemicals is much higher than would reasonably be expected in textile production therefore the permitted levels for Marks & Spencer production are those detailed in the table on pages 4-8 and not those in the legislation.

## APPENDIX 8

### Best Practice Notes for Areas Unrestricted by Legislation

**Product yellowing** – is often the effect of phenolic yellowing, which is caused by the reaction of phenolic compounds on the material with oxides of nitrogen under alkaline conditions.

Best practice to prevent phenolic yellowing is to avoid exposure of the material to gas-fired equipment, eg gas-fired tumble dryers, stenters and factory heating systems. The use of electric fork-lift trucks is recommended, and the material should not be stored near loading bay areas where it may be exposed to diesel fumes.

Packaging should be free from Butylated Hydroxytoluene (BHT), and cardboard packaging should be lined to prevent direct contact of the material to lignin in the cardboard, which can cause yellowing.

The final pH of whites and pale shades should be slightly acid (5.5 – 6.5) using a buffering chemical such as citric acid. This is particularly important with cotton, which tends to retain the alkali predominant in its processing.

For further information, refer to the Marks & Spencer guidelines for yellowing on the M&S Supplier Exchange: <http://supplierexchange.marksandspencer.com>

**Sequestering agents** – are used as chelating agents to remove metallic ions such as magnesium and calcium from water if greater softness is required for a particular process. Ethylenediaminetetraacetic acid (EDTA) and phosphonates have been used widely, but they are non-biodegradable. There are concerns that, once they enter river systems, these chelants can extract heavy metals from sediment. This remobilizes these metals in the environment, which may have adverse long-term effects.

Best practice is to use alternative sequestering agents such as ethylenediaminedisuccinic acid (EDDS), which are readily biodegradable.

**Mould** – may develop on the product during storage or transportation. Inhaled fungal spores may lead to allergy or asthma. Mould will develop on textiles or leather under warm and humid conditions, and some species of mould only require 24 hours to begin to grow.

Best practice is to ensure that the goods are dry before packing prior to storage or transportation, especially if one of the final operations is a steaming process.

For further information, refer to the Marks & Spencer guidelines for Mould on the M&S Supplier Exchange: <http://supplierexchange.marksandspencer.com>

**Chlorine: bleaching** – used mainly for cotton. Chlorine is toxic in high concentrations, and its use may lead to the presence of AOX pollutants (eg dioxins) in effluent. The use of alternative bleaching systems for cellulose based on, eg hydrogen peroxide, are recommended. The use of sodium chlorite in particular is prohibited by M&S.

**Chlorine: wool shrink - resisting** – used in wool processing to provide a base stable to either domestic laundering or to further processing of the substrate. For the shrink-resisting of certain wool qualities, chlorination processes may be used under the safety guidelines of the relevant MSDS. Where practicable, alternative processes based on, eg permonosulphuric acid, are recommended.

**Potassium permanganate** – used in denim processing as a local bleaching agent, often in spray form. It is toxic to workers. Use permanganate –free process wherever practicable. If permanganate is used – ensure PPE is worn and finished garments are free from residues.

Potassium permanganate is also used as part of a wool shrink-resisting process. Ensure that PPE is worn and the chemical handled according to the MSDS.

**Nanotechnology** – is defined by the European Chemicals Agency (ECHA) as chemical substances, materials or films that are manufactured and used on a very small scale. Their structures range from approximately 1 to 100 nm (nanometers) in at least one direction, and they could be released during surface modification. Nanofibres are defined as fibres with diameters less than 100nm.

There is research being performed on some nanoscale items, but M&S is adopting a precautionary principle to nanotechnology.

**There is no current legislation covering nanotechnology, but M&S adopts the ECHA advice to proceed with caution – hazardous chemicals remain hazardous in nano form, and safer chemistry could become more harmful at nano scale.**

Should official recommendations change (including the introduction of legislation), the M&S recommendations may be revised.

For further information, refer to the M&S Nanotechnology Policy on the Quality Standards website:

<http://supplierexchange.marksandspencer.com>

**Ozone (O<sub>3</sub>)** – is a highly reactive form of oxygen (O<sub>2</sub>), and is used as a bleaching agent in, for example, denim processing.

Because of its reactivity, ozone cannot be stored, and is created for immediate use in specialized machinery. Exposure to ozone can have serious adverse health effects, particularly damage to the respiratory tract, the lungs, and the eyes. At certain levels, ozone can be fatal in a relatively short time.

The critical area for exposure to ozone is in the vicinity of the processing machinery, and the control and monitoring of ozone emissions is vital.

Processors using ozone generating equipment must be able to demonstrate that:

- They are running the ozone generation and processing machinery according to the manufacturer's installation, operating and maintenance guidelines.
- The ozone monitoring and fail-safe devices are operational and that emissions are within agreed worker exposure limits. These limits may be subject to local legislation.
- Emergency procedures and relevant training programmes are in place.

## pH Control

The acidity or alkalinity of a substance is measured in terms of pH.

The pH scale is from 0 to 14. The neutral point is 7, and values below this are progressively more acid, while those above are progressively more alkaline.

Control of pH is important for many dyeing and finishing processes, and should be monitored for each stage of the process as appropriate.

While pH control during processing is important to achieve an acceptable product in terms of levelness, colour fastness etc, the residual pH of the product is vital to avoid skin irritation.

M&S has an RSL requirement for residual pH of 4.0 to 7.5 for Childrenswear and Direct Skin Contact, and 4.0 to 8.5 for No Direct Skin Contact.

There are formulations available which regulate the pH and, when added to the final processing bath, give a 'buffered' pH which is relatively stable.

These formulations are based mainly on citric acid derivatives, and are widely available and well-proven. When used according to the manufacturers' instructions, they will give a greater chance of compliance with M&S requirements.

## Sandblasting

Sandblasting is a finishing technique used to create a worn look for denim by blasting crystalline silica onto the fabric under high pressure. When this is performed without proper safeguards to protect workers, they can be exposed to inhalation of the crystalline silica, which can cause serious illnesses, including silicosis in the lungs.

Efforts to enforce the use of breathing equipment have not been effective and **M&S have decided that the ethical and responsible course of action is to ban sandblasting from our manufacture.**

Alternatives to replicate the sandblasting effect include hand scraping, enzyme treatment and laser techniques.