

REGULATION AND COMPLIANCE FRAMEWORK

November 2017

Version 1.4

THE PROBLEM

What problems may occur if one is not aware of chemical regulations?

Brainstorm as a group and take notes in your workbook, exercise (3-1).

LEARNING OUTCOMES & RESOURCES

Learning Outcomes

- Comprehensive understanding of the regulatory environment of chemicals.

Resources

- REMC Company Handbook.
- ZDHC Chemical Management Systems Guidance Manual.
- ZDHC Wastewater Guideline (+Video).
- ZDHC Guidance Sheets.
- REWE Group Chemical Fact Sheets.
- ZDHC MRSL (+Video).
- REWE Group MRSL.
- Tchibo MRSL.

Workbook

Refer to complimentary excercises in your workbook.

ZDHC REQUIREMENTS

ZDHC CMS 2.2.1 - Monitoring regulations and permits

ZDHC CMS 2.2.2 - Verification of compliance

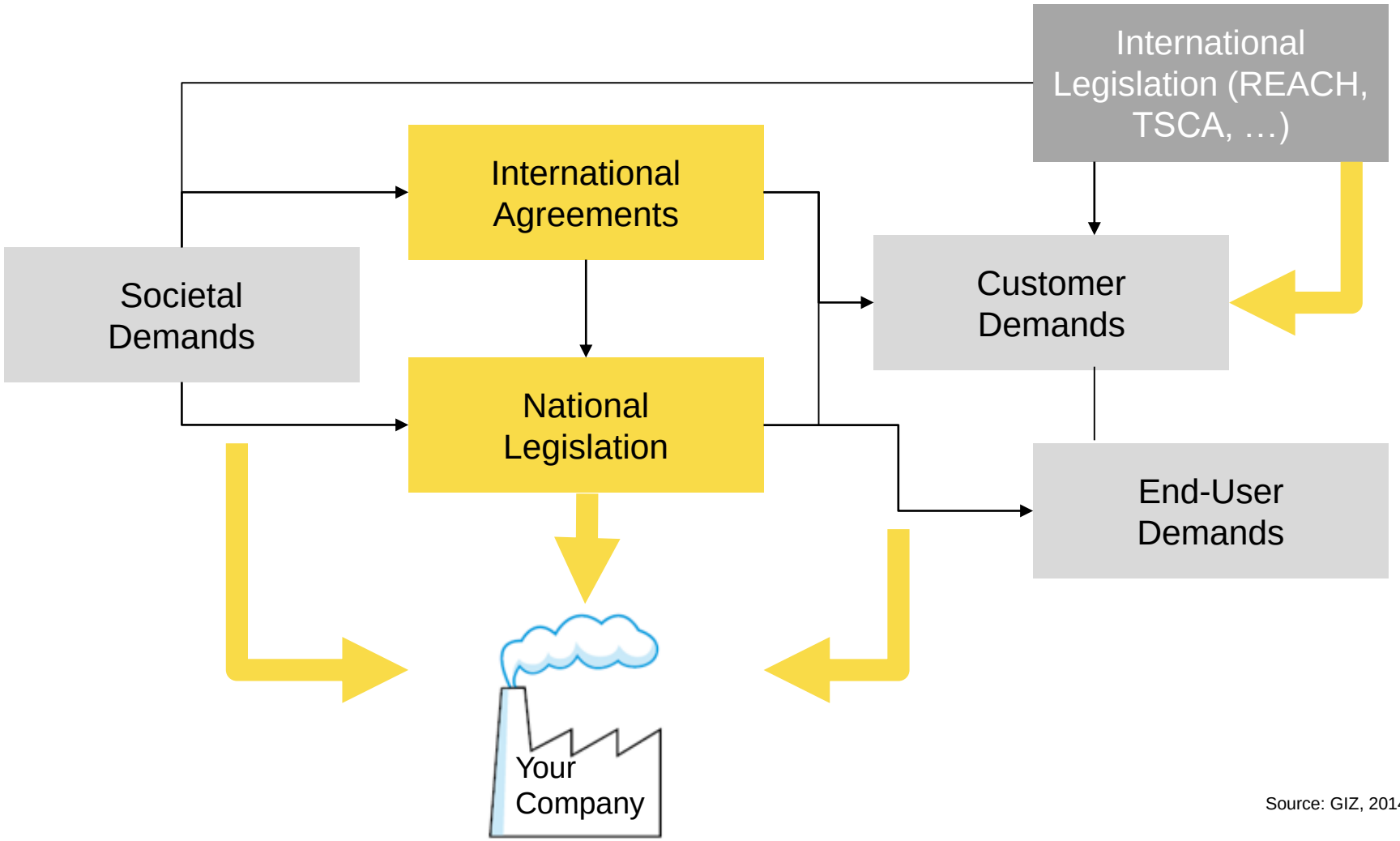
- Standard Operating Procedures (SOP) for monitoring regulatory requirements
- Up-to-date inventory of legal requirements permits

ZDHC CMS 2.5.2 RSL and MRSL Process

- 2.5.2.1 Verification of Compliance
- 2.5.2.2 RSL and MRSL Update and Maintenance
- 2.5.2.3 Integration with Contracts of Suppliers
- 2.5.2.4 Business Process Compliance with Contracts
- 2.5.2.5 Going Beyond Regulatory

Reference: ZDHC Chemical Management Systems Guidance Manual

OVERVIEW



Source: GIZ, 2014

SOCIETAL, CUSTOMER AND END-USER DEMANDS

Conventions & International Agreements:

- Agenda 21
- Stockholm, Rotterdam and Basel Convention
- ILO Convention 170

National Legislations

- Factory Act
- Rules & Regulations
- Environmental
- Health & Safety

Societal, Customer and End-Consumer Demands

- MRSL, RSL
- Protection of Human Health and the environment

Regulatory Requirements – International Framework

SUPRANATIONAL LEGISLATIONS AND CONVENTIONS

- Some conventions and protocols have been agreed on internationally.
- These typically limit the use and production of hazardous chemicals or groups of chemicals.

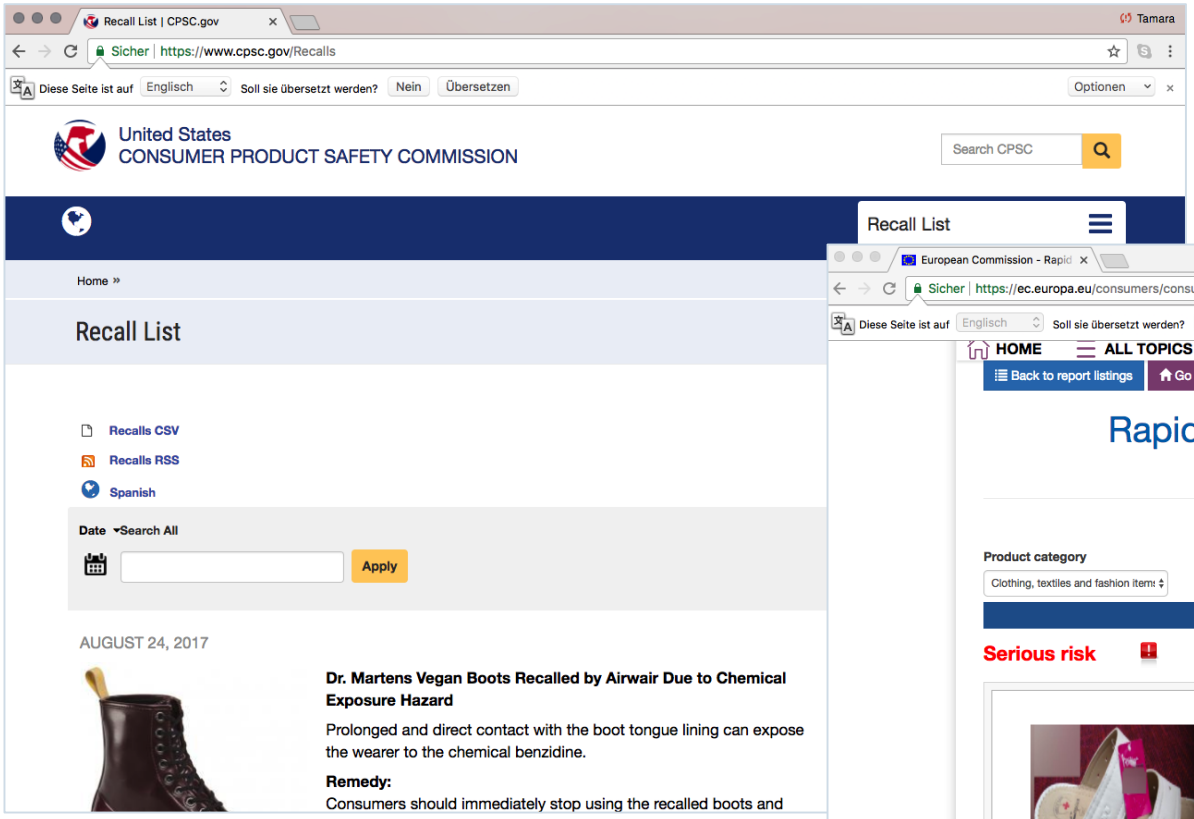
Examples

- The Stockholm Convention – Persistent Organic Pollutants (POP's) "The Dirty Dozen".
- Minamata Convention – Mercury Compounds.
- Montreal Protocol – Ozone depleting substance.

STOCKHOLM CONVENTION

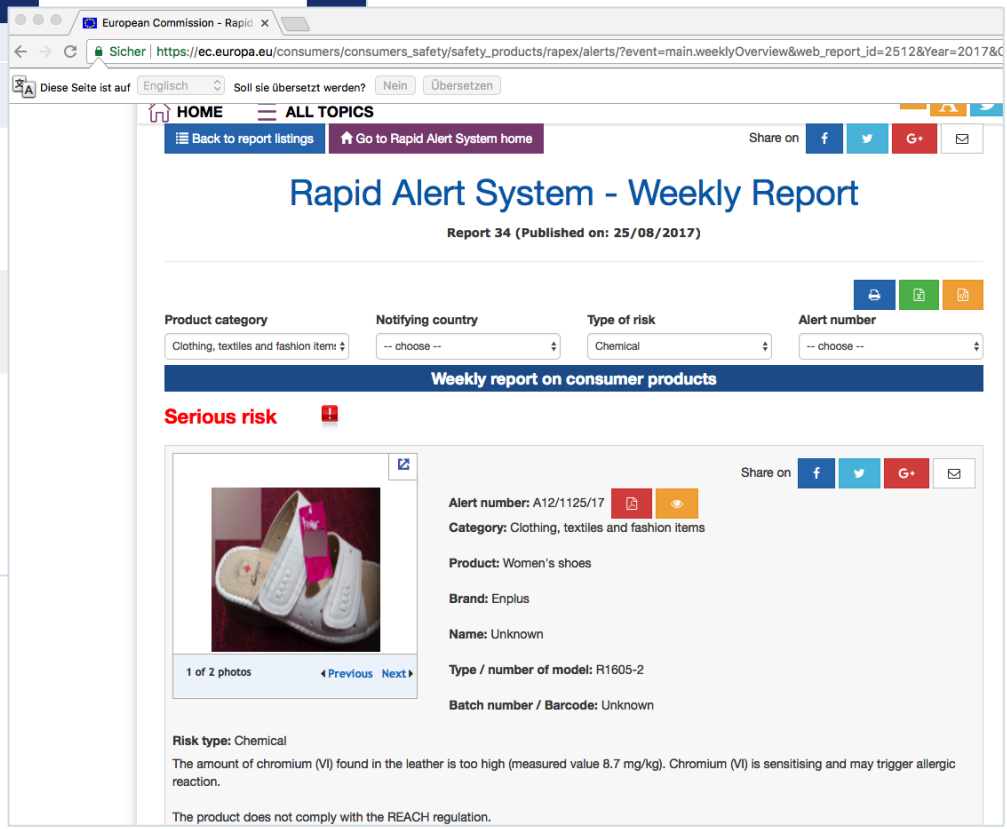
The Montreal Protocol 25 yearsof Ozone Protection

STAY AHEAD OF LEGISLATIONS TO AVOID PRODUCT RECALLS OR QUALITY FAILURES



USA
https://www.cpsc.gov/Recalls

Europe
https://ec.europa.eu/consumers/consumers_safety/safety_products/rapex/alerts/?event=main.listNotifications



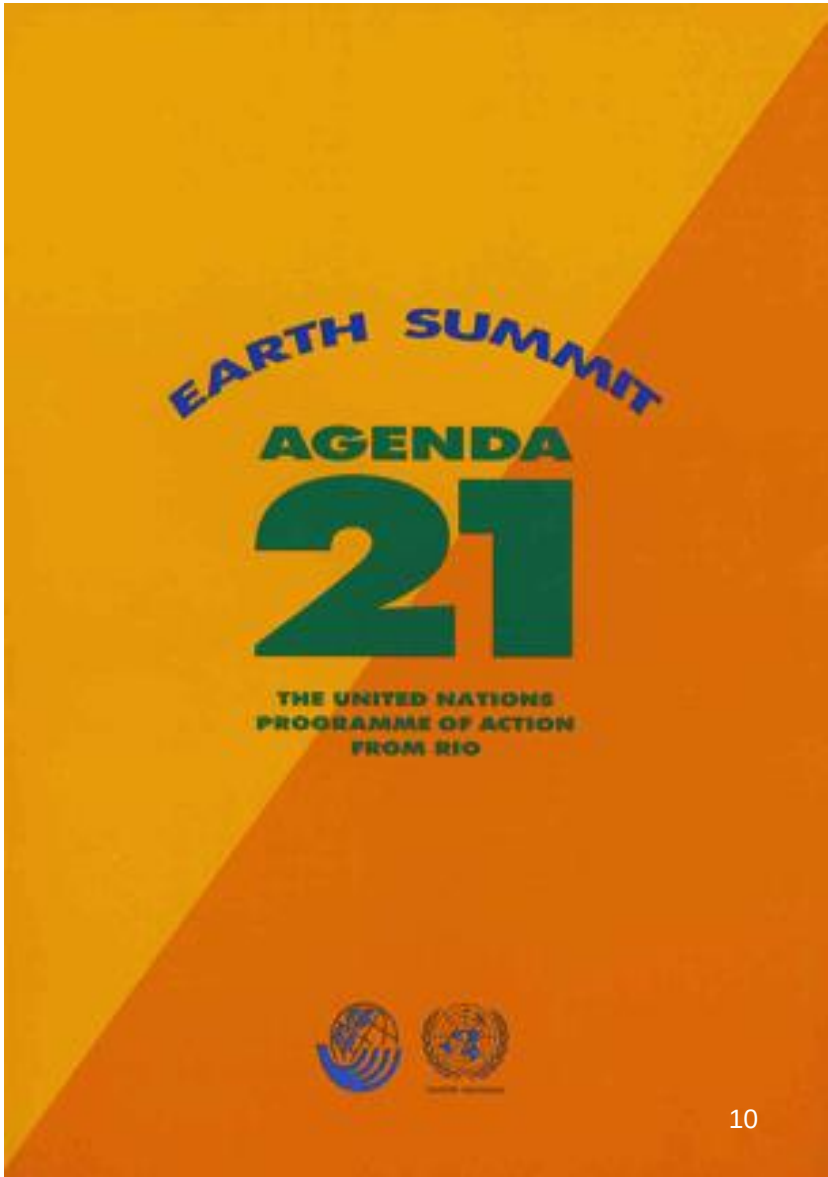
AGENDA 21

- Agenda 21 is a non-binding, voluntarily implemented action plan of the United Nations with regard to sustainable development.

- A product of the Earth Summit (UN Conference on Environment and Development) held in Rio de Janeiro, Brazil, from 1992.

What this means for Your Facility

Check if your country is part of AGENDA 21 and follow the governmental regulations for sustainable development.

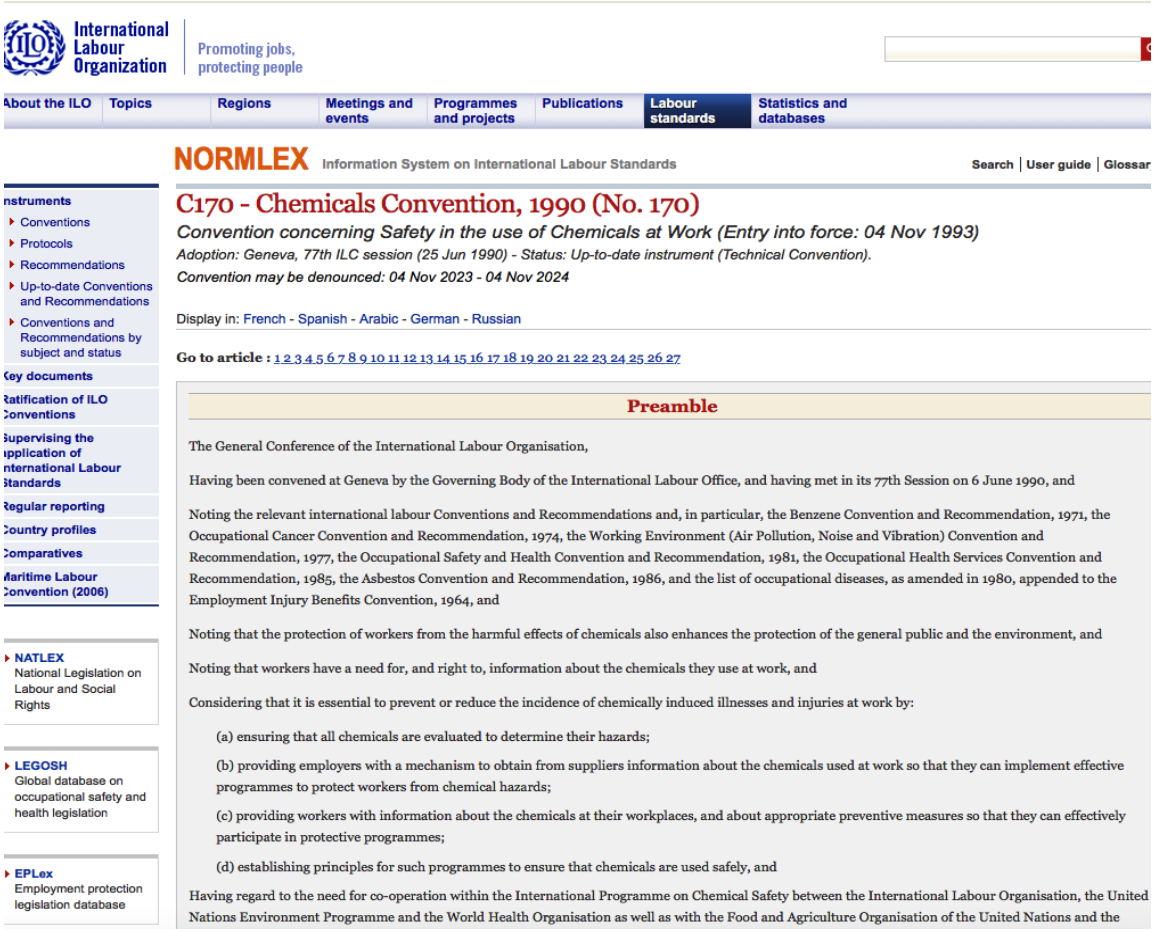


ILO CONVENTION 170, CHEMICALS CONVENTION

Convention concerning Safety in the use of Chemicals at Work
(Entered into force: 04 Nov 1993).

What this means for Your Facility

Ensures safe use of chemicals at work: any work activity which may expose a worker to a chemical, including: transport, handling, storage, production, disposal and treatment.



Regulatory Requirements – Regulation of importing countries

REGISTRATION, EVALUATION, AUTHORISATION AND RESTRICTION OF CHEMICALS (REACH)

Overarching framework regulating the production, usage and import of hazardous substances in the EU

- Since 1 June 2007.
- Targets all chemicals in (almost) all applications in the EU.
- Shifts responsibility from authorities to the industry “No data, no market”.
- Applies to substances manufactured or imported into the EU in quantities of 1 tonne per year or more.
- Under REACH manufacturers have to pay attention to, among others the Substances of Very High Concern (SVHC), the Authorisation List (Annex 14) and Restriction on Substances (Annex 17).

REACH has fundamentally changed the way chemicals are restricted, not just in the EU.

What this means for Your Facility

To be able to access the EU market, it has to be ensured that chemicals which are compliant with REACH are used for production. Substances that fall under Annex 17 must be be avoided.

SUBSTANCES OF VERY HIGH CONCERN (SVHC)

Substances of Very High Concern under **REACH** (Registration, Evaluation, Authorisation and Restriction or Chemicals) Regulation:

Criteria: The criteria are given in Article 57 of the REACH Regulation.

A substance ***may*** be proposed as an SVHC if it found to be (one or more of the following):

- Carcinogenic.
- Mutagenic.
- Toxic for reproduction.
- Persistent, bio-accumulative and toxic.

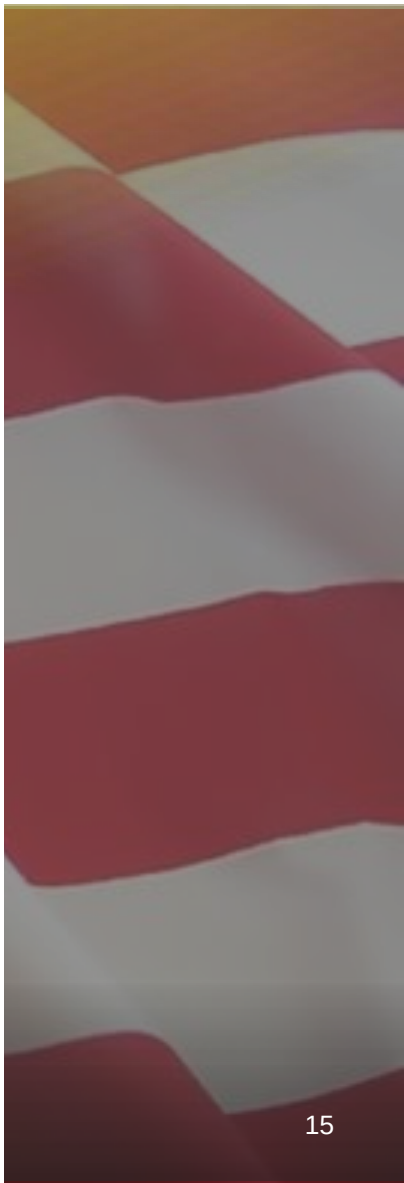
According to the criteria set out in Annex XIII of the REACH Regulation (PBT substances); there is "scientific evidence of probable serious effects to human health or the environment which give rise to an equivalent level of concern"; such substances are identified on a case-by-case basis.

TOXIC SUBSTANCES CONTROL ACT OF 1976 (TSCA)

- United States law, passed by Congress in 1976.
- Regulates new and existing chemicals.
- Does not separate chemicals into toxic and non-toxic.
- Prohibits chemicals that are not covered on the TSCA inventory.

What this means for Your Facility

To access the U.S. market, check if a chemicals are classified as toxic under the TDCS. If you find chemicals on the list, stop using them in your production.



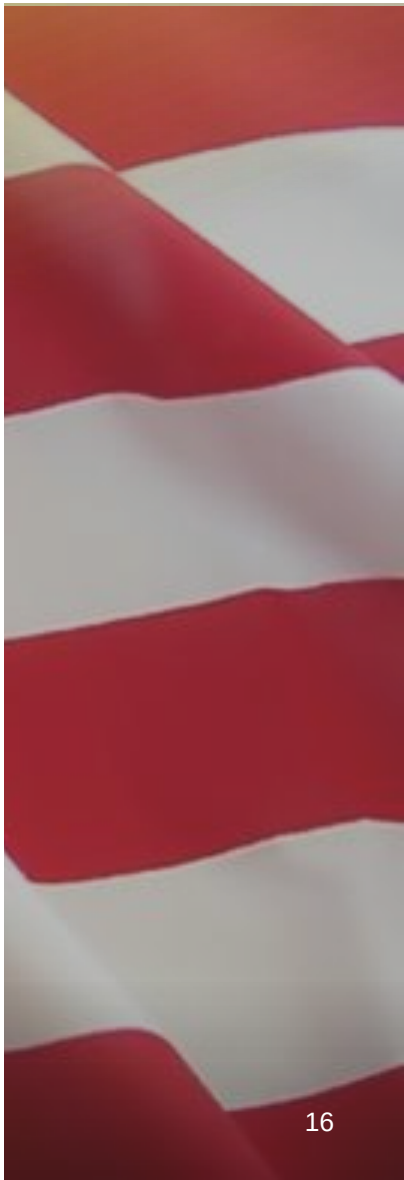
THE CONSUMER PRODUCT SAFETY IMPROVEMENT ACT (CPSIA)

Children's products should:

- Comply with all applicable children's product safety rules.
- Be tested for compliance by a CPSC-accepted accredited laboratory.
- Have a written Children's Product Certificate that provides evidence of the product's compliance.
- Have permanent tracking information affixed to the product and its packaging where practicable.

What this means for Your Facility

To access the U.S. market, ensure testing and certification of children's products are in line with the requirements of the CPSIA (Phthalate, flame retarder and heavy metal).



Regulatory Requirements – China

CHINA'S ENVIRONMENTAL PROTECTION LAW

Name of Legal Document	Type of Industrial Activities Regulated
Environmental Protection Law	All industrial activities including production, storage, transportation, sale and use of hazardous chemicals
Clean Production Promotion Law	All industrial activities involving production, use and discharge of hazardous chemicals
Regulation on the Safe Management of Dangerous Chemicals (Decree 591)	The production, storage, use, handling and transportation of dangerous chemicals
Circular on Further Enhancing Environmental Protection Information Disclosure	All industrial activities involving production, use and discharge of hazardous chemicals
Measures on Disclosure of Environmental Information (for trial implementation)	All industrial activities including production, storage, transportation, sale and use of hazardous chemicals
Guideline for Drafting Corporate Environmental Reports (HJ 617-2011)	All industrial activities including production, storage, transportation, sale and use of hazardous chemicals
Management Methods on Registration of Dangerous Chemicals	Production and import of hazardous chemical
Environmental Management Registration Methods for Dangerous Chemicals (For Trial Implementation)	Production, use, import and export of hazardous chemicals
Discharge Standard of Water Pollutants for Dyeing and Printing of Textile Industry (GB 4287-92)	Pollutants discharge
Integrated Emission Standard of Air Pollutants (GB 16297-1996)	Pollutants discharge
Cleaner production standard Textile industry (Dyeing and finishing of cotton) (HJ/T185-2006)	Production of textile products (dyeing and finishing of cotton)

What this means for Your Facility

Focus on all aspects of chemical management areas to ensure compliance with all legal requirements.

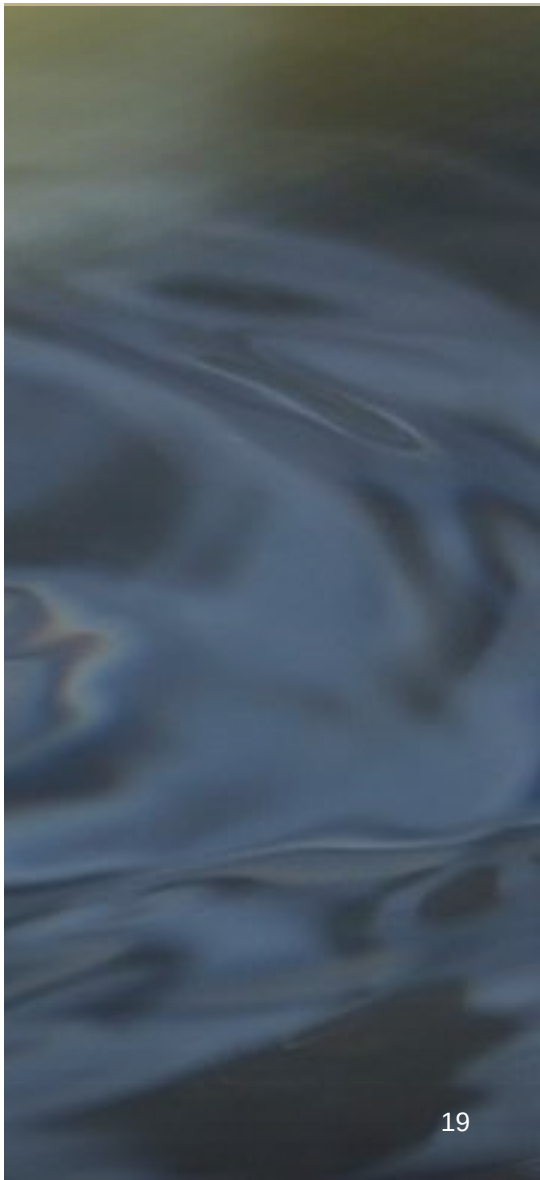
WATER TEN PLAN

The plan covers the following four broad actions:

- Control pollution discharge.
- Promote economic & industrial transformation and save & recycle resources.
- Promote science & technology progress, use market mechanisms and enforce law & regulations.
- Strengthen management & ensure water environment safety; and
- Clarify responsibilities & encourage public participation.

What this means for Your Facility

Factories shall comply with relevant national policies, standards & industrial regulations to avoid heavy punishment.

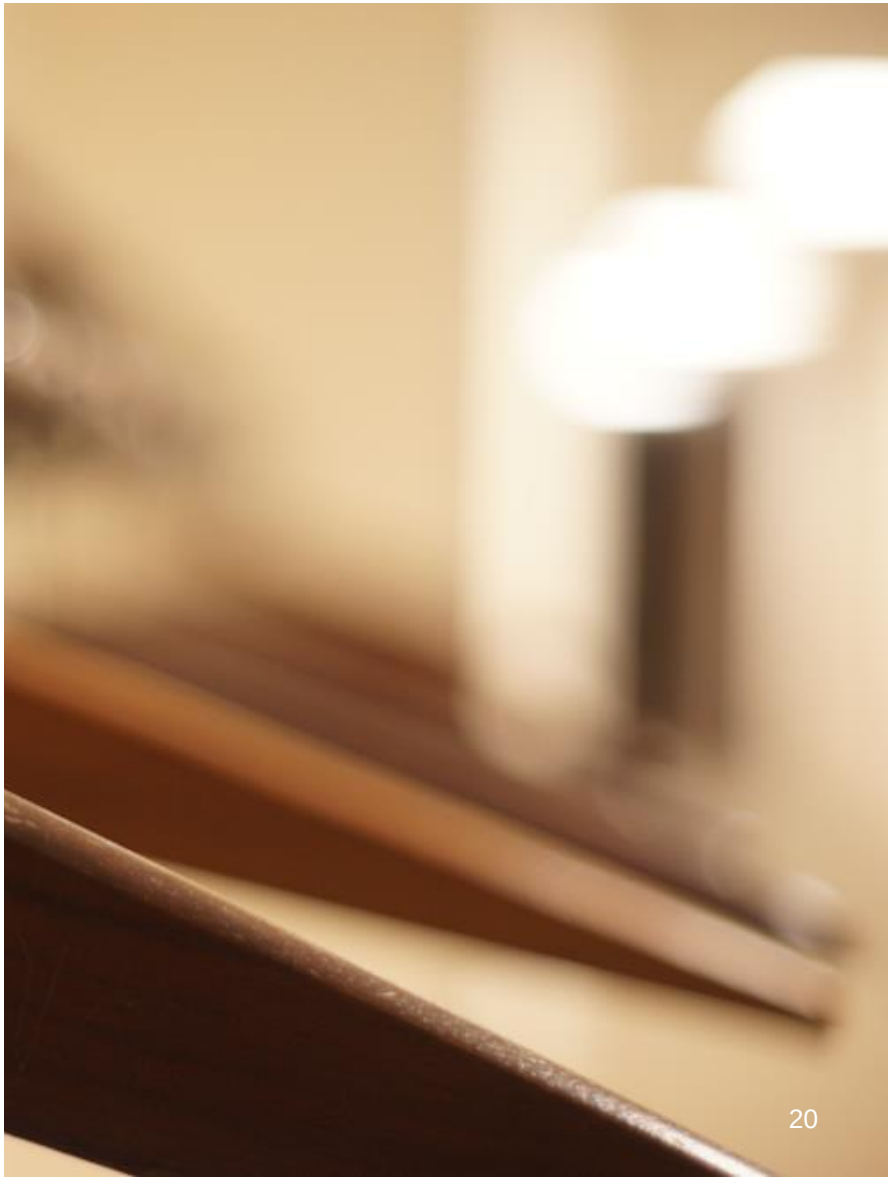


SAFETY TECHNICAL CODE FOR INFANTS / CHILDREN TEXTILE PRODUCT GB 31701-2015

- Mandatory China national standard for infants and children textile products.
- Standardises the overall safety of children’s wear.
- Implemented on 1 June 2016 with a 2 years transitional period.
- Sets requirements on chemical and mechanical safety.

What this means for Your Facility

All infant and children textile products sold on the China market after 1 June 2018, shall comply with requirements of the standard.



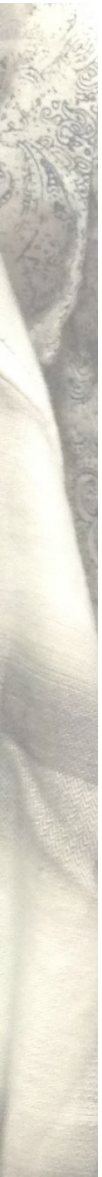
DISCHARGE STANDARDS OF WATER POLLUTANTS FOR DYEING & FINISING TEXTILE INDUSTRY GB 4287-2012

- Encourages improvement of production methods in textile dyeing and finishing.
- Encourages improvement of pollution control technology.
- Covers discharge limits, requirements for monitoring and controlling water pollutants.

What this means for Your Facility

Focus on all aspects of chemical management areas to ensure sewage discharge compliance to the latest discharge standard and limits.

NATIONAL GENERAL SAFETY TECHNICAL CODE FOR TEXTILES GB 18401-2010



- Mandatory standard that regulates the safety and quality of textile products in China.
- Outlines general safety and technical requirements, testing methods, inspection rules and implementation guidelines.
- Different limits for 3 categories (products for: babies, with and without direct skin contact).

What this means for Your Facility

Ensure textile products which are produced, sold and used in China meet these requirements.

Regulatory Requirements – Bangladesh

BANGLADESH ENVIRONMENT CONSERVATION ACT

The Bangladesh Environment Conservation Act (1995) is an act to protect conservation of the environment, provide improvements to environmental standards and control and mitigate environmental pollution.

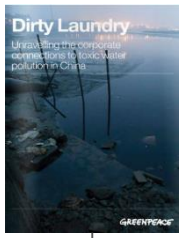
What this means for Your Facility

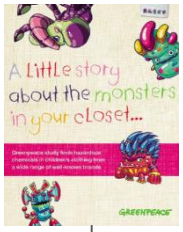
Follow all the aspects of chemical management and environmental management to ensure compliance to this act.

Societal Demands

ACHIEVEMENTS OF THE DETOX CAMPAIGN 2011–2017 (2020)

- Campaign has secured global Detox Commitment from **76 international brands, retailers and suppliers.**
- Campaign contributed to **collaboration in Italy,** where 42 companies are working together to achieve Detox.
- Campaign had **political impact.** Achieved policy changes e.g. China's enforcement of stricter wastewater standards.





2011 2012 2013 2014 2015 2016 2017 2020

GREENPEACE

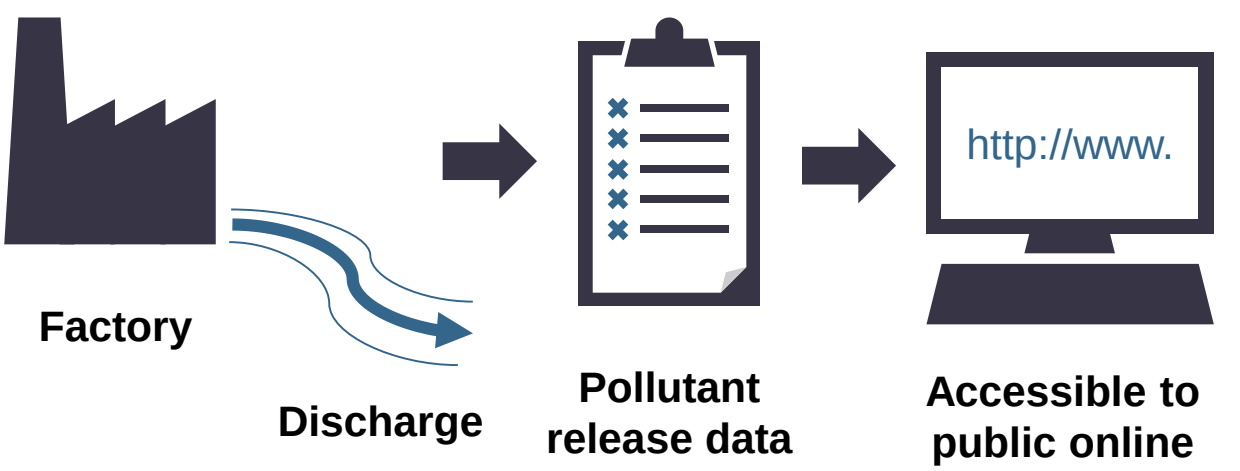
DETOX

Aim: Eliminating hazardous chemicals from textile supply chains by 2020.

GREENPEACE'S APPROACH

Use major brands as a political tool to push governments to demand public disclosure of discharge of hazardous chemicals from factories.

Existing systems in US, EU and Japan: PRTR- Pollutant Release and Transfer Register.



Greenpeace believes that everyone, especially those living close to factories, have the right to know what is being discharged.

WHICH CRITERIA ARE GREENPEACE ASSESSING?

Detox 2020 Plan

Manufacturing Restricted Substances List (MRSL), to enable brands to eliminate all hazardous chemicals.

PFC Elimination

Commitment for the elimination of per/poly fluorinated chemicals (PFC) as a group.

Transparency

Publication of precise, relevant, up to date and locally accurate information on the use and discharge of hazardous chemicals.

Greenpeace aims to remove hazardous chemicals from the textile supply chain, engage consumers, whilst ultimately **“closing and slowing the loop”.**

ZERO DISCHARGE OF HAZARDOUS CHEMICALS (ZDHC)

GREENPEACE

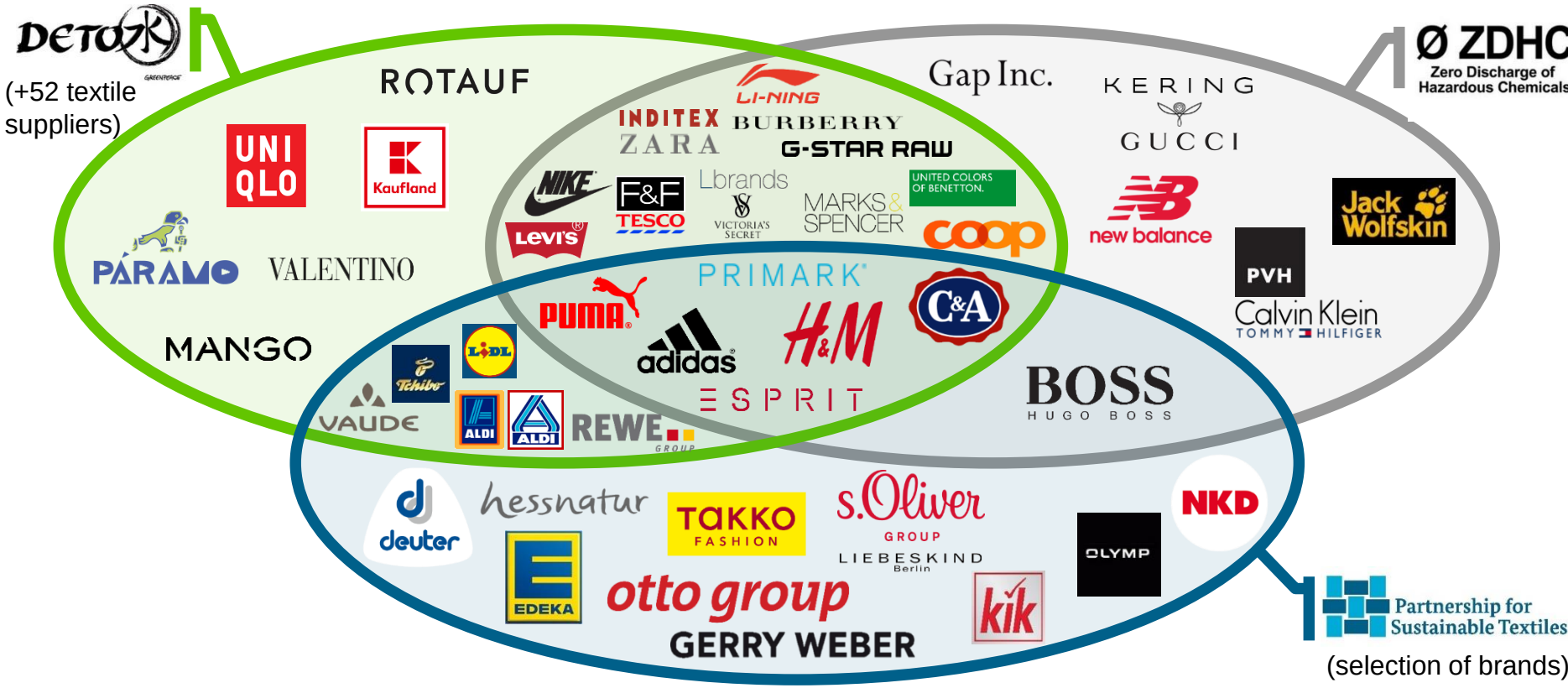
Image source: www.ecouterre.com

DETOX

Ø ZDHC

BRANDS COMMITTED TO 'DETOX' AS OF OCTOBER 2017

More than 44 international brands & retailers are committed to stop the usage of hazardous chemicals



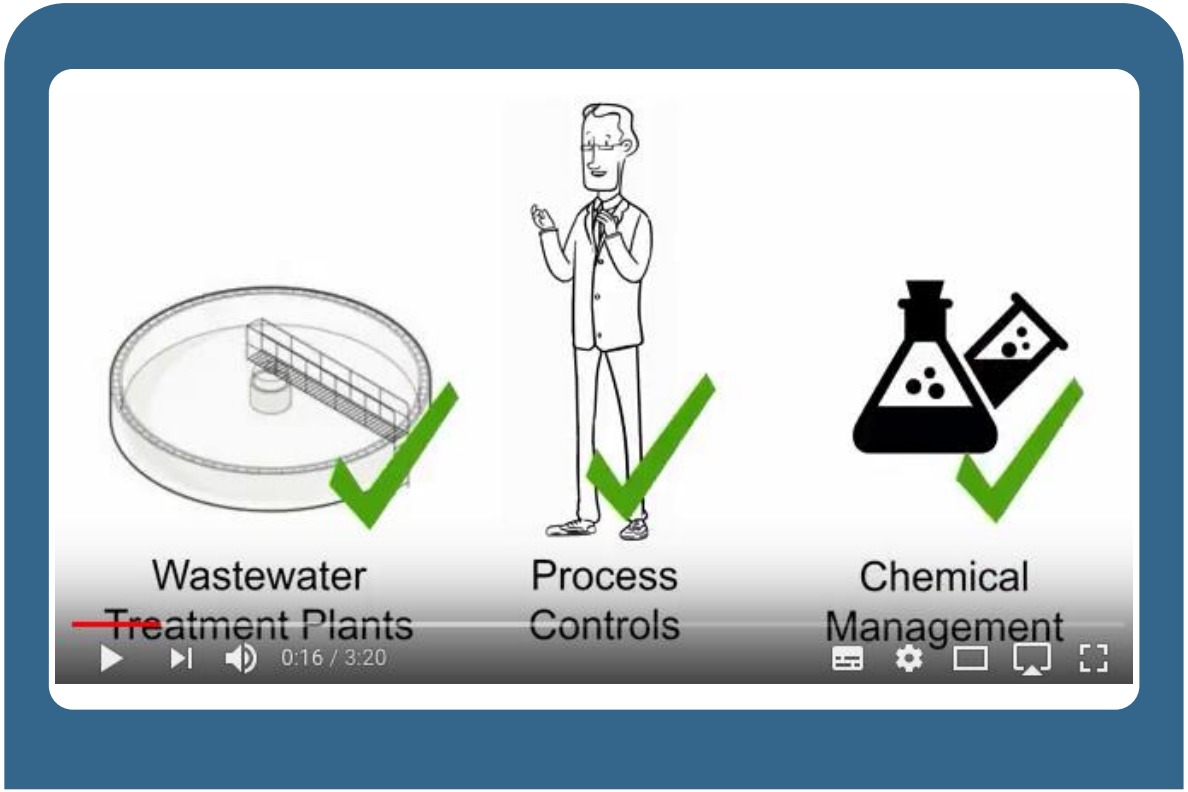
* Adopted the ZDHC MRSL

ZDHC TOOLS

- Joint initiative established in 2011.
- Released a shared roadmap “to advance towards zero discharge of hazardous chemicals”.
- Geographical regions include: China, Bangladesh, India, but not exclusive.
- Aims to create better tools and knowledge for the next step: Implementation.
    - ✓ Have issued a publically available MRSL
    - ✓ Chemical Guidance Sheets
    - ✓ Chemical Management System Guidance Manual
    - ✓ NEW Wastewater Guidelines

Chemical companies issue ZDHC chemical positives lists:

- ✓ DyStar
- ✓ Hunstman
- ✓ Rudolph GmbH
- ✓ Tanatex
- ✓ Transfar


Wastewater
Treatment Plants
Process
Controls
Chemical
Management
0:16 / 3:20

MANUFACTURING RESTRICTED SUBSTANCES LIST (MRSL)

The difference between the Manufacturing Restricted Substances List (MRSL) and Restricted Substances List (RSL) is:

MRSL
Input Chemistry

MRSL sets chemical limits for
chemical formulations

RSL
Product Chemistry

RSL sets limits for chemicals in
materials

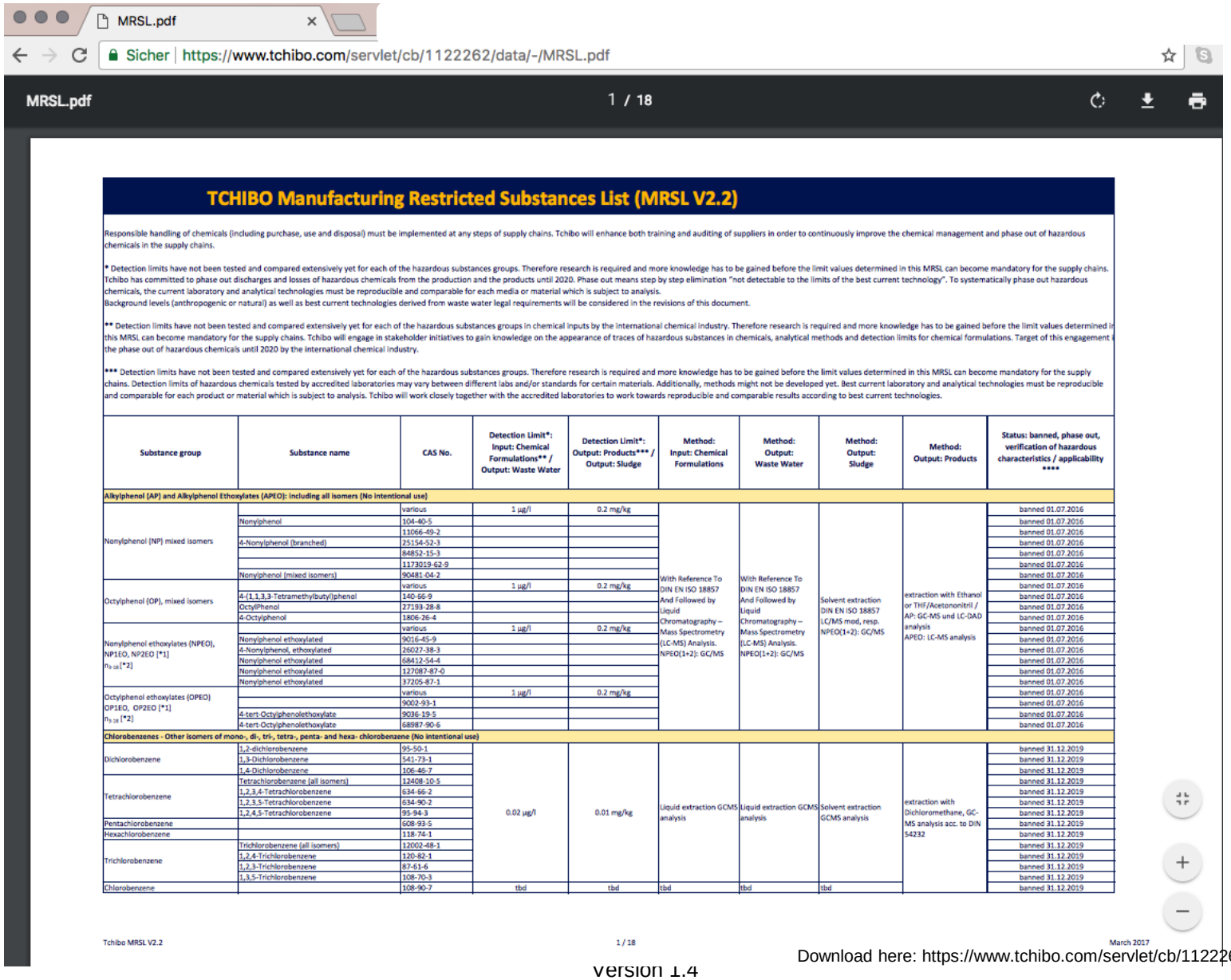
The MRSL is a valuable tool for procuring chemical formulations that will help suppliers meet sustainability targets.

APPROACHES

- The industry has a strong interest to work towards achieving zero discharge of hazardous chemicals.
- The requirements on a strong chemical management system are equal for REWE Group, Tchibo and ZDHC.
- REWE Group and Tchibo have defined their specific RSL/MRSLs which are updated on an annual basis.
- The intent of the REWE Group MRSL is to define which chemicals we regard as hazardous and which shall therefore not be used in the supply chain. These chemicals need to be eliminated in accordance to the indicated timelines. The MRSL encompasses also the REWE Group RSL and hence defines next to test methods and limit values for input chemicals, waste water and sludge also limit values for products.
- The intent of the Tchibo MRSL is to regulate the use of hazardous substances in chemical inputs and emissions of the same from production. The RSL is to regulate chemical residues (from production) in ready made items **after production.**
- The intent of the ZDHC MRSL is to provide brands and suppliers with a harmonised approach to managing chemicals during the processing of raw materials within the apparel and footwear supply chain.

INDUSTRY APPROACH: ZDHC MRSL

CUSTOMER DEMANDS: TCHIBO MRSL



MRSL.pdf

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MRSL.pdf 1 / 18

TCHIBO Manufacturing Restricted Substances List (MRSL V2.2)

Responsible handling of chemicals (including purchase, use and disposal) must be implemented at any steps of supply chains. Tchibo will enhance both training and auditing of suppliers in order to continuously improve the chemical management and phase out of hazardous chemicals in the supply chains.

* Detection limits have not been tested and compared extensively yet for each of the hazardous substances groups. Therefore research is required and more knowledge has to be gained before the limit values determined in this MRSL can become mandatory for the supply chains. Tchibo has committed to phase out discharges and losses of hazardous chemicals from the production and the products until 2020. Phase out means step by step elimination "not detectable to the limits of the best current technology". To systematically phase out hazardous chemicals, the current laboratory and analytical technologies must be reproducible and comparable for each media or material which is subject to analysis.
Background levels (anthropogenic or natural) as well as best current technologies derived from waste water legal requirements will be considered in the revisions of this document.

** Detection limits have not been tested and compared extensively yet for each of the hazardous substances groups in chemical inputs by the international chemical industry. Therefore research is required and more knowledge has to be gained before the limit values determined in this MRSL can become mandatory for the supply chains. Tchibo will engage in stakeholder initiatives to gain knowledge on the appearance of traces of hazardous substances in chemicals, analytical methods and detection limits for chemical formulations. Target of this engagement is the phase out of hazardous chemicals until 2020 by the international chemical industry.

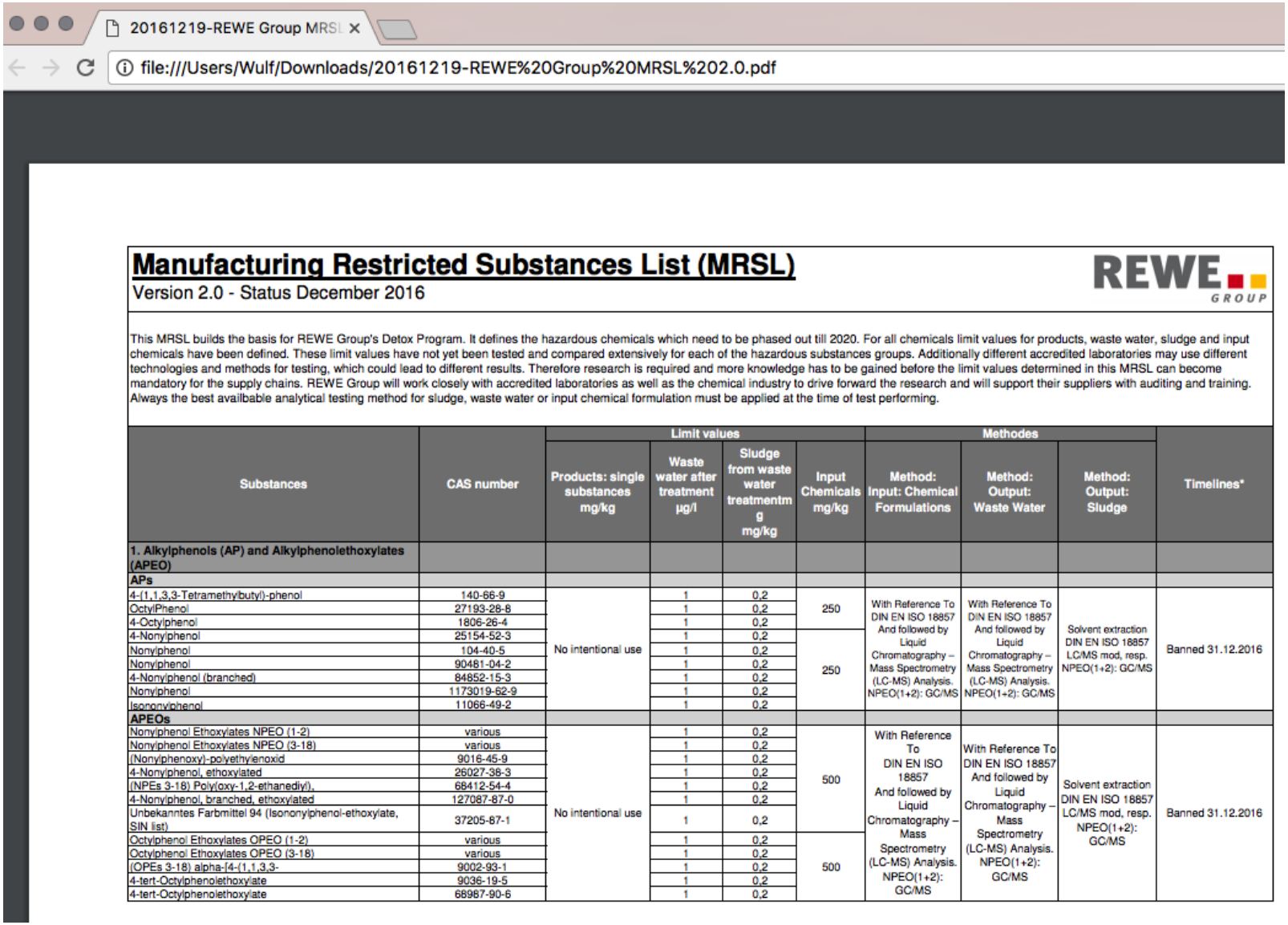
*** Detection limits have not been tested and compared extensively yet for each of the hazardous substances groups. Therefore research is required and more knowledge has to be gained before the limit values determined in this MRSL can become mandatory for the supply chains. Detection limits of hazardous chemicals tested by accredited laboratories may vary between different labs and/or standards for certain materials. Additionally, methods might not be developed yet. Best current laboratory and analytical technologies must be reproducible and comparable for each product or material which is subject to analysis. Tchibo will work closely together with the accredited laboratories to work towards reproducible and comparable results according to best current technologies.

Substance group	Substance name	CAS No.	Detection Limit*: Input: Chemical Formulations** / Output: Waste Water	Detection Limit*: Output: Products*** / Output: Sludge	Method: Input: Chemical Formulations	Method: Output: Waste Water	Method: Output: Sludge	Method: Output: Products	Status: banned, phase out, verification of hazardous characteristics / applicability ****
Alkylphenol (AP) and Alkylphenol Ethoxylates (APEO): including all isomers (No intentional use)									
Nonylphenol (NP) mixed isomers		various	1 µg/l	0.2 mg/kg	With Reference To DIN EN ISO 18857 And Followed by Liquid Chromatography – Mass Spectrometry (LC-MS) Analysis. NPEO(1+2): GC/MS	With Reference To DIN EN ISO 18857 And Followed by Liquid Chromatography – Mass Spectrometry (LC-MS) Analysis. NPEO(1+2): GC/MS	Solvent extraction DIN EN ISO 18857 LC/MS mod, resp. NPEO(1+2): GC/MS	extraction with Ethanol or THF/Acetononitril / AP: GC-MS und LC-DAD analysis APEO: LC-MS analysis	banned 01.07.2016
	Nonylphenol	104-40-5							banned 01.07.2016
		11066-49-2							banned 01.07.2016
	4-Nonylphenol (branched)	25154-52-3							banned 01.07.2016
		84852-15-3							banned 01.07.2016
		1173019-62-9							banned 01.07.2016
	Nonylphenol (mixed isomers)	90481-04-2							banned 01.07.2016
Octylphenol (OP), mixed isomers		various	1 µg/l	0.2 mg/kg					banned 01.07.2016
	4-(1,1,3,3-Tetramethylbutyl)phenol	140-66-9							banned 01.07.2016
	OctylPhenol	27193-28-8							banned 01.07.2016
	4-Octylphenol	1806-26-4							banned 01.07.2016
Nonylphenol ethoxylates (NPEO), NP1EO, NP2EO [*1] n_{3-16} [*2]		various	1 µg/l	0.2 mg/kg					banned 01.07.2016
	Nonylphenol ethoxylated	9016-45-9							banned 01.07.2016
	4-Nonylphenol, ethoxylated	26027-38-3							banned 01.07.2016
	Nonylphenol ethoxylated	68412-54-4							banned 01.07.2016
	Nonylphenol ethoxylated	127087-87-0							banned 01.07.2016
	Nonylphenol ethoxylated	37205-87-1							banned 01.07.2016
Octylphenol ethoxylates (OPEO) OP1EO, OP2EO [*1] n_{3-16} [*2]		various	1 µg/l	0.2 mg/kg					banned 01.07.2016
		9002-93-1							banned 01.07.2016
	4-tert-Octylphenolethoxylate	9036-19-5							banned 01.07.2016
	4-tert-Octylphenolethoxylate	68987-90-6							banned 01.07.2016
Chlorobenzenes - Other isomers of mono-, di-, tri-, tetra-, penta- and hexa- chlorobenzene (No intentional use)									
Dichlorobenzene	1,2-dichlorobenzene	95-50-1	0.02 µg/l	0.01 mg/kg	Liquid extraction GCMS analysis	Liquid extraction GCMS analysis	Solvent extraction GCMS analysis	extraction with Dichloromethane, GC-MS analysis acc. to DIN 54232	banned 31.12.2019
	1,3-Dichlorobenzene	541-73-1							banned 31.12.2019
	1,4-Dichlorobenzene	106-46-7							banned 31.12.2019
Tetrachlorobenzene	Tetrachlorobenzene (all isomers)	12408-10-5							banned 31.12.2019
	1,2,3,4-Tetrachlorobenzene	634-66-2							banned 31.12.2019
	1,2,3,5-Tetrachlorobenzene	634-90-2							banned 31.12.2019
	1,2,4,5-Tetrachlorobenzene	95-94-3							banned 31.12.2019
Pentachlorobenzene		608-93-5							banned 31.12.2019
Hexachlorobenzene		118-74-1							banned 31.12.2019
Trichlorobenzene	Trichlorobenzene (all isomers)	12002-48-1							banned 31.12.2019
	1,2,4-Trichlorobenzene	120-82-1							banned 31.12.2019
	1,2,3-Trichlorobenzene	87-61-6							banned 31.12.2019
	1,3,5-Trichlorobenzene	108-70-3							banned 31.12.2019
Chlorobenzene		108-90-7	tbd	tbd	tbd	tbd	tbd		banned 31.12.2019

Tchibo MRSL V2.2 1 / 18 March 2017

Download here: https://www.tchibo.com/servlet/cb/1122262/data/-/MRSL.pdf

CUSTOMER DEMANDS: REWE GROUP MRSL



Manufacturing Restricted Substances List (MRSL)

Version 2.0 - Status December 2016

REWE GROUP

This MRSL builds the basis for REWE Group's Detox Program. It defines the hazardous chemicals which need to be phased out till 2020. For all chemicals limit values for products, waste water, sludge and input chemicals have been defined. These limit values have not yet been tested and compared extensively for each of the hazardous substances groups. Additionally different accredited laboratories may use different technologies and methods for testing, which could lead to different results. Therefore research is required and more knowledge has to be gained before the limit values determined in this MRSL can become mandatory for the supply chains. REWE Group will work closely with accredited laboratories as well as the chemical industry to drive forward the research and will support their suppliers with auditing and training. Always the best availbable analytical testing method for sludge, waste water or input chemical formulation must be applied at the time of test performing.

Substances	CAS number	Limit values				Methodes			Timelines*
		Products: single substances mg/kg	Waste water after treatment µg/l	Sludge from waste water treatmentm g mg/kg	Input Chemicals mg/kg	Method: Input: Chemical Formulations	Method: Output: Waste Water	Method: Output: Sludge	
1. Alkylphenols (AP) and Alkylphenolethoxylates (APEO)									
APs									
4-(1,1,3,3-Tetramethylbutyl)-phenol	140-66-9	No intentional use	1	0,2	250	With Reference To DIN EN ISO 18857 And followed by Liquid Chromatography – Mass Spectrometry (LC-MS) Analysis. NPEO(1+2): GC/MS	With Reference To DIN EN ISO 18857 And followed by Liquid Chromatography – Mass Spectrometry (LC-MS) Analysis. NPEO(1+2): GC/MS	Solvent extraction DIN EN ISO 18857 LC/MS mod, resp. NPEO(1+2): GC/MS	Banned 31.12.2016
OctylPhenol	27193-28-8		1	0,2					
4-Octylphenol	1806-26-4		1	0,2					
4-Nonylphenol	25154-52-3		1	0,2	250				
Nonylphenol	104-40-5		1	0,2					
Nonylphenol	90481-04-2		1	0,2					
4-Nonylphenol (branched)	84852-15-3		1	0,2					
Nonylphenol	1173019-62-9		1	0,2					
Isononylphenol	11066-49-2		1	0,2					
APEOs									
Nonylphenol Ethoxylates NPEO (1-2)	various	No intentional use	1	0,2	500	With Reference To DIN EN ISO 18857 And followed by Liquid Chromatography – Mass Spectrometry (LC-MS) Analysis. NPEO(1+2): GC/MS	With Reference To DIN EN ISO 18857 And followed by Liquid Chromatography – Mass Spectrometry (LC-MS) Analysis. NPEO(1+2): GC/MS	Solvent extraction DIN EN ISO 18857 LC/MS mod, resp. NPEO(1+2): GC/MS	Banned 31.12.2016
Nonylphenol Ethoxylates NPEO (3-18)	various		1	0,2					
(Nonylphenoxy)-polyethylenoxid	9016-45-9		1	0,2					
4-Nonylphenol, ethoxylated	26027-38-3		1	0,2					
(NPEs 3-18) Poly(oxy-1,2-ethanediyl),	68412-54-4		1	0,2					
4-Nonylphenol, branched, ethoxylated	127087-87-0		1	0,2					
Unbekanntes Farbmittel 94 (Isononylphenol-ethoxylate, SIN list)	37205-87-1		1	0,2					
Octylphenol Ethoxylates OPEO (1-2)	various		1	0,2	500				
Octylphenol Ethoxylates OPEO (3-18)	various		1	0,2					
(OPEs 3-18) alpha-[4-(1,1,3,3-	9002-93-1		1	0,2					
4-tert-Octylphenolethoxylate	9036-19-5		1	0,2					
4-tert-Octylphenolethoxylate	68987-90-6		1	0,2					

Download here: www.rewe-group.com

MAINTAINING INVENTORY OF REGULATORY REQUIREMENTS

No.	Title	Descriptions	Applicable to		Area of Applicability	Licenses / Compliance Records Required	Reviewed
			Company	Contractor / Supplier			
01	Environment Conservation Act 1996 (section 2)	Regulates air pollution from stationary sources and motor vehicles. Enables promulgation of regulations.	✓	✓	Air emissions from plant (e.g. cranes, generators, excavators, vehicles), and dust.		
02	Environment Conservation Act 1996 (section 3)	Regulates water pollution, including reference to specific discharge standards.	✓		Discharge of wastewater from production and other sources in the company.		
03	Sludge ordinance	Regulates management and the disposal of treated sludge.	✓		Disposal of treatment sludge from ETP.		

Source: GIZ, 2014 and ZDHC CMS 2.2.2 Verification of Compliance

ACTIVITY

GROUP WORK

Fill in the table in your workbook, exercise (3-2).

Form groups of 5-6 persons, mix with people from different facilities and professions.

As a team create an inventory of international and national regulatory requirements.

One group to present results to peers.

Chemicals Of Concern

QUIZ

Which are the 11 Detox Priority Chemical Groups?

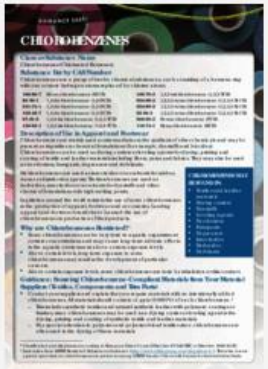
SUBSTANCE OF CONCERN – DETOX 11 PRIORITY CHEMICAL GROUPS

1. Phthalates (ortho-phthalates)
2. Brominated and Chlorinated flame retardants
3. Azo dyes
4. Organotin Compounds (e.g. TBT)
5. Chlorobenzenes
6. Chlorinated Solvents
7. Chlorophenols
8. Short-Chained Chlorinated Paraffins (SCCPs)
9. Heavy Metals (cadmium, lead, mercury, chromium (VI))
10. APEOs/NPEs
11. Perfluorinated Chemicals (PFCs)

ZDHC MRSL –
Chemical Substances Subject to Usage Ban

1. Alkylphenols/Alkylphenol Ethoxylates (AP/APEOs)
2. Chlorobenzenes & Chlorotoluenes
3. Chlorophenols
4. Dyes, including Azo, Navy Blue Colourant, Carcinogenic and Disperse (Sensitising) Dyes
5. Flame retardants
6. Glycols
7. Halogenated Solvents
8. Organotin Compounds
9. Polycyclic Aromatic Hydrocarbons (PAHs)
10. Perfluorinated and Polyfluorinated Chemicals (PFCs)
11. Phthalates
12. Heavy Metals
13. Volatile Organic Compounds (VOCs)

ZDHC GUIDANCE SHEETS FOR EACH CHEMICAL GROUP



Chlorobenzenes

Chlorophenols

Halogenated Solvents

Organotins

Polycyclic Aromatic Hydrocarbons/ Naphthalene

Short-Chain Chlorinated Paraffins

Toluene Guidance Sheet

Long-chain Perfluoroalkyl Acids (LCPFAAs)

Nonylphenol (NP)

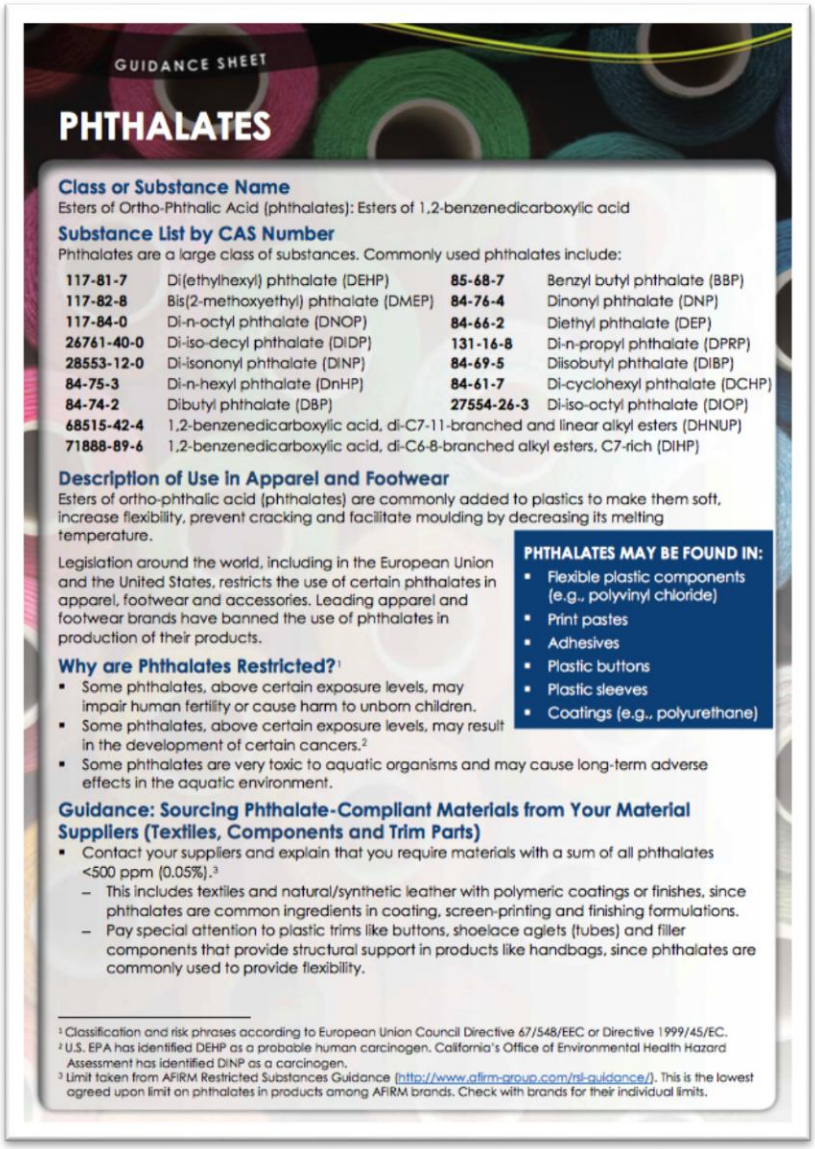
Nonylphenol Ethoxylates (NPEOs)

Phthalates Guidance Sheet

Version 1.4

Download here: http://www.roadmaptozero.com/programme/manufacturing-restricted-substances-list-mrsl-conformity-guidance/

EXAMPLE: PHTHALATES



GUIDANCE SHEET

PHTHALATES

Class or Substance Name

Esters of Ortho-Phthalic Acid (phthalates): Esters of 1,2-benzenedicarboxylic acid

Substance List by CAS Number

Phthalates are a large class of substances. Commonly used phthalates include:

117-81-7	Di(ethylhexyl) phthalate (DEHP)	**85-68-7**	Benzyl butyl phthalate (BBP)
117-82-8	Bis(2-methoxyethyl) phthalate (DMEP)	**84-76-4**	Dinonyl phthalate (DNP)
117-84-0	Di-n-octyl phthalate (DNOP)	**84-66-2**	Diethyl phthalate (DEP)
26761-40-0	Di-iso-decyl phthalate (DIDP)	**131-16-8**	Di-n-propyl phthalate (DPRP)
28553-12-0	Di-isononyl phthalate (DINP)	**84-69-5**	Diisobutyl phthalate (DIBP)
84-75-3	Di-n-hexyl phthalate (DnHP)	**84-61-7**	Di-cyclohexyl phthalate (DCHP)
84-74-2	Dibutyl phthalate (DBP)	**27554-26-3**	Di-iso-octyl phthalate (DIOP)
68515-42-4	1,2-benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)		
71888-89-6	1,2-benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)		

Description of Use in Apparel and Footwear

Esters of ortho-phthalic acid (phthalates) are commonly added to plastics to make them soft, increase flexibility, prevent cracking and facilitate moulding by decreasing its melting temperature.

Legislation around the world, including in the European Union and the United States, restricts the use of certain phthalates in apparel, footwear and accessories. Leading apparel and footwear brands have banned the use of phthalates in production of their products.

PHTHALATES MAY BE FOUND IN:

- Flexible plastic components (e.g., polyvinyl chloride)
- Print pastes
- Adhesives
- Plastic buttons
- Plastic sleeves
- Coatings (e.g., polyurethane)

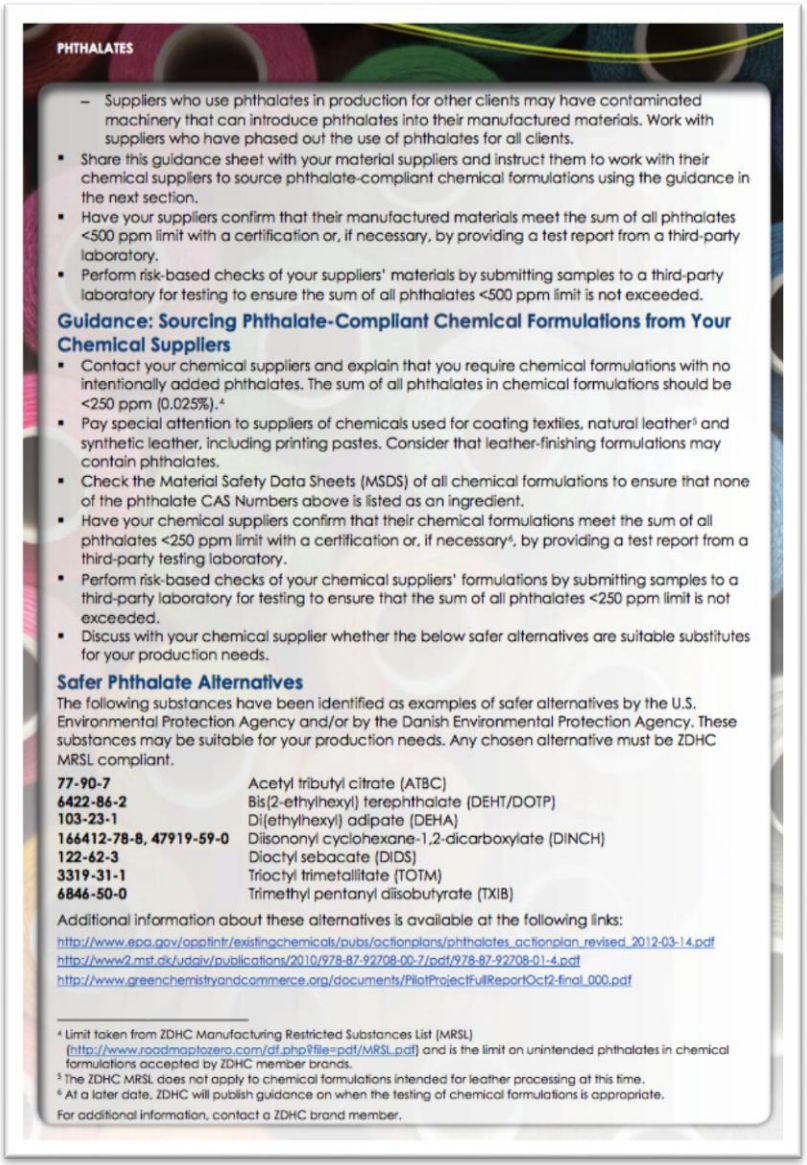
Why are Phthalates Restricted?[1]

- Some phthalates, above certain exposure levels, may impair human fertility or cause harm to unborn children.
- Some phthalates, above certain exposure levels, may result in the development of certain cancers.[2]
- Some phthalates are very toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

Guidance: Sourcing Phthalate-Compliant Materials from Your Material Suppliers (Textiles, Components and Trim Parts)

- Contact your suppliers and explain that you require materials with a sum of all phthalates <500 ppm (0.05%).[3]
  - This includes textiles and natural/synthetic leather with polymeric coatings or finishes, since phthalates are common ingredients in coating, screen-printing and finishing formulations.
  - Pay special attention to plastic trims like buttons, shoelace agiets (tubes) and filler components that provide structural support in products like handbags, since phthalates are commonly used to provide flexibility.

[1] Classification and risk phrases according to European Union Council Directive 67/548/EEC or Directive 1999/45/EC.
[2] U.S. EPA has identified DEHP as a probable human carcinogen. California's Office of Environmental Health Hazard Assessment has identified DINP as a carcinogen.
[3] Limit taken from AFIRM Restricted Substances Guidance (http://www.afirm-group.com/rsl-guidance/). This is the lowest agreed upon limit on phthalates in products among AFIRM brands. Check with brands for their individual limits.



PHTHALATES

- Suppliers who use phthalates in production for other clients may have contaminated machinery that can introduce phthalates into their manufactured materials. Work with suppliers who have phased out the use of phthalates for all clients.

- Share this guidance sheet with your material suppliers and instruct them to work with their chemical suppliers to source phthalate-compliant chemical formulations using the guidance in the next section.
- Have your suppliers confirm that their manufactured materials meet the sum of all phthalates <500 ppm limit with a certification or, if necessary, by providing a test report from a third-party laboratory.
- Perform risk-based checks of your suppliers' materials by submitting samples to a third-party laboratory for testing to ensure the sum of all phthalates <500 ppm limit is not exceeded.

Guidance: Sourcing Phthalate-Compliant Chemical Formulations from Your Chemical Suppliers

- Contact your chemical suppliers and explain that you require chemical formulations with no intentionally added phthalates. The sum of all phthalates in chemical formulations should be <250 ppm (0.025%).[4]
- Pay special attention to suppliers of chemicals used for coating textiles, natural leather[5] and synthetic leather, including printing pastes. Consider that leather-finishing formulations may contain phthalates.
- Check the Material Safety Data Sheets (MSDS) of all chemical formulations to ensure that none of the phthalate CAS Numbers above is listed as an ingredient.
- Have your chemical suppliers confirm that their chemical formulations meet the sum of all phthalates <250 ppm limit with a certification or, if necessary[6], by providing a test report from a third-party testing laboratory.
- Perform risk-based checks of your chemical suppliers' formulations by submitting samples to a third-party laboratory for testing to ensure that the sum of all phthalates <250 ppm limit is not exceeded.
- Discuss with your chemical supplier whether the below safer alternatives are suitable substitutes for your production needs.

Safer Phthalate Alternatives

The following substances have been identified as examples of safer alternatives by the U.S. Environmental Protection Agency and/or by the Danish Environmental Protection Agency. These substances may be suitable for your production needs. Any chosen alternative must be ZDHC MRSL compliant.

77-90-7	Acetyl tributyl citrate (ATBC)
6422-86-2	Bis(2-ethylhexyl) terephthalate (DEHT/DOTP)
103-23-1	Di(ethylhexyl) adipate (DEHA)
166412-78-8, 47919-59-0	Diisononyl cyclohexane-1,2-dicarboxylate (DINCH)
122-62-3	Dioctyl sebacate (DIDS)
3319-31-1	Trioctyl trimetallitate (TOTM)
6846-50-0	Trimethyl pentanyl diisobutyrate (TXIB)

Additional information about these alternatives is available at the following links:

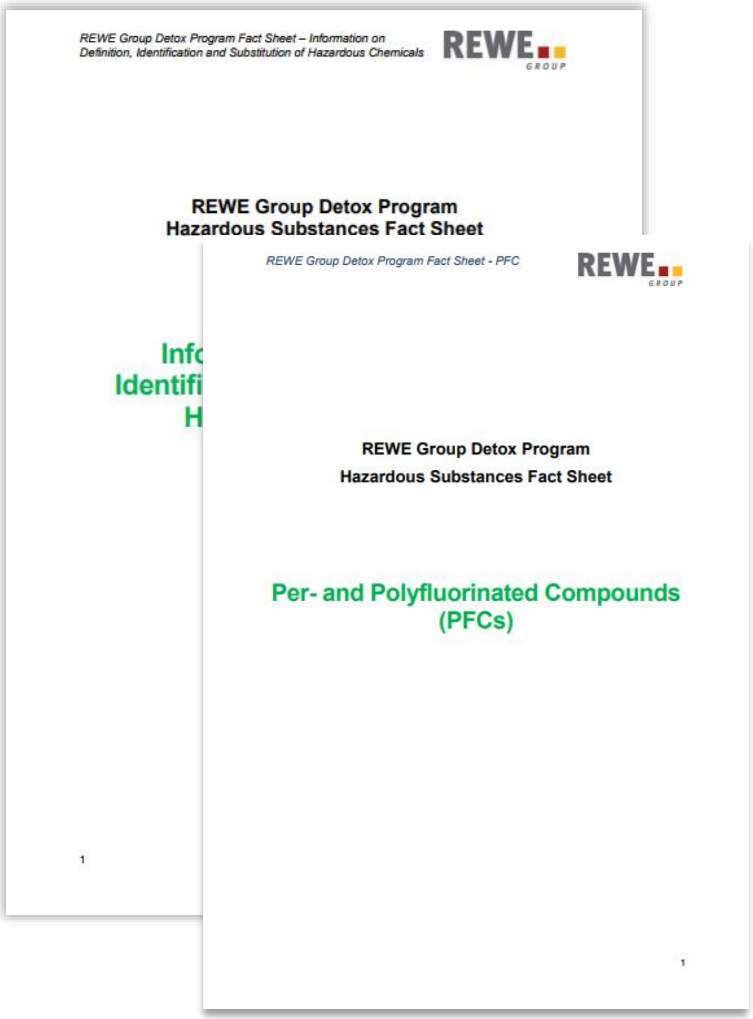
http://www.epa.gov/opptintr/existingchemicals/pubs/actionplans/phthalates_actionplan_revised_2012-03-14.pdf
http://www2.mst.dk/udgiv/publications/2010/978-87-92708-00-7/pdf/978-87-92708-01-4.pdf
http://www.greenchemistryandcommerce.org/documents/PilotProjectFullReportOct2-final_000.pdf

[4] Limit taken from ZDHC Manufacturing Restricted Substances List (MRSL) (http://www.roadmaptozero.com/df.php?file=pdf/MRSL.pdf) and is the limit on unintended phthalates in chemical formulations accepted by ZDHC member brands.
[5] The ZDHC MRSL does not apply to chemical formulations intended for leather processing at this time.
[6] At a later date, ZDHC will publish guidance on when the testing of chemical formulations is appropriate.

For additional information, contact a ZDHC brand member.

Reference: ZDHC Guidance Sheets

REWE GROUP CHEMICALS FACT SHEETS



Reference: https://www.rewe-group.com/en/nachhaltigkeit/gruene-produkte/informationsmaterial-f-r-lieferanten-und-fabriken.htmlwww.rewe-group.com

Open To Questions

SUMMARY

Every participant to feedback one key learning from this session.

Take notes in your workbook, exercise (3-3).