

Capacity Development on Chemical Management Training Programme for Multipliers

FABRIC Pakistan –ZDHC Workshop Makeup Session for Academia (T8)

Promotion of Sustainability in the Textile and Garment Industry in Asia-FABRIC

Training programme for chemical management multipliers

Agenda of Makeup Session ZDHC (T8)

12th August 2021, Time: 10:30 AM - 01:30 PM

Time	Topic	Duration	Facilitation by
10:30 AM	<ul style="list-style-type: none">Welcome – Agenda of the dayLearning objective Any questions/issues from previous sessions?	10 min	Arjmand
10:40 AM	Introduction on ZDHC <ul style="list-style-type: none">HistoryContext,Organizational SetupBasic Requirement Structure (Input, Process, Output)	30 min	Hannak
11:10 AM	Relating REMC with ZDHC <ul style="list-style-type: none">Structural Similarities	20 min	Arjmand
05 min (Short Break)			
11:35 AM	Specific requirements of ZDHC (Input) <ul style="list-style-type: none">RSL, MRSL 1.0, MRSL 2.0,Supplier Registration and VerificationAlternative / SubstitutionQ&A	30 min	Arjmand

Training programme for chemical management multipliers

Time	Topic	Duration	Facilitation by
12:05 PM	Specific requirements of ZDHC (Output) <ul style="list-style-type: none">▪ Wastewater Guidelines and requirements▪ Sludge▪ Testing procedures▪ Q&A	30 min	Hannak
12:35 PM	Specific requirements of ZDHC (Process) <ul style="list-style-type: none">▪ Overview of ZDHC Chemical Management System (CMS) and ZDHC TIG	30 min	Hannak
01:05 PM	Closing Day 01 <ul style="list-style-type: none">▪ Quick recap▪ Next Steps	10 min	Arjmand

Introduction to ZDHC

Context to ZDHC

- 1 How we got here ?
- 2 Global Initiatives
- 3 Industry Actions
- 4 Introduction > ZDHC (Standards, Tools, Solutions)

How we reached here?



Sir William Henry Perkin
Synthetic Dye
mauveine

1856



Prof Ian Rattee
Reactive Dye

1956

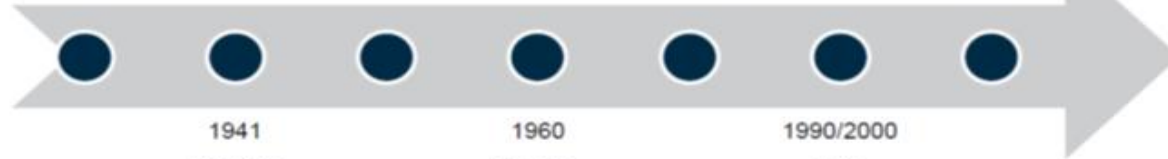


Move to Asia
Growth by 300%

1970/80



MRSL, Upstream
Supply Network
Reporting/Compliance
2010
onwards



1941
Polyester

1960
Finishing

1990/2000
RSLs
Social/Animal Welfare

https://en.wikipedia.org/wiki/Textile_industry

http://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_008075/lang--en/index.htm

SDC . Nimkartek

Background: The Role of NGOs

Residual Chemicals in Products



Aug 2011



Mar 2012

Residual Chemicals in Discharge



Oct 2009



Jan 2010



Aug 2010



Jul 2011



Apr 2012



Oct 2012

Source : <http://www.ipe.org.cn/reports/Reports.aspx?cid=18334&year=0&key=&Page=2>
<http://www.greenpeace.org/international/en/publications/Campaign-reports/Toxics-reports/#tab=0&gvs=false&page=2>

Background: The Role of NGOs

Residual Chemicals in
Products

Dirty Discount Supermarkets:
Dangerous Chemicals in Supermarket Clothing

Greenpeace tests clothes and shoes for children and young adults sold by supermarkets and leading retailers.

1. Summary of the results

Greenpeace tested clothing and shoes for kids and young adults for harmful substances in the summer of 2014. The products were purchased in supermarkets in Germany, Austria and Switzerland. In total, 26 samples were examined in independent laboratories.

More than half of the samples contained harmful substances in concentrations above the reference values and precautionary levels used by Greenpeace for children's clothing.*

Jul 2014



Jan 2016



Jul 2016



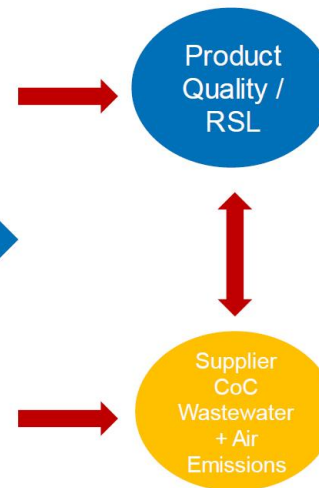
Feb 2017

Residual Chemicals in
Discharge

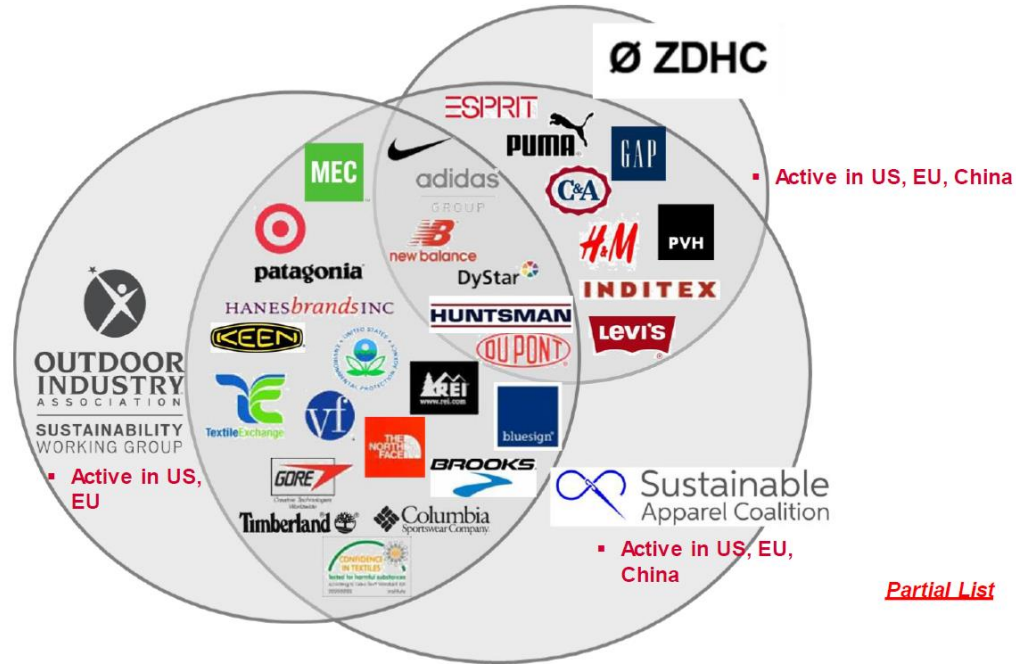


Dec 2013

Source : <http://www.ipe.org.cn/reports/Reports.aspx?cid=18334&year=0&key=&Page=2>
<http://www.greenpeace.org/international/en/publications/Campaign-reports/Toxics-reports/#tab=0&gvs=false&page=2>



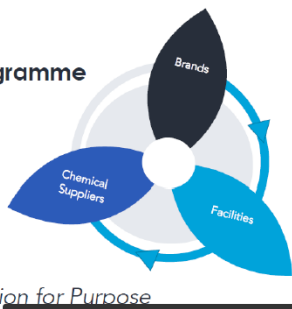
Response from Industry



ZDHC Contributors : <http://www.roadmaptozero.com/contributors/>
 Source : Outdoor Industry Association

Recent Catalyst (2019)

ZDHC
Leader Programme



Driving
Implementation for Purpose

100 %

Commitment
to use the ZDHC MRSL by the
Signatory Brand Leader
Programme.

100 %

Commitment
to use the ZDHC Wastewater
Guidelines by the Signatory
Brand Leader Programme.

76 %

Implementation
of ZDHC's Signatory Brands
implemented the Wastewater
Guidelines according to the
Leader Programme
Assessment

FASHION PACT



GRÜNER KNOPF

SOZIAL. ÖKOLOGISCH.
STAATLICH. ZERTIFIZIERT.

Green Button! Germany's new textile standard

by Apparel Resources News-Desk

24-July-2019 | 1 min read



OPEN LETTER

The COVID-19 recovery: time to speed up sustainability of the fashion, apparel and textile sector



Circular Economy Action Plan (CEAP)

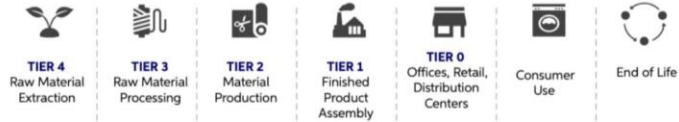


Pressure on Brands to Engage Upstream

CITI Evaluation Criteria		Respon- siveness	Compliance & Corrections			Extend Green Supply Chain		Data Disclosure & Transparency		Recycling	Total Score	Ranking +/-
		Respond to Enquiries	Establish Screening Mechanism	Push for Corrections	Centralized Wastewater Treatment	High- Impact Suppliers	Push for Upstream Manage- ment	Energy and Climate Data	PRTR	Recycling Used Products		
No.	Brand	12	12	14	10	14	8	10	12	8	100	+/-
1	Adidas	12	12	14	2.5	7	2	7.5	9	0	66	+6
2	H&M	12	12	7	2.5	7	4	5	6	4	59.5	-1
3	Levi's	12	12	10.5	2.5	7	2	5	6	2	59	+12
4	M&S	9	9	7	2.5	7	2	5	9	2	52.5	+2
5	Wal-Mart	9	12	14	0	7	4	2.5	3	0	51.5	+4
6	Esquel	9	12	14	0	7	2	2.5	3	0	49.5	-4
6	Nike	12	9	10.5	0	7	4	5	0	2	49.5	+3
8	Uniqlo	9	12	14	0	7	0	0	0	2	44	+4
9	Puma	12	9	7	0	7	0	2.5	6	0	43.5	-4
10	Target	9	12	7	0	7	2	2.5	3	0	42.5	+1
11	ZARA	9	12	7	0	7	2	0	3	0	40	+3
12	Burberry	9	9	7	0	3.5	2	2.5	6	0	39	New
13	Gap	9	9	7	0	7	4	0	0	0	36	-10
13	C&A	9	9	7	0	7	4	0	0	0	36	-10
13	IKEA	9	12	7	0	3.5	0	2.5	0	2	36	+4
16	Esprit	9	6	7	0	7	0	0	0	0	29	-4
16	Li-Ning	9	6	7	0	7	0	0	0	0	29	-1
18	Mizuno	9	6	7	0	3.5	0	2.5	0	0	28	+5

Textile Industry Rankings 2015

Focus on Transparency and Information Disclosure to Userend



 Sustainable Apparel Coalition

Commitment from Brands and Retailers

fashion. We have now achieved 80% ZDHC compliance of input chemicals. Our H&M Group goal is to reach 100% ZDHC compliance in 2020 — we call it Roadmap to Zero.



Requirements for input chemicals

The input chemicals policy was implemented in 2016 and comprises two essential components: Firstly, production facilities are required to maintain a chemical inventory and valid safety data sheet (SDS) for all chemicals used, which need to fulfil the ZDHC MRSL requirements, used. Compliance is proven based on



Achieving 100% sustainable input chemistry by adopting the ZDHC MRSL

Communication of requirements for the use of hazardous substances (MRSL list) to suppliers.

41 companies already achieved this target | **19** companies continue working on the target

Since 2015, we have focused on implementing the program with suppliers and aligning the RSSP with the ZDHC MRSL. We also have focused on utilizing other tools and trainings developed within the ZDHC

adidas



Validation through Assessment / Audits

7. Does your facility select and purchase chemicals based on their hazards and **MRSL** / RSL requirements?

If yes, do all chemicals purchased and used in production meet the facility's chemical purchasing policy?

If no, do you have a process or plan for eliminating chemicals that do not meet the facility's chemical purchasing policy?

COMMON TOOLS AND STANDARDS

Common tools to be used industry-wide, delivered through active collaboration.

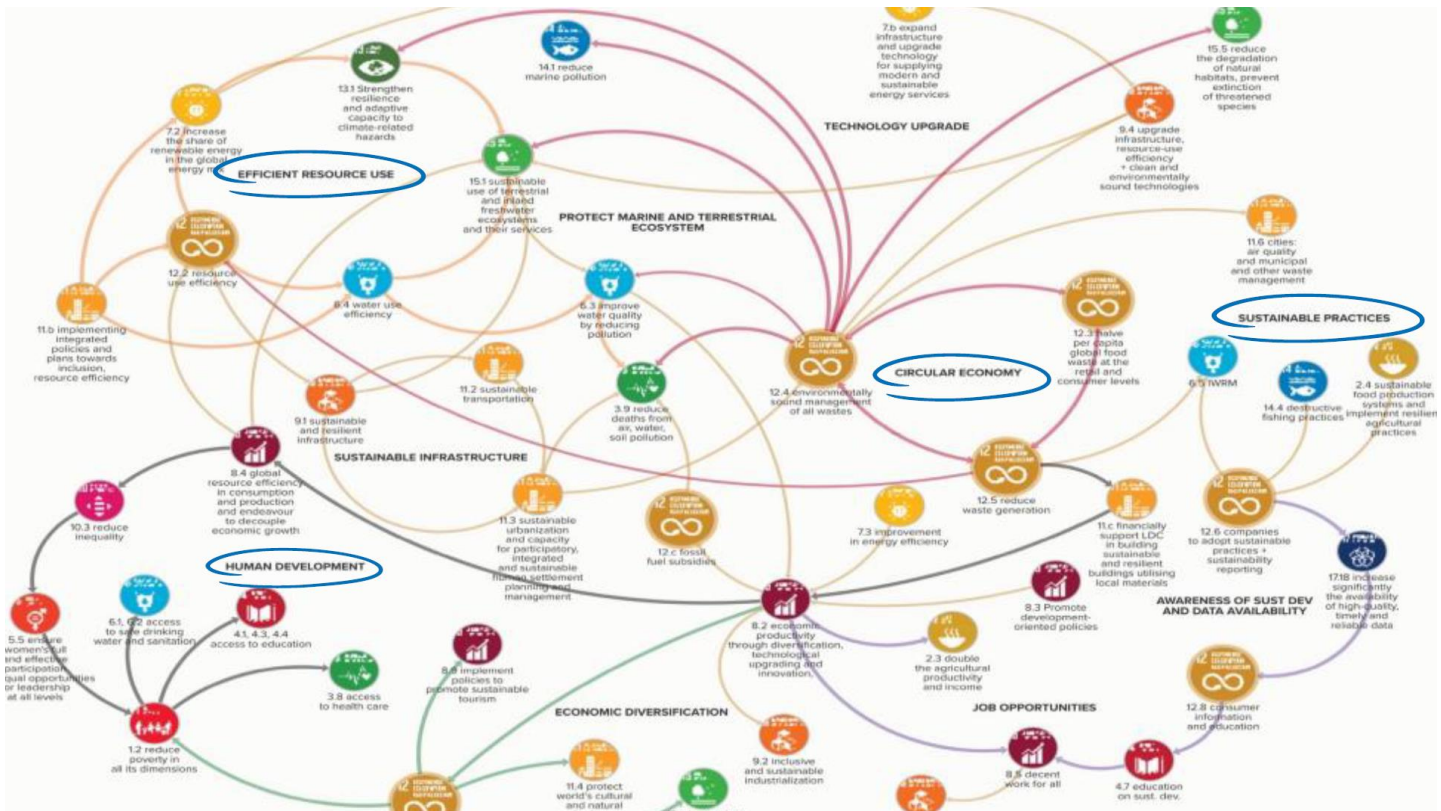
2016-2017: In collaboration with ZDHC members on the delivery of work such as the ZDHC Audit Protocol, Effluent Guidelines and ZDHC **MRSL** for the textile and footwear industry.

its usage. GOTS has been following the system of MRSL for chemical inputs since inception.



The Bigger Picture SDGs





From Detox to Roadmap to ZERO



GREENPEACE
DETOX
CAMPAIGN

July 2011

- Sampled wastewater discharge at textile facilities in several countries in Global South
- Tested clothing purchased in brands' flagship stores
- Identified 11 Priority Chemicals that are discharged in wastewater & residual on end products
- Multiple brands committed to Detox commitment with "Zero Discharge by 2020" in mind

ZDHC INITIATIVE
FORMED

Q1 2012
Onwards

- "Zero Discharge of Hazardous Chemicals" was formed by 6 brands in response to address this challenge collaboratively
- Multiple brands began to join this initiative



ZDHC
FOUNDATION
FORMED

2015

- ZDHC was registered in Amsterdam in 2015 to deepen the programme & its engagement
- Developed a range of tools and guidelines to support an unified implementation approach
- Become a multi-stakeholder organization in which brands, retailers, suppliers, solution providers and chemical formulators are engaged

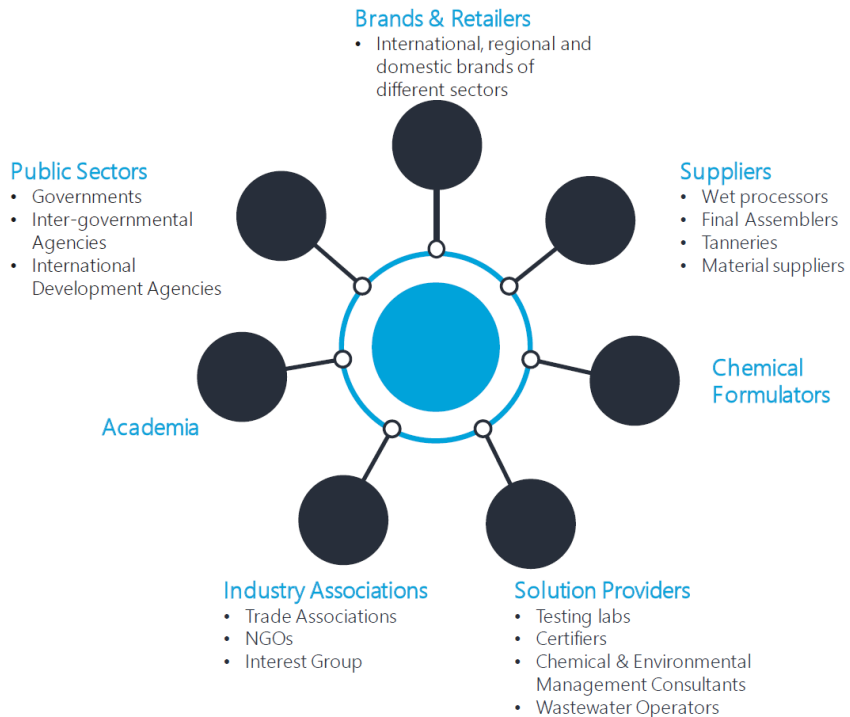


FROM FINITE TO
INFINITE GOAL

2020
Onwards

- Continue to converge the textile, footwear and leather approach on implementation to reduce duplication in the market
- Widen scope of development & deepen implementation in various geographical regions

From Detox to Roadmap to ZERO



Linking & Engaging Key Stakeholders In Textile, Footwear & Leather Value Chain

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Structure of ZDHC



An Integral Setup to Environmental Improvements



The Roadmap to Zero Programme

Developing guidelines and solutions for the industry



The ZDHC Academy

Building capacity of the value chains



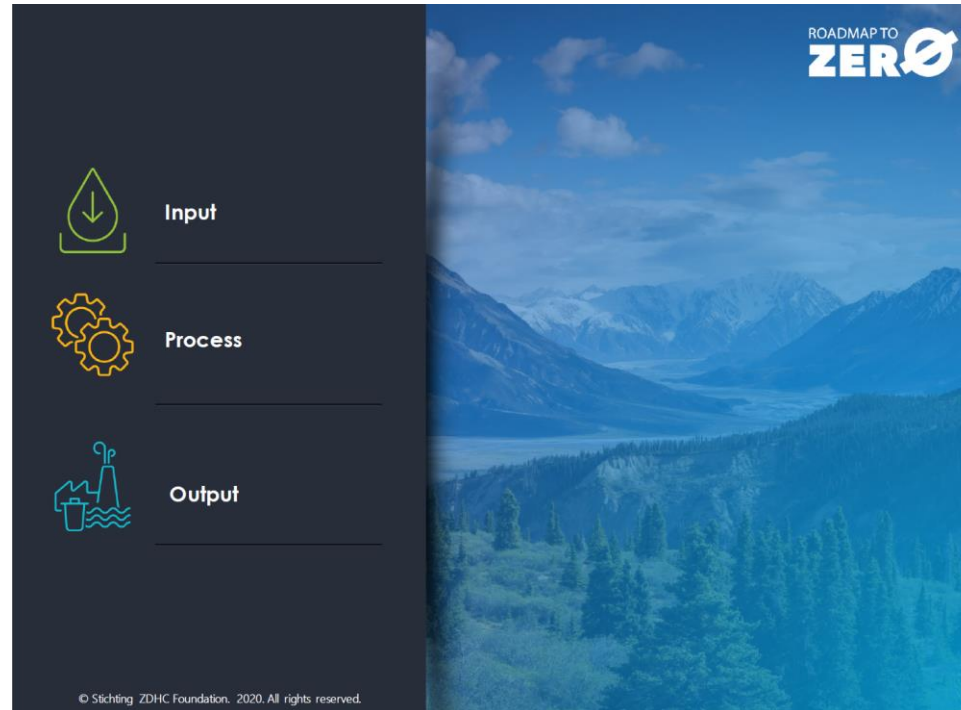
The Implementation HUB

Scaling adoption and innovation

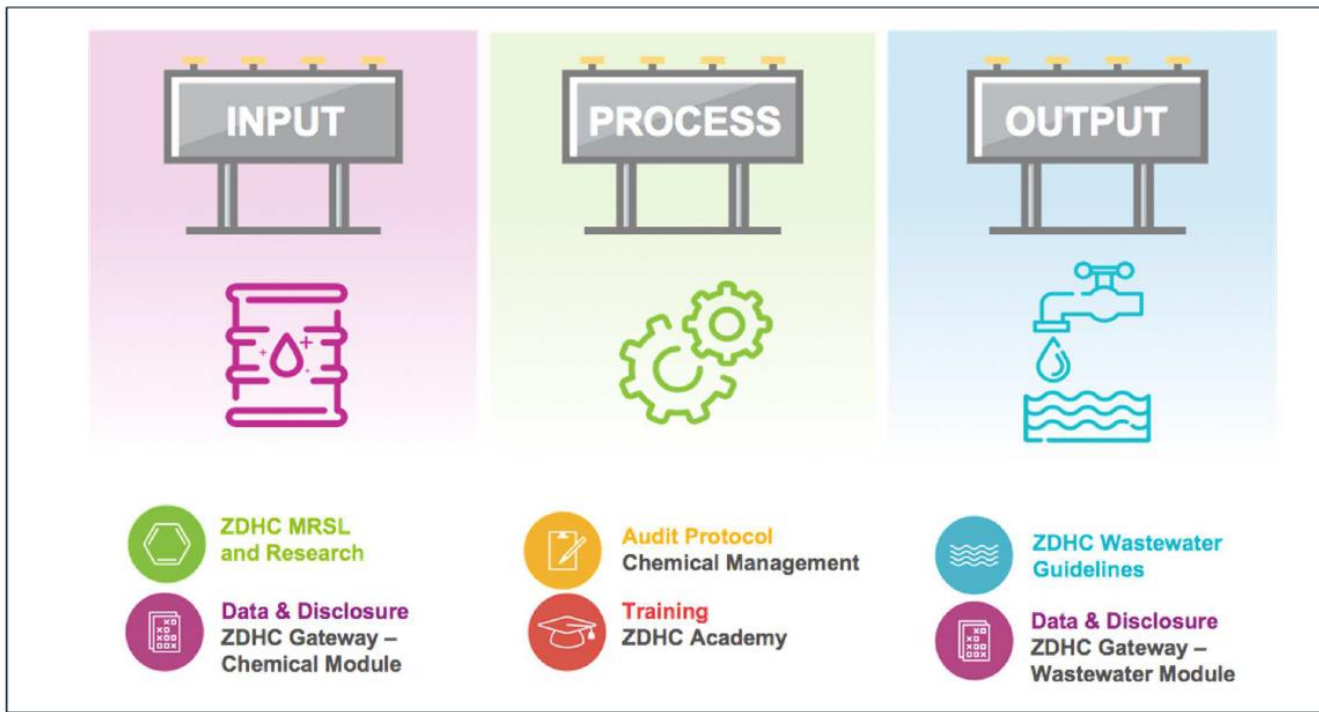
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Methodology

Holistic
Systems
Approach to
Sustainable
Chemical
Management



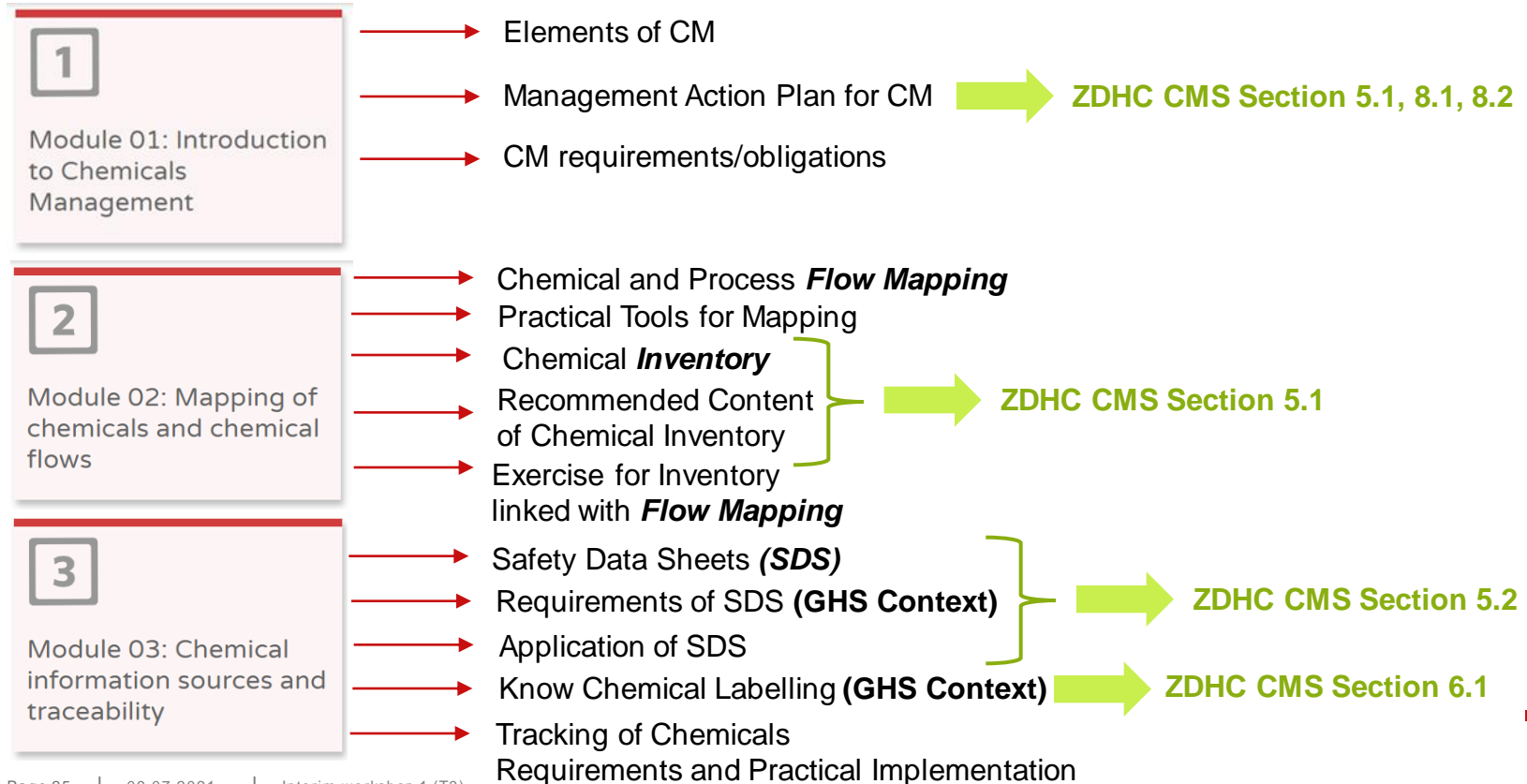
Holistic Approach of ZDHC



Relating REMC with ZDHC

Training programme for chemical management multipliers

eREMC and ZDHC

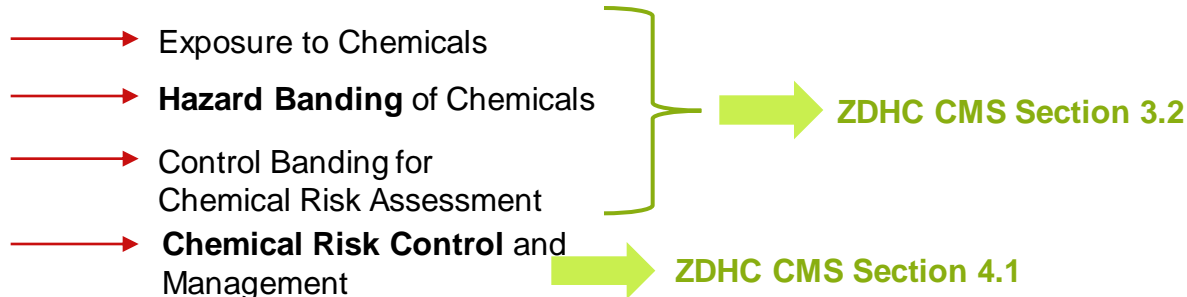


Training programme for chemical management multipliers

eREMC and ZDHC

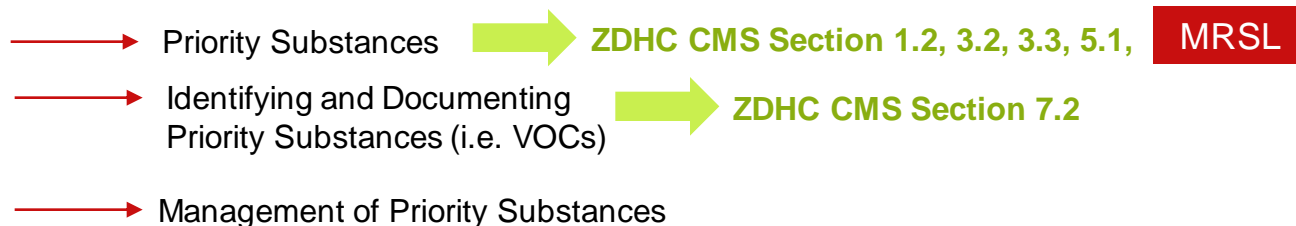
4

Module 04: Assessing chemical hazards, exposure and risks



5

Module 05: Identifying and documenting priority chemicals



Training programme for chemical management multipliers

eREMC and ZDHC

6

Module 06:
Streamlining chemical
purchase practices

- Good Procurement Practices
- **Procurement** Policy and System → ZDHC CMS Section 1.2.1, 2.3,
- Procedure for Chemical **Supplier Selection** and Monitoring → ZDHC CMS Section 3.3

7

Module 7: Preparing for
chemical risk
management

- **Root Cause Analysis** for Observed gaps
 - Tools for Root Cause Analysis
 - Action Planning → ZDHC CMS Section 5.1, 8.1, 8.2
- } → ZDHC CMS Section 7.1, 8.1, 8.2

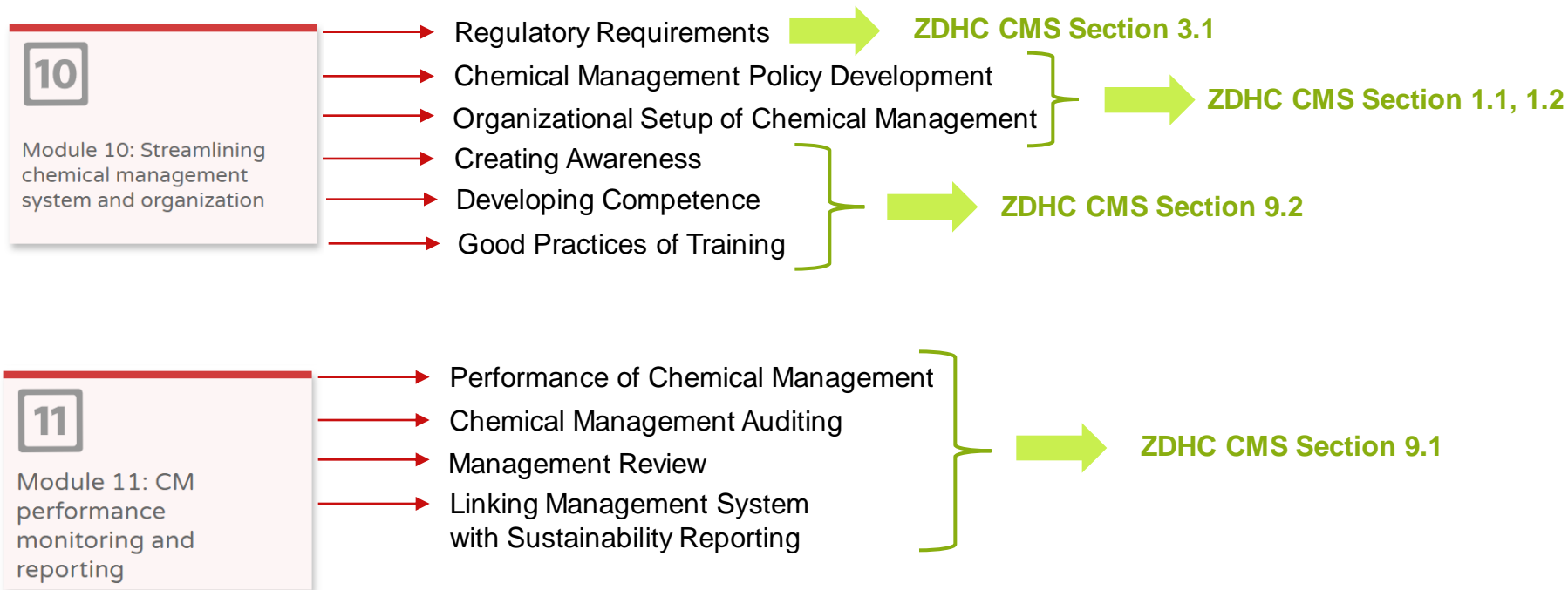
Training programme for chemical management multipliers

eREMC and ZDHC



Training programme for chemical management multipliers

eREMC and ZDHC



Connections between REMC and ZDHC

GIZ REMC E-learning	1. Introduction to Chemical Management	2. Mapping of chemicals and chemical flows	3. Using chemical information sources and ensuring traceability	4. Assessing chemical hazards, exposure and risks	5. Identifying and documenting priority chemicals	6. Streamlining chemical purchase Practices	7. Preparing for chemical risk Management	8. Controlling chemical hazards and Risks	9. Managing chemical wastewater and waste	10. Streamlining chemical management system and Organisation	11. Monitoring and reporting CM performance
ZDHC CMS (Based on TIG)											
1. Policy	√		√			√					√
2. Strategy	√										
3. Assessments			√	√				√			√
4. Health and Safety								√		√	
5. Chemical Inventory		√	√		√						
6. Storage and Handling			√								
7. Output Management					√		√		√	√	√
8. Process Control							√				
9. Continuous Improvement	√									√	√

ZDHC Requirements (input)

Manufacturing Restricted Substances List

- The ZDHC MRSL is **a list of chemical substances subject to a usage ban.**
- The ZDHC MRSL applies to chemicals used in facilities that process textile materials and trim parts for use in apparel and footwear.
- In 2015, ZDHC published the ZDHC MRSL Version 1.1 (updated from 2014 to include Leather)
- **There should be no intentional use of the listed substances** in facilities that process materials used in the production of apparel and footwear.
- The ZDHC MRSL limits apply to substances in commercially available chemical formulations and not earlier stages of chemical synthesis.

MRSL and RSL

A chemical substance is usually identifiable by a single, unique Chemical Abstracts Service (CAS) number or Color index number(CI)



- The **RSL** governs the **outputs** (finished product) to protect consumers.
- The **MRSL** governs the **inputs** to protect the environment, worker health and safety, and consumers.

Conformance to MRSL

ZDHC MRSL conformance means that the chemical formulation does not contain any of the chemical substances on the ZDHC MRSL above the ZDHC MRSL threshold commercial formulation limit values.

***Note:** Threshold Limit values on restricted substances in chemical formulations are in some cases substantially higher than limits on restricted substances in finished products. This is because restricted substances in finished products are almost always found in smaller concentrations than in the chemical formulations used to produce them. Chemical formulations are highly concentrated before being diluted upon application to textiles and other materials.*

HAZARDOUS CHEMICALS

Hazardous Chemicals

Hazardous chemicals are those that show intrinsically hazardous properties:

- Persistent, bioaccumulative and toxic (PBT)
- Very persistent and very bioaccumulative (vPvB)
- Carcinogenic, mutagenic and toxic for reproduction (CMR)
- Endocrine disruptors (ED); or those of equivalent concern, not just those that have been regulated or restricted in other regions



Updating of MRSL

ZDHC MRSL

Version 1.1 published in Dec 2015

Version 2.0 published in Dec 2019

What is ZDHC MRSL?

- List of chemical substances banned from intentional use in facility.
- Establishes concentrations limits.
- To be used in entire manufacturing process.
- Coverage: textile, synthetic leather, leather, Rubber, Foam, Adhesives etc.

Why should I use the ZDHC MRSL?

- ✓ Industry collaboration and alignment is essential to solve the issue of hazardous chemicals.
- ✓ ZDHC MRSL is aspirational, but achievable for brands to adopt.
- ✓ Alternatives already available for the ZDHC MRSL compounds.

Major Updates

1

Chapters

New Chapters added;

- ZDHC MRSL Candidate List
- ZDHC MRSL Archive

2

Substrates

Expanded substrates to include

Rubber, Foam and Adhesives

3

New Substances

Going beyond the 11 priority substances

- 24 Parameters in New Version V 2.0 and in old 16 parameters (V1.1)

Standard for Management of Input Chemistry ZDHC MRSL Version 2.0

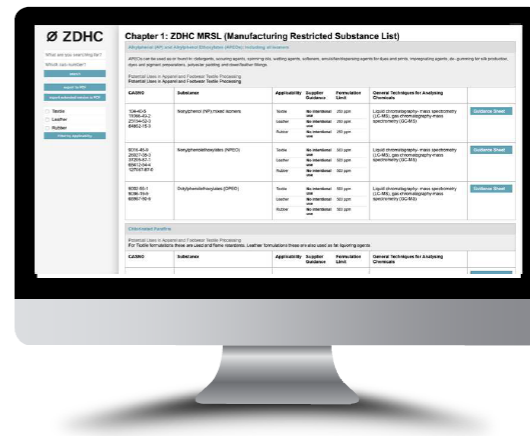
Textiles and Coated
Fabrics Processing &
Leather Processing

Proactive chemicals
management in supply
chain

List of chemical
substances banned from
intentional use in facility

Starting point for safer
chemistry innovation

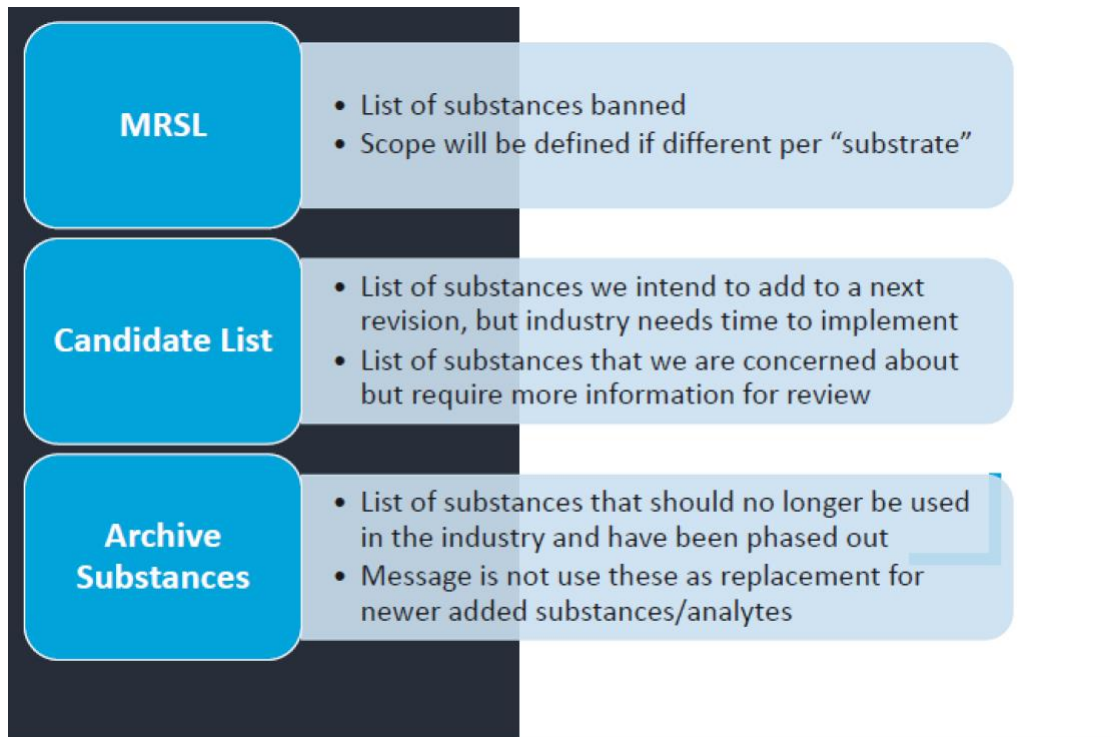
ZDHC MRSL



Chemical Groups in MRSL



Chapters in MRSL 2.0



Transiting

ZDHC MRSL

TRANSITION PERIOD

During the transition period it is the Chemical Industry that needs to shift from V1.1 to V2.0



Launch Sep - Dec '19

- ZDHC E-MRSL
- Conformance Guidance
- MRSL Conformance Indicators
- Gateway



Chemical Formulators

Jan - Jun '20

- ZDHC MRSL V2.0 substances internal research by Chemical Formulators

Jul - Dec '20

- Re-certify formulations
- Upload certificates on Gateway



Facilities & Brands

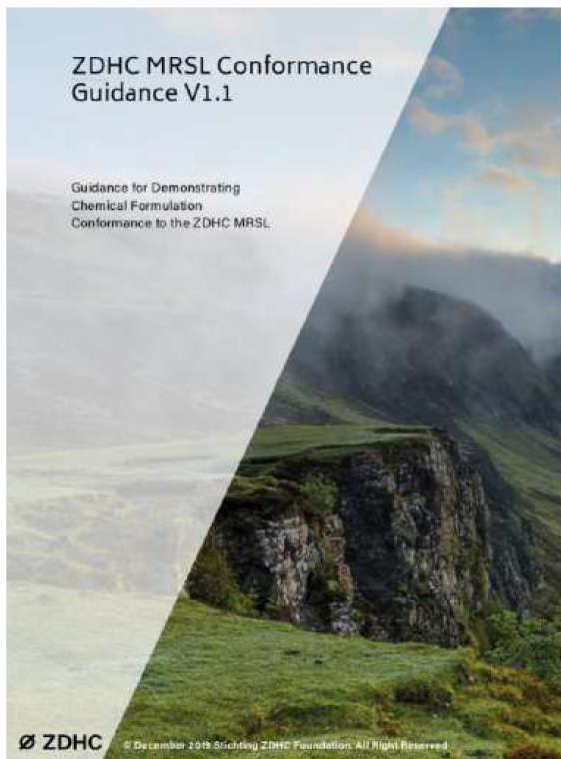
Jul '20 - Jun '21

- Chemical Inventory Compliance moving from ZDHC MRSL V1.1 to V2.0
- Caveat that V1.1 Stock bought before Dec '20 can be used after Dec '20

ZDHC MRSL V2.0

- Chemical Formulators
- Facilities
- Brands
- Conformance Indicator

Conformance Guidance



MRSL Conformance Guidance V 1.1

- Phase out Level 0
- Updated Smart Testing Grid including
 - Leather,
 - Synthetics
 - Rubber, Foams and Adhesives

Communication (V1.1 & V2.0) acceptance

E. Annex A: Quality Control Guidance for Analytical Test Data - Supporting ZDHC MRSL V2.0 Conformance

Smart Testing Grid - Tests

Industry (e.g., Manufacturer, Retailer, Importer, Exporter, or Regulator) is responsible for quality control procedures.

Industry (e.g., Manufacturer, Retailer, Importer, Exporter, or Regulator) is responsible for quality control procedures.

Test ID	Test Name	Substances (Only 1 Mark Allowed per Substance)												
		AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	
A. All Restricted Substances (Smart Testing Grid - Tests)														
E1	Formaldehyde	X												
E2	Lead													
E3	Mercury													
E4	Cadmium													
E5	Chromium VI													
E6	Hexavalent Chromium													
E7	Polycyclic Aromatic Hydrocarbons (PAHs)													
E8	Phthalates													
E9	Organotin Compounds													
E10	Organotin Compounds (Total)													
E11	Organotin Compounds (Total)													
E12	Organotin Compounds (Total)													
E13	Organotin Compounds (Total)													
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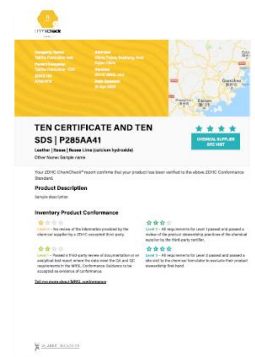
Support for Input Management



ZDHC MRSL & Conformance Guidance



Chemical Module



ChemCheck

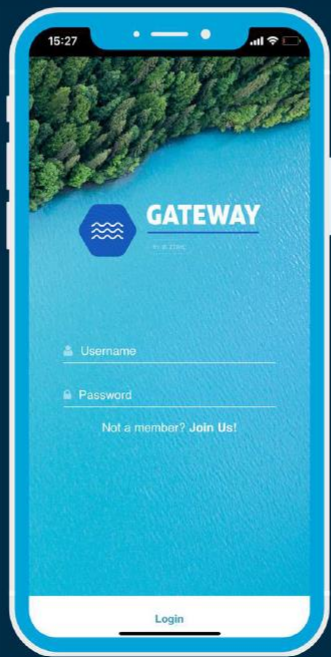


InCheck

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ZDHC Gateway

THE world's largest database of safer and innovative chemistry for the leather, textile, apparel and footwear industry



ZDHC
Gateway

ZDHC Gateway – Chemical Module

ZDHC Tools for Suppliers



ZDHC Gateway™



ZDHC ClearStream™

ChemCheck™ CERTIFICATE

NeoTex® Blue 3RL Micro 200% Hummingbird Dyes Inc
LEVEL 3 Conformance ★★★★★

Your ZDHC ChemCheck report confirms that your product has been verified to the above ZDHC Conformance Standard. [What does this mean?](#)

Factory Name: Hummingbird Dyes, Taiwan
 Parent Company: Hummingbird Dyes Inc.
 ZDHC ID: 12345678
 Certified by: ZDHC (Singapore) Pte. Ltd.
 Factory Address: No. 25, Wu Chuan Road, Wang District, New Taipei City, Taiwan
 Contact: Lucy Chen
 E-Mail Address: lucy.chen@human-hgpr.com

Certified Date: 07 November 2018
 Issuing Date: None
 ZDHC Status: Manufacturer List
 ZDHC Verified Date: 11 March 2019
 ZDHC Verifier: Mary Ryan
 ZDHC Standard Checked: ZDHC 0001 (22/10/2018)

ZDHC ChemCheck™

InCheck™

MANUFACTURING SUPPLIER

80%
 90%
 100%

MANUFACTURING SUPPLIER
 ★★★★★
 MANUFACTURING SUPPLIER
 ★★★★★
 MANUFACTURING SUPPLIER
 ★★★★★
 MANUFACTURING SUPPLIER
 ★★★★★

MANUFACTURING SUPPLIER

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ZDHC InCheck™

ClearStream™

ColourTex Lanka (Pvt.) Ltd

856

MANUFACTURING SUPPLIER

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MANUFACTURING SUPPLIER	MANUFACTURING SUPPLIER	MANUFACTURING SUPPLIER	MANUFACTURING SUPPLIER

ZDHC ClearStream™

ZDHC Requirements (Output)

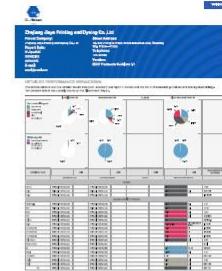
Output Management Support



ZDHC Wastewater Guidelines & Wastewater Treatment Technologies



Wastewater Module



ZDHC Wastewater Guidelines

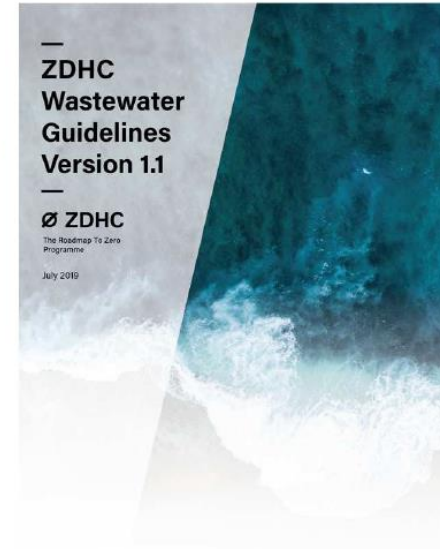
Standard for Management of **Output Chemistry** - ZDHC Wastewater Guidelines / Holistic Expansion

ZDHC Wastewater Guidelines

- Conventional Parameters: Foundational, Progressive, Aspirational
- ZDHC MRSL Parameters (Priority Hazardous Chemicals)
- Existing for textile mills

Under Development

- Leather tanneries wastewater guidelines
- Solid waste & sludge guidelines
- Air emissions guidelines



Version 1.1
Published in July 2019
With Immediate Effect

Applicability

- Textile, apparel and footwear wet processing facilities producing industrial wastewater & sludge, including but not limited to:
 - a. Textile dyeing & finishing
 - b. Yarn dyeing
 - c. Fabric mills
 - d. Laundry, washing & finishing facilities
 - e. Printing facilities
 - f. Vertical finished goods manufacturing facilities
- Applicable to facilities with direct indirect discharge and On-site Zero Liquid Discharge treatment plants
- Applicable to facilities combining domestic and industrial wastewater discharge

Minimum Requirements

- Have a valid licence to operate.
- Be compliant with applicable wastewater and sludge discharge permits at all times.
- Ensure there are no unpermitted bypasses for untreated wastewater around wastewater treatment systems.
- Follow generally accepted process engineering best practices with respect to wastewater treatment and overall supplier water efficiency management.
- Not dilute wastewater discharge with incoming water or cleaner wastewater as a means to achieve conformance to concentration-based discharge permits.
- Properly classify sludge produced from a wastewater treatment or a Zero Liquid Discharge (ZLD) treatment system as either hazardous or non-hazardous, as defined by local legal regulations.
- Contract out sludge hauling and disposal to licenced/permited and qualified third parties that have appropriate facilities to properly dispose of the sludge wastes to ensure sludge and leachates from the sludge meet local regulatory requirements and do not adversely impact the environment.

ZDHC Wastewater Parameters

1. Conventional Parameters (For Wastewater)

- All conventional parameters stated in the following table:
 - **Table IA** (Sum Parameters & Anions)
 - **Table IB** (Metals)
- If legislation or permits cover conventional parameters that are additional to those listed Table IAGB
 - suppliers are expected to test for the additional parameters and;
 - Test according to the timeline identified by local authorities

2. ZDHC MRSL Parameters (For Wastewater)

- Specifically refers to the ZDHC MRSL VI.1 and are listed in Table 2A - N
- In some cases the analytes can be treated by the ETP. They are best controlled by eliminating them at the source and not using them in production.
- These parameters are analysed to check the effectiveness of process input control to show conformance with the ZDHC MRSL VI.1.

3. Sludge Parameters

- Parameters stated in Table 3
- Testing of sludge resulting from the wastewater treatment process is considered another factor in the verification of ZDHC MRSL VI.1 conformance.

ZDHC Wastewater Parameters

Conventional Parameters

Table 1A-1B

TABLE 1A Sum Parameters

1. Temperature
2. TSS
3. COD
4. Total-N
5. pH
6. Colour
7. BODs
8. Ammonium-N
9. Total-P
10. AOX
11. Oil and Grease
12. Phenol
13. Coliform
14. Persistent Foam

Anions

1. Sulfide
2. Sulfite
3. Cyanide

TABLE 1B Metals

1. Antimony
2. Chromium, total
3. Cobalt
4. Copper
5. Nickel
6. Silver
7. Zinc
8. Arsenic
9. Cadmium
10. Chromium (VI)
11. Lead
12. Mercury

MRSL Parameters

Table 2A-2N

- A. Alkylphenol (AP) and Alkylphenol Ethoxylates (APEOs): Including All Isomers
- B. Chlorobenzenes and Chlorotoluenes
- C. Chlorophenols
- D. Dyes - Azo (Forming Restricted Amines)
- E. Dyes - Carcinogenic or Equivalent Concern
- F. Dyes - Disperse (Sensitising)
- G. Flame Retardants
- H. Glycols
- I. Halogenated Solvents
- J. Organotin Compounds
- K. Perfluorinated and Polyfluorinated Chemicals (PFCs)
- L. Ortho-Phthalates - Including all ortho esters of phthalic acid
- M. Polycyclic Aromatic Hydrocarbons (PAHs)
- N. Volatile Organic Compounds (VOC)

Sludge Parameters

Table 3

- A. Dry Mass
- B. Anion (Cyanide)
- C. Metals (Arsenic, Cadmium, Lead, Chromium (VI), Mercury)
- D. Alkylphenol (AP) and Alkylphenol Ethoxylates (APEOs): Including All Isomers
- E. Chlorobenzenes and Chlorotoluenes
- F. Chlorophenols
- G. Dyes - Azo (Forming Restricted Amines)
- H. Dyes - Carcinogenic or Equivalent Concern
- I. Dyes - Disperse (Sensitising)
- J. Flame Retardants
- K. Glycols
- L. Halogenated Solvents
- M. Organotin Compounds
- N. Perfluorinated and Polyfluorinated Chemicals (PFCs)
- O. Ortho-Phthalates - Including all ortho esters of phthalic acid
- P. Polycyclic Aromatic Hydrocarbons (PAHs)
- Q. Volatile Organic Compounds (VOC)

Environmental Impact Mitigation Measure

- Factory wastewater discharge may contain chemicals, including chemicals found in the priority classes.
- The risk of releasing these chemicals can be reduced or eliminated by:
 - Well designed, properly functioning effluent / wastewater treatment plants.
 - Good process controls.
 - Effective chemicals management.
- Proper disposal of expired chemicals, sludge from ETP/WWTP and empty chemical containers are essential for mitigating the risk to the environment.

Working towards Zero Discharge of Hazardous Chemicals

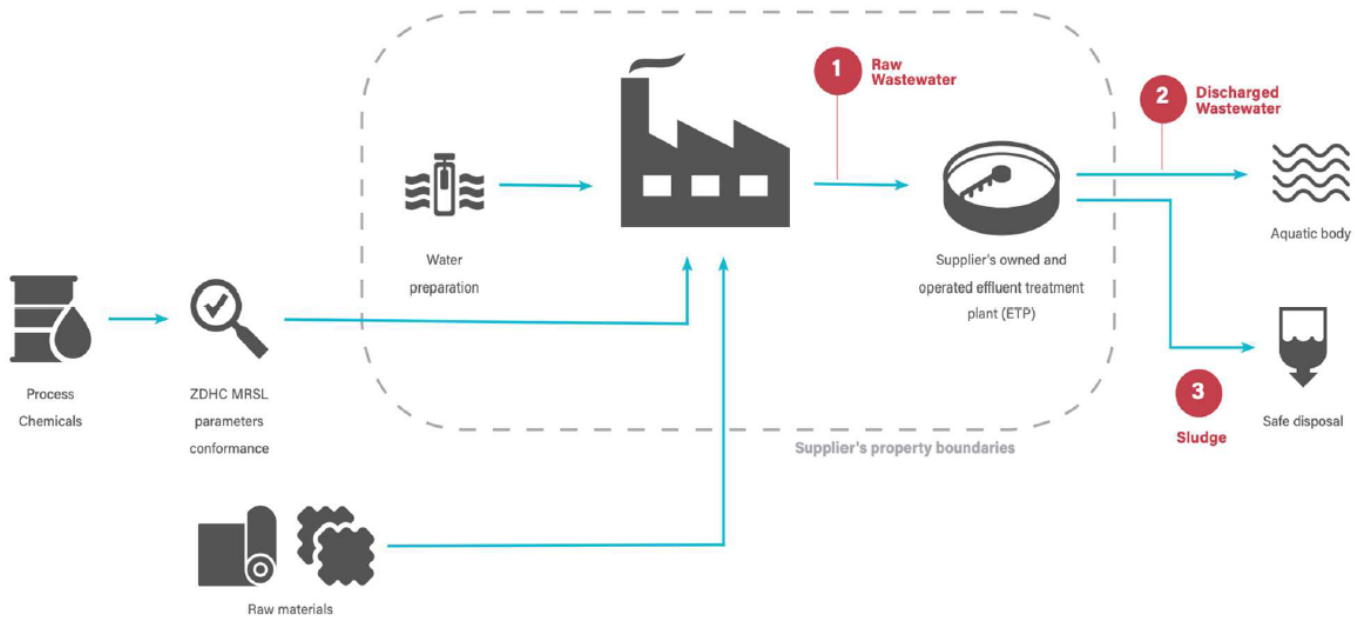
- When disposed of in water bodies or onto land, effluents can result in the deterioration of surrounding ecosystem.
- Factories must monitor the quality of their wastewater and stay within or below national limits for pollution control.
- International pressure for effluent treatment is increasing and there is more concern whether textiles are produced in an environmental-friendly way.
- To reduce pollution intensity, an onsite WWTP should be used to treat the effluent before it is discharged into the environment.




Monitoring of ETP/WWTP

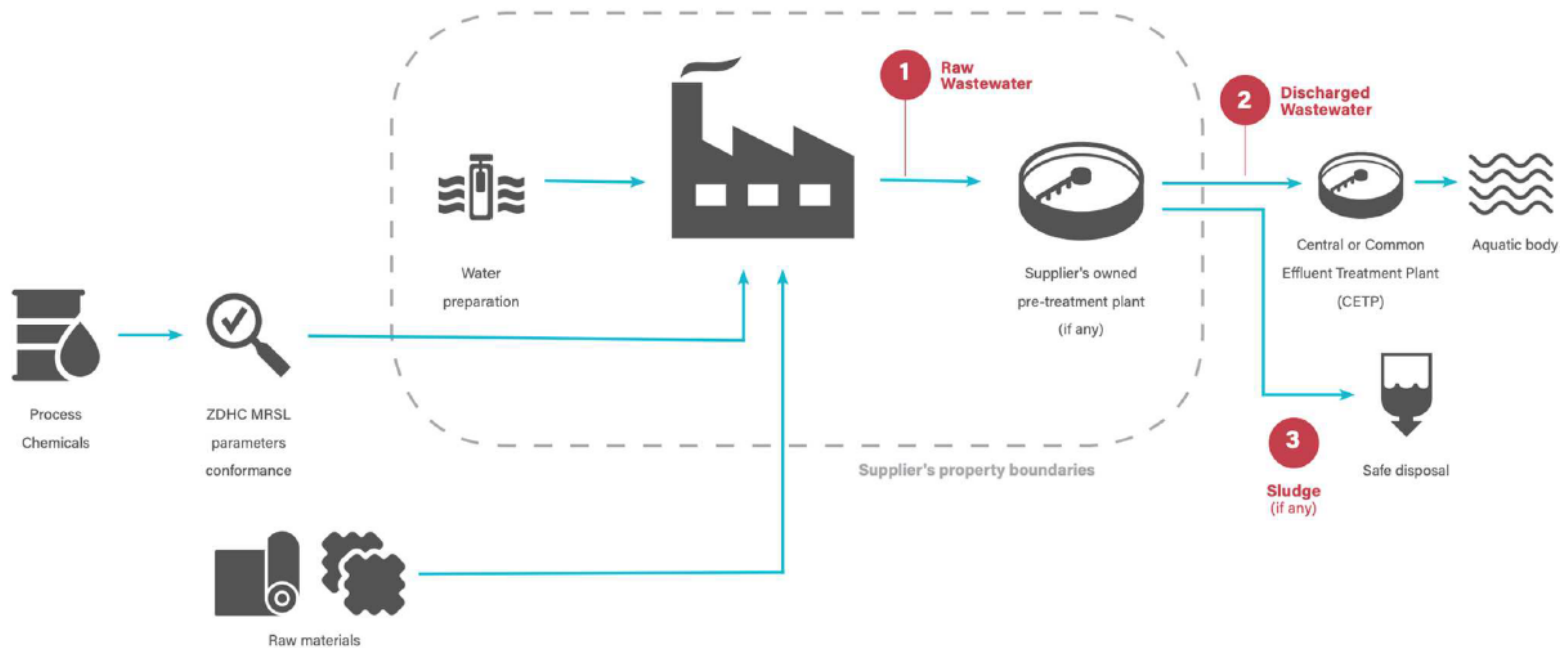
- Untreated and treated wastewater characteristics need to be known and must be monitored regularly to evaluate the efficiency of the ETP / WWTP, minimising the amount of chemical pollutants discharged into the environment.
- Different parameters in different units of the ETP/WWTP must be monitored routinely to diagnose any internal breakdown of the system.
- Monitoring can reduce the overall cost of treatment by preventing excess chemicals from being used and resulting in a more efficient plant.
- Efficiently operated plants produce effluent that complies with relevant standards.


Sampling Points for Direct Discharge



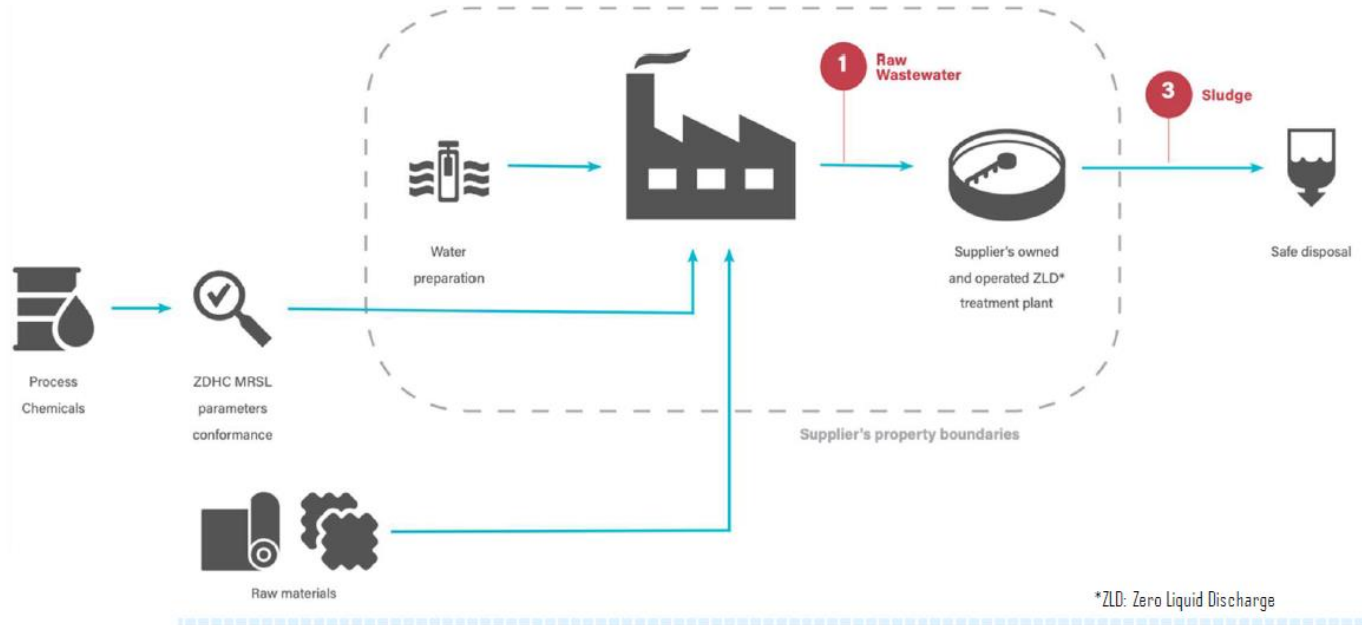
 = sampling points

Sampling Points for indirect Discharge



 = sampling points

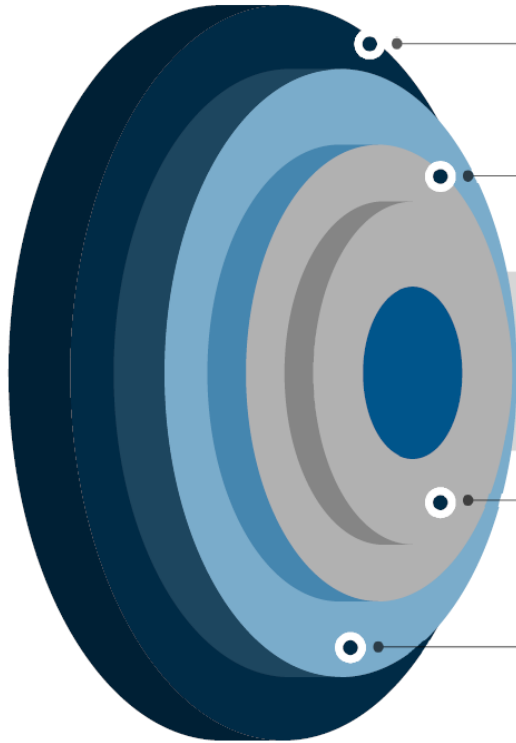
Sampling Points for ZLD Facility



 = sampling points

Sampling Methodology

- Composite sampling should be performed for no less than six (6) hours, with no more than one hour between discrete samples.
- Samples shall be taken by qualified laboratory personnel of the ZDHC Accepted Laboratory.
- Samples should be taken under the factory's normal production scale.
- No samples be taken during times when the production process is not running or the wastewater is diluted due to for example heavy rainfall, etc.



Enable suppliers (wet processing facilities) to share test results based on ZDHC Wastewater Guidelines with multiple brands.

Reduce duplicated testing (= improve resource and operational efficiencies) requested by multiple brands.

Key Objectives of ZDHC Gateway Wastewater Module

Provide transparent tools to allow suppliers and brands to measure, understand and improve the level of conformance to the ZDHC Wastewater Guidelines (including the use of ClearStream)

Data analysis will help prioritise areas where improvement and capacity building at facilities is needed.



Access to the ZDHC Gateway - Wastewater Module

BRANDS

Main activities:

- Create and maintain Brand profile.
- Access to suppliers test results and overall performance.
- Follow/bookmark suppliers to track performance of brand's supply chain.

SUPPLIERS

Main activities:

- Create and maintain Supplier profile (only after invited by brand).
- Upload Supplier's WW permit.
- Review and accept or decline WW test data submitted by Lab.

ZDHC ACCEPTED LABS

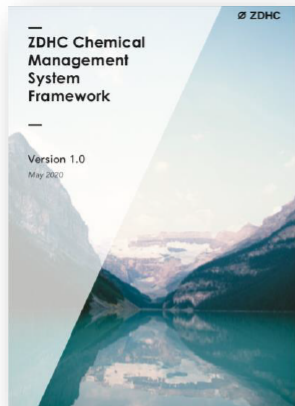
Main activities:

- Create and main Lab Profile (only after invited by ZDHC).
- Submit test results on behalf of supplier.

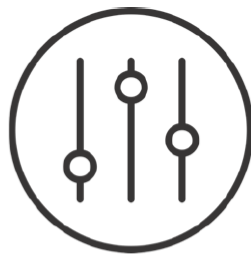
Accessible by ZDHC Community Members

ZDHC Requirements (Process)

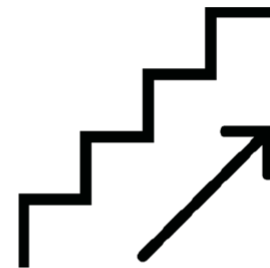
Process Management



"How to ZDHC"
Chemical
Management System
Guidance

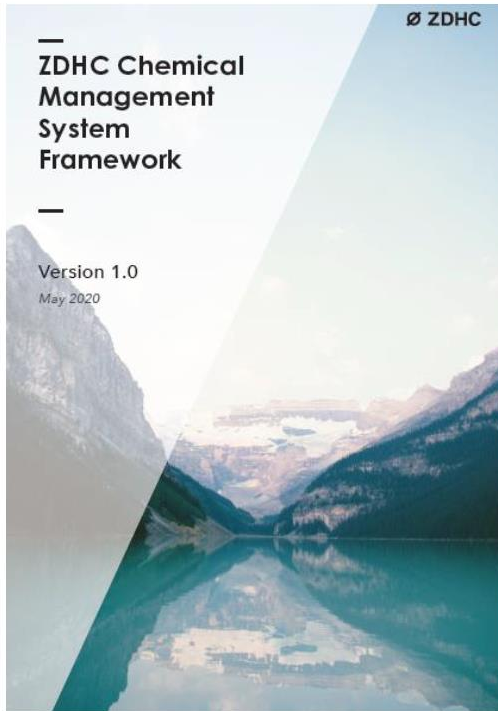


SAC - Higg FEM
amfori BEPI
Leather Working
Group
Harmonisation with
assessment and
audit schemes



Supplier and Brand to
Zero Programme

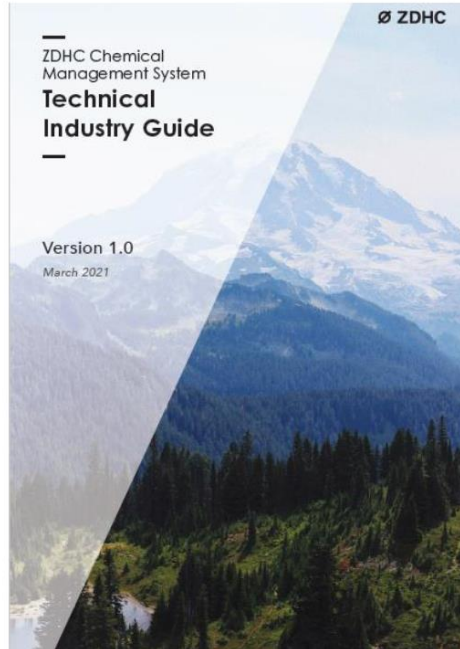
ZDHC CMS Framework



The ZDHC CMS Framework is intended to –

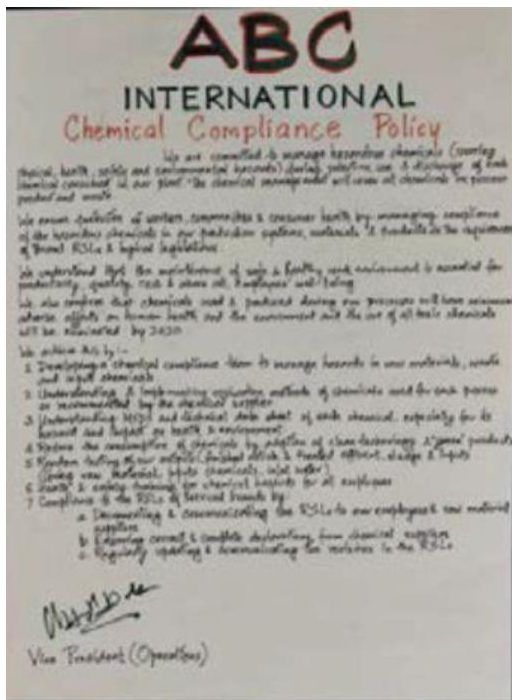
- either replace brand-specific requirements for chemical management
- and/or to be supportive or complimentary to such requirements.

Technical Industry Guide from ZDHC



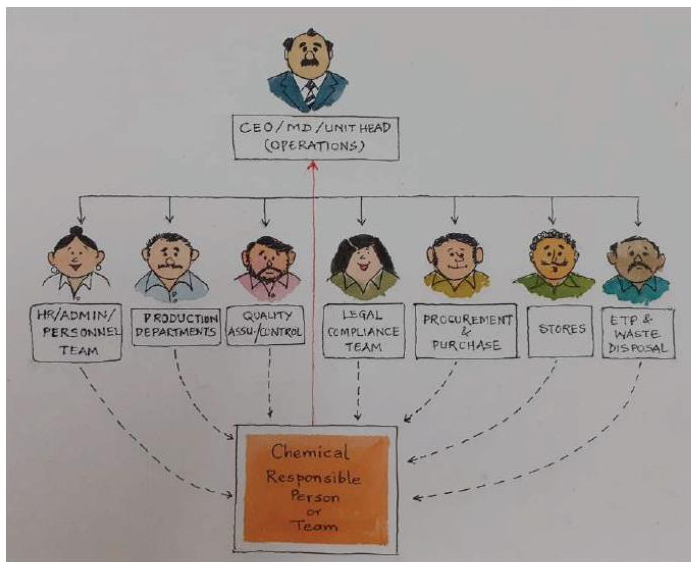
1. Policy
2. Strategy
3. Assessments
4. Health & Safety
5. Chemical Inventory
6. Storage and Handling
7. Output Management
8. Process Control
9. Continuous Improvement

e: ZDHC Chemical Management System Technical Industry Guide



- How to Write a Chemical Management Policy
 - Policy Statement
 - Communicating your Policy Statement
- Practices & Procedures for Chemical Management
 - Chemical Purchasing Policy
 - Transparency Policy
 - Traceability Policy
- How do the different elements of a Chemical management policy fit together?

Strategy



- How to Build Your Chemical Management Strategy
 - Defining the Scope
 - Designing the Infrastructure and Resources for Chemical Management
 - Developing an Action Plan

Assessments

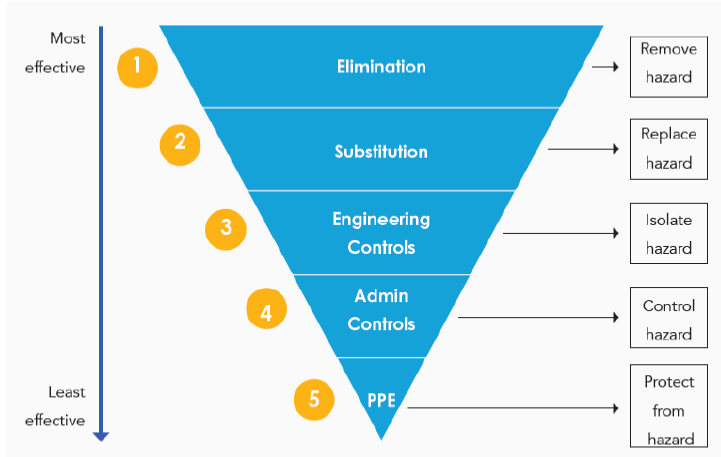
No.	Title	Descriptions	Applicable to		Area of Applicability	Licenses / Compliance Records Required	Reviewed by
			Company	Contractor / Supplier			
01	Environment Conservation Act 1996 (section xx)	Regulates air pollution from stationary sources and motor vehicles.	✓	✓			
02	Environment Conservation Act 1996 (section xx)	Regulates water pollution, including reference to specific discharge standards.	✓	X	Discharge of wastewater from production and other sources in the company.		

Template 1: Regulatory Requirements Inventory (Source: GIZ, 2014)

- How to Conduct Assessments
 - Regulatory Assessment
 - Chemical Hazard and Risk Assessment
 - Supply Chain Assessment
 - Alternative Chemicals Assessment

Health & Safety

- How to Ensure Health & Safety For Chemical Hazards
 - Controlling exposure through a hierarchy of control measures
 - ✓ Elimination
 - ✓ Substitution
 - ✓ Engineering Controls
 - ✓ Administrative Controls
 - ✓ Personal Protective Equipment (PPE)
 - ✓ Creating a Standard Operating Procedures (SOP) on Exposure Control
 - Personal Protective Equipment (PPE)
 - ✓ Selection on PPE
 - ✓ Training for staff on PPE
 - ✓ PPE Signage
 - Emergency Response Procedures
 - ✓ Fire Management
 - ✓ Chemical Spill Management
 - ✓ First-Aid Management
 - ✓ Eye Wash and Body Shower Stations Management

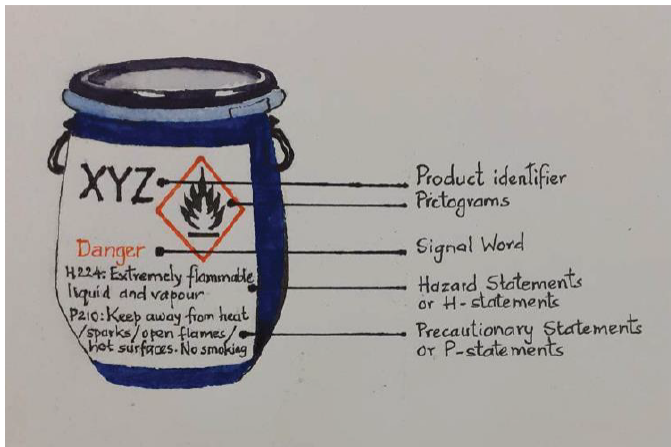


Chemical Inventory

FOUNDATIONAL											
Information on chemical product				Value-related information		ZINC MREL ZINC MREL certification level of regulation		Storage		Expiry Date OPTIONAL	
Chemical description	Chemical formula (molecular)	Chemical supplier	ZINC use category	Monthly usage (kg/mo)	Monthly usage (kg)	ZINC MREL certification level of regulation	Storage Location	LOT Number	Expiry Date OPTIONAL	SSS data of base	
Insert the full name of the substance, including any substituents in the case this is the formula name or symbol of the compound and any accompanying information (solubility, color, etc.)	Insert the name of the substance or the formula (e.g. C ₂ H ₆ O ₂)	Insert the name of the supplier or the name of the manufacturer (e.g. ABC Chemicals)	Choose from the categories that are defined in the ZINC MREL (CIL)	Insert the amount of the chemical substance used within the month of the CIL	Insert the amount of the chemical substance used within the month of the CIL	Insert the ZINC MREL certification level of regulation	Insert the location of the chemical substance (e.g. storage room)	Insert the lot number of the chemical substance	Insert the date of the chemical substance (e.g. 01.01.2020)	Insert the SSS data of the chemical substance (e.g. CAS number, molecular weight, etc.)	
METHYL 27	CH ₃ COO ALUMINUM acetate	Alfa Aesar Germany	1.2.1.1.1.1.1	10	10	Level 1	001111111 P001	001111111 01.01.2020	01.01.2020	15.10.2018	

- Chemical Inventory List (CIL)
 - Foundational Level CIL
 - Progressive Level CIL
 - Aspirational Level CIL
- Safety Data Sheet Management

Major Updates



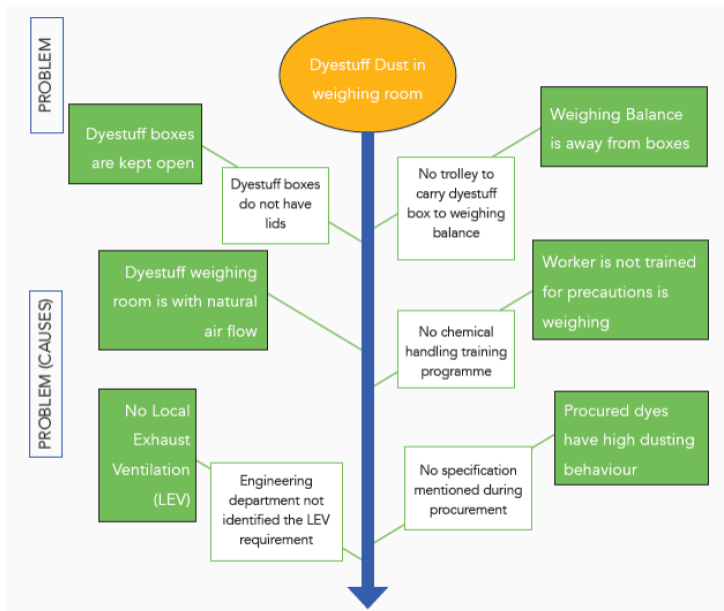
- Chemical Labelling
- Chemical Handling
 - Safe Chemical Storage
 - Safety considerations recommended for storage of chemicals

Output Management

Sample point	Flow rate (m³/day)	Key parameters								
		Colour (visual)	pH	Temp (°C)	TSS (mg/L)	TDS (mg/L)	BOD (mg/L)	COD (mg/L)	DO (mg/L)	MLSS (mg/L)
1										
2										
3										
4										
5										
6										

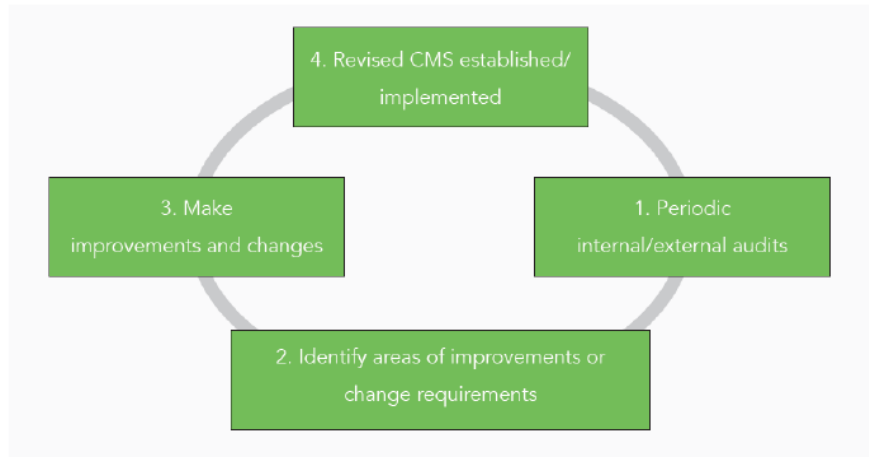
- Wastewater Management
 - ZDHC Wastewater Guidelines
 - In-house monitoring
 - ZDHC Wastewater Guidelines Testing
 - Root Cause Analysis for Non-Conformities
- Sludge Management
- Air Emission
 - Air Emission Control
- Solid Waste Management and disposal
 - Managing waste in the Manufacturing Facility
 - Storage conditions for hazardous waste

Process Control



- How to Implement Process Control
 - Document and Record Control
 - Incident & Non-compliance Management
 - General Maintenance and Housekeeping

Continuous Improvement



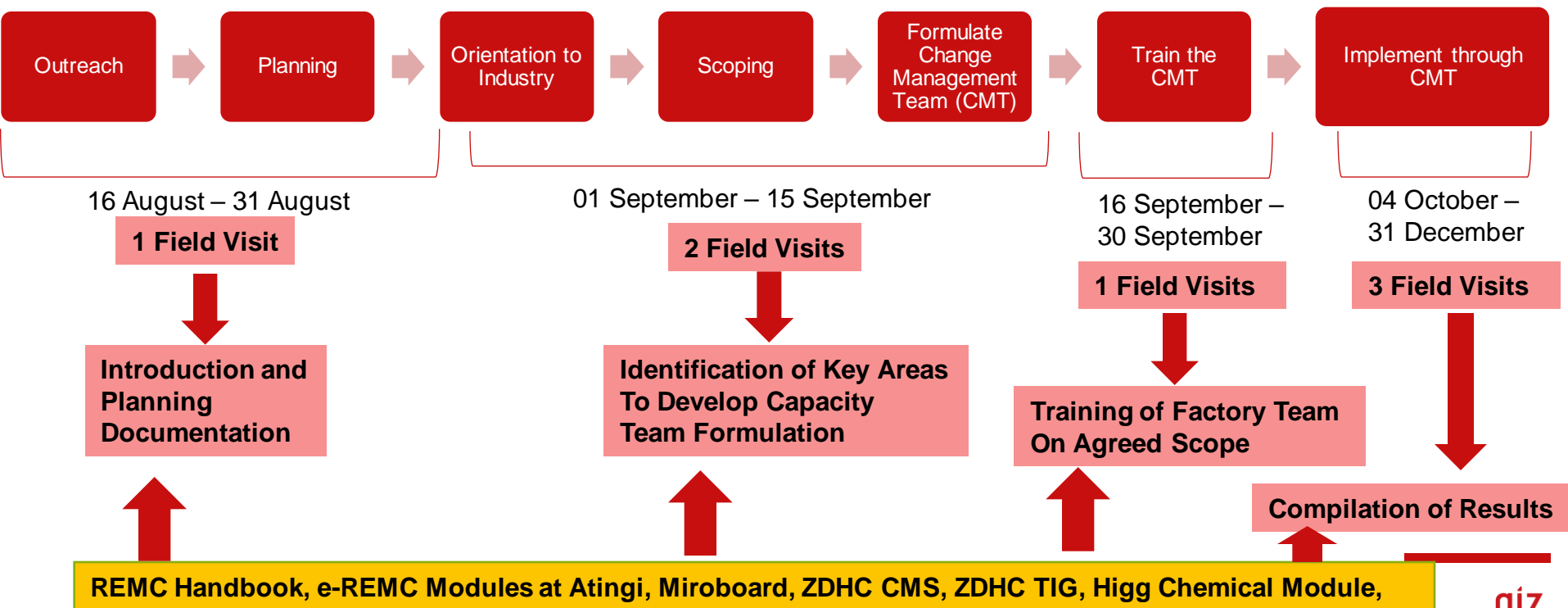
- How to Ensure Continuous Improvement
 - CMS Performance Review
 - Training

Next steps

Training programme for chemical management multipliers

#	Activity	Starting
9	Factory Application	From 16th August 2021 till 31st December 2021

Training programme for chemical management multipliers



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