
July, 2021



Ask a DetoXpert – ZDHC Input & Output Specific Requirements

Agenda

Part	Topic
1	Specific Requirements of ZDHC (Inputs)
2	RSL , MRSL 1.0 and 2.0
3	Supplier Registration and Verification
4	Specific Requirements of ZDHC (outputs)
5	Wastewater Guidelines and Requirements

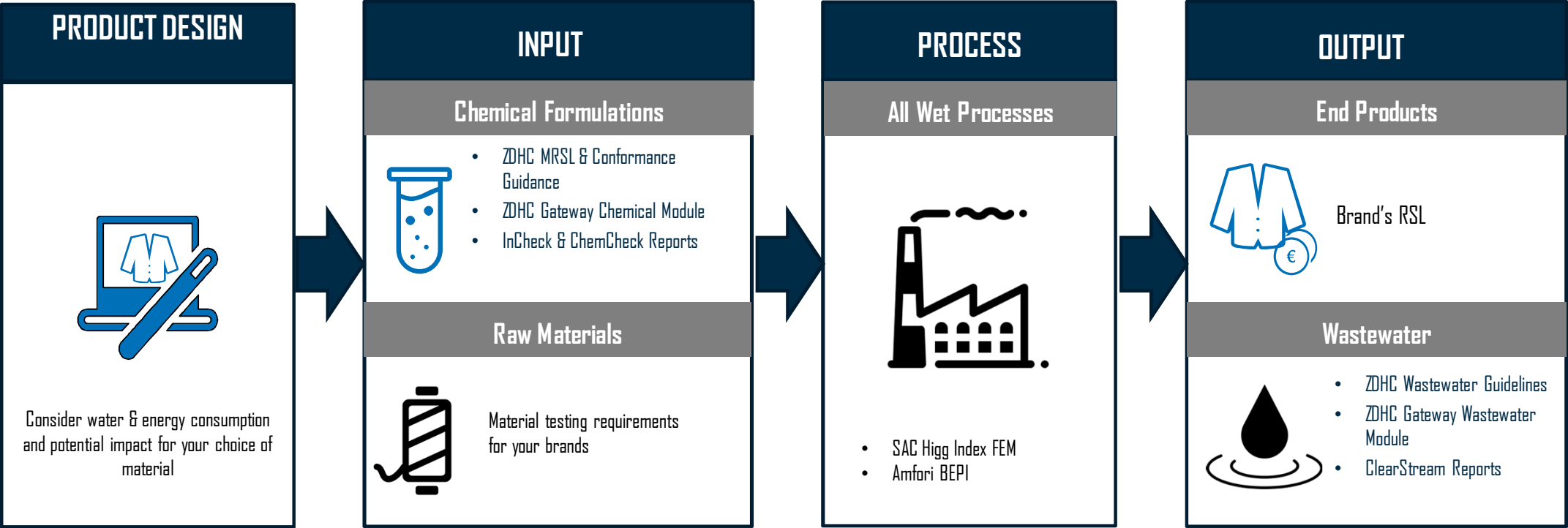


Mr. Shivendra Parmar
Senior Manager Technical Soft lines India
Technical Expert Textile, Footwear, Toys
GIZ and ZDHC approved Chemical Management Trainer

Mr. Shivendra Parmar

holds an Masters in Textile Technology with over 15 years experience in the industry. Prior to joining us, Shiv was involved in academia as Assistant Professor in Textile Engineering College. He is also our ZDHC Trainer and is hands on with activities that involve test method development in chemical lab for international standards and regulations.

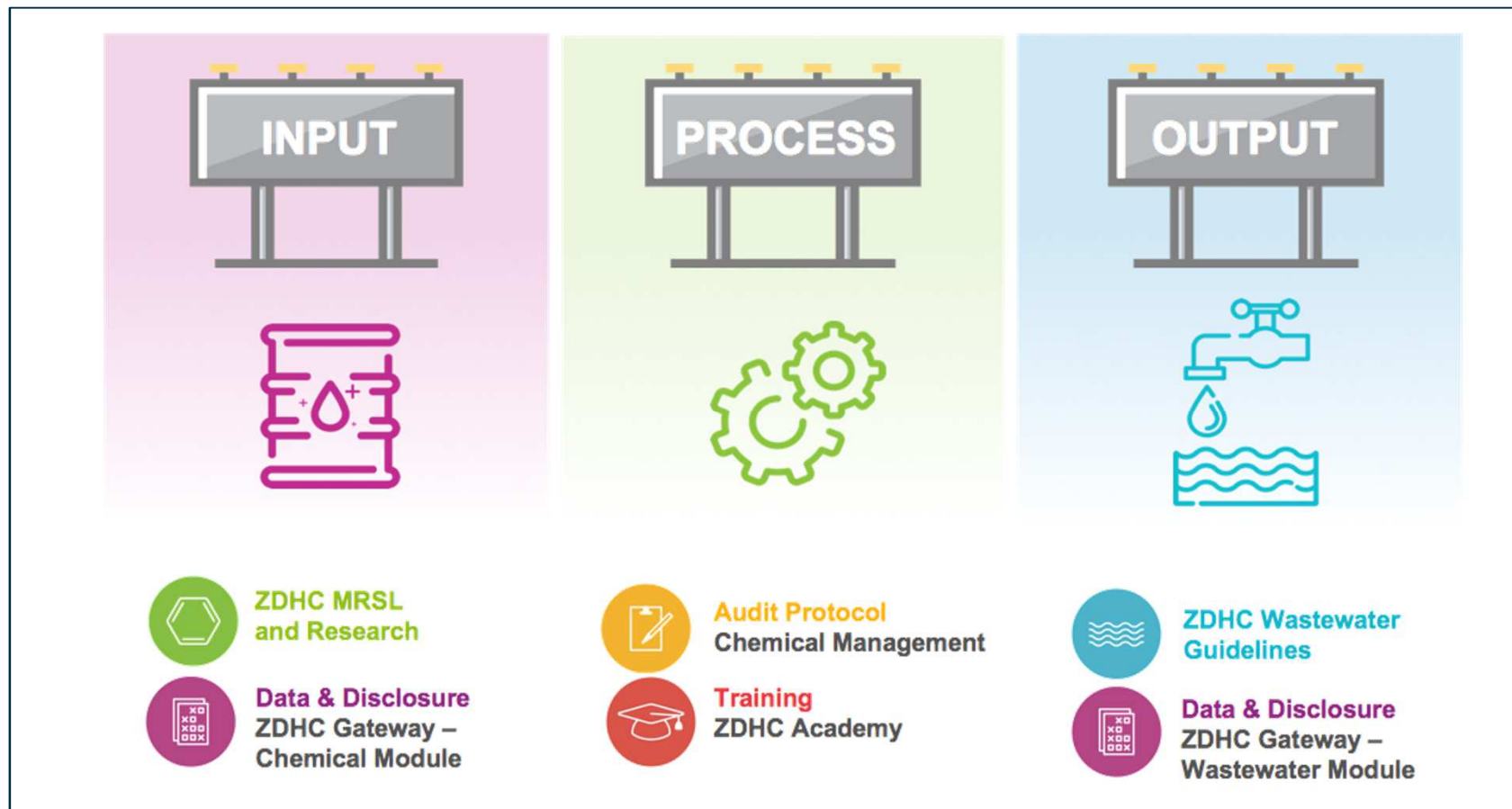
How does (ZDHC) Platforms, Guidelines & Solutions Relate to Your Supply Chain?



ZDHC CMS
 ZDHC Academy
 Implementation Hub
 Supplier to Zero
 Brand to Zero



ZDHC Roadmap to Zero Programme: A holistic approach to sustainable chemical management



Manufactured Restricted Substances List

“

A list of chemical substances banned from intentional use in facilities that process...textiles, apparel, and footwear.

”

The ZDHC MRSL

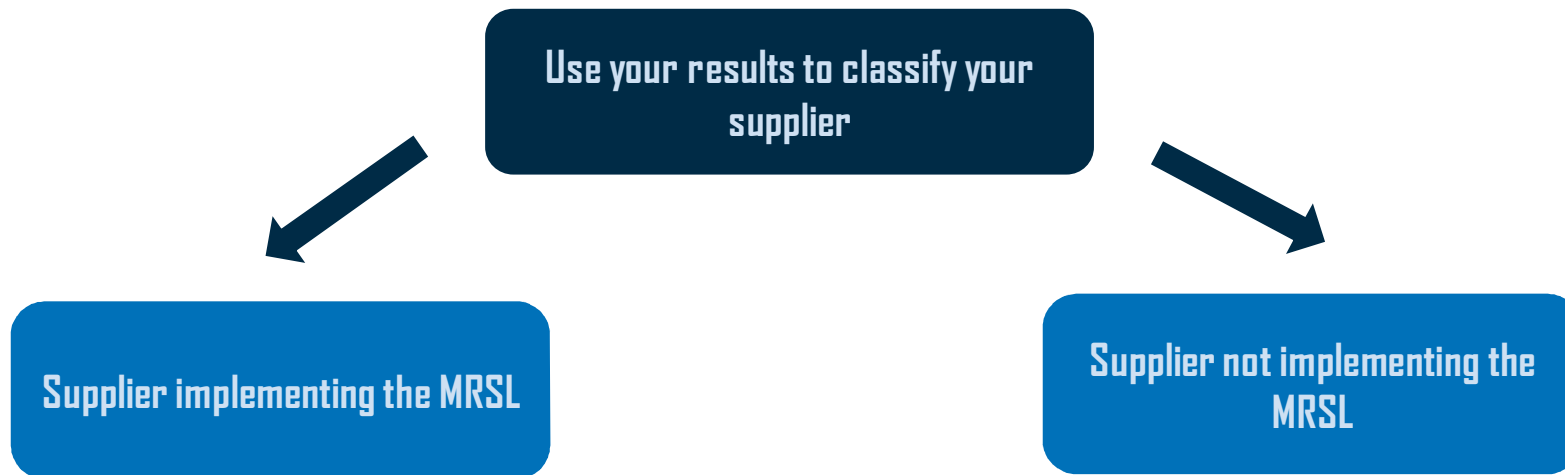
A brief description

- 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.

The ZDHC MRSL

How do I apply it?

1. Share the ZDHC MRSL with raw material vendors and chemical suppliers
2. Develop an internal procedure to assure that purchased chemical formulations meet established limits



ZDHC MRSL adoption may be checked through auditing, chemical and wastewater testing by individual brands. To check whether the chemical inventory is aligned with the ZDHC MRSL. Therefore, a chemical inventory should indicate ZDHC MRSL conformance status of all chemicals.

The

Role of the ZDHC MRSL In the purchasing policy

All employees including management team involved in purchasing chemicals must be aware of the role a MRSL plays in a purchasing process.

The purchasing process should include following steps:

- ✓ Communication of MRSL to the chemical suppliers
- ✓ Obtain suppliers' confirmation/declaration of MRSL compliance and perform an annual check on its validity

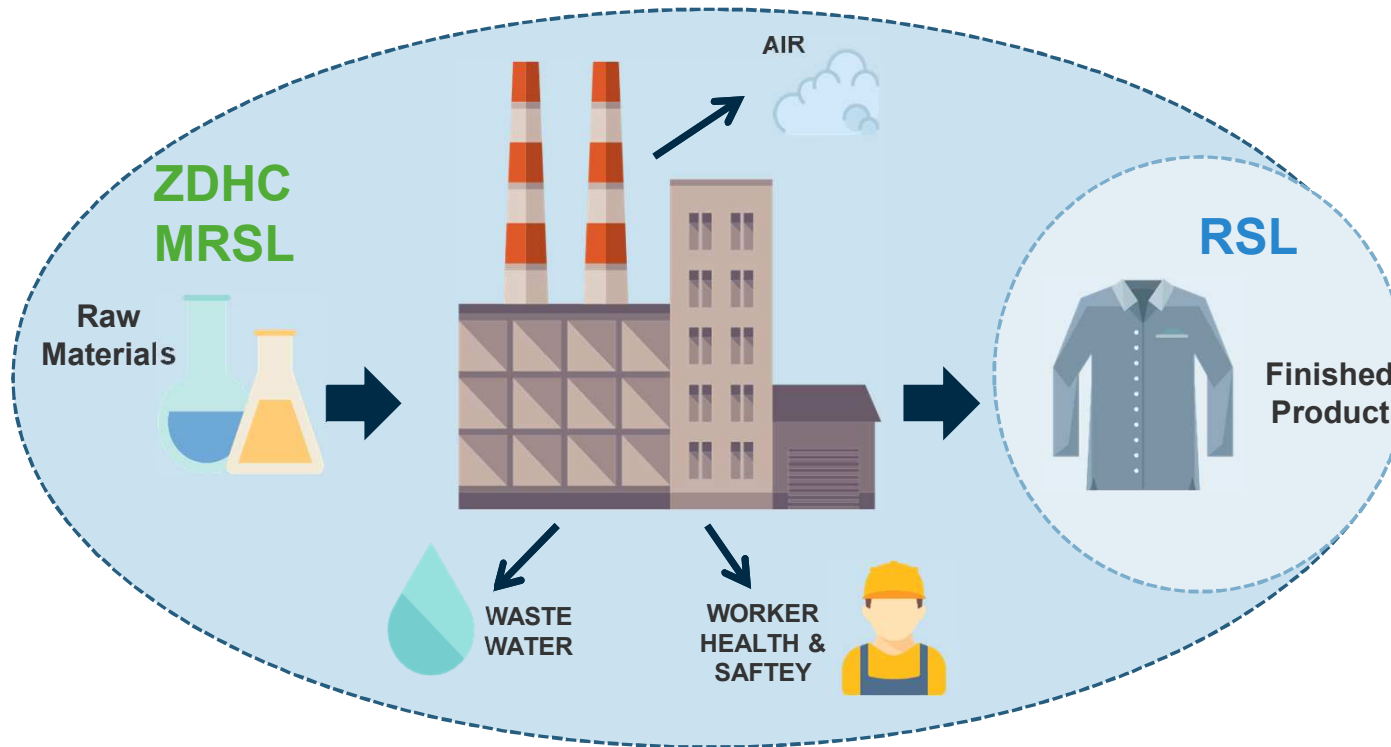
- ✓ Collection of up-to-date Positive Lists from chemical suppliers
- ✓ Purchase of chemicals preferably from Positive Lists
- ✓ Monitoring of MRSL compliance at least on an annual basis

The purchasing process containing above verification steps can be tracked by senior management at any stage.

General information about ZDHC MRSL

Difference between 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**.

1. What is MRSL Conformance?

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.



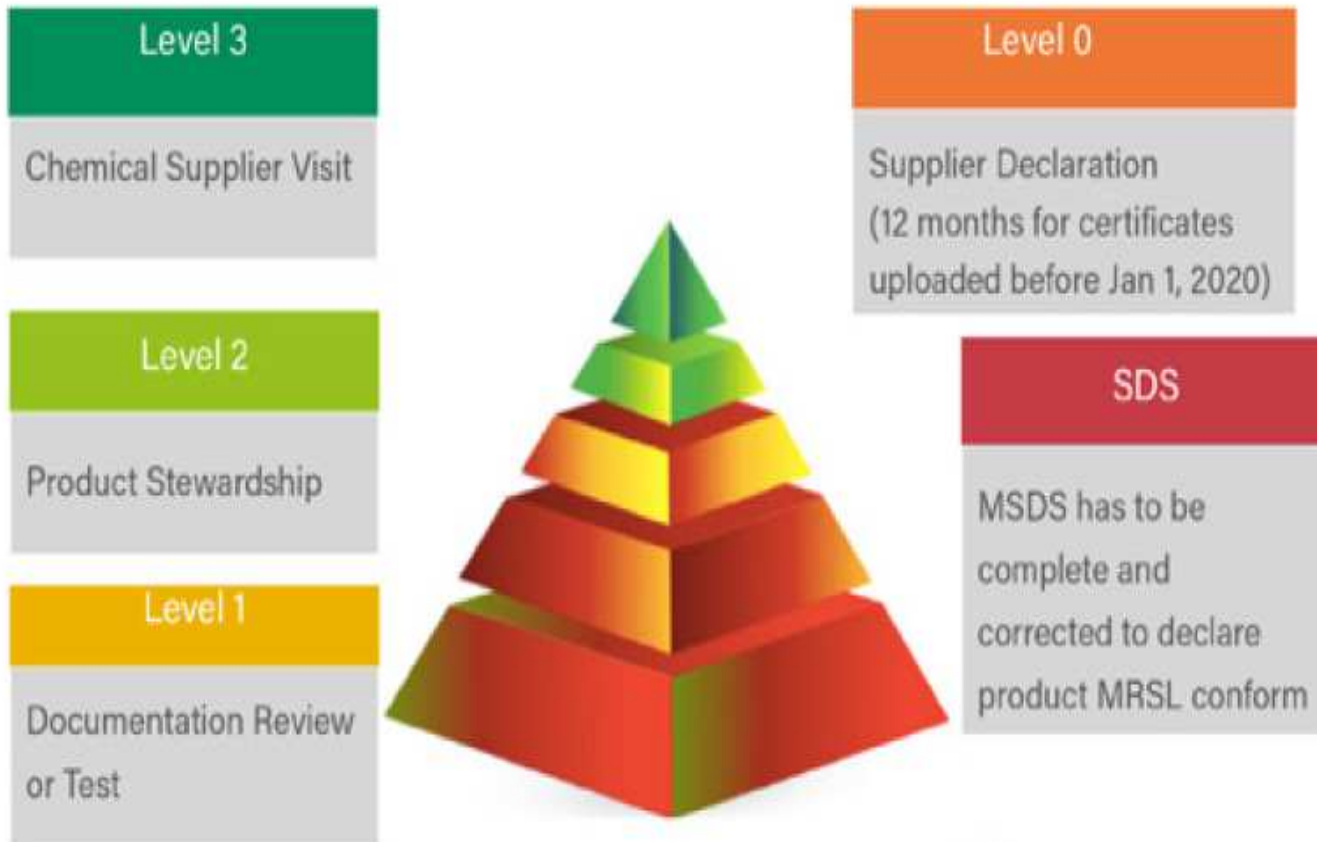
Definitions of Hazardous Chemicals

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



General information about ZDHC MRSL



- Higher conformance level means more extensive review of the chemical formulation and its producer.
- **ZDHC MRSL Conformance Guidance** forms the backbone of the **ZDHC Gateway - Chemical Module**
- Manufacturers and brands can use the **ZDHC Gateway - Chemical Module** to find **ZDHC MRSL** conformant safer alternatives.

Level 1

MRSL Conformance Level 1 requires a third-party review of documentation or an analytical test report where the data meet the Quality Assurance and Quality Control requirements in Annex A to be accepted as evidence of conformance

Level 2

MRSL Conformance Level 2 requires:

- all the elements of MRSL Conformance

level 1

- a review of the product stewardship practices (health, safety and environment)

of the chemical supplier by the third-party certifier. This may include, but is not limited to:

- analytical test data
- evidence that manufacturing is conducted according to ISO (or equivalent) standards

for quality management systems or environmental management systems a commitment to the Responsible Care® initiative (e.g. via direct membership or via membership of a trade association committed to the initiative) demonstrating that they have appropriate wastewater treatment and waste handling procedures in place a commitment to worker

health and safety

Level 3

MRS� Conformance Level 3 requires all the elements of MRS� Conformance Level 2 and a site visit to the chemical supplier to evaluate their product stewardship first hand.

ZDHC MRSL Version 1.1 published in Dec 2015 and New Version Document in Dec 2019 V 1.1 and V 2.0

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

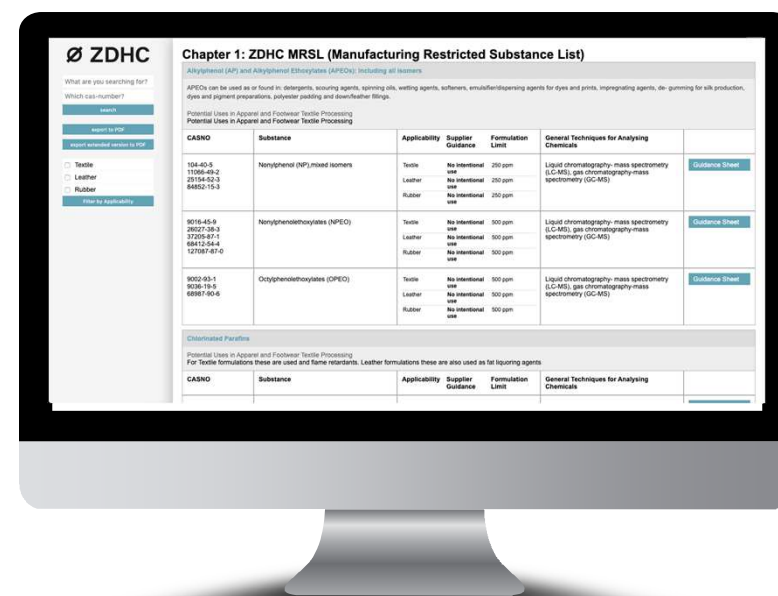
ZDHC MRSL Version 2.0

Textiles and Coated Fabrics Processing & Leather Processing

List of chemical substances banned from intentional use in facility

Proactive chemicals management in supply chain

Starting point for safer chemistry innovation



Chapters in MRSL V 2.0

MRSL

- List of substances banned
- Scope will be defined if different per “substrate”

Candidate List

- List of substances we intend to add to a next revision, but industry needs time to implement
- List of substances that we are concerned about but require more information for review

Archive Substances

- List of substances that should no longer be used in the industry and have been phased out
- Message is not use these as replacement for newer added substances/analytes

What is the impact?

Stakeholder Actions



Chemical Supplier

Updating products to be conformant to ZDHC MRSL V2.0



Facility

Updating its Chemical Inventory and recipes for V 2.0



Brands

Communication & Training its supply chain on the new requirements



Conformance Indicators

Updating certification of products and test requirements

Brands



Facilities



Chemical
Suppliers

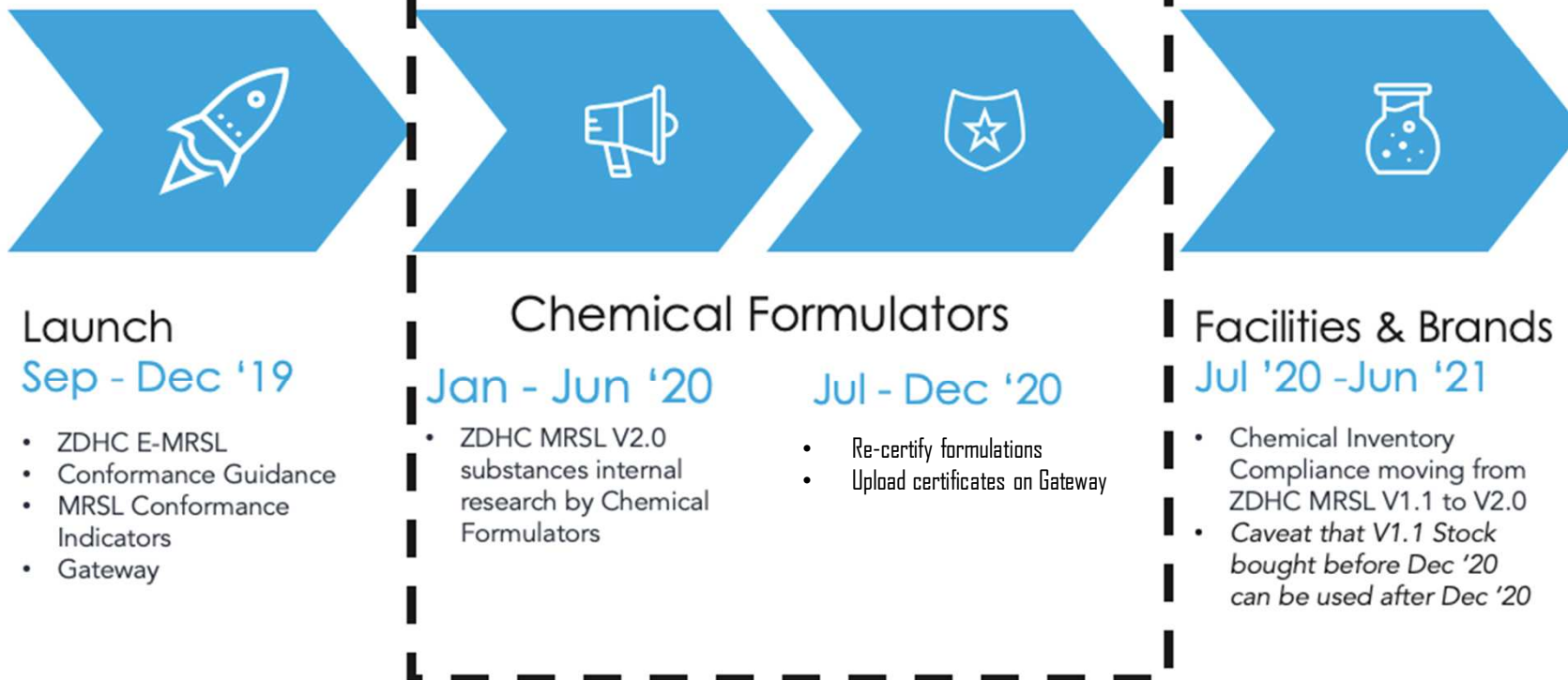


MRSL
Conformance
Indicators

A transition period is to ensure a "smooth" transition from the implementation of ZDHC MRSL Version 1.1 to Version 2.0 considering the stakeholder groups

TRANSITION PERIOD

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



ZDHC MRSL V2.0

- Chemical Formulators
- Facilities
- Brands
- Conformance Indicator

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ZDHC MRSL v2.0 Impact on ZDHC Gateway

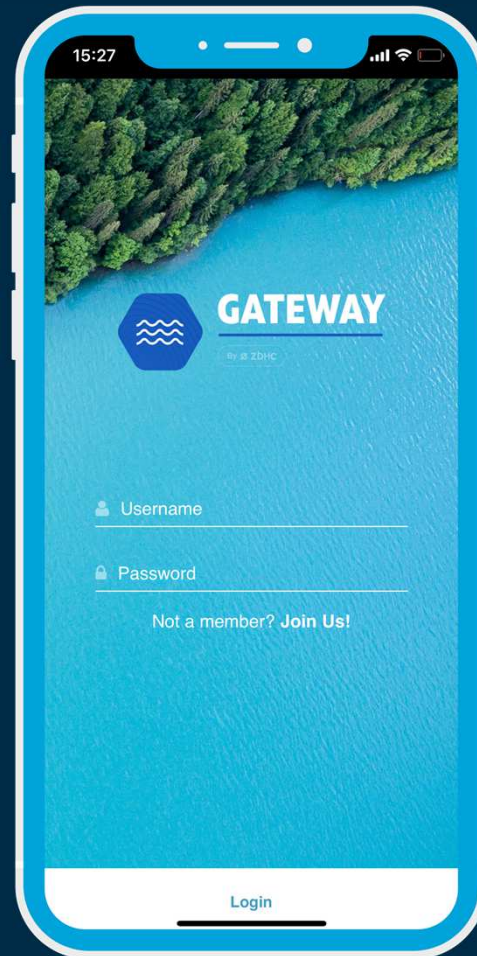


**Update
the platform
to reflect**

- Product status, visibility & CheckTools within and after transition period
- Level 0 phase out
- Direct verification by certification organisation

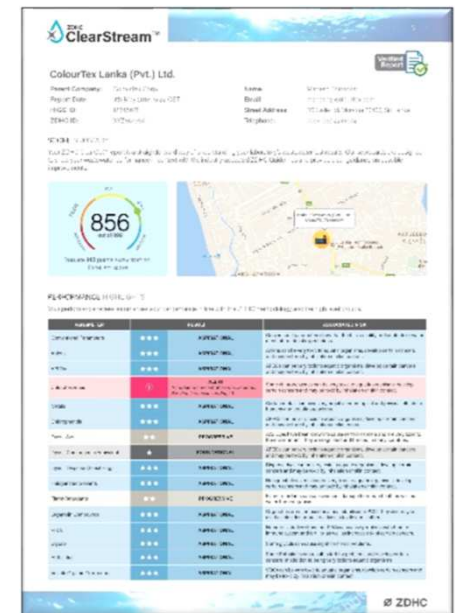
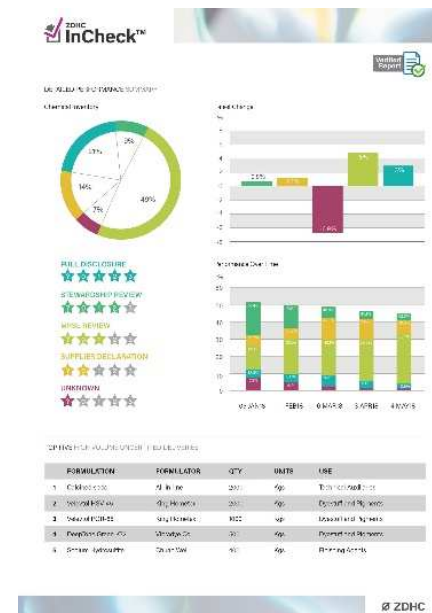
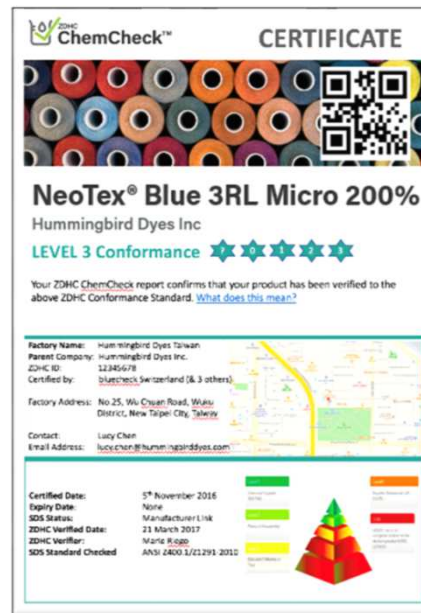
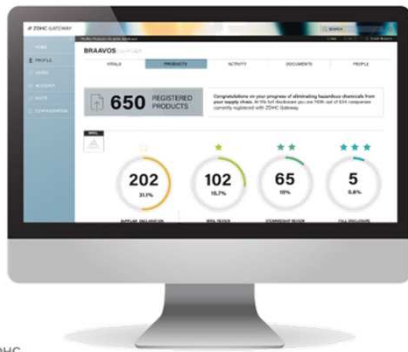
& future proof..

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



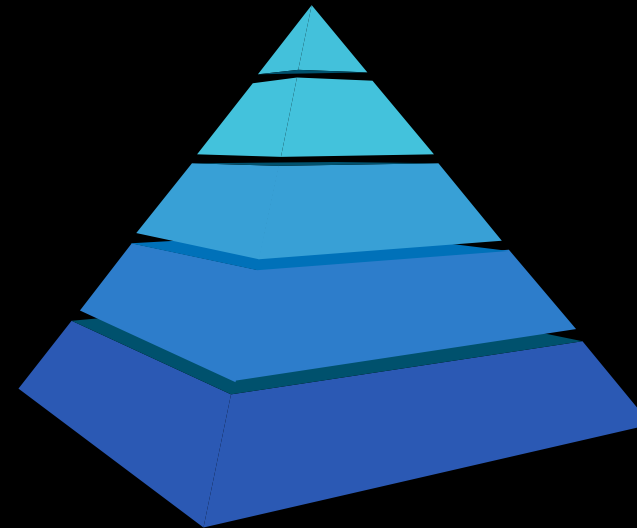
ZDHC Gateway — Chemical Module

ZDHC tools at facility level for supplier excellence



We Trust...

Formulators add data about their company and products.



Level 3

Level 2

Level 1

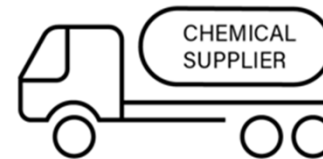
Level 0

ZDHC accepted
3rd party
Certification standards

Verification



Product
registration



Entity registration

.. but Verify

ZDHC verifies this information
with relevant Certification
Companies.



Company Name:
Talitha Formulator test

Parent Company:
Talitha Formulator TEST

ZDHC ID:
A795H1X19

Address:
China, Fujian, Baizhang, Anxi
Fujian China

Version:
ZDHC MRSL v2.0

Date Updated:
01-Apr-2020



TEN CERTIFICATE AND TEN SDS | P285AA41

Leather | Bases | Bases Lime (calcium hydroxide)
Other Name: Sample name



Your ZDHC ChemCheck™ report confirms that your product has been verified to the above ZDHC Conformance Standard.

Product Description

Sample description

Inventory Product Conformance



Level 0 – No review of the information provided by the chemical supplier by a ZDHC-accepted third-party.



Level 1 – Passed a third-party review of documentation or an analytical test report where the data meet the QA and QC requirements in the MRSL Conformance Guidance to be accepted as evidence of conformance.

[Tell me more about MRSL conformance](#)



Level 2 – All requirements for Level 1 passed and passed a review of the product stewardship practices of the chemical supplier by the third-party certifier.



Level 3 – All requirements for Level 2 passed and passed a site visit to the chemical formulator to evaluate their product stewardship first-hand.

ZDHC MRSL Conformance Certificate for Formulators

- Assure customers that the product has been verified to the ZDHC Conformance Standard
- Downloadable through ZDHC Gateway – Chemical Module.

✓ Product summary, including ZDHC MRSL Conformance Level with description of the respective level

✓ Certifications and SDS summary, listing individual product certifications and their verification status



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VERIFIED REPORT

Factory Name:
AKBAS TEKSTIL OTO, SAN VE TIC. A.S.

Name:
NEDİM GÜNGÖR

Report Date:
01 April 2020 07:28

Email:
email@email.com

ZDHC ID:
A671BW95

Street Address:
İsmetpaşa mh. OSB 5.sk. No:7,
Kapaklı Tekirdağ Turkey



InCheck Inventory Report - June 2019

Introduction

The ZDHC InCheck report, a new universally accepted chemical inventory standard for input stream management, is an easy to read report of chemical inventory that provides suppliers with a benchmark score of their ZDHC MRSL conformance. A ZDHC InCheck report can be printed or shared electronically via PDF with customers and other stakeholders.

It provides a universal way for suppliers to check and understand their level of ZDHC MRSL conformance. Suppliers will get clear results and guidance to improve the quality of their chemical inputs, assure their customers of ZDHC MRSL conformance and grow their business.

60 This Supplier has uploaded 60 products for the June 2019 inventory.

4 or 6.67% of this Supplier's inventory products are in the ZDHC Gateway.

4 6.67% of Products in the June 2019 inventory are conformant with the ZDHC MRSL.

Inventory Product Conformance



ZDHC MRSL v1.1

- Level 0 - 25.00%
- Level 1 - 50.00%
- Level 3 - 25.00%

- Not Evaluated** - Products are not found in the ZDHC Gateways. Contact your Formulators to upload the products to ZDHC Gateway.
- Registered** - The chemical formulator has registered its company and uploaded the product details along with a valid SDS to the ZDHC Gateway. There is no MRSL conformance expected or implied by this level.
- Level 0** - The chemical formulator and product SDS are registered in the ZDHC Gateway and the formulator has submitted a self-declaration of ZDHC MRSL.
- Level 1** - The chemical formulator has provided a thirdparty review of documentation or an analytical test report for the product where the data meet the QA and QC requirements in the MRSL Conformance Guidance to be accepted as evidence of conformance.
- Level 2** - All requirements for Level 1 passed and passed a review of the product stewardship practices of the chemical supplier by the third-party certifier.
- Level 3** - All requirements for Level 2 passed and passed a site visit to the chemical formulator to evaluate their product stewardship first-hand.

[Tell me more about MRSL conformance](#)

Conformance of Your Chemical Inventory

Get an InCheck Report via:

- ZDHC Gateway
- 3rd party service providers e.g. CleanChain and BVE3 (mid-2019)

Future Developments:

InCheck Report will account for:

- Multiple production units within one single compound
- Commodity or basic/bulk chemicals, machine maintenance chemicals and general cleaning agents that end up on the same wastewater discharges production



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ZDHC MRSL V2.0 Discontinued Chemical products

From January 2020, Formulators can indicate easily in the overview of the products which products are no longer produced. As long as the product is active in the transition period, it can be searched for in the ZDHC Gateway.

The screenshot displays the ZDHC Gateway interface for the 'Product List'. The page features a sidebar with navigation options: SEARCH, PROFILE, USERS, ORGANIZATIONS, INVITES, PRODUCTS, and CONFIGURATION. The main content area is titled 'PRODUCTS' and includes a search bar and filter options (BASIC FILTER, ADVANCED FILTER). A table lists various products with columns for SELECT, DATE UPDATED, PRODUCT NAME, ZDHC PID, FORMULATOR, SUBSTRATE, CATEGORY, TYPE, CONFIDENCE, and PRODUCT STATUS. A red box highlights the 'DISCONTINUE' button (a circle with a diagonal slash) in the action column of the table. A tooltip above the table provides options: 'DISCONTINUE ALL PRODUCTS' and 'DISCONTINUE SELECTED PRODUCTS'. The bottom of the page shows pagination controls for 1 to 10 of 11 records.

SELECT	DATE UPDATED	PRODUCT NAME	ZDHC PID	FORMULATOR	SUBSTRATE	CATEGORY	TYPE	CONFIDENCE	PRODUCT STATUS	ACTION	
<input checked="" type="checkbox"/>	16-Jan-2020	Acid ABC	P394D074	BRM Formulator	Leather				Active		
<input checked="" type="checkbox"/>	13-Jun-2019	Blue Dye 33	P181HT17	BRM Formulator	Textile				Pending		
<input type="checkbox"/>	24-Sep-2019	Blue Dye 34	P491LR73	BRM Formulator	Textile				Pending		
<input type="checkbox"/>	06-Nov-2019	Dye Red 90	P451DP32	BRM Formulator	Textile	Dyes and Pigments	Direct dye	Level 1: Document Review or Test	Approved	Active	
<input type="checkbox"/>	14-Nov-2019	HANS L88B	P644SY58	BRM Formulator	Leather	Degreasing Agents	Degreasing agents cationic or amphoteric e.g. Ethoxylated fatty amines	-	-	Pending	
<input type="checkbox"/>	13-Jun-2019	Red Dye 89	P789GR69	BRM Formulator	Textile	Dyes and Pigments	Pigments	-	Approved	Pending	
<input type="checkbox"/>	03-Sep-2019	Wet DM-1253	P169PH60	BRM Formulator	Leather	Bases	Bases Sodium acetate trihydrate	-	Approved	Pending	
<input type="checkbox"/>	05-Jul-2019	Wet DM-125312	P729CH29	BRM Formulator	Leather	Bases	Bases Sodium acetate trihydrate	-	Approved	Pending	
<input type="checkbox"/>	03-Sep-2019	Weimatic DM-1132	P659TT66	BRM Formulator	Textile	Pretreatment Agents	Kierboling/Scouring auxiliaries	Registered	Pending	Active	
<input type="checkbox"/>	05-Jul-2019	Weimatic DM-113223	P308NP53	BRM Formulator	Textile	Pretreatment Agents	Kierboling/Scouring auxiliaries	-	Approved	Pending	

Technical Detail

PRODUCT NAME	ZDHC PID	ORGANIZATION	SUBSTRATE	CATEGORY	TYPE	DATE UPDATED	SDS	CONFIDENCE LEVEL
NECRASIT ESP	P935YL29	NF KIMYA	Textile	Textile Auxiliaries for Dyeing and Printing	pH-regulators, acid and alkali dispensers	11-Oct-2018	✓	☆☆☆☆
REQUEST AT-50	P869SE30	NF KIMYA	Textile	Textile Auxiliaries for Dyeing and Printing	Dispersing agents and protective colloids	11-Oct-2018	✓	☆☆☆☆
SOFTAN ASR CONZ	P600NJ30	NF KIMYA	Textile	Finishing Assistants	Anti-electrostatic agent	11-Oct-2018	✓	☆☆☆☆
WASHEN ECO CONS	P954ZN96	NF KIMYA	Textile	Finishing Assistants	Weighting agents	11-Oct-2018	✓	☆☆☆☆
WASHENMAC	P871EN77	NF KIMYA	Textile	Finishing Assistants	Weighting agents	11-Oct-2018	✓	☆☆☆☆
WETAN ANE	P560RI99	NF KIMYA	Textile	Finishing Assistants	Weighting agents	11-Oct-2018	✓	☆☆☆☆
WETAN FAST	P544FN81	NF KIMYA	Textile	Finishing Assistants	Weighting agents	11-Oct-2018	✓	☆☆☆☆
WETAN PBE	P466RJ84	NF KIMYA	Textile	Finishing Assistants	Weighting agents	11-Oct-2018	✓	☆☆☆☆
WETAN WSR	P451ZP21	NF KIMYA	Textile	Pretreatment Agents	Hydrophilizing agents	11-Oct-2018	✓	☆☆☆☆
WETCLEAN NF ULTRA	P680MX78	NF KIMYA	Textile	Finishing Assistants	Softening agents	11-Oct-2018	✓	☆☆☆☆

1 to 10 of 25 records

1 2 3 next →

MRSL Chemical Groups at a Glance



Managing expectations beyond legal compliance (RSL)

Know your chemicals

Due to the complexity and diversity of the topic Brands/Retailer might have similar or different threshold chemicals resulting in difference RSLs.

Company should be able to identify differences or similarities and share these with their material and chemical suppliers.

The identification of RSL Chemicals for substitution (Chemical Abstracts Service (CAS) number one key to identify chemicals on the RSL) and share with the supply chain, it is a cost and time efficient way to recue hazardous chemical in procurement and manufacturing process.

Maintaining any kinds of chemicals in a Chemical Inventory list (CIL) will reduce the possible impact of unintended contamination in raw materials or during production processes (Basic Principles of Chemical Management).

Managing expectations beyond legal compliance (RSL)

Know your chemicals

When chemical characterizations also include the function of chemicals (using chemical information sheets) it is much easier for manufacturers to search and replace chemicals of concern with safer substitutes.

Characterizing hazard and function together reduces the chance that a manufacturer replaces a chemical of concern with one that is equally or more problematic.

Possible actions:

- Provide suppliers with positive chemical lists / or substitution list
- Regularly update of brand and Retailer requirement
- Internal and suppliers training (Know your chemicals)
- Create product chemical footprint
- Communication throughout the entire supply and value chain

<https://www.afirm-group.com/chemical-information-sheets/>

AG AFIRM GROUP	
Chemical Information Document Version 1.0 January 2018	
ALKYLPHENOL ETHOXYLATES (APEOs)	
Other Names	Nonylphenol Ethoxylates (NPEOs, NPEs): Polyethylene glycol nonylphenyl ether Octylphenol Ethoxylates (OPEOs, OPEs): Polyethylene glycol octylphenyl ether
CAS Number	Substance
9002-93-1	Polyethylene glycol 4-(tert-octylphenyl) ether
9036-19-5	Polyethylene glycol mono(octylphenyl) ether
68987-90-6	Poly (oxy-1,2-ethanediy), alpha-(octylphenyl)-omega-hydroxy-, branched
<i>List continued in "Additional Information"</i>	
May Be Found In	<ul style="list-style-type: none">• Industrial laundry detergent• Scouring agents• (e.g., wood and leather)• Wetting agents• Softeners• Spinning oils (yam and fabric)• Emulsifier/dispersing agents for dyes and prints• Impregnating agents• Degreasing agents for leather hides• Leather-finishing preparations• Die-gunning agents for silk production• Dyes and pigment preparations• Polyester padding• Down/leather fillings• Binders for interlinings• Facility cleaning products

APEOs are primarily used as detergents in the textile wet processing industry but they are also used in the leather industry as degreasing products and in small quantities as emulsifiers or wetting agents in some dyestuff and pigment preparations.

Uses in the Supply Chain
APEOs are common ingredients in many chemical formulations used to produce apparel and footwear materials. They have been widely used as surfactants or emulsifiers in detergents, scouring agents, dye-dispersing agents, printing pastes, spinning oils and wetting agents. Legislation around the world restricts the presence of APEOs in finished products. Leading apparel and footwear brands have restricted or banned the use of APEOs in production of their products.

Why Alkylphenol Ethoxylates (APEOs) are Restricted!

- APEOs can degrade into alkylphenols (APs) in the environment.
- Some APs are very toxic to aquatic life with long lasting effects.
- Some APs are suspected of damaging human fertility and unborn children.
- See the Guidance Document on Alkylphenols for more information on this class of chemicals.

1

Pre-Requisites for Analyzing Test Data

a) Chemical Inventory (based on SDS)

- If do not have it, request supplier or search internet www.chemexper.com
- Example:

Chemical Inventory Sheet		MSDS - original		MSDS translated		Original labels		Name of supplier		Name of Manufacturer		Hazard symbols		Compressed gas						
SI/No	Chemical Name	MSDS - original	MSDS translated	Original labels	Name of supplier	Name of Manufacturer	Danger	Flammable	Oxidising	Em-toxic	APEQ/NPE free	Hazard identified	Hazard band physical	Hazard band Health	Hazard band Skin	Hazard band Environment	PPE recommended	Storage conditions	Fire fighting recommended	Spill control
1	xxxx	Yes/No	Yes/No	Yes/No	ccc	ccc	! Toxic	Explosive	Corrosive	CMR	yes/no	Irritant	A	B	B	n.a.	Latex gloves	cool	CO2	Sand

b) Review and understand Material-based Substance mapping

c) Process Mapping

Table 1. Recommended Tests Per Formulation Type ("smart testing")

CHEMICAL FORMULATION TYPE	SUBSTANCE GROUPS AND SUBSTANCES MENTIONED IN MRSL													
Use Code	Alc & APEQ	Chlorobenzenes + thalures	Chlorophenols	Cyclohexanols/Alcohols	Heavy Metals	Dye-Catechol Esters	Dye-Catechol	Flame Retardants	glycols	Solvents, Resin	Organotin	PAH	Phenols	VOC
1.1 Auxiliaries and finishing agents for fibres and yarns														
1.1.1 Spinning solution additives	X								(4)					
1.1.2 Spinning additives	X								(4)		X			X
1.1.3 Spinning bath additives	X								(4)					
1.1.4 Preparation agents	X								(4)					
1.1.5 Lubricants	X								X					
1.1.6 Dyeing, scouring and twisting oils	X										X			X

Using Test Results to drive improvements

Analyzing Test Results

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Test Report No.: 0154213547a 001 Page 2 of 18

Test specification: **ALDI M-RSL** **Test result:**

1. Alkylphenol (AP) and Alkylphenol Ethoxylates (APEOs)	Detected / Please refer to page 4
2. Phthalates	Not Detected / Please refer to page 5
3. Brominated and Chlorinated Flame Retardants	Not Detected / Please refer to page 6-7
- Subgroup: Other Flame Retardants	Not Detected / Please refer to page 6-7
4. Amines (associated with Azo dyes)	Detected / Please refer to page 8
- Subgroup: Carcinogenic dyes	Not Detected / Please refer to page 9
- Subgroup: Allergenic Disperse Dyes	Not Detected / Please refer to page 10
5. Organotin Compounds	Not Detected / Please refer to page 11
6. Perfluorinated and Polyfluorinated Chemicals (PFCs)	Not Detected / Please refer to page 12
7. Chlorobenzenes & Chloro-Toluenes	Not Detected / Please refer to page 13
8. Chlorinated Solvents & Other VOCs	Not Detected / Please refer to page 14
9. Chlorophenols	Not Detected / Please refer to page 15
10. SCCP	Detected / Please refer to page 16
11. Heavy Metals	Detected / Please refer to page 17

TÜV Rheinland (Shanghai) Co., Ltd., Shanghai TÜV Rheinland Building, No.177, Lane 777, West Guangzhong Road, Jing'an District, Shanghai 200072, P.R.China
Tel.: (86) 21 6106 1188 Fax: (86) 21 6074 7299 Mail: info@eng.chn.tuv.com Web: www.tuv.rh.com

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Test Report No.: 0154213547a 001 Page 4 of 18

Test result

1. Alkylphenol (AP) and Alkylphenol Ethoxylates (APEOs)

Test Method: Ref. ISO 18857, ASTM D7065-06, ISO 18254-1, LC-MSMS and GC-MS analysis

Parameter	Result	
	M001 (µg/L)	M002 (mg/kg)
NP	ND	32
OP	ND	1.8
NPEO (n=1)	ND	ND
NPEO (n=2-8)	ND	ND
OPEO (n=1)	ND	ND
OPEO (n=2-8)	ND	ND

Abbreviation: µg/L = Microgram per liter
mg/kg = Milligram per kilogram
RL = Reporting Limit
ND = Not detected (< Reporting Limit)

Remarks:
List of AP and APEOs being tested

Parameter	CAS No.	Reporting Limit	
		Wastewater (µg/L)	Sludge (mg/kg)
Nonylphenol (NP)	Various (25154-52-3, 104-40-5, 90481-04-2, 84852-15-3, 1173019-62-9)	1	0.2
	Various (140-66-9, 27193-28-8, 1806-26-4)	1	0.2
	51437-89-9	1	0.2
	Various (9016-45-9, 26227-39-3, 68412-54-4, 127057-67-0, 37205-87-1)	1	0.2
Octylphenol ethoxylates (NPEO n=1)	51437-89-9	1	0.2
Nonylphenol ethoxylates (NPEO n=2-8)	Various (9016-45-9, 26227-39-3, 68412-54-4, 127057-67-0, 37205-87-1)	1	0.2
	104-35-8	1	0.2
Octylphenol ethoxylates (OPEO n=1)	104-35-8	1	0.2
Octylphenol ethoxylates (OPEO n=2-8)	Various (9002-99-1, 9036-19-5, 68967-90-6)	1	0.2
	Various (9002-99-1, 9036-19-5, 68967-90-6)	1	0.2

CHEMICAL FORMULATION TYPE	SUBST
Use Code	AP & APEO
1.2 Pretreatment agents	
12.1 Fibre protecting agents in pretreatment	
12.2 Kierboiling/Scouring auxiliaries	
12.3 Bleaching auxiliaries	
12.4 Mercerising and causticizing auxiliaries	
12.5 Carbonizing assistants	
12.6 Sizing agents and sizing additives	X
12.7 Desizing agents	X
12.8 Hydrophilizing agents	X
12.9 Enzymes	
12.10 Sequestering Agents	
12.11 Stabilizers	
1.3 Textile auxiliaries for dyeing and printing	

Using Test Results to drive improvements

Time for 5 min Break



Agenda

Part	Topic
1	Specific Requirements of ZDHC (Inputs)
2	RSL , MRSL 1.0 and 2.0
3	Supplier Registration and Verification
4	Specific Requirements of ZDHC (outputs)
5	Wastewater Guidelines and Requirements

A Holistic Approach

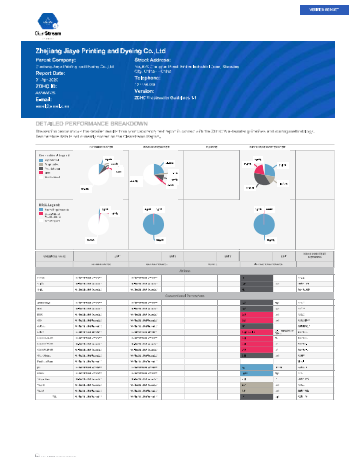
OUTPUT Management



ZDHC Wastewater Guidelines & Wastewater Treatment Technologies



Wastewater Module



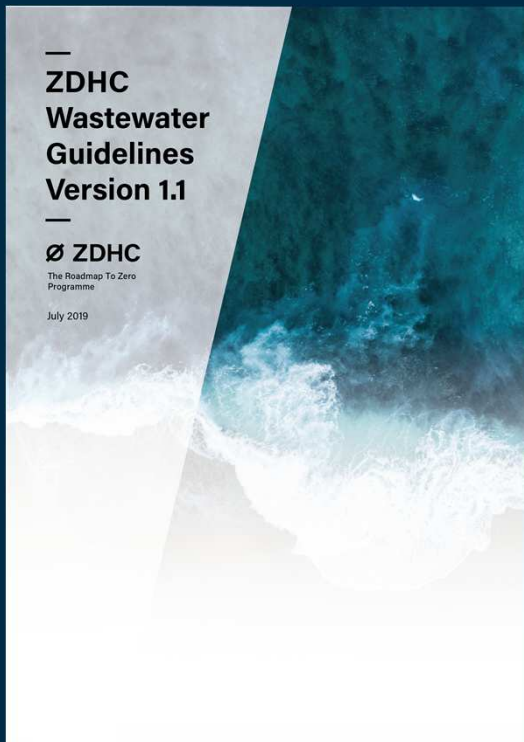
ClearStream

By Ø ZDHC



Overview

ZDHC Wastewater Guidelines



- ZDHC recognises the value of addressing hazardous substances that may be discharged into the environment during the manufacture of materials used in the textile and footwear industry.
- The discharge of wastewater containing hazardous chemicals could have a significant impact on the environment and human health
- In 2015, the Roadmap to Zero Programme commissioned a study to better understand the regulatory landscape of wastewater discharge regulations and guidelines across the textile industry
- In 2019, ZDHC released already the second version of the Wastewater Guidelines



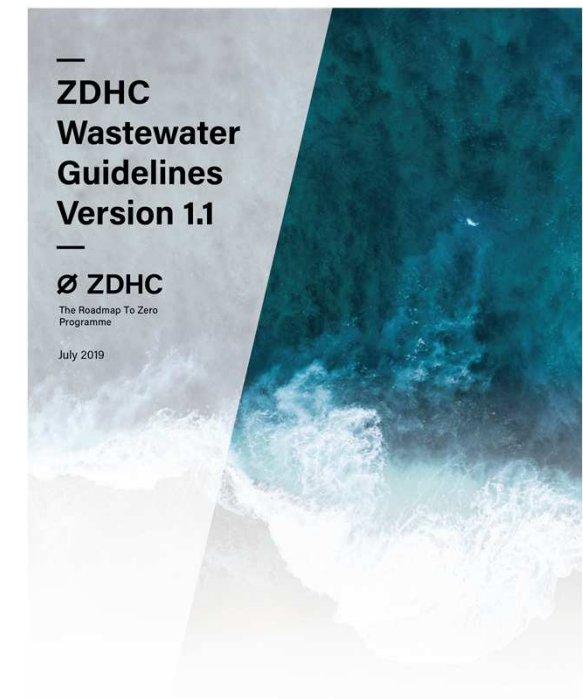
Standard for Management of **Output Chemistry** - ZDHC Wastewater Guidelines / Holistic Expansion

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

Purpose

Define a single, unified expectation concerning wastewater discharge quality that goes beyond regulatory compliance, not only for conventional wastewater parameters, but also for hazardous chemicals.

ZDHC Wastewater Guidelines

Propose & Objective

Objective

Allowing ZDHC brands and their suppliers to share their testing results in a systematic and efficient manner via a ZDHC Gateway Wastewater Module - A Data & Disclosure Platform.

Why are the ZDHC Wastewater Guidelines Developed?

CHALLENGES*

- Multiple and differing national regulations
- Multiple and differing brand standards
- ZDHC MRSL chemicals generally not covered
- Increased public scrutiny & desire to enhance environmental stewardship
- Confusion for suppliers as to which standards to apply

SOLUTION

Industry alignment on a single wastewater quality standard that:

- Is beyond regulatory compliance
- Ensures wastewater discharge does not adversely affect the environment and surrounding communities

*These challenges confirmed by a literature review conducted on wastewater discharge quality regulations & other applicable standards to textile – provided on ZDHC website.

Expected Outcome

▶ **01**

Ensure wastewater discharge does not have an adverse impact on communities and the environment.

▶ **02**

Harmonise expectations for wastewater monitoring and testing, and to aid suppliers with sharing wastewater discharge data with the brand(s) they work with, and other interested parties.

▶ **03**

Eliminate duplicative testing and improve operational efficiency within the value chain by defining a standard cadence for wastewater and sludge sampling, testing and reporting requirements, applicable to all brands and suppliers adopting these Guidelines.

APPLICABILITY

OF WASTEWATER GUIDELINES

IN-SCOPE

- 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

APPLICABILITY

OF WASTEWATER GUIDELINES

OUT-OF-SCOPE

- Not applicable to wastewater discharge from suppliers such as, but not limited to:
 - a. Cotton farming
 - b. Cattle ranching
 - c. Polymer production
 - d. Fibre production (including man-made cellulosic fibres)
 - e. Leather processing (including beam house, tanning, dyeing and finishing)
 - f. Raw wool scouring
 - g. Production of chemicals or mixing of chemical formulations for commercial sale
- Treatment systems that are beyond the property boundaries of the supplier such as **third-party, off-site, central or common effluent treatment plants (CETP)**
- Discharges of domestic wastewater alone

APPLICABILITY

OF WASTEWATER GUIDELINES

SCOPE EXPANSION IN FUTURE

- At the time of publication of these Guidelines, work is currently underway to define specific guidelines for:
 - a. Man-made cellulosic fibres production
 - b. Leather processing (including beam house, tanning, dyeing and finishing)
 - c. PU coated fabric production



MINIMUM REQUIREMENTS

FOR FACILITIES

- 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/permitted 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.

Parameters in ZDHC Wastewater Guidelines

1. Conventional Parameters (For Wastewater)

- **All conventional parameters stated in the following table:**
 - **Table 1A** (Sum Parameters & Anions)
 - **Table 1B** (Metals)
- If legislation or permits cover conventional parameters that are additional to those listed Table 1A&B
 - 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 conformances.

Three I For Co

Reasons for Three Level Approach

- Differences in manufacturing facilities
- Consistency with other collaborations
- Incentive for continuous improvement

At a minimum, meets legal discharge requirements and ensures effective control of ZDHC MRSL chemicals

FOUNDATIONAL

Demonstrates increasing knowledge of chemicals management and applies advanced wastewater treatment process.

PROGRESSIVE

Demonstrates best-in-class performance and strives for continuous improvement in both chemicals and wastewater treatment process knowledge; creates industry best practices.

ASPIRATIONAL

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

mg/L unless otherwise noted	Limits			Standard Method for Analysis/Testing			
	Foundational	Progressive	Aspirational	ISO	European Union	United States	China
Sum parameters							
Temperature [°C] *	Δ15 or max. 35	Δ10 or max. 30	Δ5 or max. 25	No standard	No standard	US EPA 17.01	GB/T 13195
TSS	50	15	5	ISO 11923	ISO 11923	US EPA 160.2, APHA 2540D	GB/T 11901
COD	150	80	40	ISO 6060**	ISO 6060**	US EPA 410.4, APHA 5220D**	GB/T 11914**
Total-N	20	10	5	ISO 5663, ISO 29441	ISO 5663, ISO 29441	US EPA 351.2, APHA 4500P-J, APHA 4500N-C	HJ 636, GB 11891
pH		6-9		ISO 10523	EN ISO 10523	US EPA 150.1	GB/T 6920
Colour [m ¹] (436nm; 525; 620nm)	7; 5; 3	5; 3; 2	2; 1; 1	ISO 7887-B	-	-	-
BOD ₅	30	15	5	ISO 5815-2	EN 1899-1 (5days)	US EPA 405.1 (5 days), APHA 5210B (5 days)	HJ 505
Ammonium-N	10	1	0.5	ISO 11732, ISO 7150	EN ISO 11732	US EPA 350.1, APHA 4500 NH ₃ -N	HJ 535, HJ 536
Total-P	3	0.5	0.1	ISO 11885, ISO 6878	EN ISO 11885	US EPA 365.4, APHA 4500P-J	GB/T 11893
AOX	5	1	0.1	ISO 9562	EN ISO 9563	US EPA 1650	HJ/T 83-2001
Oil and Grease	10	2	0.5	ISO 9377-2	EN ISO 9377-2	US EPA 1664	HJ 637
Phenol	0.5	0.01	0.001	ISO 14402	EN ISO 14402	APHA 5530 B, C&D	HJ 503
Coliform [bacteria/100 ml]	400	100	25	ISO 9308-1	EN ISO 9308-1	US EPA 9132	GB/T 5750.12
Persistent Foam	Refer to respective information in section 9.6.A			N/A	N/A	N/A	N/A
Anions							
Cyanide - Total	0.2	0.1	0.05	ISO 6703-1,-2,-3, ISO 14403-1,-2	ISO 6703-1,-2,-3, ISO 14403-1,-2	US EPA 335.2, APHA 4500-CN	HJ 484
Sulfide	0.5	0.05	0.01	ISO 10530	ISO 10530	APHA 4500-S2-D	GB/T 16489
Sulfite	2	0.5	0.2	ISO 10304-3	EN ISO 10304-3	US EPA 377.1	**

The methods for analysis/testing recommended in these Guidelines are based on internationally-recognised standard water and wastewater testing methodologies, as well as government-recognised testing requirements in the European Union, the United States of America, and China.

11 classes of priority chemicals

Chemical Classes	Typical Uses in Textile Industry	Specific Process where Utilised
Alkylphenol Ethoxylates/Alkylphenols (APEOs/APEs)	cleaners, detergents, sizing agents	desizing, scouring, washing, dyeing, softening
Halogenated Flame Retardants	flame retardants	functional finishing
Chlorinated Solvents	spot cleaners, dry cleaning, scouring	sizing, dry cleaning, scouring
Chlorinated benzenes	solvents, fiber swelling agents	dyeing
Chlorophenols	textile preservatives	pesticides, sizing, dyeing
Heavy Metals	dyes, pigments catalysts	fiber polymerising, dyeing, printing, tanning
Organotin Compounds (e.g., TBT)	antimicrobial, preservatives, catalysts	dyeing, leathering coating, polyurethane synthesising
Per- and poly-fluorinated chemicals	durable water repellents and their by-products	functional finishing (water/oil repellent)
Ortho-phthalates	plasticisers	dyeing, printing, coating, softening
Short-Chained Chlorinated Paraffins	leather conditioners	tanning
Azo dyes that may release carcinogenic amines as defined in Annex XVII of REACH	by-products of banned dyes	dyeing, printing



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)

Appendix A Tables 2A-2N: ZDHC MRSL V1.1 Parameters for Wastewater

Reporting limits mentioned in the following tables apply to each single chemical substance of the respective substance group.

Table 2A:

Alkylphenol (AP) and Alkylphenol Ethoxylates (APEOs): Including All Isomers

Substance or Substance Group	CAS	Reporting Limit (µg/l)	Standard Method for Analysis/Testing
Nonylphenol (NP), mixed isomers	104-40-5 1061-19-1 3151-32-3 97852-15-3	5	NP/OP: ISO 18857 -2 (modified dichloromethane extraction) or ASTM D7065 (GC/MS or LC/MS(-MS)) OPEO/NPEO (n>2): ISO 18254-1 OPEO/NPEO (n=1,2): ISO 18857-2 or ASTM D7065
Octylphenol (OP), mixed isomers	140-66-9 1806-26-4 27193-28-8		
Octylphenol ethoxylates (OPEO)	9002-93-1 9036-19-5 68987-90-6		
Nonylphenol ethoxylates (NPEO)	9016-45-9 26027-38-3 37205-87-1 68412-54-4 127087-87-0		

The methods for analysis/testing recommended in these Guidelines are based on internationally-recognised standard water and wastewater testing methodologies.

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)

Sludge Parameter	Reporting Limit (mg/kg - Dry Weight)	Description of Lab Method	Standard Method for Analysis/Testing			
			ISO	European Union	United States	China
ZDHC MRSL V1.1						
Alkylphenol (AP) and Alkylphenol Ethoxylates (APEOs): including all isomers	0.4 mg/kg	Preparation: Modified dichloromethane extraction with mechanical agitation				US EPA 3540/3541 soxhlet US EPA 3550 ultrasonic US EPA 3560 SFE
		Analysis: NP/OP, GC/MS, LC/MS	ISO 18857-2	ASTM D7065		
		Analysis: OPEO/NPEO (n>2): GC/MS; LC/MS	ISO 18254-1			
Chlorobenzenes and Chlorotoluenes	0.2 mg/kg	Preparation: Dichloromethane extraction with mechanical agitation				US EPA 3540/3541 soxhlet US EPA 3550 ultrasonic US EPA 3560 SFE
		Clean up: GPC				US EPA 3650
		Analysis: GC/MS				US EPA 8270
Chlorophenols	0.05 mg/kg	Preparation: Acid/base liquid extraction, liq/liq extraction	ISO 14154			
		Analysis: GC/MS	ISO 14154			
Dyes - Azo (forming restricted amines)	0.2 mg/kg	Preparation: Reduction with sodium thionite, solvent extraction				
Dyes - Carcinogenic or equivalent concern	10 mg/kg	Preparation: Liquid extraction				
Dyes - Disperse (sensitising)	2 mg/kg	Preparation: Liquid extraction				
Flame Retardants	1 mg/kg	Analysis: LC/MS	ISO 14362-1, 14362-3			
		Preparation: Dichloromethane extraction	ISO 16373, 2014			
Glycols	10 mg/kg	Analysis: GC/MS or LC/MS-MS	ISO 16373, 2014			
		Preparation: Liquid extraction	ISO 22032			US EPA 8270D
		Analysis: LC/MS, GC/MS	ISO 22892, 2006			

The methods for analysis/testing recommended in these Guidelines are based on internationally-recognised standard water and sludge testing methodologies.

MARKET AVAILABLE EFFLUENT TREATMENT PLANT (ETP)

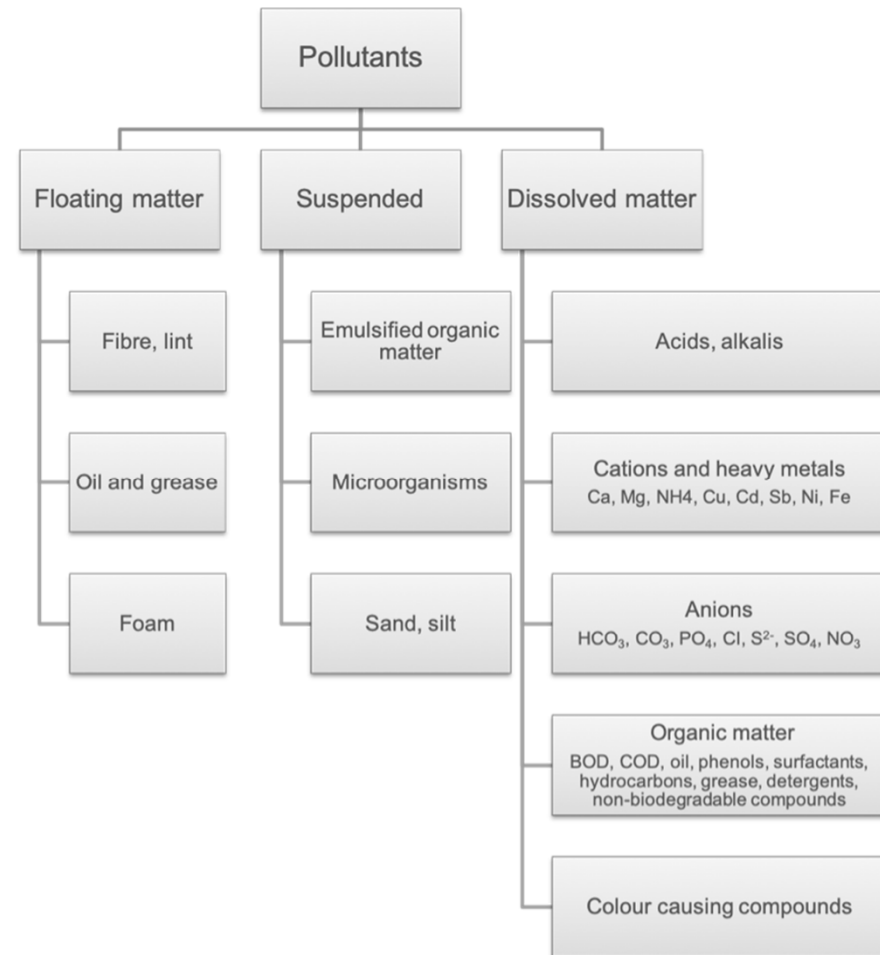
A high-level introduction of Wastewater Treatment Operation

07

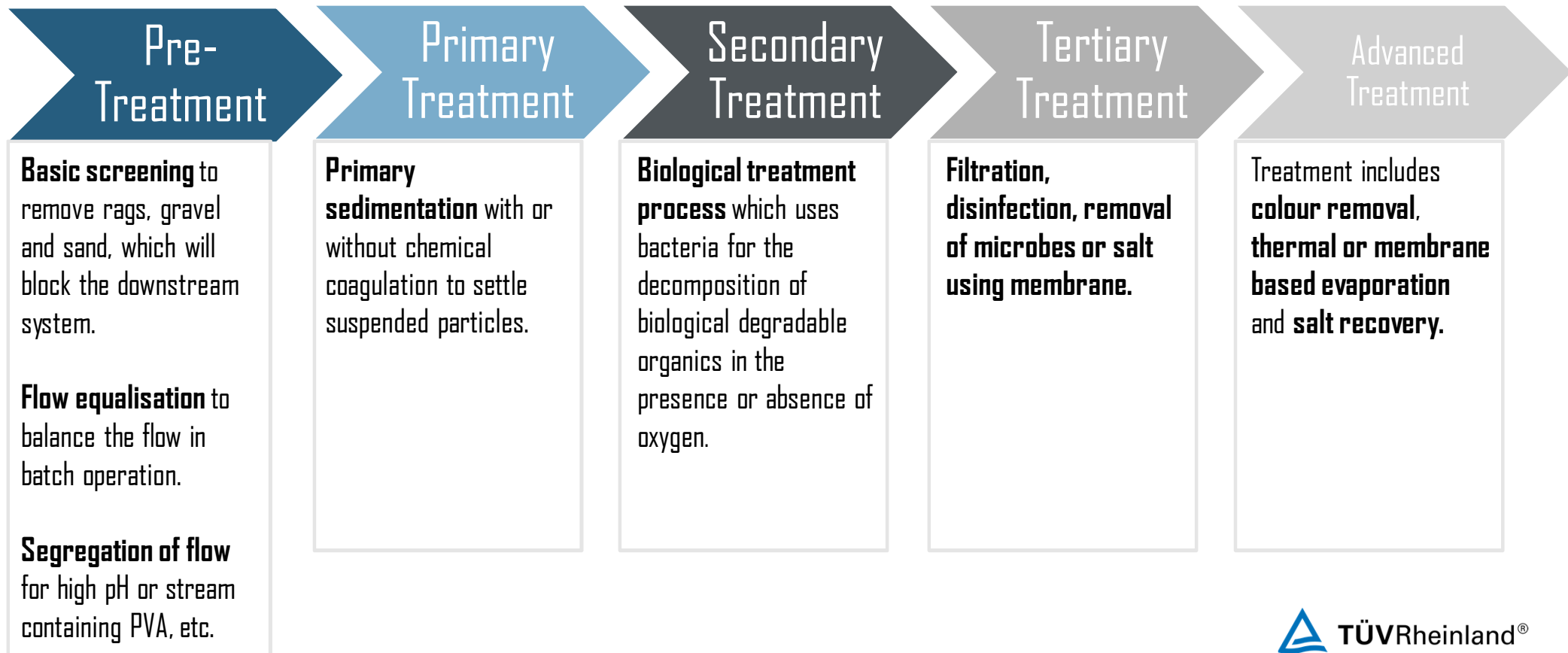
Effluent Treatment Overview

Wastewater generated from the textile, footwear and leather industry can be classified into 3 main categories.

Aim of the effluent / wastewater treatment plant is to treat and filter out these pollutants prior to discharge into the environment.



Effluent / Wastewater Treatment Plant Technologies



Typical Effluent / Wastewater Treatment Plant

Screen



Balance tank



Aeration tank



Settling tank



Sludge digester





Sludge

- Sludge is a semi-solid slurry.
- Can be produced as sewage sludge from wastewater treatment processes.
- Sludge is mostly water with lesser amounts of solid material removed from liquid sewage and is stabilised using digesters.
- Sludge digestion is an anaerobic digestion process in which microorganisms break down biodegradable material in the absence of oxygen.
- A large fraction of the organic matter is broken down into carbon dioxide and methane.



Disposal of Sludge

Like the liquid effluent from the treatment plant, there are four broad methods for the disposal of sludge:

- Disposal on land
- Composting
- Incineration



- **DISPOSAL ON LAND:**
This is under land disposal, the following methods can be included: Burial, fill or application as fertiliser or soil conditioner.
- **COMPOSTING:**
It is the aerobic thermophilic decomposition of organic wastes to a relatively stable humus. Decomposition results from the biological activity of microorganisms which exist in the waste.
- **INCINERATION:**
Can be burnt for energy recovery. Energy generated can be used as electricity within the manufacture plant.

Typical Effluent / Wastewater Treatment Plant

Screen



Balance tank



Aeration tank



Settling tank



Sludge digester





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- **INCINERATION:**
Can be burnt for energy recovery. Energy generated can be used as electricity within the manufacture plant.

Why we need Environmental Impact Mitigation Measures

- 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 in Wastewater

- 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.



Monitoring of Effluent

- Supervisory monitoring/inspection by local government.
- Online monitoring system for core parameters such as COD, pH, temperature flow rate, etc.
- Monitoring conducted by the factory.
- Monitoring should be contracted and managed by a service company, or via an on-site lab.

Effluent Treatment Plant Monitoring Record

Chemical	kg/Month	COD ¹ kg/kg	COD kg/Month	% COD Contribution	BOD ² kg/kg	Total BOD	% BOD Contribution
Acetic Acid	300	1.04	312				

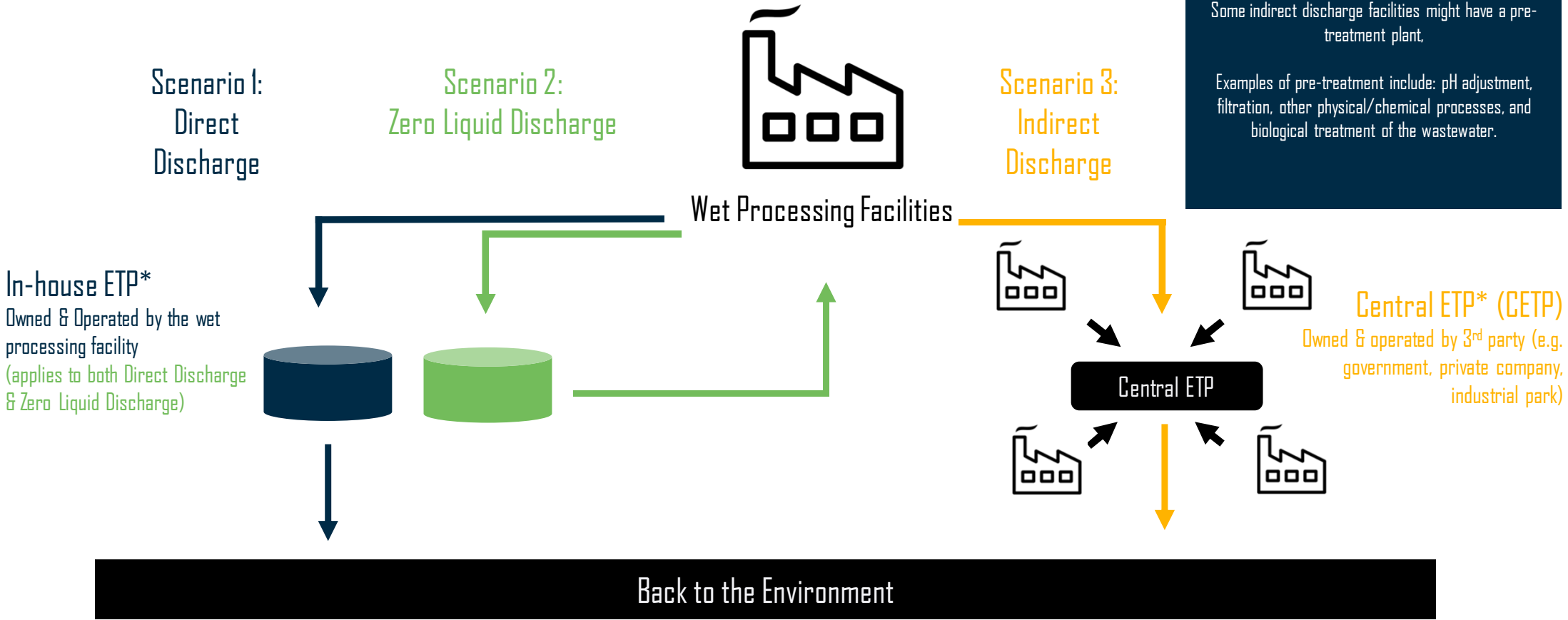
¹COD = chemical oxygen demand
²BOD = biochemical oxygen demand

SAMPLING REQUIREMENTS

04


In Accordance to ZDHC Wastewater Guidelines

Direct Discharge, Indirect Discharge & Zero Liquid Discharge Facility



In-house ETP*
 Owned & Operated by the wet processing facility
 (applies to both Direct Discharge & Zero Liquid Discharge)

Central ETP* (CETP)
 Owned & operated by 3rd party (e.g. government, private company, industrial park)

*ETP = Effluent Treatment Plant. Sometime it is also called WWTP - Wastewater Treatment Plant.
 **TÜV Rheinland**
 Precisely Right.

Sampling & Testing Requirements

Type of sample (see Appendix B for sampling points)	Direct and Indirect Discharge Supplier (with NO on-site ZLD Treatment System)						Supplier with on-site ZLD Treatment System	
	Option 1			Option 2			Metals (Table 1B)	ZDHC MRSL Parameters (Tables 2A-2N for wastewater or Table 3 for sludge)
	ZDHC Conventional Parameters (Tables 1A-1B)	Legal Parameters (any additional parameters required by legal wastewater discharge permit and/or receiving central effluent treatment plant (CETP) not listed in Tables 1A-1B)	ZDHC MRSL Parameters (Tables 2A-2N for wastewater and Table 3 for sludge)	ZDHC Conventional Parameters (Tables 1A-1B)	Legal Parameters (any additional parameters required by legal wastewater discharge permit and/or receiving central effluent treatment plant (CETP) not listed in Tables 1A-1B)	ZDHC MRSL Parameters (Tables 2A-2N)		
1. Raw Wastewater	Not applicable			C & T Test only according to Table 1B	Not applicable	C & T	C & T	C & T
2. Discharged Wastewater	C & T	C & T	C & T	C & T	C & T	C & T**	Not applicable***	
3. Sludge	Not applicable	Not applicable	C & T*	Not applicable			Not applicable	C & T

C & T = Collect and Test sample.

*For an Indirect Discharge Supplier: test sludge sample only if it is available (meaning if the supplier in question generates sludge), such as when there is primary (flocculation) treatment done.

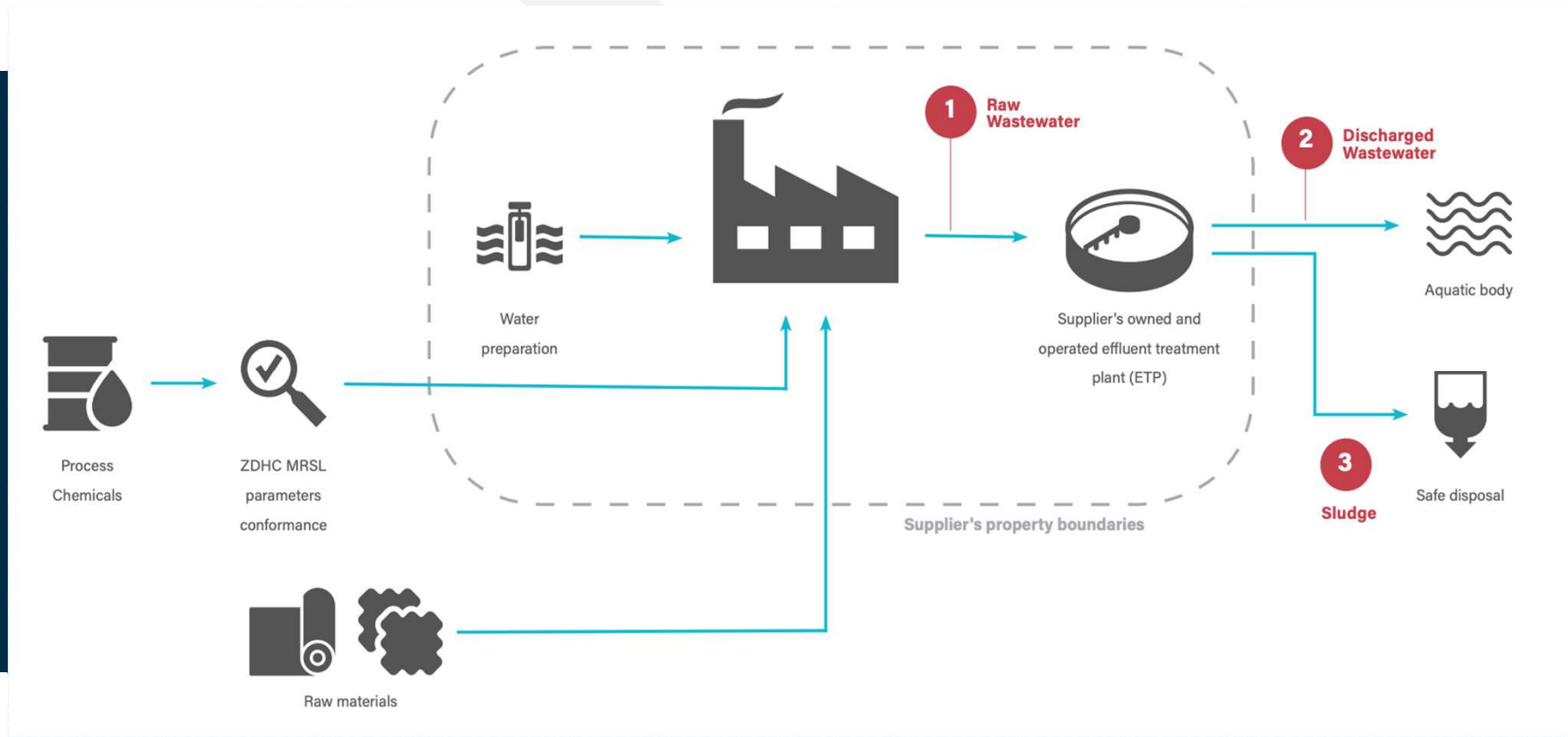
**For an Indirect Discharge Supplier: Test the discharged wastewater sample only if there is any pretreatment, otherwise no need to test as it is the same as raw wastewater.


***A supplier with an on-site ZLD system is expected to not have any liquid discharge

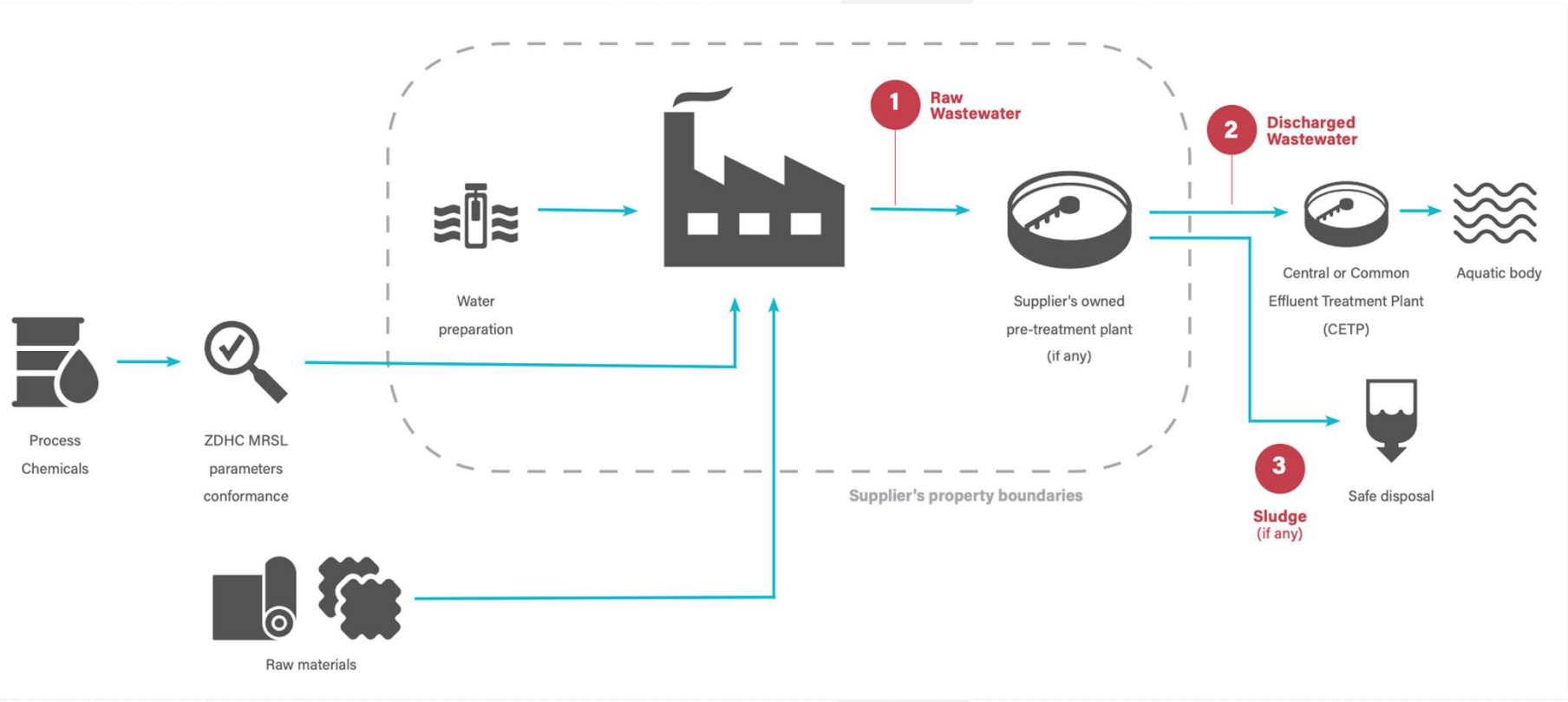
SAMPLING METHODOLOGY

- 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.

Facility with Direct Discharge: Sample Collection Points



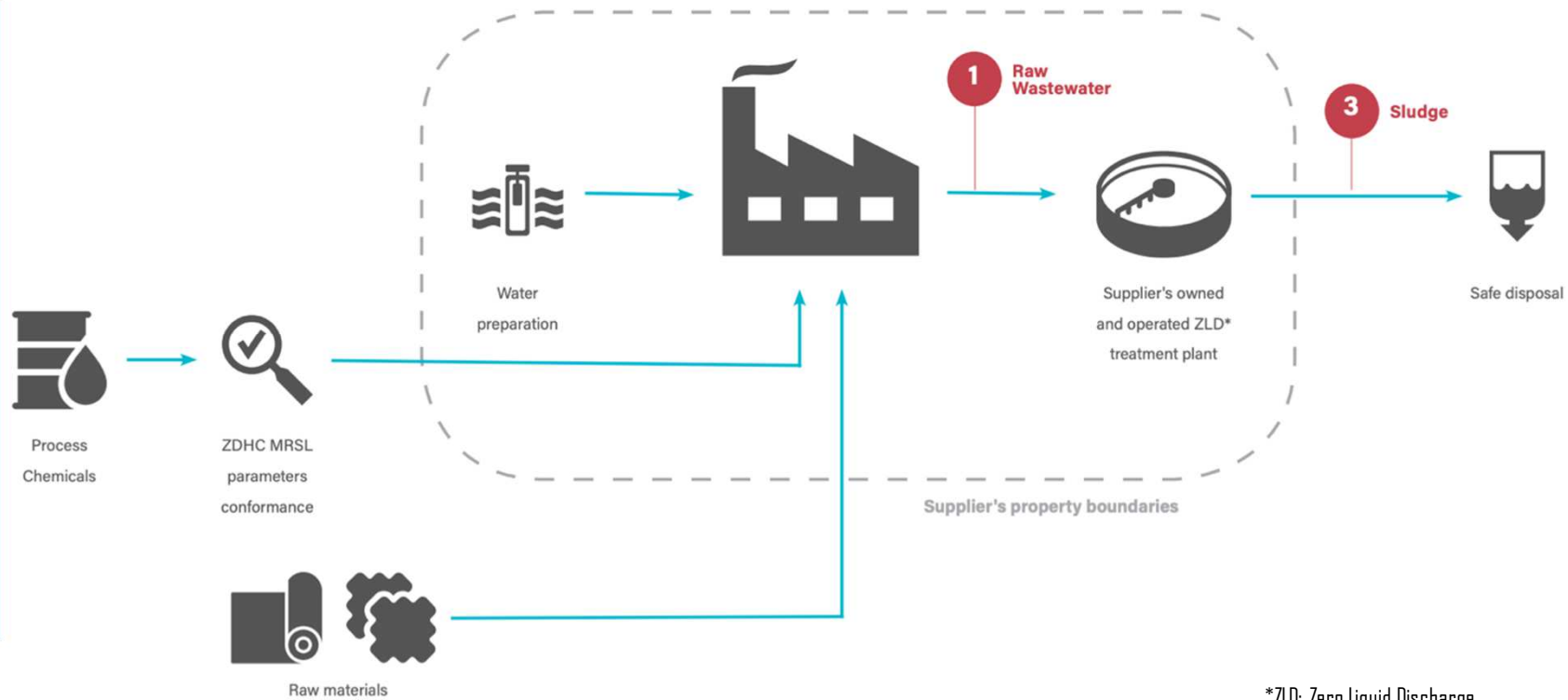
 = sampling points



Facility with Indirect Discharge: Sample Collection Points

= sampling points

Facility with Zero Liquid Discharge: Sample Collection Points



*ZLD: Zero Liquid Discharge

 = sampling points

SAMPLING REQUIREMENTS

DISCHARGED WASTEWATER

- Sampling shall occur at a point closest to the location where the industrial wastewater leaves the property boundaries of the supplier.
- It should be the same location used to obtain samples to demonstrate legal compliance.
- Wastewater being sampled must be of the same quality as the wastewater being discharged.
- If a supplier has multiple discharge points/locations for industrial wastewater, samples must be taken and analysed for each discharge point.
- Samples from multiple discharge points are to be tested separately and not blended together.

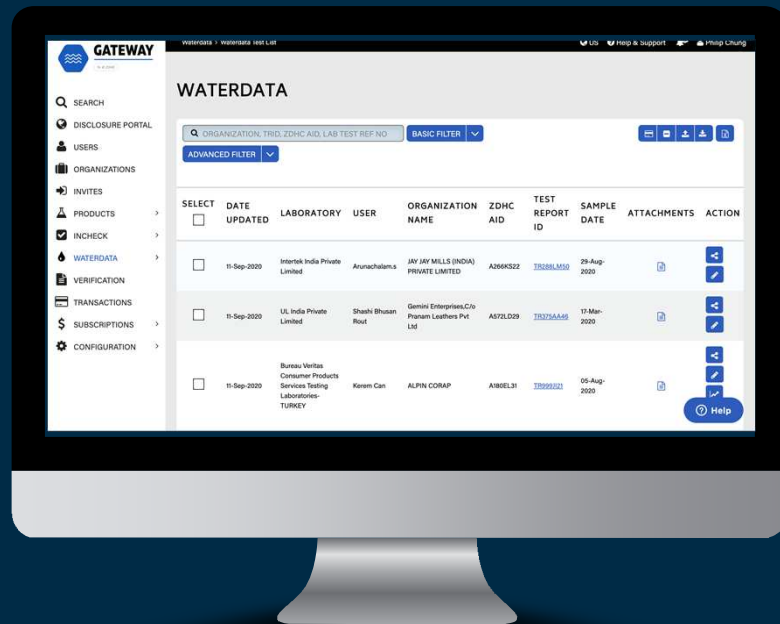
RAW WASTEWATER

- For indirect discharge suppliers, samples from multiple raw wastewater points are to be tested separately and not blended together.

SLUDGE

- Collected samples should represent all of the sludge generated by the effluent treatment plant (ETP) that are disposed of or reused. It may be necessary to collect various types of sludge samples throughout a given factory's ETP.
- Sludge results shall be reported on a "dry weight" basis.

*Please refer to the SAP document for more detailed sampling requirements

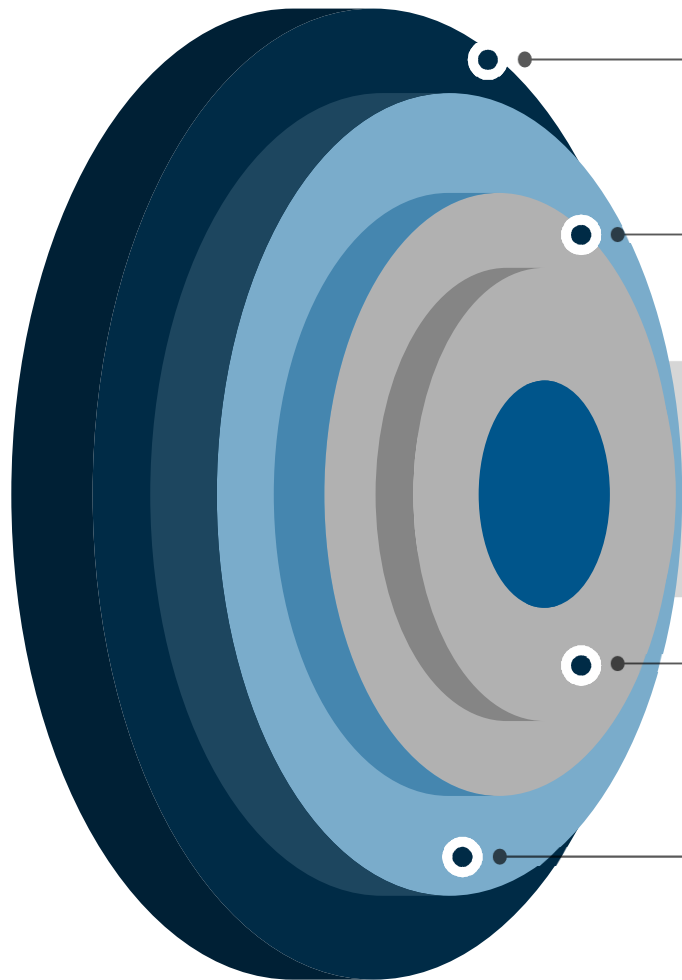


ZDHC Gateway

Wastewater Module

THE global online platform to register and share verified Wastewater test data against the ZDHC Wastewater Guidelines.

ZDHC Wastewater Testing should be reported to ZDGC Gateway - Wastewater Module



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

Q/A Session



Thanks for your time!

