Reformation

Clean Chemistry Supplier Roadmap

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Introduction

It's our mission to bring sustainable fashion to everyone. Through the responsible management of chemicals and materials used in every step of the supply chain, we work to improve customer and worker safety and reduce environmental risk.

Key Elements of our Clean Chemistry Roadmap

- Our vision for the use of chemicals in our supply chain
- Our expectations for suppliers regarding chemical management
- How we evaluate Cleaner Way, Cleaner Chemicals & Cleaner Finished Materials
- Chemical compliance guidelines for all materials and finished product

Our Vision

We want zero hazardous chemicals and inputs in our supply chain. To scale our clean chemistry program, we will work with our suppliers to support their sustainable chemistry management journeys.

Here's how we'll do it:

- Implement risk-based testing protocols & enforcement of the Restricted Substances List (RSL) across our materials.
- Require Tier 2 facilities* to hold an approved clean chemistry certification (or can demonstrate meeting our entry level requirements).
- Review chemical inventories across our supply chain and encourage the use of cleaner chemical formulations.
- Support continuous improvement in chemical management at strategic mills and wet processing facilities in our supply chain (e.g. expanding wastewater quality programs).
- Connect suppliers with organizations like the Apparel Impact Institute (Aii), bluesign®, and Zero Discharge of Hazardous Chemicals (ZDHC) to implement water, energy, and chemistry efficiency programs.

*Where wet processing takes place, like mills, dye houses, printers, and tanneries.

Our Roadmap to Clean Chemistry

We'll stay close with our supply chain partners to ensure they use chemical, water, and energy resources responsibly when making our stuff because we want our products to be safe for everyone and everything they touch.

We believe that using cleaner chemicals in a cleaner way leads to cleaner materials that are better for Ref customers and for the environment.

Our Expectations

Reformation expects all our supplier facilities–both finished goods and material suppliers–to be able to demonstrate:

The Basics

- Compliance with local regulatory requirements on hazardous substances
- Compliance with our Sustainable Partners Guidebook
- Protection of the health and safety of all workers, contractors, and the surrounding environment

The Chemistry

- The use of **cleaner chemicals** that are conformant with the ZDHC MRSL
- The use of chemistry in a **cleaner way** by developing, implementing and maintaining a Chemical Management System (CMS) that is aligned with the ZDHC CMS Framework (May 2020) and Wastewater Guidelines
- Compliance with Reformation's Restricted Substance List (we use the AFIRM RSL for all materials)

Cleaner Chemicals

Safe, non-hazardous chemistries, specifically MRSL conformant chemicals

+

Cleaner Way

Chemical management system (CMS) that ensures workersafety, better environmental practices, and continuous improvement

=

Cleaner finished material

Restricted Substance List (RSL) compliance of finished goods & fabrics

Cleaner Chemicals

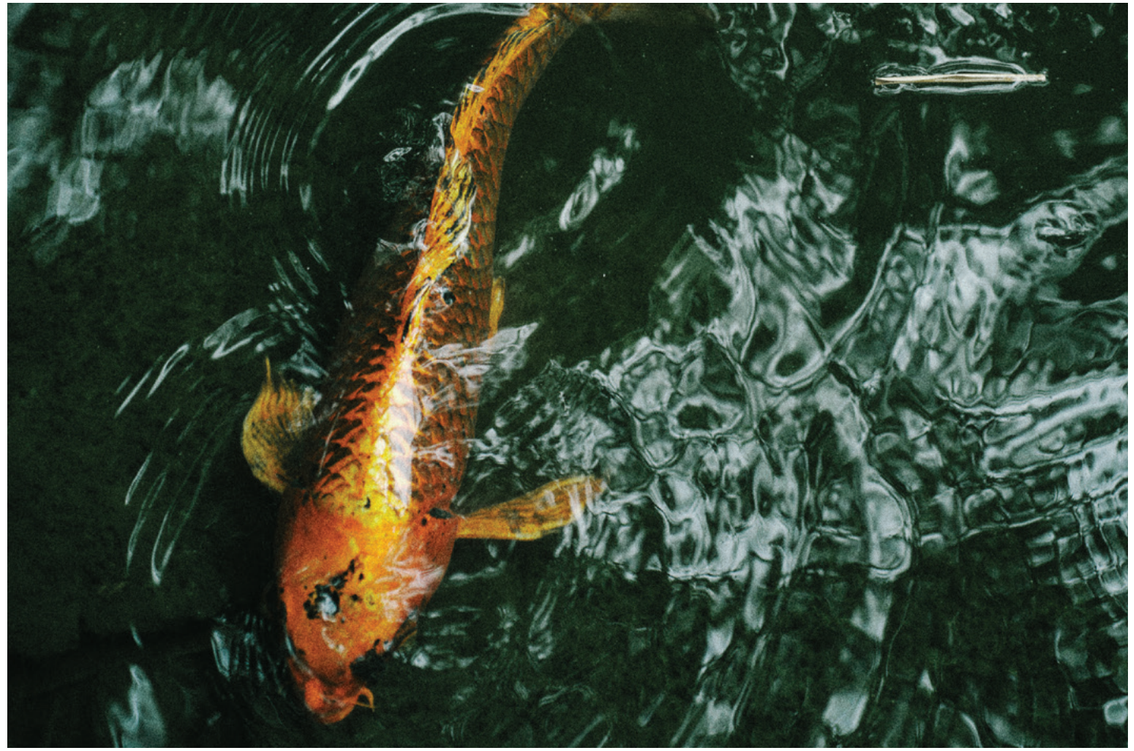
We use the ZDHC Manufacturing Restricted Substance List (MRSL), which is a list of chemical substances banned from intentional use and restricts chemicals at or before the point of use during production.

This approach helps protect customers while minimizing the potential impacts of banned hazardous substances on production workers, local communities, and the environment.

Reformation's MRSL is aligned with the Zero Discharge of Hazardous Chemicals (ZDHC) MRSL V3.10 (effective November 1, 2023). This list applies to chemicals used to make textile materials and trim in apparel and accessories, not just those that remain in the finished product.

Our Expectations

- All suppliers are responsible for ensuring that the chemical inputs used on Reformation materials are ZDHC MRSL Conformant
- All suppliers will develop a strategy, in line with their Chemical Management System (CMS) and purchasing policies, to improve the compliance of their chemical inventories



Cleaner Chemicals

Where to begin

Here's how to ensure the chemical inventory is MRSL conformant:

1. Establish a clear purchasing policy to only purchase chemicals that are verified to be MRSL conformant
2. Keep, maintain & review the chemical inventory
3. Use available tools to check MRSL conformance of chemicals

    - ZDHC Gateway to search database chemical formulations and their conformance level
    - bluesign® FINDER to find approved chemicals
    - OEKO-TEX® ECO PASSPORT to find approved chemicals
    - Request ZDHC ChemCheck Reports from the chemical suppliers

And here's how to show the chemical inventory is MRSL conformant:

- ZDHC InCheck Reports
- OEKO-TEX® STeP certification
- bluesign SYSTEM Partnership
- Facility Scope Certifications (if applicable to the material) like the Global Recycled Standard (GRS) or Global Organic Textile Standard (GOTS), or Leather Working Group (LWG) - Gold or Silver

Cleaner Way

Cleaner Chemicals are a great start. A Cleaner Way takes the next step by requiring a Chemical Management System (CMS) at the facility level that defines actions to manage inputs, processes, and outputs in chemical processing.

Below are critical elements of a CMS. You can learn more in the ZDHC CMS Framework guidance.

- A policy statement that includes the commitments to sustainable chemical management and adoption of the ZDHC MRSL, compliance with local laws and regulations, minimizing chemical risks to employees and the environment, and ensuring traceability and transparency.
- Specific procedures for purchasing compliant chemicals, traceability of chemicals and processes, and transparency with stakeholders.
- Regular assessments & facility evaluations of the facility's regulatory compliance and performance, including measures for continuous improvement—especially in areas related to worker health and safety—hazards and risks, output management, and purchasing practices.
- A chemical inventory that is maintained regularly with information on MRSL compliance and which chemicals are used and why.

Actions to include in your CMS

- ✓ Source chemicals that comply with MRSL and RSL requirements
- ✓ Communicate & train employees on chemical hazards, how to read and use safety data sheets (SDSs) or material safety data sheets (MSDSs)
- ✓ Review internal processes to understand how chemicals are used
- ✓ Indicate when personal protective equipment (PPE) may be required
- ✓ Use industry best practices for chemical storage
- ✓ Ensure safe and responsible disposal of chemicals
- ✓ Handle and transport chemicals in line with the SDS
- ✓ Evaluate necessary spill response procedures
- ✓ Provide regular training to all people working with chemicals on safe use & hazard mitigation

Cleaner Way

Where to begin

We know that our partners may be at different places in their clean chemistry journey. So we're sharing some programs that can demonstrate a commitment to cleaner production, in line with the ZDHC CMS requirements.

- Higg FEM 4.0 (up to Level 2, with verification for Level 1)
- Supplier to Zero Program (StZ) from ZDHC which covers implementation of the ZDHC CMS Framework
- GRS & GOTS or LWG scope certification (if applicable to the material)
- STeP by Oeko-Tex: Holistic facility certification that checks chemical inventory, facility practices, worker health and safety, and environmental management
- bluesign® partnership & certification: Comprehensive facility certification that checks chemical inventory, facility practices, worker health & safety, and certifies materials against the Bluesign restricted substance list list
- Other standards/programs that have a focus on chemical management, environmental practices (e.g., 4Sustainability)

A Cleaner Way & Output Management

Managing the water, waste, and emissions that come from fabric production is critical for any chemical management program. It's super important to us that our partners work towards zero discharge of hazardous chemicals.

Our priorities

- We believe that if facilities use cleaner chemicals in a cleaner way, we can make progress towards zero discharge of hazardous chemicals.
- To that end, all suppliers should implement mechanisms, processes, and procedures that are in line with the ZDHC CMS Framework & ZDHC Wastewater Guidelines (Sep 2024), to manage and treat output streams (wastewater, sludge, hazardous waste, air emissions) and finished products.

Inside the factory

- We expect our supply chain partners to safely manage and dispose of hazardous waste and provide regular training for key personnel within the facility.

Outside the factory

- For industrial wastewater, sludge, hazardous waste & air emissions, we expect our supply chain partners to maintain legal compliance with the local/state requirements for operational permits and water permits. This includes meeting requirements for discharge limits, monitoring and reporting.

In the future, we'll work with suppliers to figure out how best to regularly test wastewater at the facility to ensure that cleaner chemistry equation is adding up, for example, through ZDHC WasteStream reports.

Output Management in Practice

Outputs	Expectations
Industrial wastewater is water used on-site for production processes (dyeing, washing, rinsing, finishing) that is no longer usable for its intended purpose. **Sludge** is a by-product in most wastewater treatment systems.	Every facility must maintain legal compliance with the requirements and discharge limits stipulated in its wastewater discharge permit. Untreated wastewater must never be released into the environment. Tier 2 facilities should implement the ZDHC CMS Framework, which includes developing a wastewater testing program in alignment with the ZDHC Wastewater Guidelines.
Hazardous waste has chemical or physical properties that make it dangerous to human health or the environment.	Suppliers must safely manage and dispose of hazardous waste and provide regular training for key personnel within the facility.
Air emissions are the release of gases or particulates into the air. Criteria for pollutants are emissions that are or could be harmful to people (such as carbon monoxide (CO), lead (Pb), nitrogen dioxide(NO2), ozone (O3), particulate matter (PM), and sulfur dioxide (SO2)).	All facilities must comply with local regulations, including permitting, operational requirements, and monitoring. Indoor air quality must be maintained to protect against occupational exposure. Suppliers must calculate the potential to emit (PTE) for all chemicals used on site to determine whether air pollution control equipment is needed.

How it all adds up

To deliver on our cleaner chemistry commitments, we prioritize working with facilities who can show better or advanced performance under both the cleaner chemicals and cleaner way elements of our program.

We accept the OEKO-TEX® STANDARD 100, but it's only one part of the cleaner chemistry story. Facilities must show how they implement cleaner chemicals & cleaner way in a performance level listed below.

Advanced

A facility with advanced performance is an all-star in chemical management. They are actively engaged & certified under programs that ensure the highest level of MRSL inventory conformance, require sustainable and safe chemical use and output monitoring and management.

Cleaner Chemicals		Cleaner Way
ZDHC Verified InCheck	+	**ZDHC ClearStream**
		ZDHC Supplier to Zero
OEKO-TEX® STeP Certification **bluesign® Certification**		

Better

A facility with better performance in is actively engaged in verification ZDHC programs and/or has a material scope certificate that includes clean chemistry requirements, aligned with the ZDHC.

Cleaner Chemicals		Cleaner Way
ZDHC Verified InCheck	+	**ZDHC Supplier to Zero**
GOTS, GRS, LWG (Gold or Silver) Certification* *if applicable to the material composition		

Entry Level

A facility at the entry level may not have any certifications. This isn't ideal, but we want to be a part of their continuous improvement. Initially, we'll require self-reporting in both elements. Over time, we'll push for verifications & commitments to achieve better performance.

Cleaner Chemicals		Cleaner Way
Inventory MRSL Conformance & Purchasing Practices Required to check chemical inputs in external resources (e.g., bluesign Guide, OekoTex EcoPassport, ZDHC Gateway, ZDHC Chem-Check, or Performance InCheck)	+	**Facility Chemical & Environmental Management** Required to confirm practices under external frameworks Higg FEM 4.0 (verification & Level 2 required) 4Sustainability & others

We'll track progress towards better & advanced performanace

Cleaner Finished Material

To ensure a **cleaner finished material**, Reformation will use finished fabric testing to ensure the fabrics we make comply with regulations and meet customer safety standards.

Reformation's Restricted Substance List

To ensure our products are safe for everyone and everything they touch, we test for chemicals in finished materials and final products against a Restricted Substance List (RSL), in accordance with the AFIRM RSL.

- An RSL includes chemicals that cannot be present on the finished fabrics and goods per customer safety & regulatory requirements.
- The AFIRM RSL also includes concentration limits for substances aligned with EU REACH, Substances of Very High Concern (SVHC), and the California Proposition 65 List.
- All raw materials, components, and finished products must meet our RSL, which can be downloaded here in multiple languages.

Our approach to RSL Testing

We'll use fabric testing as a tool for accountability and to strengthen our relationships with supply chain partners. RSL testing will inform how we work together to improve sustainable chemical management.

It is of the utmost importance that suppliers comply with the current Reformation RSL and any legally binding limits that apply in the jurisdiction where they operate. Examples include, but are not limited to, the EU REACH, Substances of Very High Concern (SVHC), and California Proposition 65 List.

Cleaner Finished Material

What to know about Ref's RSL

Supplier Expectations & Ref's RSL

- Our direct suppliers are responsible for sharing Reformation's current RSL and MRSL with all subcontractors and sub-suppliers from raw materials to finished products involved in the making of our stuff and ensuring our standards are met.
- Reformation recommends that finished goods suppliers request RSL testing for any components, materials, and trims received from sub-suppliers to identify issues prior to production and protect from inadvertent RSL violations.
- Unless otherwise stated, RSL test results are valid for one year from the test date.
- Suppliers cannot change processes or chemicals once they have an RSL pass for a material. Any change requires notification to Reformation in advance & retesting to confirm RSL compliance.
- Reformation reserves the right to request testing of any material or product at any time.

Scope of Testing Program

- All raw materials and finished goods are subject to RSL Testing.
- Reformation manages the scope and procedures of the RSL Testing Program on finished materials. Our RSL is aligned with the AFIRM RSL, which is updated annually in February and is publicly available.
- In the event of Non-Compliance: For finished materials that have a failed result, the supplier must take immediate action and is responsible for completing the failure resolution process, facilitated by the Product Sustainability Team (productsustainability@reformation.us).

Looking ahead: Even Cleaner Chemistry

We know this work isn't easy and we'll work with our suppliers to see improvements year over year.

Our goal is that 100% of our fabrics are certified by OEKO-TEX® STANDARD 100 or come from facilities that are better or advanced.

To make sure we're making progress in our Cleaner Chemistry Supplier Roadmap, we will report on our sourcing and supplier performance in the following areas:

- % Fabrics that are certified by OEKO-TEX® STANDARD 100 or come from facilities that are better or advanced.
- % Facilities that we work with that have better or advanced clean chemistry performance.
- % Facilities that are actively engaged in continuous improvement

Multitasking

While we'll work with our partners to go from entry level to advanced, we'll also be doing our own work. We'll track alignment of our strategic supply chain partners against the ZDHC CMS principles of input & output management:

- ✓ Enrollment in ZDHC Supplier to Zero
- ✓ Verified InCheck Reports showing MRSL conformant inventories
- ✓ ZDHC ClearStream Reports showing wastewater MRSL conformance

Plus, we'll aim to join the ZDHC Brands to Zero program so that we can eventually roll out support in these programs to all of our supply chain partners.

We'll continue to be a key collaborator with our partners and push for material innovation across our industry.

Industry Collaboration
Because we believe a collaborative industry approach is essential to driving impact, we'll continue to contribute to and participate in efforts that work towards a shared goal of safe and responsible chemical use.

- This includes working with organizations like Cascale, ZDHC, Textile Exchange (TE), bluesign®, Fashion for Good (FFG), AII, and the Apparel and Footwear International RSL Management (AFIRM) Group, who are all working to scale industry change.

Accelerating Innovation
To meet our goals, we need to approach chemistry from all angles. We can't just talk about what chemicals are being used without discussing how they are used.We'll work on other ways to support clean chemistry. Like:

- Improving material efficiency and eliminating the need for virgin materials through our Better Material and Circularity strategies, overall reducing the volume of chemicals required for fabrication.
- Working with our supply chain partners to use innovative processes, such as water-efficient dyeing, to reduce water use.

Dyeing & Printing Standards

Our Dyeing & Printing Standards

Dyeing, printing, and tanning suppliers must restrict the use of harmful substances currently restricted by law, and substances known to be harmful to human health. We encourage the use of recognized industry standards for input chemical management, and require that only safe, approved chemicals are used in manufacturing (per the ZDHC MRSL). Also, all output water must be treated to local regulations, and we encourage the reuse or recycling of treated wastewater.

We do not permit direct dyeing, vat dyeing, conventional soaping, continuous wash off, or discharge printing.

See the EU Best Available Techniques Reference for the Textiles Industry.

If you have adopted natural dyes, azo- free dyes, phthalate-free dyes, low-impact reactive inks, reusing water, optimizing energy use, eliminating harmful substances, better cleaning agents, dye stuff carriers or any other efforts, let us know.

Preferred (But Not Required) Dyeing & Printing Techniques

Sublimation, Waterless Dyeing (like AirDye and DryDye), Closed loop dyeing systems (like DyeCoo, water recycling-based systems that recover and reuse process water), Solution dye, Cold pad batch, Supercritical CO_2 Dyeing, Foam Dyeing, Low Liquor Ratio Dyeing

Digital Printing, Low-impact Screen Printing with proper wash and effluent control (e.g., Hybrid Screen Printing and Water-based Screen Printing)

Preferred (But Not Required) Regional Certifications

DISHA (India), Ekolabel Indonesia, Hong Kong Green Label Scheme, Singapore Green Label Scheme, Thai Green Label Scheme, China Environmental Labeling, German Blue Angel, Nordic Ecolabel

Our Finishing Standards

We do not permit chlorine bleaching, silica, aluminum dioxide, formaldehyde containing resins for 3D/crinkled effect, Ice/potassium permanganate, stone washing, conventional electroplating, PFAS in DWR treatments or sandblasting.

Below are techniques that will help reduce water and energy consumption. We encourage suppliers to conduct third party energy & water efficiency assessments to determine facility-specific needs & identify improvement opportunities. Please let us know if you are working on this!

Ozone	Used for garment lightening: combines bleach, neutralize and rinse baths
Ozone mist	Garment decolorizing by spraying water mist is sprayed into the ozone machine
Combine desize and stone/enzyme wash	A four bath process can be reduced to two baths by combining steps, and reducing a rinse step. Requires compatible chemistry.
Combine desize, enzyme wash and bleach	A seven bath process can be reduced to five baths by combining the desize, enzyme and bleach step. Requires compatible chemistry.
Combine enzyme and softener	Saves a rinse step and a softener step. Technique works well with non-denim.
Sky chlorine-free bleach/rag bleach	Undiluted chlorine-free bleach solution applied to rags which are tumbled with garments, without water in the machine.
Low liquor ratio reactive garment dye	Education around lower water levels in both reactive dye bath and rinse bath and the application of a smart rinsing process by replacing overflow rinsing with drop-fill rinsing and controlled rinsing.
Remove desize step	Garment decolorizing by spraying water mist is sprayed into the ozone machine
High fixation reaction dyes	Use high fixation reactive dyes to reduce hydrolysis and over deposition, and leads to less discoloration of the effluent
Neutralize chlorine-free bleach in one bath	Combining bleach and neutralization can save one bath.
Foam dye/tine	A concentrated dye solution applied as a foam instead of a typical wet dye bath.
Foam chlorine-free bleach	Applied in foam form with chlorine-free bleach maintaining a max 1:1 liquor ratio.

Our Finishing Standards contd.

Combine resin and tint steps; apply by dipping	Add tint to the resin solution and applying through spray or dip. Tint wet bath (and sometimes the rinse bath) is removed.
Enzyme spray stonewash	Enzyme mixture is sprayed onto garments followed by tumbling the garments in a washing machine with steam. Technique uses abrasion without water or stones.
Spray softener	Apply undiluted softener in a tumble dryer with a spray to avoid a softener bath.
Soft rigid	Use balls/bottle caps to soften the fabric without water.
Low liquor ratio chlorine-free bleach	Combine to save one fixation bath. Ensure fixer and softener are compatible.
Combine fixing and softener	Modern machine design and technology allow laundries to significantly lower the liquor ratio.
Low liquor ratio for desize	Modern chemistry and modern machine designs allow for low liquor ratio desize. Education is needed.
Low liquor ratio for synthetic stonewash	Abrasion is equally effective with less water.

Best Practices for commercial garment washing

Energy Star® certified equipment, dryer safety (e.g. lint removal), training dryer operators on cool down types for different fabrics, fire safety to avoid spontaneous combustion, electrical safety, health safety. See NZI Laundry Risk Management Guide.

Best practices for optimized operations/resource efficiency measures:

1. Install meters and repair leaks in steam, water and compressed air systems
2. Collect and recover condensate
3. Reuse cooling water
4. Recycle process and waste water
5. Recover heat from hot water, effluent
6. Improve boiler efficiency
7. Maintain steam traps and system
8. Improve insulation
9. Recover heat from exhaust gas and heating
10. Optimize compressed air

Resources

Reformation
Sustainability at Reformation
Ref's Climate Positive Roadmap
Circularity at Reformation
Sustainable Partners Guidebook (SPG)
Reformation Certification Toolkit

Cleaner Chemicals, Cleaner Way
bluesign SYSTEM Partnership
bluesign®FINDER
EU Best Available Techniques -Textiles Industry
Global Organic Textile Standard (GOTS) & GOTS Certification + DETOX ZDHC
Global Recycled Standard (GRS)
Higg Resources Library – FEM 4.0 Resources
Leather Working Group
OEKO-TEX® ECO PASSPORT
OEKO-TEX® STeP certification
ZDHC MRSL v3.1
ZDHC MRSL Conformance Guidance
ZDHC Chemical Management System: Technical Industry Guide
ZDHC Gateway
ZDHC Chemcheck - Gateway Reports
ZDHC InCheck Reports

Cleaner Finished Material
AFIRM RSL (updated annually in February)
AFIRM Chemistry Toolkit

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