Discharge Analysis 2021

Hangeroup

June 2022

The state

Summary

In 2021, **95%** of our factories in chemical scope (tier 1 and 2 with high use of chemicals in textile and leather supply chain) were enrolled in ZDHC programmes. This equals **609** units, and among them, **424** are in scope for wastewater testing. The results were uploaded on ZDHC Gateway and published on Detox Live. Using direct data download from ZDHC Gateway API, we have data from **444** units who are connected to us and tested in the 2021 period.

Out of **183** chemical analytes tested from **14** MRSL Chemical Groups in ZDHC Wastewater Guidelines 2016, we found that **99.85%** of our result had no detection of hazardous chemicals as defined by ZDHC MRSL v.1.1. The remaining findings (0.15%) were spread across **27%** of our units.





What does it mean to be in ZDHC program?

In 2011 H&M Group committed to phasing out hazardous chemicals in the supply chain.

All tier one and two facilities in textile and leather supply chain that heavily use chemicals are in scope of the ZDHC program.

ZDHC Program means that the facility needs to:

- Conduct wastewater test as per ZDHC Wastewater Guideline annually and upload the results on ZDHC Gateway with ClearStream report
- Publicly disclose the wastewater test result on DetoxLive platform
- Input all production chemicals into a ZDHC-approved input chemical management tool with InCheck reports
- Develop chemical management according to ZDHC CMS Guideline

Hazardous Chemicals: ZDHC MRSL v.1.1



Global Distribution: MRSL Compliance



Result Overview



INCOMING WATERS RAW WASTEWATERS

8 out of 183 ZDHC MRSL analytes found. **58** out of **183** ZDHC MRSL analytes found.

One out of 21 conventional parameter analytes and three out of 12 heavy metals exceeded the foundational limit. 21 out of 21 conventional parameter analytes and nine out of 12 heavy metals exceeded the foundational limit. DISCHARGED WASTEWATERS

15 out of **183** ZDHC MRSL analytes found.

18 out of 21 conventional parameter analytes and eight out of 12 heavy metals exceeded the foundational limit.

ZDHC MRSL Compliance



The substances with the lowest compliance levels have been fully banned in our supply chain since before we committed to ZDHC MRSL. This suggests we need better implementation and a shift by the entire industry to reach our goal.

PFOA and PFHxA (from PFCs) are the most commonly detected. PFCs are used as water repellents and this group of chemicals has been banned from our supply chain since 2003.

From input chemical management we know that our facilities do not intentionally use this chemical group. Therefore, the findings suggest the results may arise from incoming water or impurities, indicating an industrywide problem.

ZDHC MRSL Findings in Detail



For PFCs and halogenated solvents, the incoming water had low compliance, indicating a need to clean up the industry as a whole.

For AP, APEOs and chlorophenols the lowest compliance levels were found in raw wastewater, which suggests intentional use or accumulated impurities in production.

We have implemented ZDHC MRSL and promoted the use of ZDHC Gateway chemicals, therefore these findings suggest that our work is far from done and we need to evaluate which methods we use to prove MRSL compliance. This also justifies the need of going beyond compliance and using more thorough, hazard-based assessments instead of purely risk-based assessments.

PFCs



- From the data shown here, the PFC being used is PFOA and PFHxA in all regions.
- In China, the presence of PFCs in incoming water suggests that the problem originates upstream of our value chain.
- This non-compliance worsens in raw wastewater suggesting an accumulation of PFCs. In discharged wastewater, PFCs are still present, suggesting ETPs are unable to eliminate them.
- This shows that PFCs need to be eliminated from the industry in order to significantly improve water quality.
 Further studies should be conducted to see the effect of PFCs on surrounding biodiversity.

AP & APEOs



--NPEO is the most commonly detected chemical among AP & APEOs family.

- —NPEO is still detected in raw wastewater, which suggests use of NPEO in production, either by unintentional use or through accumulation of impurities. This decrease, and the absence in most incoming water, suggests improvement in the industry, although it should have already disappeared from our supply chain.
- —From our assessment, NPEO has never shown up in the incoming chemical data. This suggests that NPEO comes as impurity contamination or the result of non-transparency in chemical industry, especially in regions where findings occurred in raw wastewater. Like PFC, we need to improve our methods to prove MRSL compliance by using hazard-based assessment.

Overall Conventional Parameters



In this combined result of direct and indirect dischargers, color, coliform, BOD and COD are among those substances with the highest occurrences exceeding foundational limits.

The inclusion of indirect dischargers here may explain the low performance in BOD and COD.

Coliform's performance is aligned with BOD, suggesting that coliform sampling and processing has improved this year.

Color continues to be the parameter which drew the highest attention as our supply chain uses many colorants. Better treatment for eliminating color must be in place to correct this remaining issue.

Conventional Parameter: Direct vs. Indirect Discharger (Discharged Wastewater)



By separating ETP based on direct vs. indirect dischargers, we can see that substances from indirect dischargers exceed the foundational limit more. This is expected since the purpose of indirect discharger is to meet the requirement of their receiver central ETP.

More compliant results, especially for parameters secured through ETP treatment (such as BOD, COD and TSS), indicates good functionality of ETPs within the supply chain.

Coliform remains high in direct dischargers, which raises the question about sampling reliability again.

An area of improvement for ETP functionality is color. This can be addressed through better color removal technology and more efficient use of colorants.

Overall Heavy Metals Parameters



Like previous years, antimony is the heavy metal that exceeds foundational levels the most. Antimony is mostly found in facilities with polyester products because it is a raw material in this fibre.

Other heavy metals such as chromium, copper, arsenic and cobalt may be found because they are present as impurities in dyes used in the industry.

Heavy Metal Parameters: Direct vs. Indirect (Discharged Wastewater)



Brown: Indirect Dischargers Green: Direct Dischargers The data shows that our discharged wastewater is better, therefore we need to evaluate where the heavy metals are deposited because our ETP is not designed to eliminate heavy metals.

Looking at the high percentage of aspirational results, our supply chain is already on its way to eliminating hazardous heavy metals. However, some heavy metals are still present. One challenge is antimony leached from polyester. It is worth noting overall compliance for total chromium is worse than the discharged wastewater only. This was due to usage in the production.

Next Steps from H&M

- Input Chemical Management: Our results show that ETP does not eliminate all MRSL chemicals or heavy metals. This is because ETPs are designed to treat wastewater to meet conventional parameters such BOD, COD and TSS levels, not eliminate MRSL chemicals and heavy metals. Therefore, the best way to eliminate these substances from wastewater would be at the input stage. We have maximised our MRSL Compliance and only use chemicals from ZDHC Gateway. In 2021, we achieved our highest performance with 95% MRSL Compliance and 81% ZDHC Gateway utilisation. Despite this, wastewater results did not improve much. This suggests that current standards of input chemical management do not guarantee clean wastewater. To answer these challenges and to future proof our supply chain, we believe that the industry should put more effort into hazard-based assessment. In 2021, we carried out a Screened Chemistry pilot, in which we learned that a more inclusive approach is needed to scale up hazard-based assessment in textile chemistries.
- **ZDHC Programmes:** Through input chemicals management, we monitor the use of ZDHC Gateway database chemicals. This is an industry tested and reviewed database of chemicals that comply with ZDHC MRSL. However, our wastewater findings show that more work is needed to ensure that using ZDHC Gateway chemicals result in cleaner wastewater. We are working with ZDHC and other ZDHC brands to improve the ZDHC Chemical Module and Wastewater Module, as well as improving connectivity between the two systems.
- **General Chemicals:** Our input chemicals data shows that there was no intentional use of specialized chemicals, which suggests that the MRSL chemicals and heavy metals may come from impurities in chemicals or commodities. We are supporting ZDHC to develop a better framework to improve the quality of commodity chemicals as well as working with public affairs to strengthen chemical manufacturing regulations in our markets.
- ETP Functionality: At H&M, our internal team or third-party engineering companies assess all on-site ETPs regularly to ensure that direct dischargers are working optimally. Through ZDHC, we are also developing a framework to better engage central ETP in treating wastewater from indirect dischargers, ensuring they work and comply with local regulations and ZDHC guidelines.
- **Data Quality:** In 2021 we directly downloaded data from ZDHC Wastewater Module for the first time. This means that the pool of data is bigger, however many data points are incomplete and inaccurate. To gain a better understanding of problems, we need to improve data accuracy by securing supplier profiles on the ZDHC Wastewater Module.
- Public Policy and Stakeholder Engagements: We will continue to engage with partners in setting higher environmental standards and safer practices to eliminate hazardous chemicals at both a local and global level. As our results have shown, many findings come from incoming water. This indicates that the issues lie further upstream and must be tackled as an industry. We are pushing for better transparency on chemicals to be included in EU regulations such as Safe and Sustainable by Design framework, part of the EU Green Deal.