Discharge Analysis 2022

H&M Group

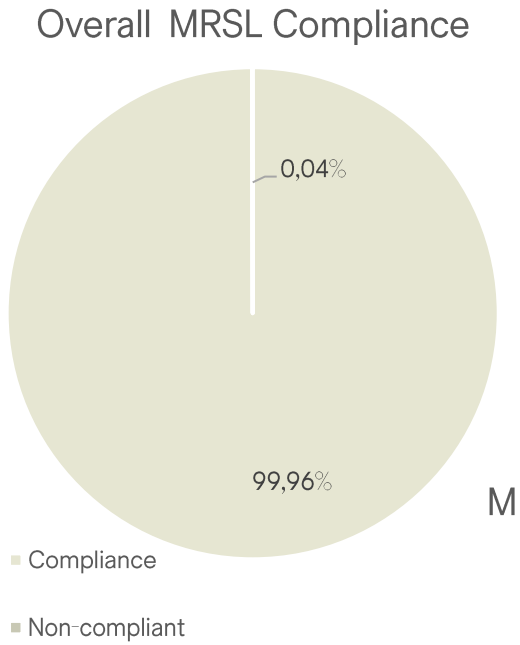
July 2023

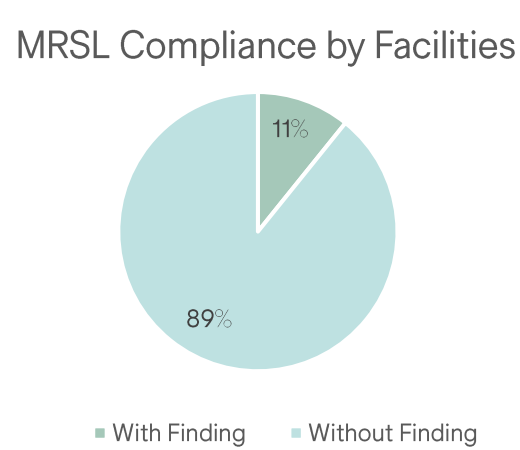
Summary

In 2022, 99% of our chemical scope factories* were enrolled in ZDHC programs. This equals 619 facilities and 436 of them are in scope for ZDHC wastewater testing. The results are uploaded on ZDHC Gateway and published on Detox Live. Using direct data download from ZDHC Gateway API, we have data from from 528 units that are connected to us and tested in the 2022 period.

Out of 183 chemical analytes tested from 14 MRSL chemical groups according to ZDHC Wastewater Guidelines v.1.1, we found that 99.96% of our wastewater result had no trace of hazardous chemicals as defined by ZDHC MRSL v.1.1. The remaining findings (0.04%) were spread across 10.8% of our facilities.

* T1 and T2 suppliers with high use of chemicals in textile and leather supply chain)





What does it mean to be in ZDHC program?

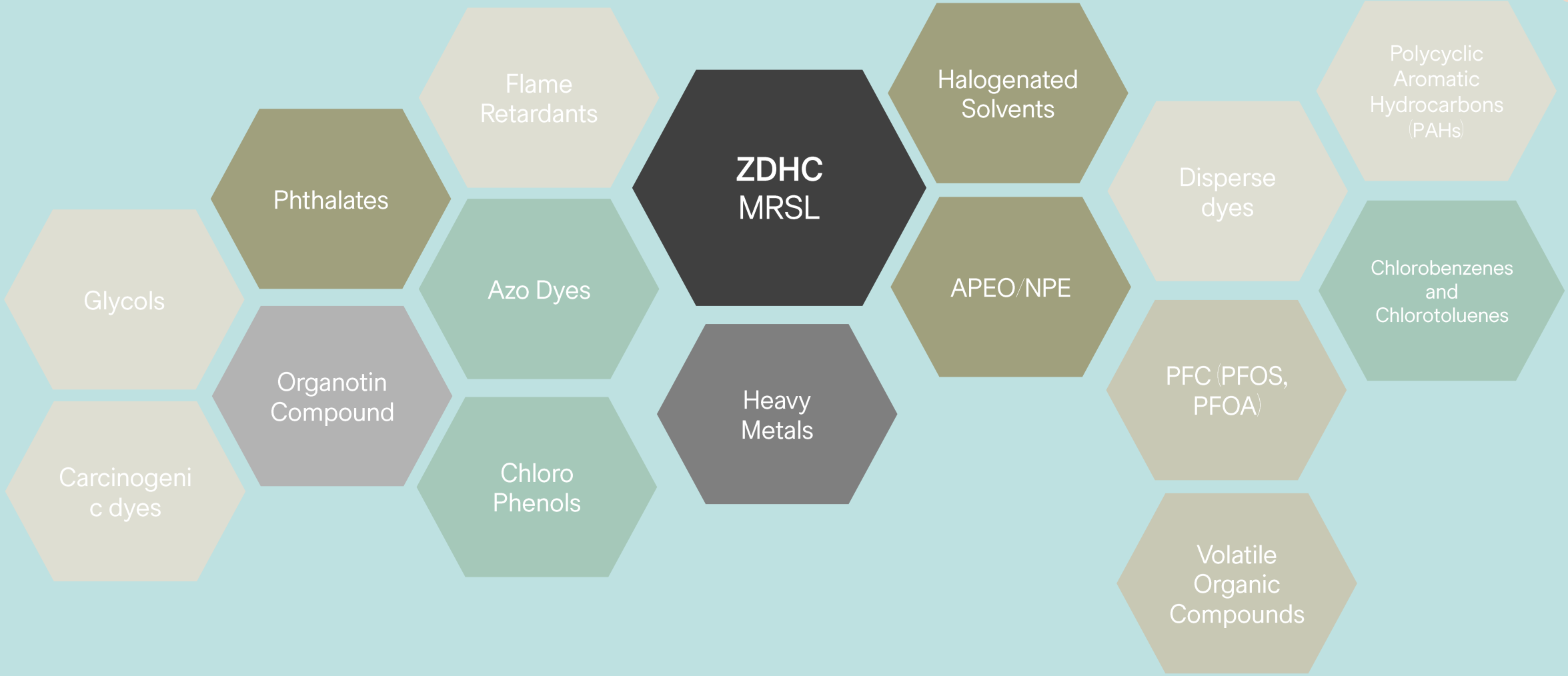
In 2011, H&M Group committed to phasing out hazardous chemicals in the supply chain.

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

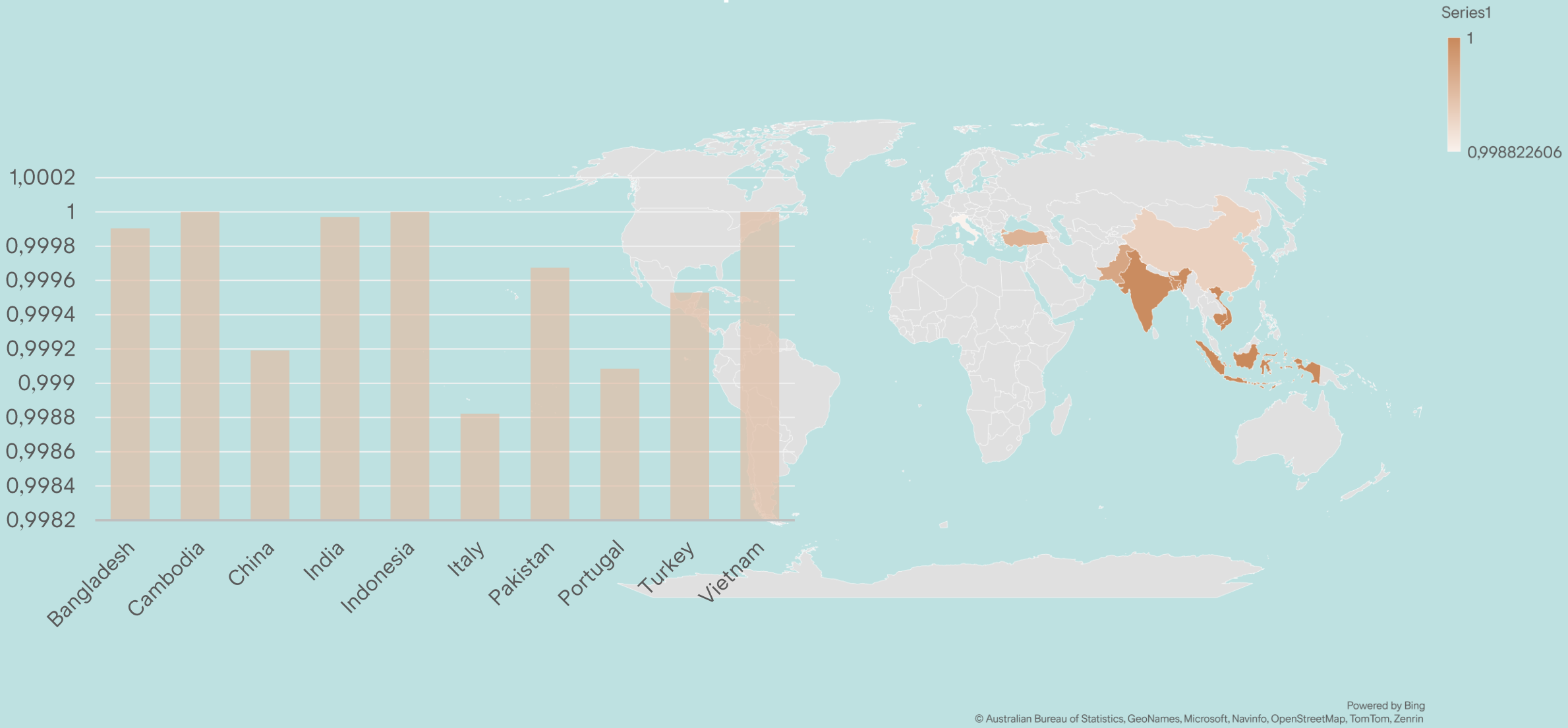
In scope facilities must:

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

Hazardous chemicals: ZDHC MRSL v.1.1



Global distribution: MRSL compliance



Result overview

INCOMING WATERS

2 out of 183 ZDHC MRSL analytes found.

Zero conventional parameter analytes or heavy metals exceeded the foundational limit.

RAW WASTEWATERS

35 out of 183 ZDHC MRSL analytes found.

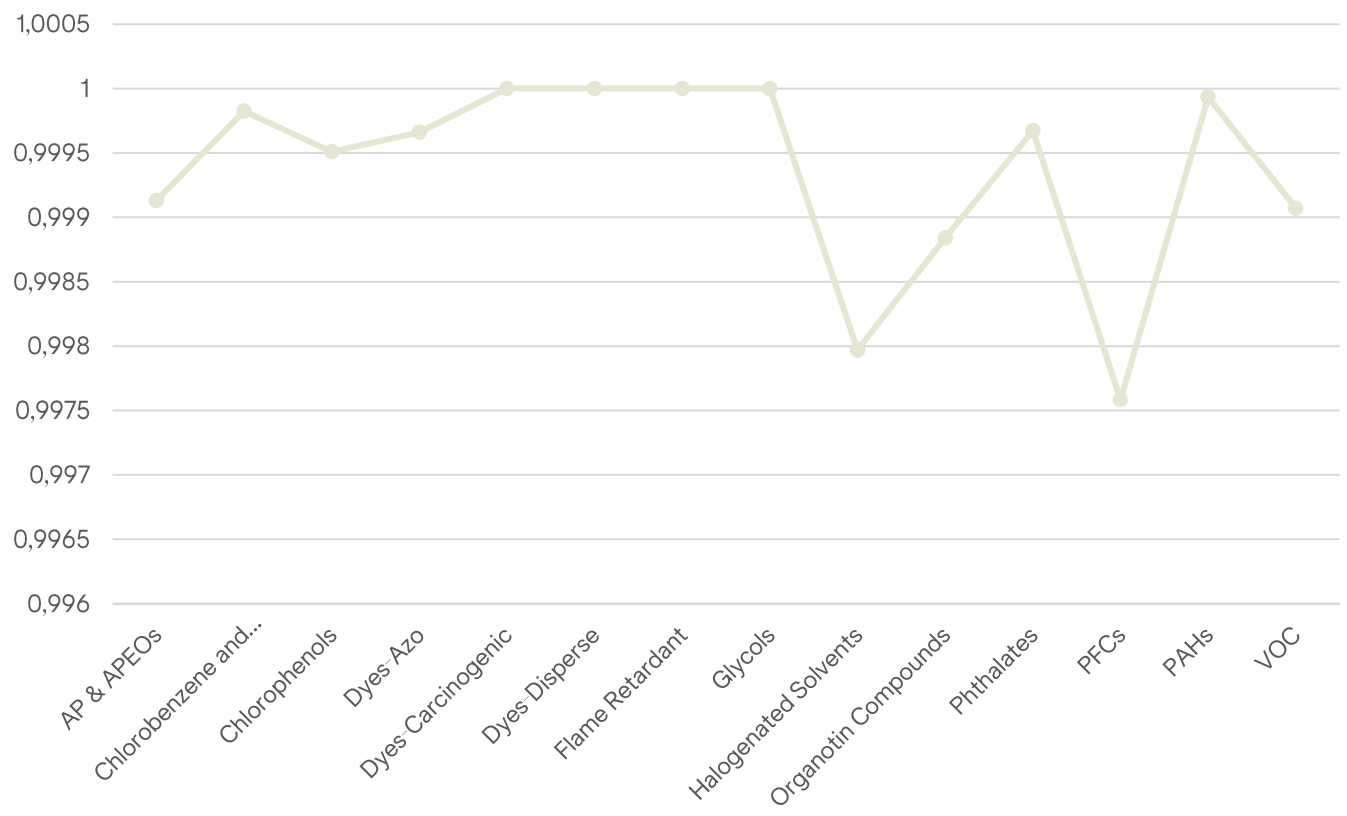
19 out of 21 conventional parameter analytes and 9 out of 12 heavy metals exceeded the foundational limit.

DISCHARGED WASTEWATERS

6 out of 183 ZDHC MRSL analytes found.

17 out of 21 conventional parameter analytes and 5 out of 12 heavy metals exceeded the foundational limit.

ZDHC MRSL compliance

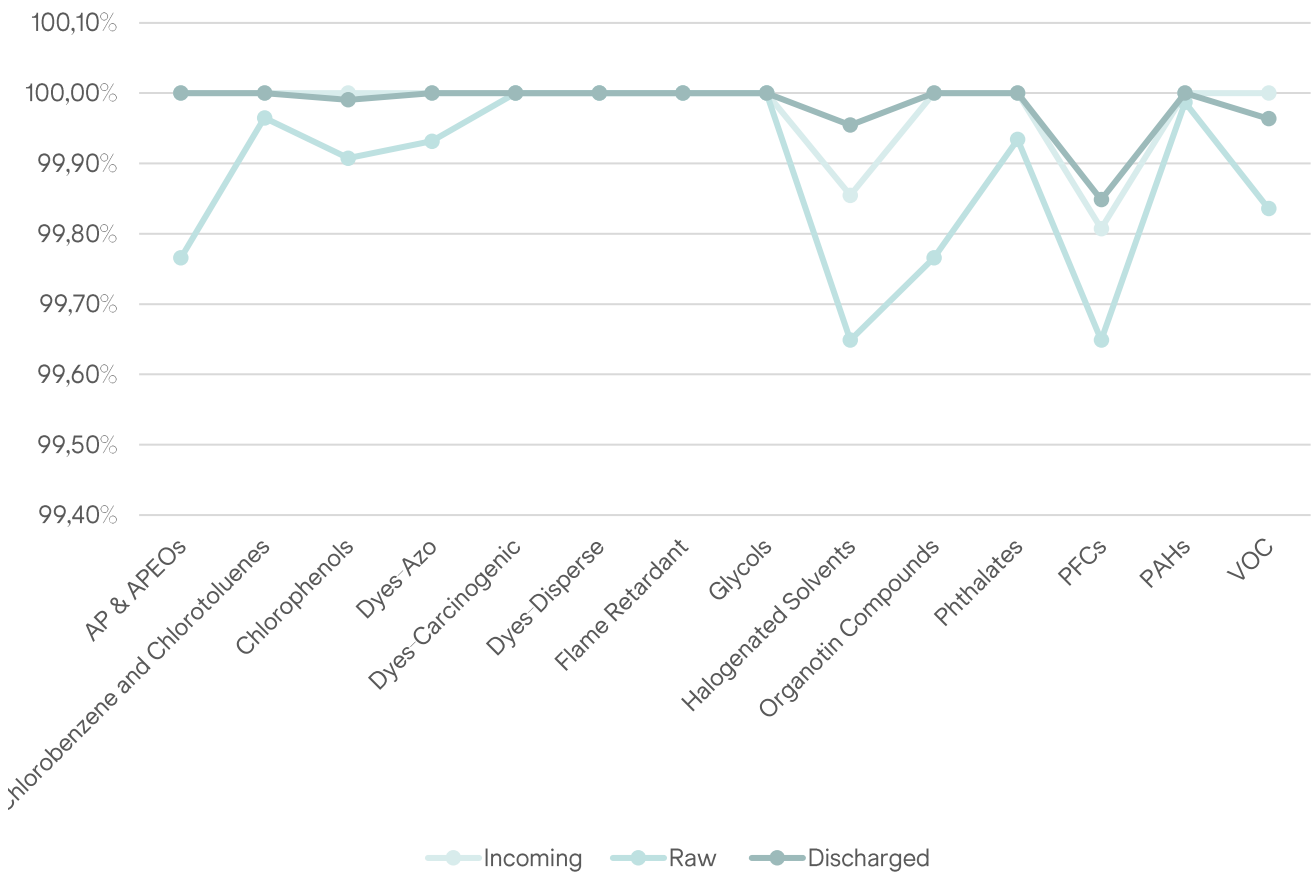


In line with previous years, PFOA and PFHxA (from PFCs) and halogenated solvents are detected most.

We banned the use of PFCs in 2003, and restricted the use of halogenated solvents, APEO, VOC, chlorophenols and phthalates in our former MRSL that was in place before we fully adopted ZDHC MRSL in 2019.

From our input chemical data, we know that, aside from halogenated solvents and VOC, our facilities do not intentionally use these chemical groups. Therefore, the findings could arise from incoming water or impurities, which suggests that these are industry-wide problems.

ZDHC MRSL findings in detail



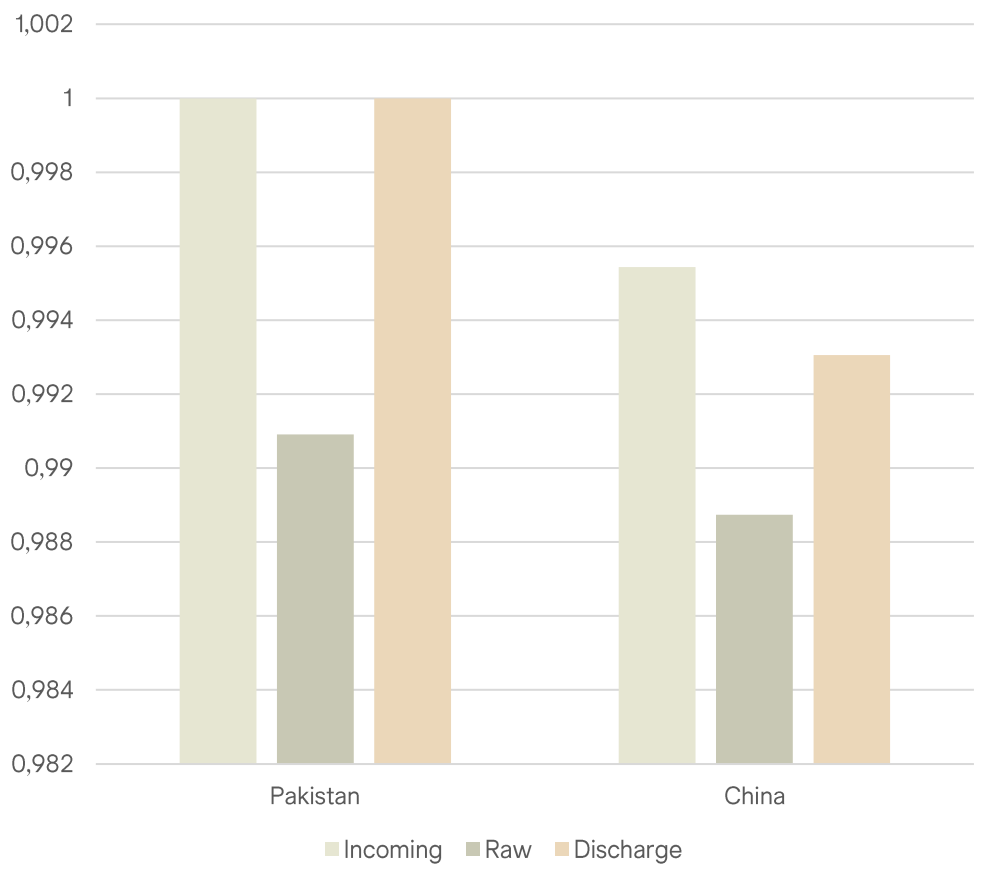
PFCs and halogenated solvents were detected in the incoming water indicating a need to clean up the whole industry.

However, AP & APEOs, VOC and chlorophenols were not detected in large amounts in incoming water suggesting they were used or accumulated during production.

Despite implementing ZDHC MRSL and promoting the use of chemicals from ZDHC Gateway, these findings suggests that our work is far from done. We need to evaluate the methods used to prove MRSL compliance and ensure that MRSL is being used effectively.

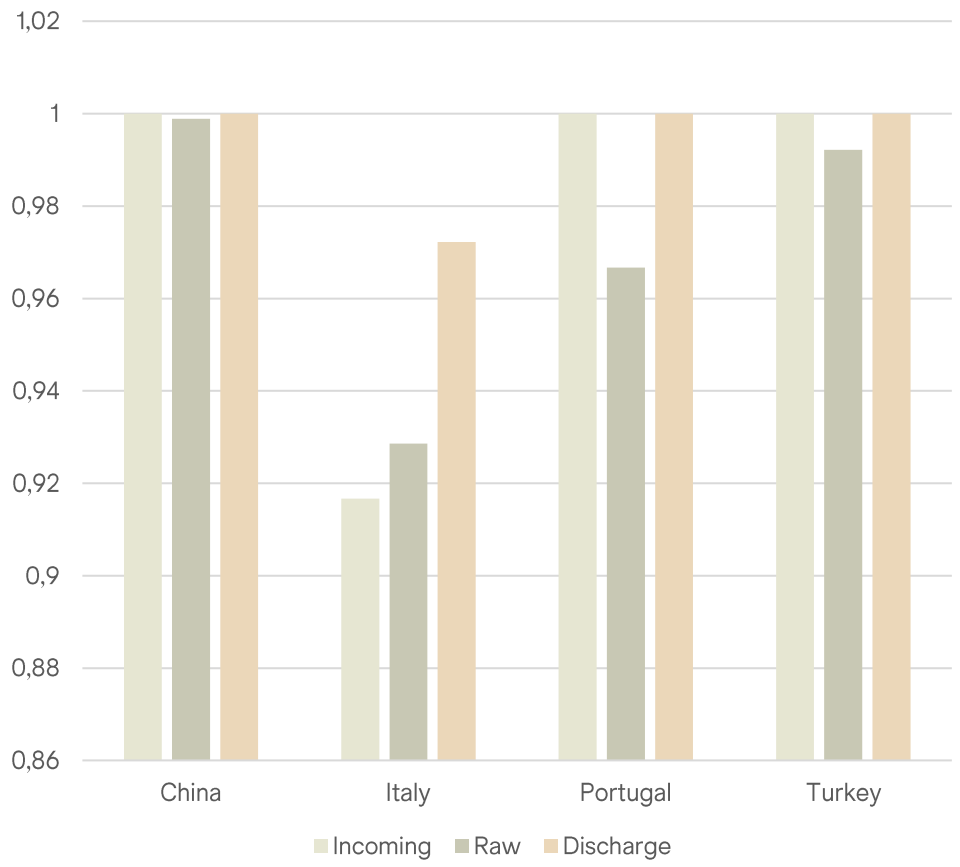
This result also highlights the need of going beyond compliance and using hazard-based assessment as well as working with the chemical industry to find a common solution.

PFCs



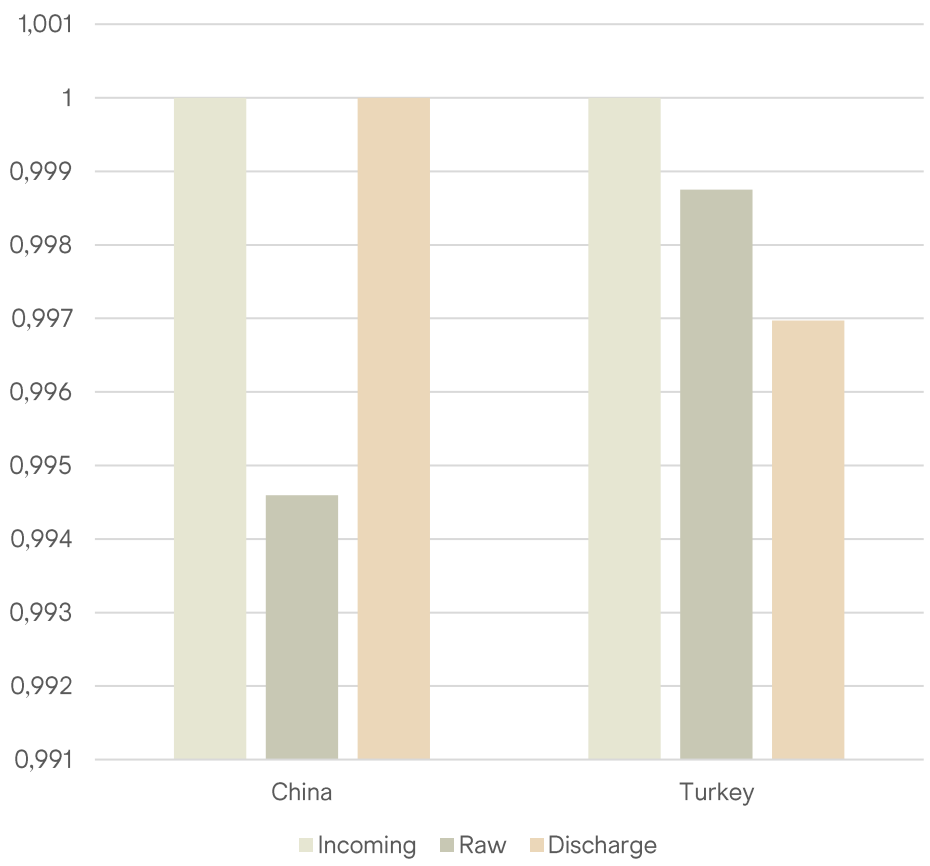
- From the data shown here, the PFCs being used are PFBS, PFOA and PFHxA.
- In China, the incoming water results suggest that this problem occurs upstream of our value chain.
- Non-compliance is worsening in raw wastewater, suggesting PFCs are accumulated or used during production. In some cases, PFCs are still present in discharged wastewater suggesting ETPs are unable to eliminate it.
- PFCs need to be completely removed from the industry in order to have a significantly raise water quality. However, this requires the involvement of facilities that are not part of the supply chain of brands using ZDHC. Therefore, engagement with governments and the overall chemical industry is needed. Further studies should be conducted to assess the impact of PFCs on surrounding biodiversity due to its bio-persistence characteristic.

Halogenated solvents



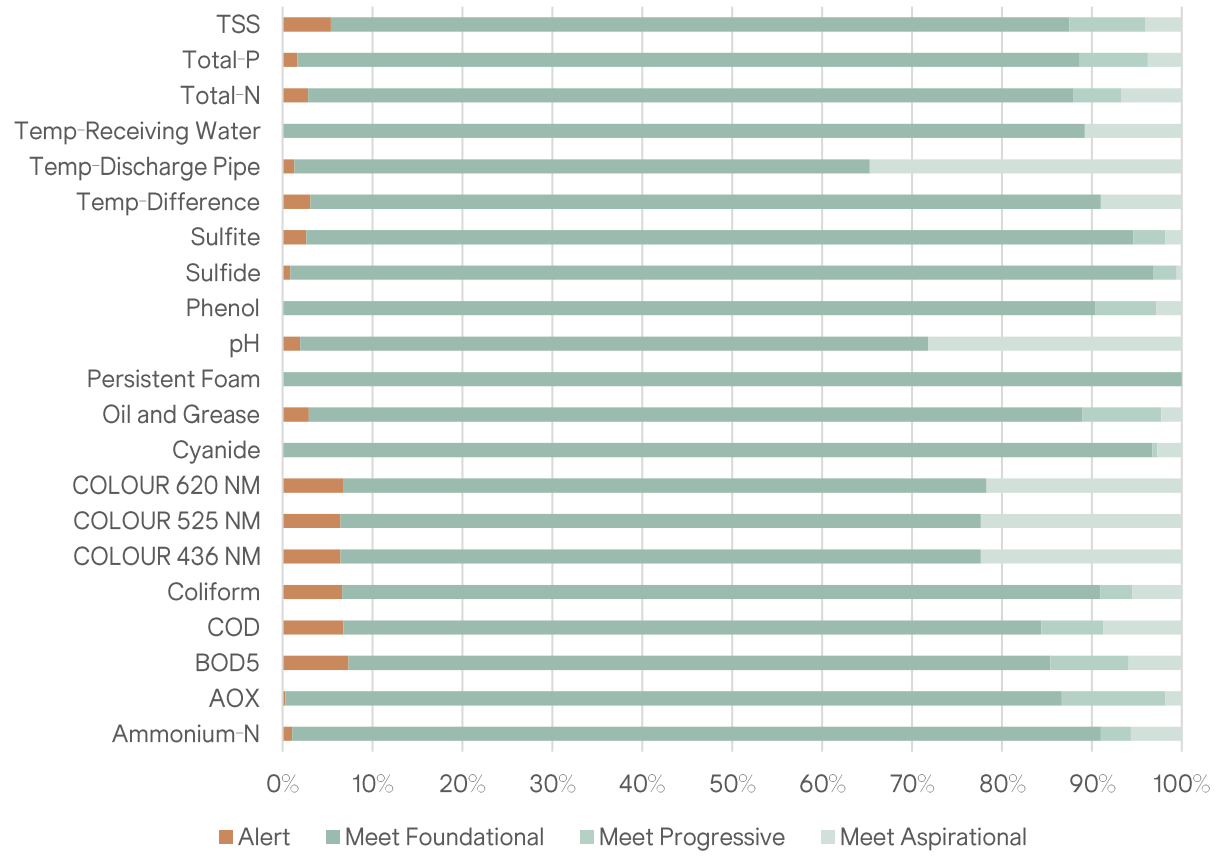
- Among halogenated solvents, methylene chloride, tetrachloroethylene and trichloroethylene were found.
- We had rare instances of these halogenated solvents being recorded in our input chemical data. In these cases, we worked with our facilities to substitute it with other chemicals. However, this can be challenging for the facility depending on its application. Therefore, we are supporting ZDHC's work on developing a better way to handle these solvents.
- These substances have multiple applications in the textile industry, including as cleaning agents. These non-production chemicals are not part of the ZDHC Gateway and therefore are not secured in the best way possible.
- Halogenated solvents were present in incoming water in Italy, indicating that it may persist in the environment, potentially from other industries as these substances have many applications.

VOCs



- In terms of VOCs, xylene and p-cresol were detected in our data. Xylene in Turkey and p-cresol in China.
- Both xylene and p-cresol are used as solvents in dyeing and printing processes, as well as cleaning and coating agents. Like halogenated solvents, we also have seen these substances in our input chemical data in rare cases. This shows us that suppliers are dependent on these chemicals, and we need work together as an industry to better manage solvent use and promote less hazardous solvents.
- Like halogenated solvents, when VOCs are used for cleaning agents or other non-production purposes, it may not be included in our input chemical data. Therefore, we need to work together with ZDHC on how to better capture the risks presented by these non-production chemicals.

Overall conventional parameters

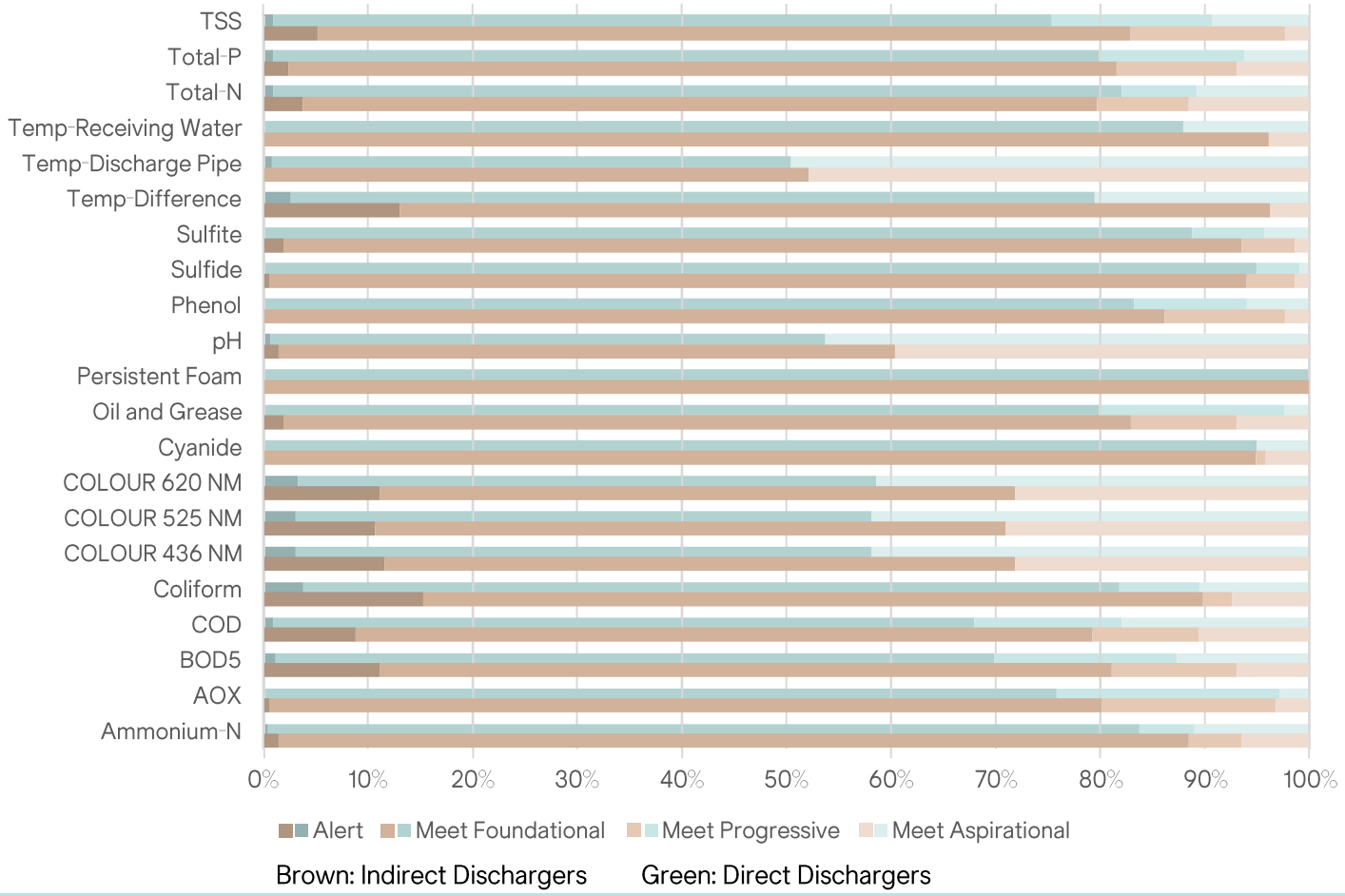


This combined result of direct and indirect dischargers show that coliform, BOD, COD, TSS and colours exceed foundational limits most often. The inclusion of indirect dischargers here may explain this low performance.

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

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

Conventional parameter: direct vs. indirect discharger (discharged wastewater only)

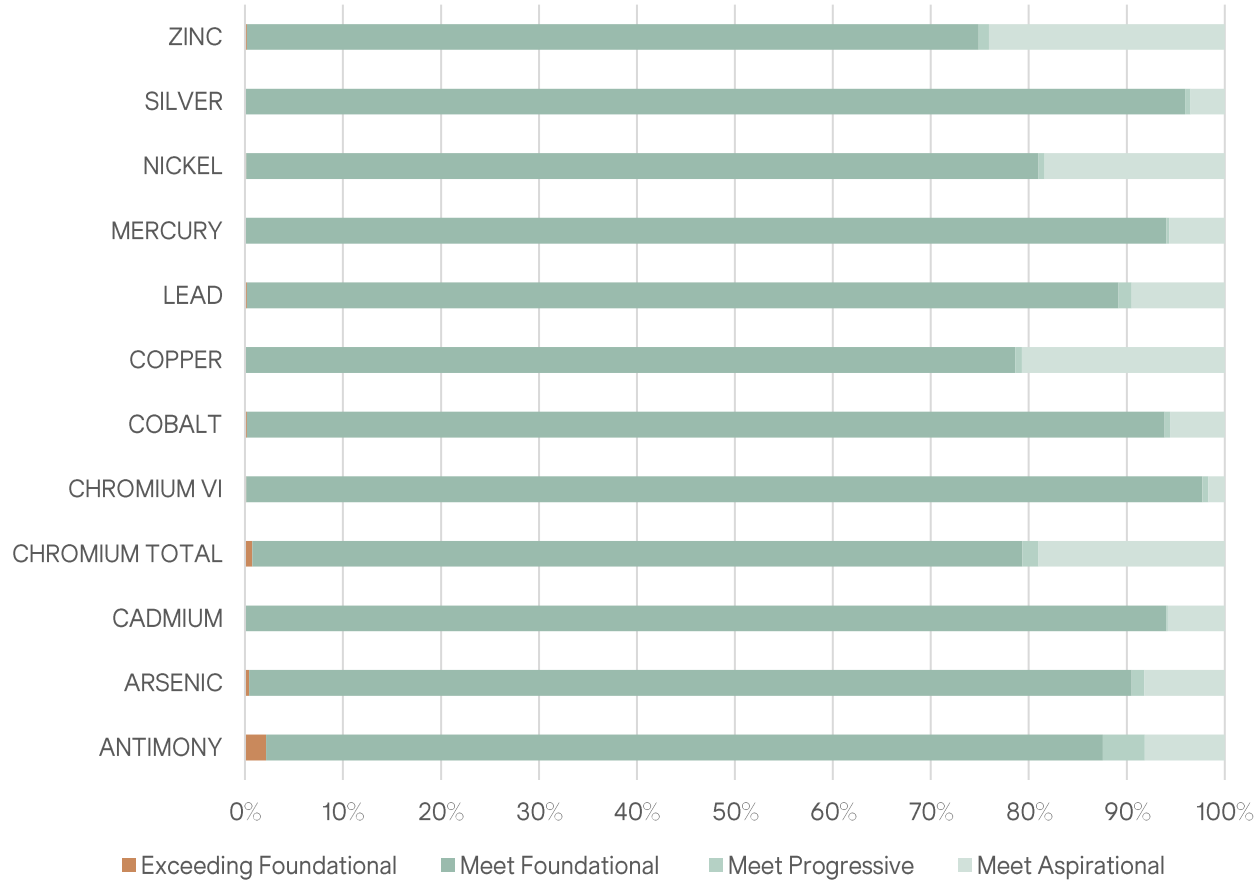


By separating ETP based on direct vs. indirect dischargers, we can see that indirect dischargers exceeded foundational limit more often. This is expected since the purpose of indirect dischargers is to meet the requirement of their receiver central ETP.

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

An area of improvement for ETP functionality is colour, which can also be addressed through better colour removal technology and more efficient use of colourants.

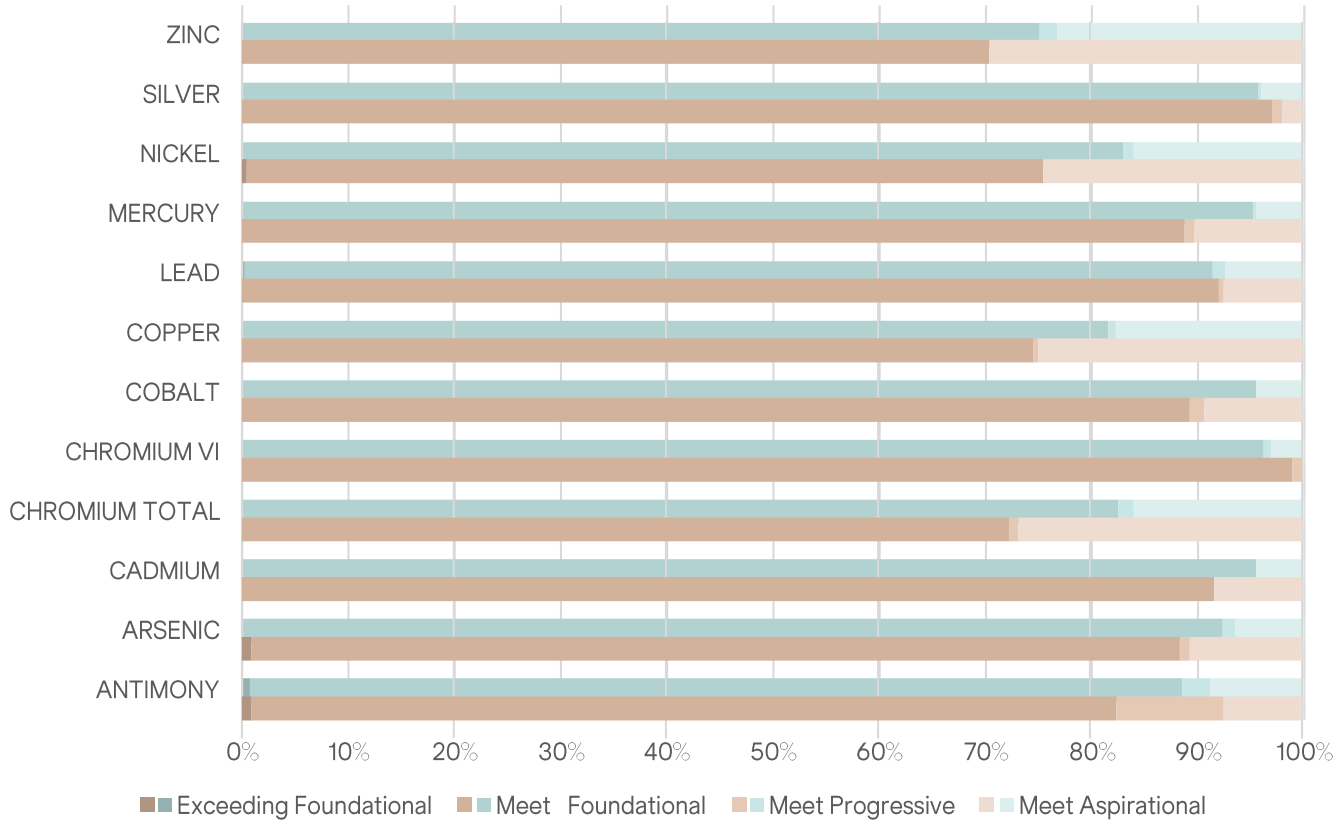
Overall heavy metals parameters



Like previous years, antimony exceeded foundational levels the most. Antimony is one of the raw materials used to make polyester and therefore, it is mostly found in facilities with polyester products.

Other heavy metals, such as chromium, can be found as impurities in certain textile dyes and is used in tanning agents. Although our leather products are chrome-free, they are produced in tanneries who also performed chrome-based tanning.

Heavy metal parameters: direct vs. indirect (discharged wastewater)



Brown: Indirect Dischargers
Green: Direct Dischargers

The data shows that our discharged wastewater is better. Apparel and textil ETPs are not designed to eliminate heavy metals therefore we need to evaluate where these substances are being deposited.

Antimony leached from polyester fibers remains a challenge.

Overall compliance for total chromium is worse than the discharged wastewater because of its use in textile dyeing or leather tanning.

The presence of nickel and arsenic in indirect discharge could come from certain dyes. Arsenic is of high concern because it is extremely hazardous and has been largely phased out from the industry. This reappearance shows we need to mitigate this risk more effectively as an industry.

Next steps from H&M Group

- **Input Chemical Management:** Our results show that MRSL chemicals and heavy metals cannot be eliminated by ETPs. ETPs are designed to treat overall wastewater to meet conventional parameters such as BOD, COD and TSS and not eliminate heavy metals or MRSL chemicals. Therefore, the best way to eliminate these substances from wastewater would be to secure them at the input stage. We have maximized our MRSL compliance by using chemicals from ZDHC Gateway. In 2022, we achieved our highest ever performance of 97% MRSL compliance with 88% from the ZDHC Gateway. However, the wastewater result is still not perfect, which suggests that the current standards of input chemical management does not guarantee clean wastewater. Therefore, we believe that the industry should go beyond MRSL compliance and put more effort into hazard-based assessment to both address today's challenges and future proof supply chains. In 2022, we supported ZDHC to develop Chemicals to Zero framework on going beyond compliance. We are continuing this work in 2023 and aim to start its first implementation stage for Aspirational level.
- **ZDHC Programmes:** Through input chemicals management, we also monitor the use of ZDHC Gateway database chemicals. This is an industry tested and reviewed database of chemicals compliant to ZDHC MRSL. However, our wastewater result shows that more work is required to further secure the system. We are working with ZDHC and other ZDHC brands to improve the ZDHC chemical module and wastewater module as well as improving connectivity between both systems.
- **General Chemicals:** In some rare instances, we detected uses of halogenated solvents and VOCs in our facilities. In most cases, they were used as cleaning agents which are not captured well in ZDHC Gateway. We are supporting ZDHC to develop a better framework that captures the use of commodity chemicals, improves their quality and better manages chemicals. However, since this is a global issue with local challenges, we will also work with public affairs to strengthen chemical manufacturing regulations in our markets and engage with the chemical industry.
- **ETP Functionality**: At H&M Group, our internal team or 3rd party engineering companies assess all on-site ETP regularly to ensure all direct dischargers are functioning 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 were blank and therefore may be inaccurate. To gain a better understanding of problems, we need to improve data accuracy by securing supplier profiles on the ZDHC Gateway and bullet-proofing the 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, which indicates a common issue that must be tackled as an industry. We are pushing for better transparency and chemical restrictions to be included in EU regulations such as Safe and Sustainable by Design framework and the REACH update, as part of the EU Green Deal.