REWE Group Detox Program

Discharge Data Report

March, 2017

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1. Introduction

The REWE Group started its Detox Program in 2014 supporting the Greenpeace Detox Campaign for a more environment-friendly and safer textile production for future generations. The REWE Group advocates replacing hazardous chemicals in textile production with safer substances. As published in our REWE Group Detox Commitment, we want to achieve this goal by 2020. The hazardous chemicals are mostly applied during the major wet processes of production (e.g. bleaching, dyeing, washing and printing). This means that it is not our direct business partners who use the hazardous chemicals but their downstream suppliers. Our Detox Program is aimed primarily at these wet processing factories.

Hazardous chemicals that may not be used in our supply chains are defined in our Manufacturing Restricted Substances List (MRSL). Priorities and time schedules for eliminating the chemicals are also contained in it. An updated Manufacturing Restricted Substances List (MRSL 2.0) in which the REWE Group defines testing limits for products, wastewater, sludge and input chemicals was published at the end of 2016. Next to other chemicals, the MRSL includes 11 priority chemical groups in which we focus with regard to substitution in the phase of implementation.

In 2016, we continued to request wastewater tests from wet processes facilities of REWE Group suppliers to ensure that the Detox standards are complied with. The water test reports allow conclusions to be drawn about the chemicals that were used in the wet process factories. They indicate whether any hazardous chemicals have been used. According to our Detox process the suppliers must provide a valid and acceptable water test report prepared by an independent test institute.

In 2016, wet process facilities from eleven production countries, namely Bangladesh, China, Croatia, Egypt, India, Italy, Pakistan, Serbia, Slovakia, Turkey, Vietnam have conducted

wastewater tests on 282 substances based on the 11 priority chemical groups on which the phase out concentrates in the implementation phase.

In this report, the results from wastewater testing will be analyzed. After a brief introduction to our testing approach, testing results of the wet process factories will be discussed. The analysis will particularly focus on Alkyphenols and Alkylphenol ethoxylates (APs/APEOs) and Perfluorinated compounds (PFCs). REWE Group announced the phase out of APs/APEOs and PFCs in the beginning of 2016. After that, we have been working with our suppliers and wet process facilities throughout the year to eliminate the use of these chemicals. Starting from January, 2017, both chemical groups are banned in our textile supply chain. The analysis also includes Brominated and chlorinated flame retardants, Chlorophenols, SCCPs and Hexavalent chromium (Cr VI) which are the chemicals that we plan to phase out for determined commodity groups till the end of 2017. At the same time, we will monitor the test results of other chemical groups and support the factories to develop action plans as all chemicals in our MRSL need to be eliminated till 2020. In this report, we also analyze the wastewater test results by process and by country. Finally, the report outlines the next steps we are taking to achieve Detox compliance by 2020.

2. Methodology

In this report, all wastewater test reports from wet process facilities that have an active business relationship with REWE Group suppliers and which were issued in 2016 are included in the analysis. The reports are analyzed with regard to the violations they disclose, the location where they have been conducted and the wet process concerned. In addition, a comparison to 2015 data is provided.

In 2016, 56% of the wastewater tests were conducted for wet process facilities in China. The other tests, which represent 44% of the wet process facilities, were conducted in other countries.

The wastewater tests in other countries were mainly performed in South East Asia, Pakistan and Turkey. Only a few wastewater tests were conducted in Eastern Europe and Egypt.

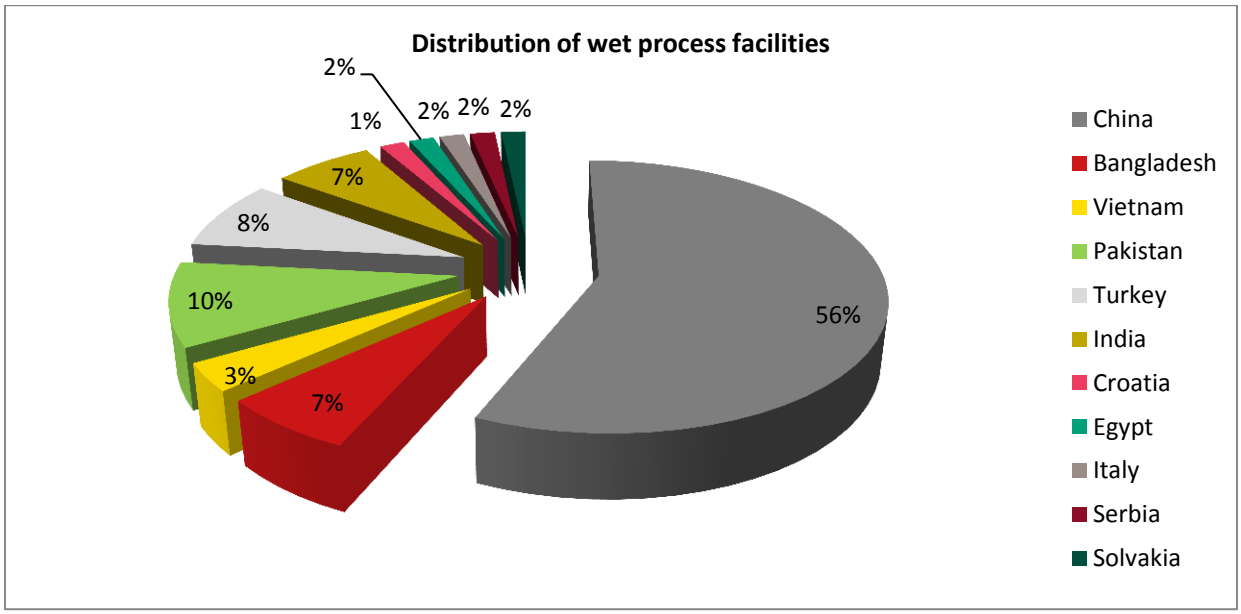

Figure 1: Distribution of location of wet process facilities

REWE Group's Detox Program focuses on the key stages of textile production in which toxic chemicals could be used, such as the major wet processes as bleaching, dyeing, washing and printing. Each individual wet process is analyzed and a risk assessment is carried out, thereby enabling the evaluation of risks regarding contamination with restricted substances. Dyeing is a common process in our textile supply chain, as 83% of factories disclosed that dyeing is involved in their production processes. There is also a considerable number of factories producing with bleaching and printing processes. Bleaching and printing processes are involved

in production in 35% and 28% of factories respectively. Some very specific processes have been grouped in the category others because of very small sample size (e.g. down and feather processing).

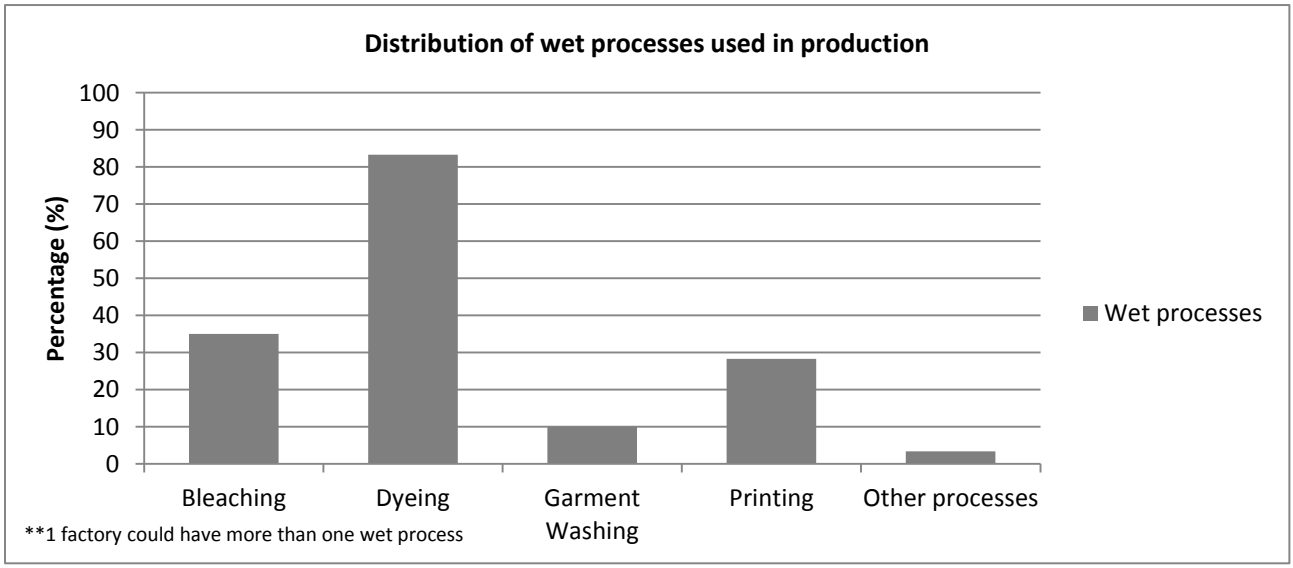

Figure 2: Distribution of wet processes involved in production

The wastewater tests have been carried out by selected testing institutes following the REWE Group sampling and testing requirements, which are defined as follows:

- Samples are taken from the effluent after treatment
- Sampling method is composite sampling
- Wastewater and sludge is tested on 11 priority chemicals, plus general chemistry
- For the sampling, the ISO 5667 or an equivalent method is used

As described, samples were usually drawn after treatment. In cases where the factory has been connected to a centralized effluent treatment plant, the processing water has been tested. Just in very few cases, the sample had to be taken from centralized effluent treatment plants as the factory did not have their own treatment and it was not possible to draw a sample from the processing water.

3. Results and Discussion

3.1 Test results for 11 priority chemical groups

General test results for 11 priority chemical groups

The wastewater samples have been tested for the 11 priority chemical groups and general chemistry parameters. These 11 priority chemical groups are Phthalates, Flame Retardants, Azo Dyes, Organotins, Chlorobenzenes, Chlorinated solvents, Chlorophenols, SCCPs, Heavy metals, AP/APEOs and PFCs respectively.

An overview on the wastewater test results concerning the 11 priority chemical groups is given in Figure 2. In general, five chemical groups (Phthalates, Flame retardants, Chlorinated solvents, Heavy metals and PFCs) are commonly found with various concentrations in wastewater samples. Specifically, over 50% of wet process facilities showed violations against Flame retardants and over 90% of wet process facilities showed violations against Heavy metals. Apart from that, over 20% of wet process facilities showed non-compliant concentrations of Phthalates, Chlorinated solvents or PFCs.

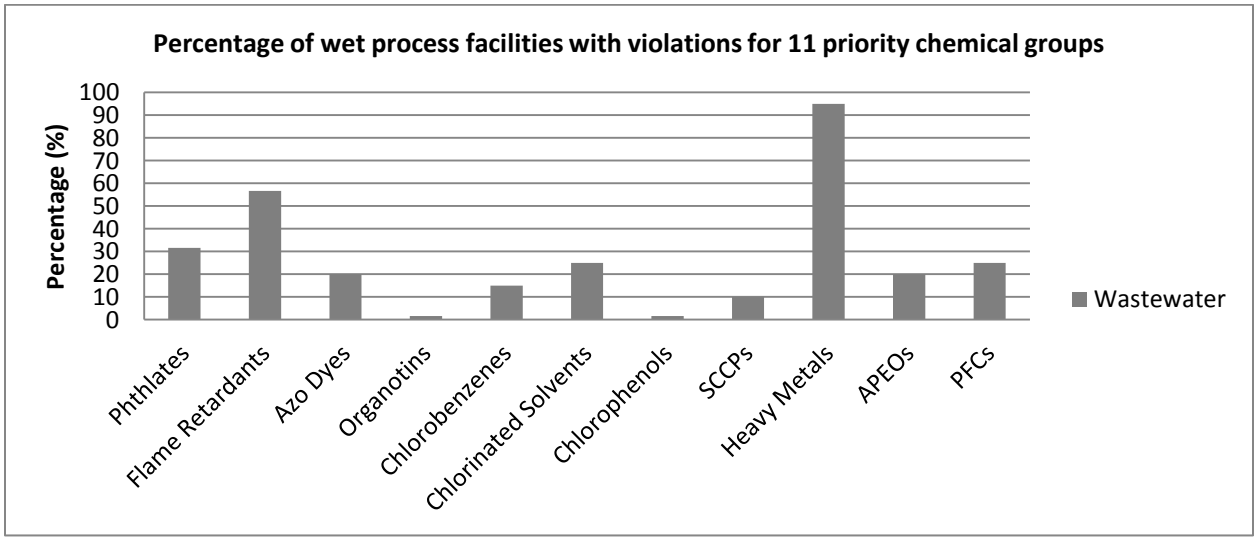

Figure 3: Percentage of wet process facilities with violations in 11 priority chemical groups

Test results for 11 priority chemical groups by country

In this section, the test results of wet process facilities in China are analyzed with regard to violations concerning the 11 priority chemical groups (Figure 5). Nearly all tested wet process facilities showed non-compliant concentrations of Heavy metals in China. Moreover, more than 50% of tested wet process facilities in China showed violations against Brominated and chlorinated flame retardants and Phthalates. As mentioned before, Brominated and chlorinated flame retardants is one of the chemical groups that needs to be phased out from production in 2017 which will become a challenging task. In addition, more than 30% of wet process facilities in China show non-compliant concentrations of Azo Dyes, PFCs and Chlorinated Solvents. Fewer wet process facilities were found violating the testing limits of Organotins, Chlorobenzenes, Chlorophenols, SCCPs and AP/APEOs.

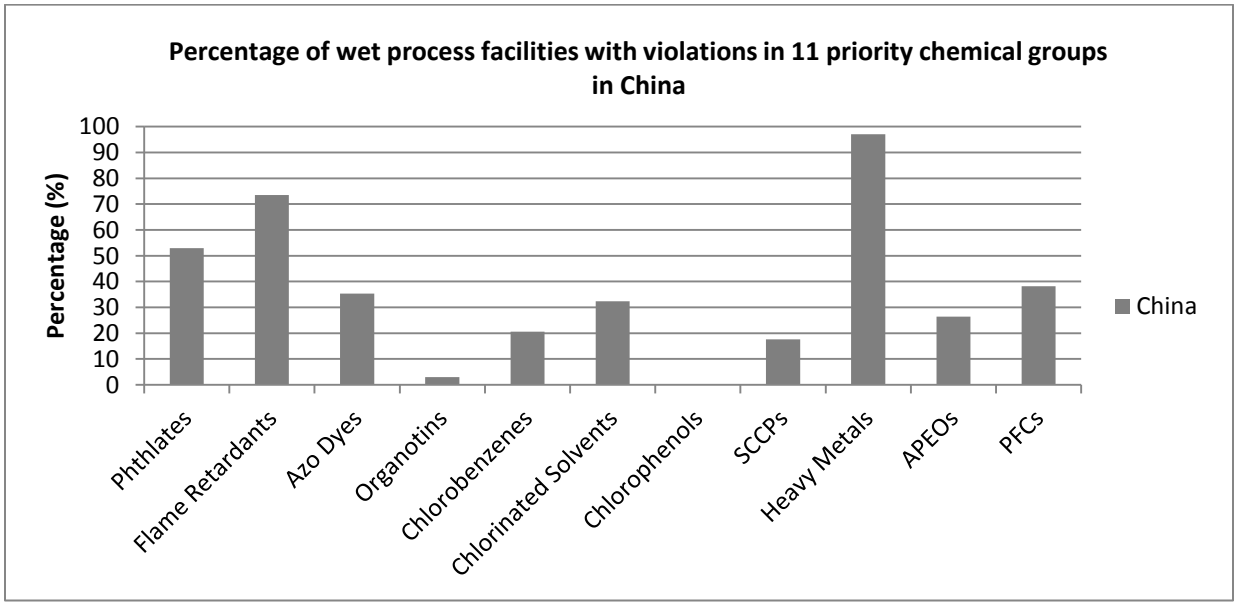

Figure 4: Percentage of wet process facilities with violations in 11 priority chemical groups in China

As compared to China, the non-compliant findings in wet process facilities of all 11 priority chemical groups except Heavy metals are less significant in other Asian countries. For example, over 50% of wet process facilities in China were found with Phthalates violations. In contrast, less than 5% of wet process facilities in other Asian countries show non-compliant concentrations of Phthalates in their wastewater samples. Moreover, no Azo dyes and SCCPs violation was detected in wastewater samples in countries except China. Thus, we will especially support our suppliers in China with further measures. However, in other Asian countries there are still more than 30% and around 20% of wet process facilities found with Brominated and chlorinated flame retardants and APs/APEOs violations respectively.

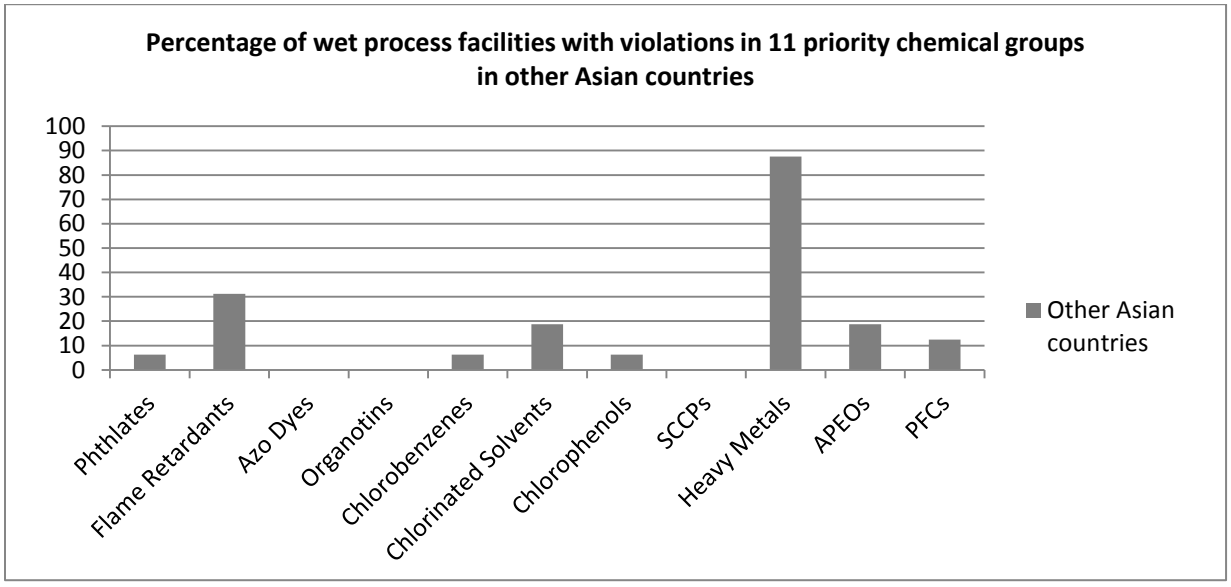

Figure 5: Percentage of wet process facilities with violations in 11 priority chemical groups in other Asian countries

100% and 40% of wet process facilities were detected Heavy metals and Brominated and chlorinated flame retardants violations respectively in Europe, including Egypt, which might partially be explained by a smaller sample size. The results of other hazardous chemicals are

however outstanding. Only a small number of factories show violations of Chlorobenzenes and Chlorinated solvents.

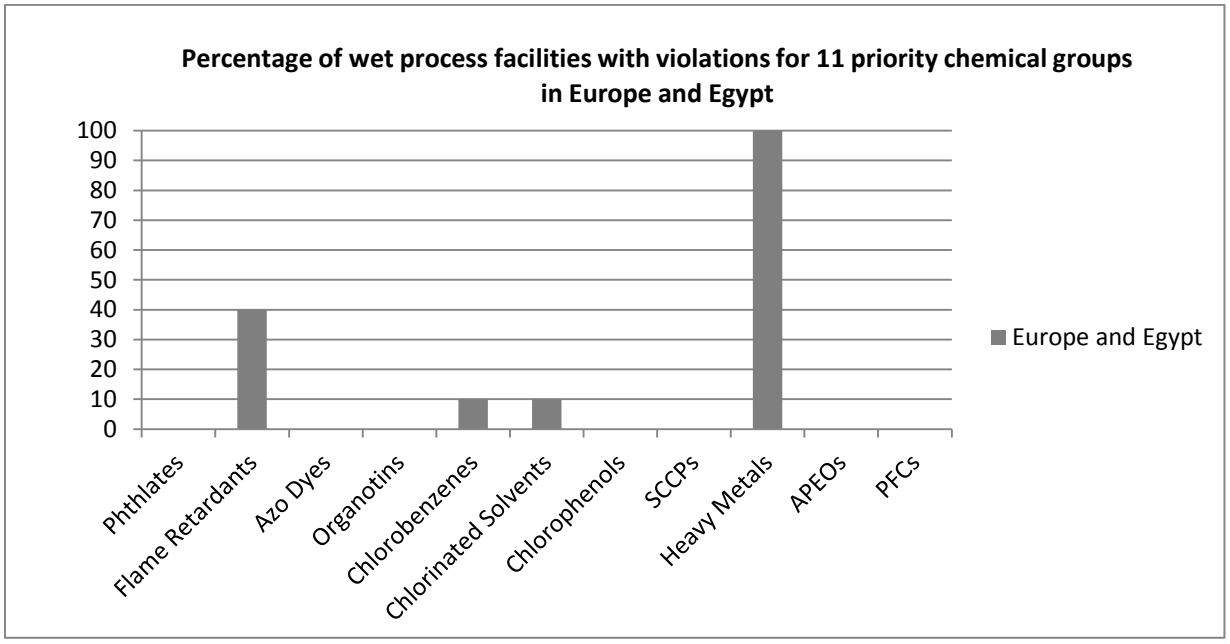

Figure 6: Percentage of wet process facilities with violations in 11 priority chemical groups in Europe and Egypt

Test results for 11 priority chemical groups by wet process

In Figure 5, the test results of wet process facilities with violations of 11 priority chemical groups are analyzed by process. The printing process has a higher non-compliant rate compared to other wet processes in general. It also shows that SCCPs is a group of chemicals more commonly found in garment washing processes. Brominated and chlorinated flame retardants violations are found in all four major wet processes of over half of the wet process facilities and even more violations are found in all wet processes against Heavy metals. Some processes (e.g. down and feather processing) have not been presented in Figure 7 as the results would have created a wrong impression due to very small sample size.

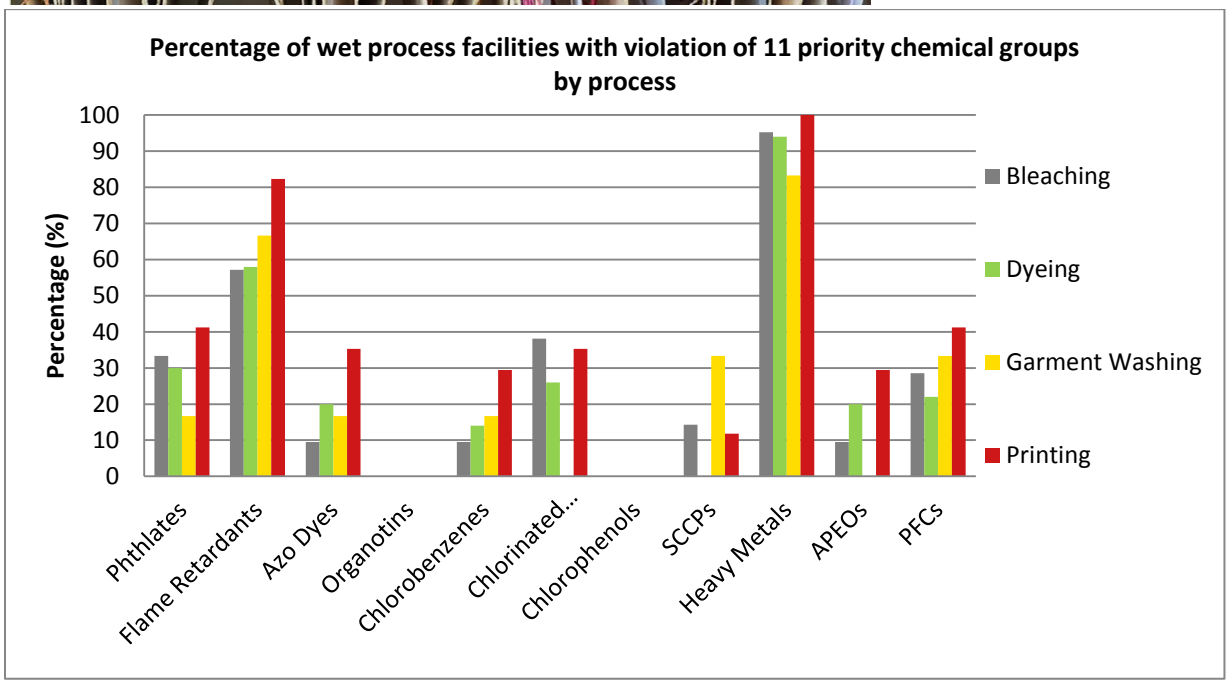

Figure 7: Percentage of wet process facilities with violations in 11 priority chemical groups by process

Test results for 11 priority chemical groups compared to 2015

Comparing the results of 2015 and 2016 (Figure 6), there is a significant decrease in factories with Brominated and chlorinated flame retardants findings, as well as APs/APEOs and PFCs findings. As REWE Group started to phase out AP/APEOs and PFCs since the beginning of 2016, the decrease reflects these efforts of our suppliers to eliminate these substances and shows that some factories achieved this aim already before December 31st 2016. However, the number of factories with Heavy metals findings is similar and remains high in both years which can be explained by the common use of these chemicals in all wet processes as well as the fact that tubes often contain some minerals belonging to the chemical group of Heavy metals. With Cr VI the first Heavy metal needs to be phased out in 2017. Furthermore, the number of wet

process facilities with SCCPs violations has increased by almost 10% which indicates the challenge to phase out SCCPs till the end of 2017. We will increase our efforts accordingly.

However, there are limitations with regard to the comparison of 2015 and 2016 results because the wet process facilities conducted wastewater tests in 2015 were not exactly the same as those in 2016, therefore it is difficult to demonstrate the improvement of same wet process facility base over time. Because REWE Group does not maintain direct business relationships with wet process factories but only with its suppliers, some fluctuation in the wet process facility base cannot be avoided. Another limitation is that wastewater test results only reflect a specific status quo captured at the time when the wastewater sample was collected. This also limits the comparability of the results. Although REWE Group follows the clean factory approach and aims to eliminate hazardous chemicals from the production in wet process factories completely, different chemicals are used for different products and sometimes new violations become apparent only then. Thus, a waste water test can serve as an indicator but not as a final proof.

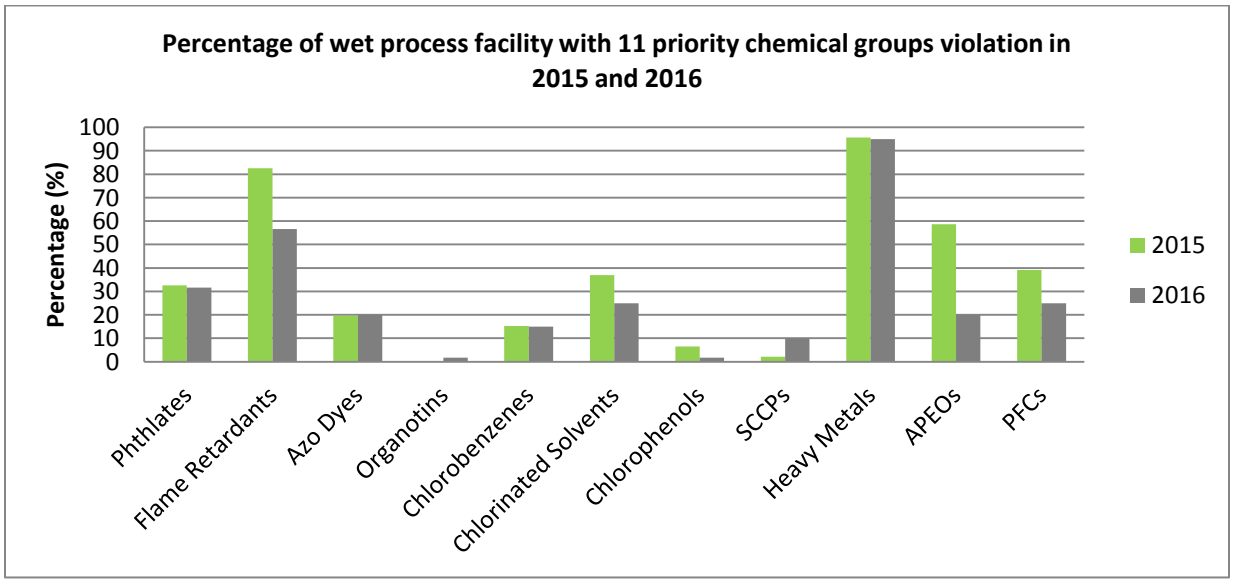

Figure 8: Percentage of wet process facility with violations in 11 priority chemical groups in 2015 and 2016

3.2 Test results for APs/APEOs and PFCs to be eliminated 2016

General test results for APs/APEOs and PFCs

APEOs or Alkylphenol Ethoxylates are commonly used surfactants in the apparel, home textile and footwear industry. According to the wastewater test results in Figure 7, 20% of tested wet process facilities showed a non-compliant concentration of APEOs.

APEOs are discharged by wet process facilities, ending up in the environment where they are slow to biodegrade and tend to bioaccumulate and can cause severe damage to the aquatic ecosystems. Their endocrine (hormone-like) properties may also impair human health.[1] As a result, REWE Group decided to phase out APEOs as one of the first chemical groups from production since the beginning of 2016 and banned APEOs in the supply chain of our textile products starting December 31, 2016.

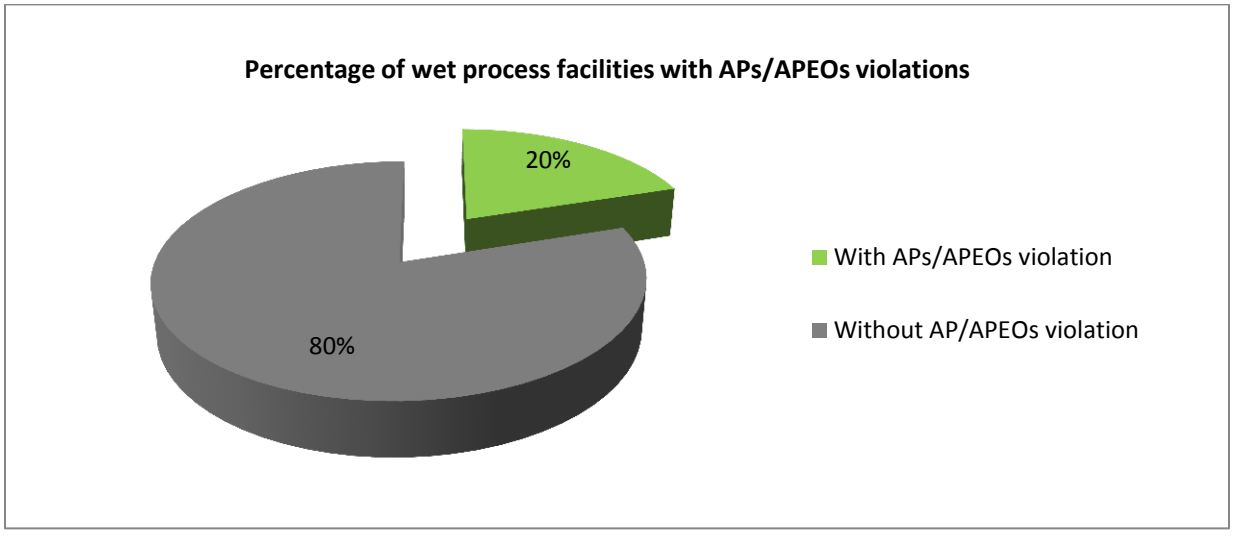

Figure 9: Percentage of wet process facilities with AP/APEO violations

[1] WWF, DETOX Campaign, undated. Alkylphenols (octylphenol and nonylphenol isomers). Online available: http://assets.panda.org/downloads/fact_sheet___alkylphenols_food.pdf

PFCs or Perfluorinated compounds is a group of manmade organic chemicals containing fluorine. According to the result of wastewater tests in Figure 8, 25% of tested wet process facilities showed a non-compliant concentration of PFCs.

Studies indicate that PFCs can have adverse effects on humans. PFCs, including PFOA, may act as endocrine disruptors, and studies have suggested that PFOS and PFOA exhibit reproductive toxicity. Other known detrimental effects are reduced female fertility and reduced male sperm quality, reduced birth weight, attention deficit hyperactivity disorder (ADHD), increased total and non-HDL (bad) cholesterol levels, and changes in thyroid hormone levels.[2]

These properties underline the importance to phase out PFCs from production. Same as APEOs, the REWE Group has decided to phase out PFCs from its supply chain since the beginning of 2016 and ban the use of PFCs in textile products starting December 31, 2016.

REWE Group has provided trainings to suppliers and wet process facilities in 2016 to assist them in achieving Detox Compliance especially on PFCs and APs/APEOs. In 2017, we aim at zero discharge of APs/APEOs and PFCs in our textile supply chains. If there occurs any PFCs or APs/APEOs findings, the wet process facility will be required to verify its chemical inventory and to establish and implement a chemical action plan, followed up by a re-test on the banned chemical group with violations. Open and transparent communication among the REWE Group, suppliers and wet process facilities is essential for achieving zero discharge.

[2] National Collaborating Center for Environmental Health 2010. Potential human health effects of perfluorinated chemicals (PFCs). Online available: http://www.ncceh.ca/sites/default/files/Health_effects_PFCs_Oct_2010.pdf

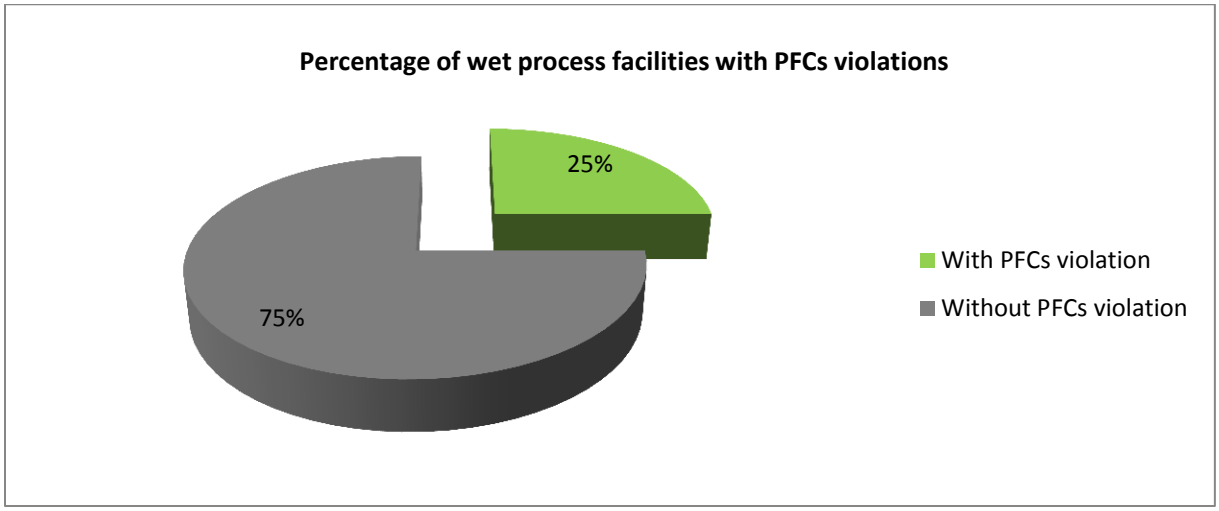

Figure 10: Percentage of wet process facilities with PFCs violations

Test results for APs/APEOs and PFCs by country

APs/APEOs violations in water tests of 2016 are detected in China, Vietnam and India. PFCs violations are detected mainly in China and Pakistan. However, due to the small number of reports from Vietnam, India and Pakistan, the results may not reflect the full picture of APs/APEOs/PFCs use in the textile industry in those countries. For other countries, no APs/APEOs and PFCs findings were reported, which might also be due to the small sample size.

Test results for APs/APEOs and PFCs by wet process

In Figure 10, test results of AP/APEO and PFC violations are analyzed by process. The result reveals that these two chemical groups are used in most of the wet processes, with a higher number of violations in factories with printing processes.

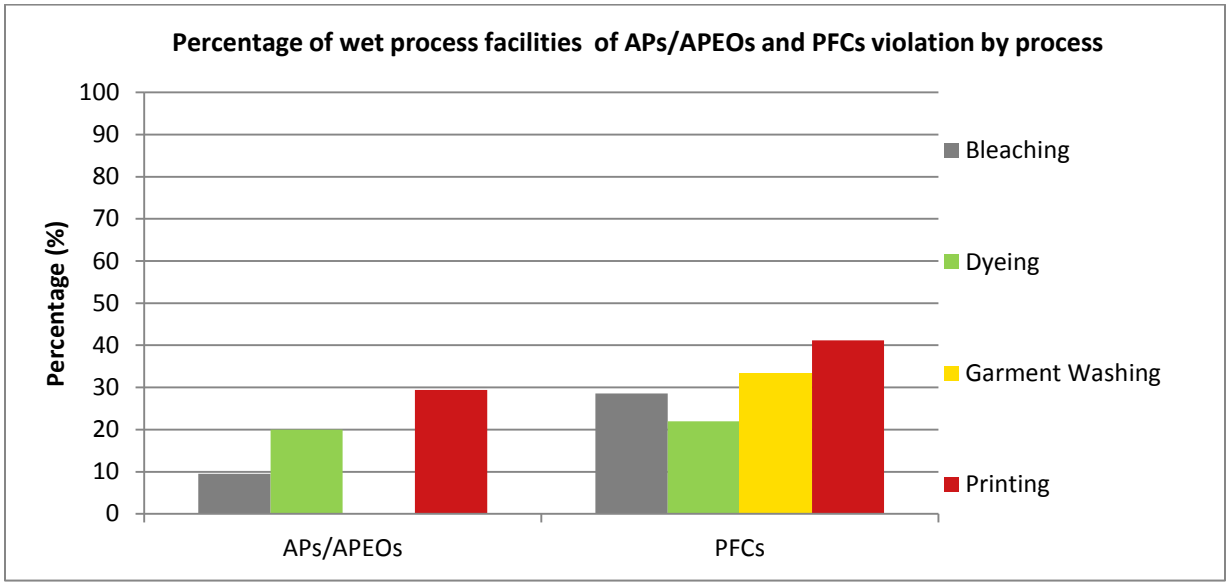

Figure 11: Percentage of wet process facilities of APs/APEOs and PFCs violation by process

Test results for APs/APEOs and PFCs compared to 2015

The test results of APs/APEOs and PFCs violations in 2016 have drastically decreased compared to 2015. PFCs violation of wet process facilities reduced from 62% to 25% and APs/APEOs violation reduced from 44% to 20%. REWE Group has informed all suppliers and factories to phase out APs/APEOs and PFCs at the beginning of 2016 and provided resources such as training workshops to help factories phase out both chemical groups within 2016. Yet, the wastewater tests were not performed only at the end of 2016 but throughout the year. Thus, the results indicate improvements but the question whether the complete elimination has been achieved cannot be answered by this analysis of 2016 discharge data. In addition, the explained limitations regarding the comparison of water test data apply.

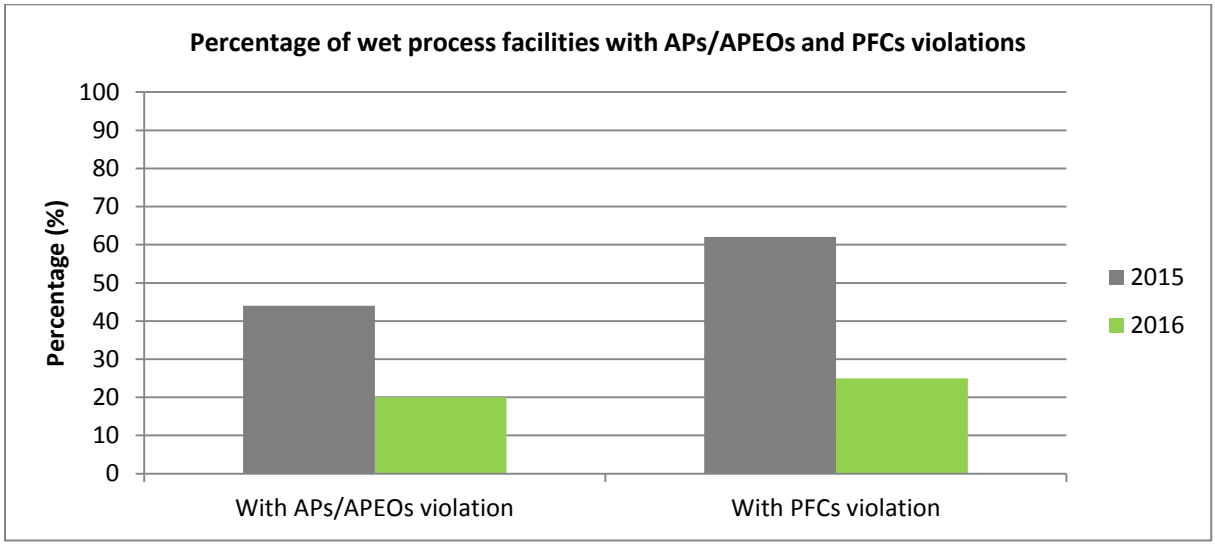

Figure 12: Percentage of wet process facilities with APs/APEOs and PFCs violations

3.3. Test results for Brominated and chlorinated flame retardants, Chlorophenols, SCCP for apparels and Cr VI to be eliminated in 2017

General test results for Brominated and chlorinated flame retardants, Chlorophenols, SCCP for apparels and Cr VI

Brominated flame retardants (BFRs) are persistent and bioaccumulative chemicals that released and remained in the environment. BFRs are mixtures of man-made chemicals that are added to textile products to make them less flammable. Some BFRs, such as Polybrominated diphenyl ethers (PBDEs), could also disrupt the hormone systems involved in growth and sexual development.[3] These compounds are suspected to be carcinogenic and their stability makes them dangerous to wildlife.

[3] Gregory P (2007). "Toxicology of textile dyes", Chapter 3 in Christie, R. (ed.) Environmental aspects of textile dyeing, Woodhead Publishing

Short-chain chlorinated paraffins (SCCPs) are commonly used in textile production as flame retardants and leather production as finishing agents. SCCPs are bioaccumulative, toxic to aquatic organisms and suspected to be carcinogenic.[4] Chlorophenols are used as impregnation agents for textiles and bactericides in leather and paper pulp industries for biocidal purposes.[5] Hexavalent Chromium (Cr VI) is produced in leather tanning process by oxidation of trivalent chromium. Studies show that Cr VI causes cancer if Cr VI is ingested or inhaled.[6]

These properties highlight the urgency to phase out those chemicals from production. The REWE Group has decided to phase out Brominated and chlorinated flame retardants, Chlorophenols, SCCPs and Cr VI from its supply chain till the end of 2017. All suppliers were informed accordingly in January 2017.

The wet process facilities with violations in chemical groups to be phased out till the end of 2017 are analyzed in Figure 13. Over 50% of the wet process facilities show violations of Brominated and chlorinated flame retardants which is the highest number among other chemical groups and will be a challenge to eliminate. SCCPs violations were found in 10% of the wet process facilities, which also draws our attention. Even if Chlorophenols and Cr VI findings are relatively insignificant in wastewater samples, we will continue monitoring new test results on these two chemical groups.

[4] Short-Chain Chlorinated Paraffins (SCCPs) - www.roadmaptozero.com/fileadmin/layout/media/downloads/en/SCCP.pdf
[5] DeLaune RD, Patrick WH & Guo T (1998). The redox-pH chemistry of chromium in water and sediment. In Allen HE, Garrison AW, Luther GW, eds, Metals in Surface Waters. Ann Arbor, USA. ISBN:1575040875: 262 pp.
[6] Chromium Toxicity - What Are the Physiologic Effects of Chromium Exposure?: https://www.atsdr.cdc.gov/csem/csem.asp?csem=10&po=10

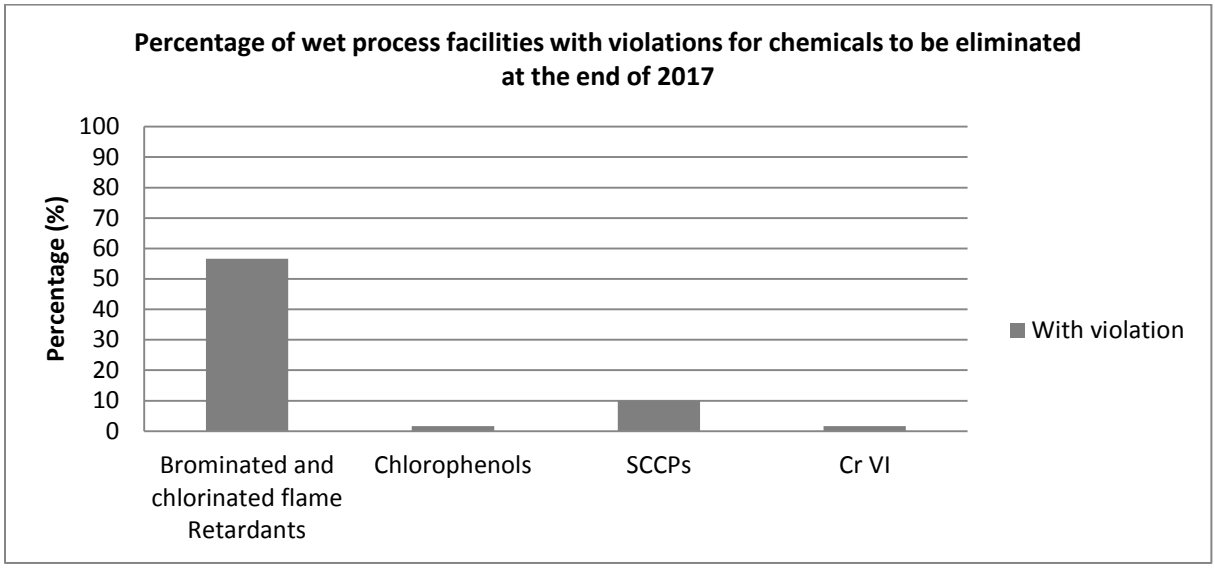

Figure 13: Percentage of wet process facilities with violations for Brominated and chlorinated flame retardants, Chlorophenols, SCCP and Cr VI to be eliminated in 2017

Test results for Brominated and chlorinated flame retardants, Chlorophenols, SCCP for apparels and Cr VI by country

According to the wastewater test results, Brominated and chlorinated flame retardants were detected from most factories in China, Turkey, India and Bangladesh. Immediate actions from the factories are required to eliminate the discharge of Brominated and chlorinated flame retardants. The result also indicates that factories in Vietnam have Chlorophenols violations, which, however, might not be representative due to small sample size. In addition, Cr VI was found being discharged from a small number of factories in China and all SCCPs violations were detected in China.

Test results for Brominated and chlorinated flame retardants, Chlorophenols, SCCP for apparels and Cr VI by wet process

Analyzing the chemicals to be eliminated in 2017 by process shows that Brominated and chlorinated flame retardants are found in all major wet processes indicating that the elimination

will become challenging. Chlorophenols were not detected in the major wet processes presented in Figure 14. However, some violation has been found in fiber processing although the finding is not representative due to very small sample size. SCCPs were found mainly in garment washing processes.

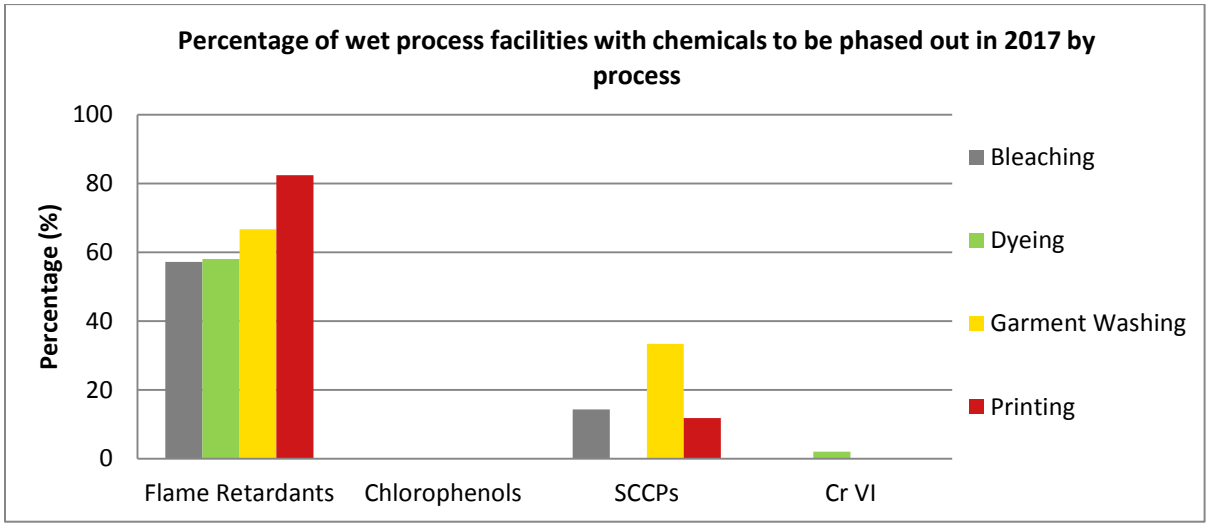

Figure 14: Percentage of wet process facilities with violations for Brominated and chlorinated flame retardants, Chlorophenols, SCCP and Cr VI to be eliminated in 2017 by process

4. Conclusion and Next Steps

The waste water text results of 2016 indicate that progress has been made regarding the elimination of APs/APEOs and PFCs in our supply chain. Since 2017, APs/APEOs and PFCs are banned from production. In case any violation occurs in 2017, we will support the factories on substitution and will conduct re-tests to confirm the elimination. Water tests in 2017 need to show whether the complete elimination of both chemical groups has been successful.

Although we can see progress from the discharge data, they also show that further efforts are needed in order to eliminate the use of hazardous chemicals in our supply chain till 2020. For the phase out of Brominated and chlorinated flame retardants, Chlorophenols, SCCPs for

apparels and Cr VI from our supply chain, we will continue to work with our suppliers and wet process facilities to eliminate the use of banned chemicals till the end of 2017. This is an ambitious target, since those hazardous chemicals, especially Brominated and chlorinated flame retardants, are widely used by wet process facilities in our supply chain. There has been fewer wet process facilities with Chlorophenols, SCCPs or Cr VI violations, however, it is equally important to communicate with suppliers and wet process facilities and support them to identify the sources and phase out those hazardous chemicals among others. Rewe Group will provide additional assistance to suppliers and factories with non-compliant findings. In addition to our support regarding the set up or improvement of chemical inventories and chemical action plans, we provide trainings to suppliers and consult on any upcoming issues. For the other priority chemical groups, further phase outs and bans are already planned and included in the REWE Group MRSL.

We are in continuous exchange with brands, service providers and research institutions to find common solutions for encountered challenges. In order to support our suppliers improving the chemical management in wet process facilities, we will set up a training program for wet processing facilities in China and Bangladesh with tailored workshops and on-site visits in collaboration with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and with participation of Tchibo in 2017. The aim of the project is to help the wet process factories developing chemical management systems that enable the elimination of hazardous chemicals from production processes in accordance with Detox requirements. This program is planned to advance the elimination of hazardous chemicals from our supply chain. In addition, local advice structures are built and local stakeholders are sensitized for a safer textile production. We believe that we can only achieve our target of a safer textile production by 2020 if we collaborate and join forces with other brands and stakeholders. We will continue to report on our advance in our annual progress and discharge data reports.