REWE Group Detox Program

Report of discharge data wastewater and sludge

2016

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1. Introduction

The REWE Group takes its responsibility for the society and the environment seriously. In 2014, REWE Group set up its Detox Program and joined the Detox campaign of Greenpeace. The REWE Group Detox Program and the Detox campaign are both pursuing the same goal: Achieving a more environment-friendly and safer textile production for future generations. In detail, REWE Group will enhance the use of safer chemicals in the production processes of textiles[1] defined as apparel, footwear and home textiles by no later than 2020 with dedication to improve transparency in the textile supply chain, promote the use of non-hazardous chemicals in textile production and largely reduce the release of hazardous substances into the water.[2]

In December 2014, the REWE Group Manufacturing Restricted Substances List (MRSL) which is in line with the REWE Group Detox Commitment and lists all chemicals which are in the scope of the REWE Group Detox Commitment and therefore need to be phased out from the production of the REWE Group private label textile products till 2020, was published. The MRSL defines limit values for products, wastewater, sludge and input chemicals. Based on the yearly review process the MRSL has been updated in December 2015 and the MRSL 1.0 has been published at the end of 2015.[3] Next to other chemicals the MRSL includes 11 priority chemical groups[4] which shall be focused on in the first phase of the REWE Group Detox Program. In order to assess the current status of compliance with the REWE Group MRSL we started to conduct wastewater and sludge tests in wet processes facilities of REWE Group suppliers[5] in 2015.

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[1] Textiles in the context of the REWE Group Detox Program always refer to apparels, footwear and home textiles.

[2] REWE Group information brochure: http://www.rewe-group.com/dam/jcr:4605231f-16e6-40df-b030-a977e56d137f/Info%20Brochure%20Supplier%20Detox_EN_11122015.pdf

[3] REWE Group Manufacturing Restricted Substances List (MRSL) https://www.rewe-group.com/dam/jcr:61f24f24-edc5-4e68-9a93-f42c7862b1dc/MRSL%202%200%20-%20with%20timelines%20(7).pdf

[4] The details of 11 priority chemicals groups are listed in the REWE Group MRSL

[5] Suppliers in the context of the REWE Group Detox Commitment are always defined as textile suppliers for REWE Group private label products.

For wet processes three main components are important to consider if contamination of water shall be avoided: The input, the wet process itself and the output. Among other input includes textiles, water and chemicals. During the process, all components are added together with energy and further raw materials if necessary. Each component added to the process carries its own risk of contamination. The chemicals could be hazardous, the ground water could already be contaminated with toxins and the raw materials could contain, for example, pesticides. The REWE Group works with all textile suppliers to achieve a common understanding on which inputs can be used in the process and to ensure the compliance of the output by testing the discharge water and products.

In 2015 wet process facilities from six production countries, namely China, India, Bangladesh, Pakistan, Egypt and Cambodia, reflecting 80% of REWE Group's turnover with private label textile products, have conducted wastewater and sludge tests on 259 substances[6] based on the 11 priority chemical groups on which the phase out concentrates in the first implementation phase.

In this report, the results from wastewater and sludge testing are analyzed. After a short introduction of the testing approach, the testing data for those wet process facilities which have done the wastewater and sludge testing will be presented and discussed. The analysis will particularly focus on Alkyphenol ethoxylates (APEOs) and Perfluorinated compounds (PFCs) because these are the chemicals that are phased out from production first. This, however, does not mean that the phase out of other chemicals is less important. Therefore in addition, certain violations regarding other chemicals found in the wet process facilities will be highlighted. It is important to notice that all tests this report refers to were commissioned in 2015 and obtained till January 2016, which means that the data does not reflect the current status quo. All chemicals in the REWE Group MRSL are planned to be phased out till 2020. The analysis will also show

[6] Tested substances are listed in the REWE Group MRSL

that violations differ by region. In detail, the similarities and discrepancies between test results from China and South-East Pacific region are discussed.

2. Methodology

In 2015, the wastewater and sludge tests were conducted for wet process facilities from two major regions, namely the South-East Pacific region and China region. In the South-East Pacific region tests were conducted in five countries: Bangladesh, Egypt, India, Cambodia and Pakistan, where 42% of wet process facilities are located. The other tests, which represent 58% of the wet process facilities, were conducted in the China region (see Figure 1). In most of the cases the samples were drawn after the treatment or from the processing, 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.

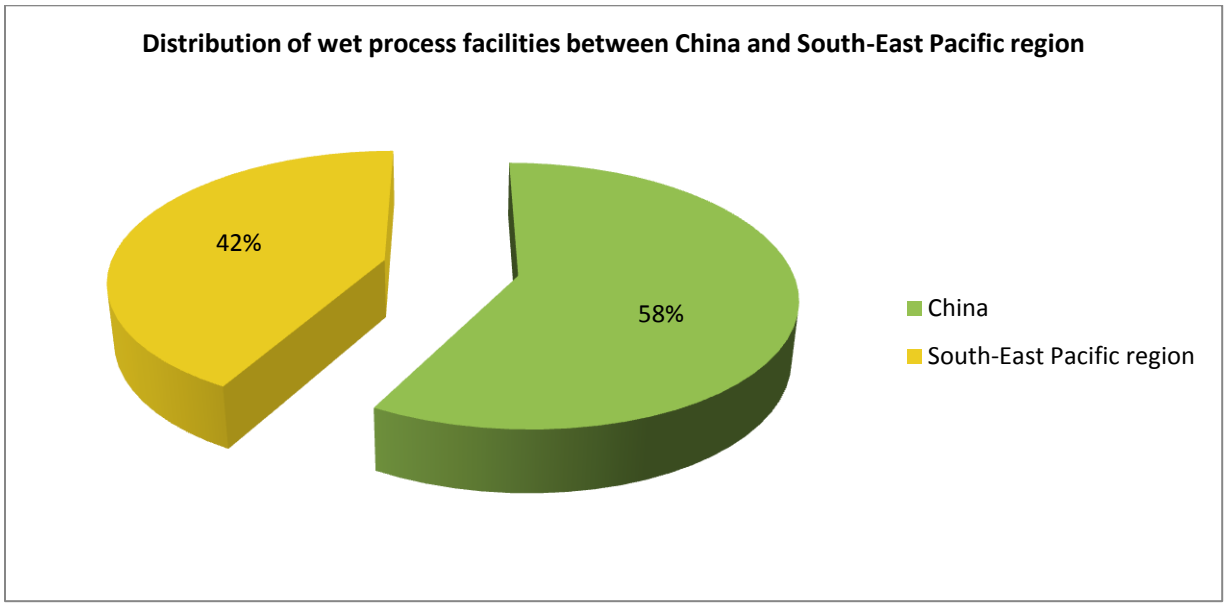

Figure 1: Distribution of wet process facilities between China and South-East Pacific region

The wastewater and sludge tests have been carried out by a testing institute following the REWE Group sampling and testing requirements which are defined as follows:

- Samples are taken from the effluent and the sludge
- Sampling method is grabbed 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

3. Results and discussion

3.1 Test results for 11 priority chemical groups

The wastewater and sludge 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, COCs, VOCs, Chlorophenols, SCCPs, Heavy Metals, AP/APEOs and PFCs respectively. Generally, the results between wastewater and sludge tests are consistent, meaning the results of waste water tests are similar to the ones of sludge tests. Some fluctuations can, however, be observed for some particular chemical groups, like Phthalates. In particular, more wet process facilities show the detection of Phthalates in sludge tests than in wastewater tests. The reason may be that Phthalates are less soluble in water so that it may be difficult to detect Phthalates in wastewater.

An overview on the wastewater and sludge test results concerning the 11 priority chemical groups is given in Figure 2. The violations affecting the largest share of factories are the ones regarding Heavy Metals (>90% of factories), followed by Flame Retardants, AP/APEOs and Phthalates. These data indicate that those four chemical groups (Phthalates, Flame Retardants, Heavy Metals and AP/APEOs) are commonly found with various concentrations in wet process facilities in the supply chain.

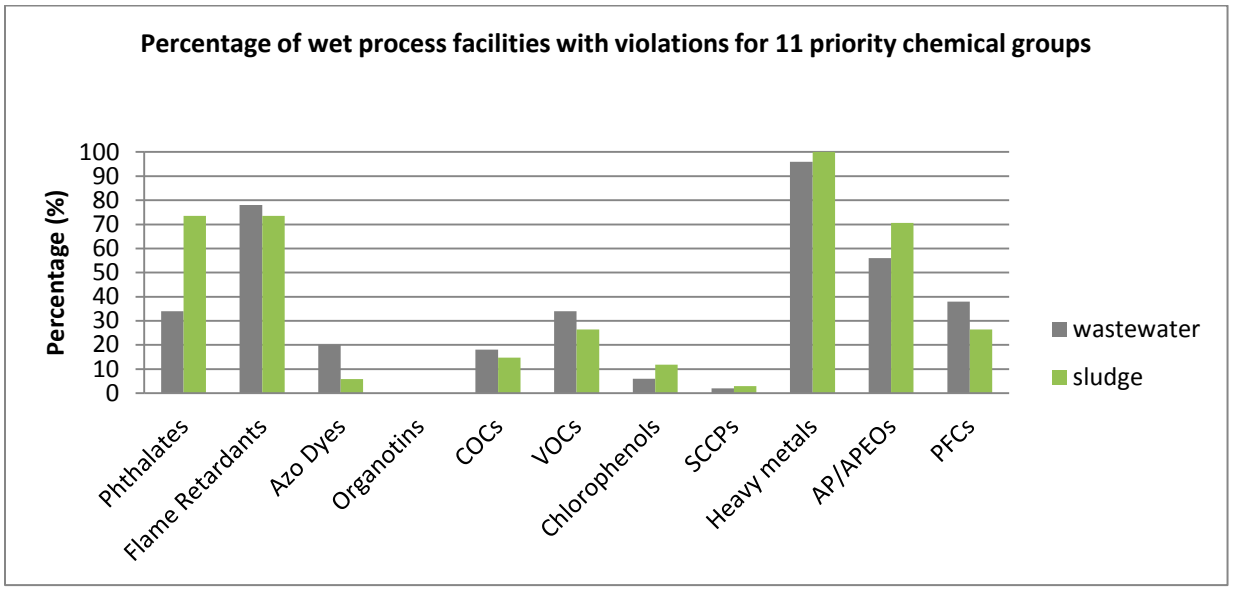

Figure 2: Percentage of wet process facilities with violations for 11 priority chemical groups

3.2 Test results for APEOs

APEOs or Alkylphenol Ethoxylates are common surfactants used in the apparel, home textile and shoe industry. According to the result of wastewater and sludge tests (see Figure 3 and Figure 4), approximately 60% of tested wet process facilities showed a non-compliant concentration of APEOs including violations for APs, a breakdown product of APEOs. As over half of all tested wet process facilities still seem to use APEOs/APs, this indicates the urgent need to control the discharge of APEOs/APs by wet process facilities.

APEOs are discharged by wet process facilities, ending up in the environment where they hardly break down and can cause severe damage to aquatic ecosystems. Their endocrine

(hormone-like) properties may also impair human health.[7] As a result, REWE Group decided to phase out APEOs as one of the first chemical groups from production till the end of 2016.

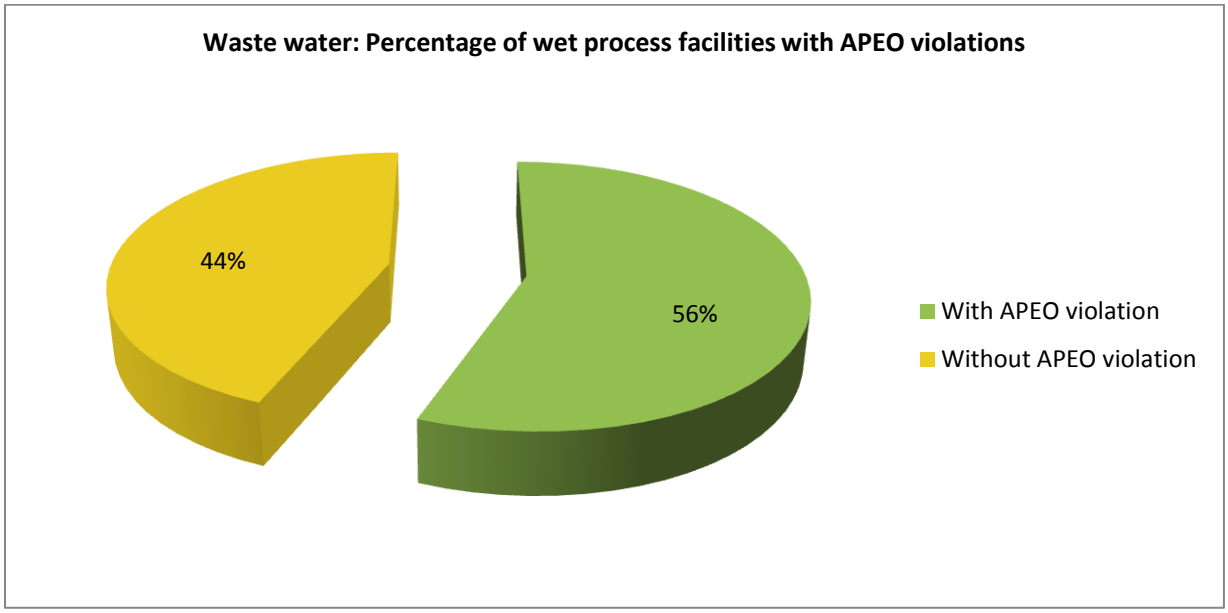

Figure 3: Waste water: Percentage of wet process facilities with APEO violations

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

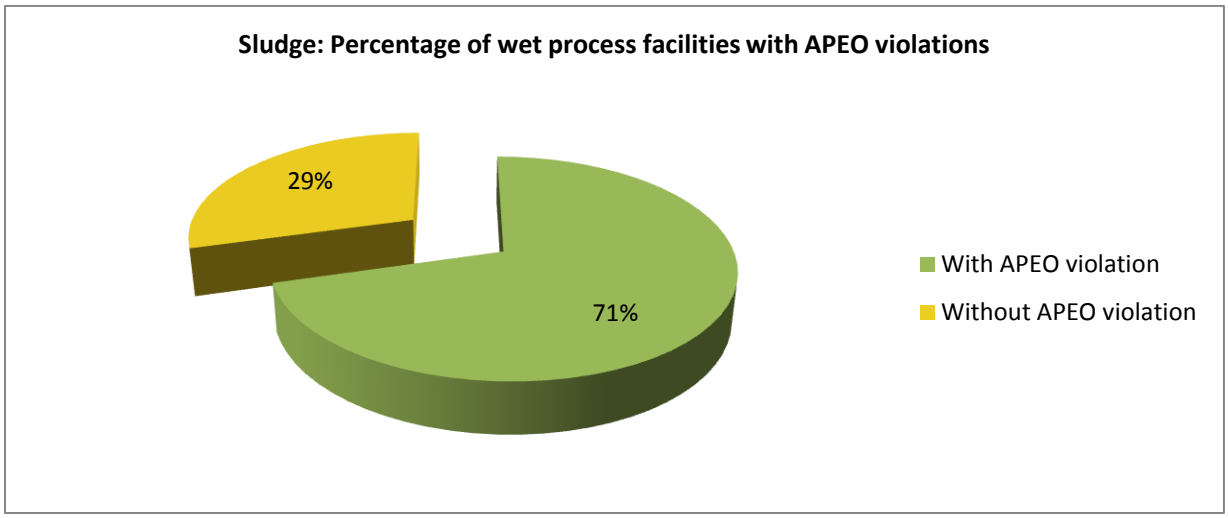

Figure 4: Sludge: Percentage of wet process facilities with APEO violations

3.3 Test results for PFCs

Perfluorinated compounds or PFCs are a group of manmade organic chemicals containing fluorine. According to the result of wastewater and sludge tests (see Figure 5 and Figure 6), about 35% 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.[8]

These properties underline the importance to phase out PFCs from production. The REWE Group has decided to phase out PFCs from the supply chain till the end of 2016 and will further work with our suppliers and wet process facilities to achieve this target.

[8] 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

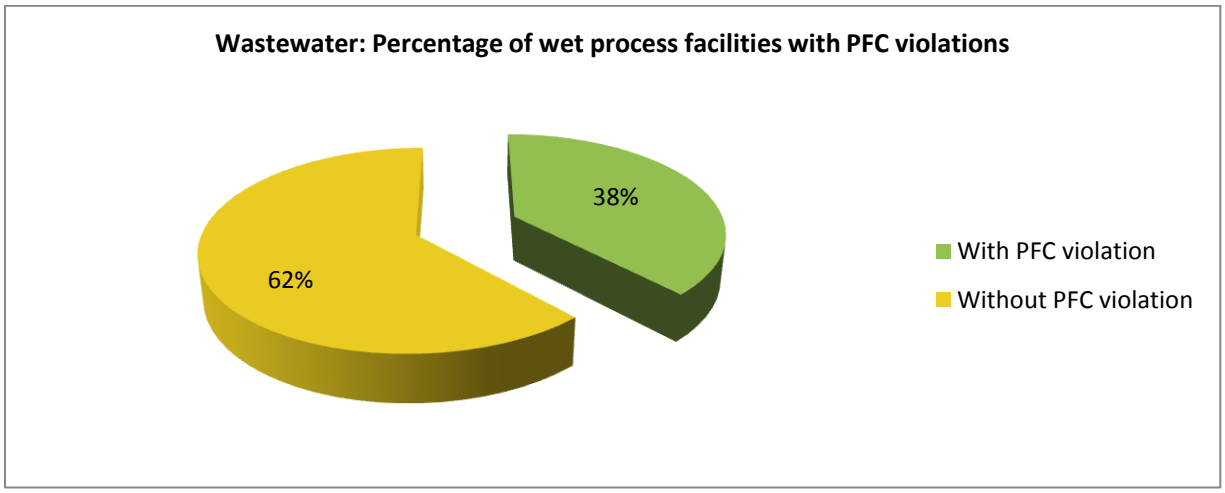

Figure 5: Wastewater: Percentage of wet process facilities with PFC violations

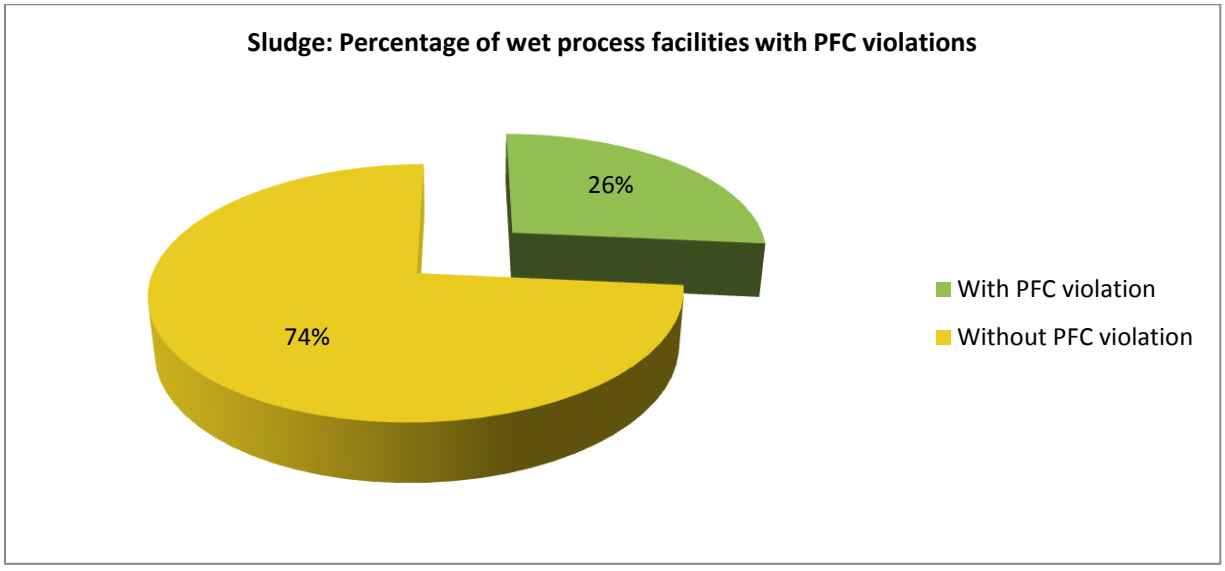

Figure 6: Sludge: Percentage of wet process facilities with PFC violations

3.4 Test results in China

In this part, the test results of wet process facilities in China are analyzed with regard to violations concerning the 11 priority chemical groups (see Figure 7). From the results it can be seen that nearly all tested wet process facilities from China showed non-compliant concentrations for Heavy Metals. Additionally over 90% of the tested wet process facilities from China showed non-compliant concentrations for Flame Retardants. More than 60% of tested wet process facilities in China showed violations for AP/APEOs and PFCs which need to be phased out till the end of 2016 according to the REWE Group Detox Program. This indicates that wet process facilities need to continue working especially on the phase out AP/APEOs and PFCs in order to achieve the phase out at the end of 2016. For the other chemical groups, there is no significant violation shown.

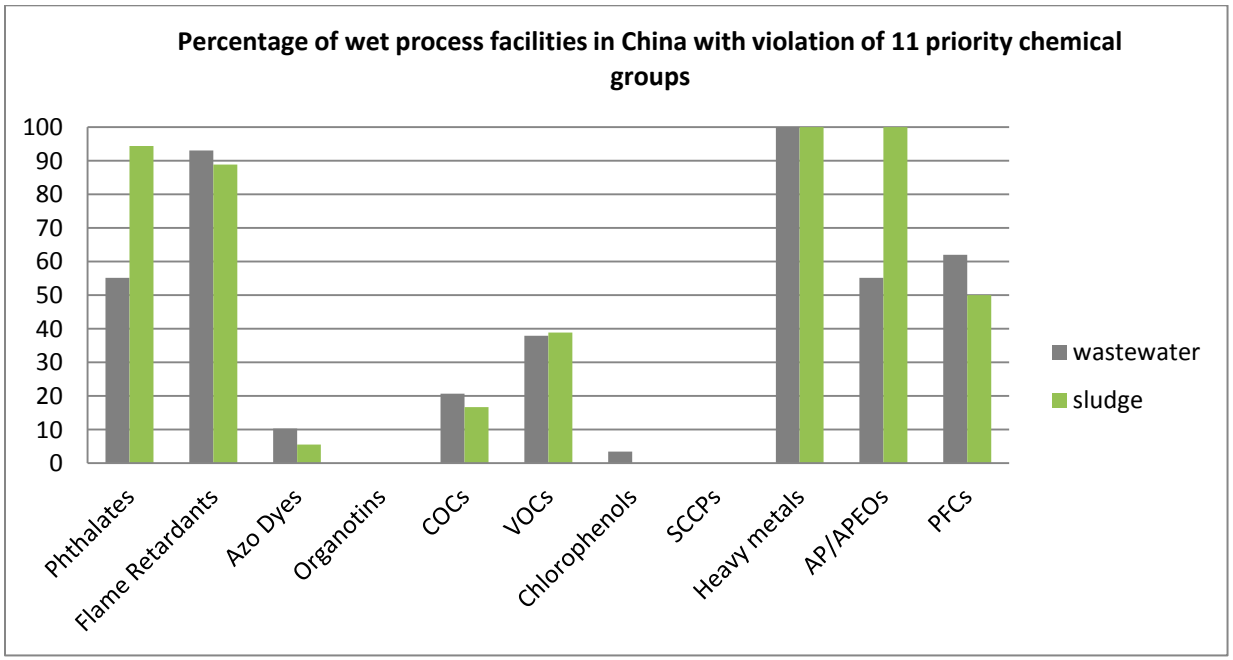

Figure 7: Percentage of wet process facilities in China with violation of 11 priority chemical groups

3.5 Test results in South-East Pacific region

In this part, the test results of wet process facilities in South-East Pacific region are analyzed with regard to violations concerning the 11 priority chemical groups (see Figure 8). Generally, the number of wet process facilities located in South-East Pacific region with violations concerning the 11 priority chemical groups is lower than the number of facilities located in China. However, similar to the results in China, nearly all tested wet process facilities showed non-compliant concentrations for Heavy Metals in the South-East Pacific region. In addition, more than 50% of tested wet process facilities from South-East Pacific region showed violated concentrations for APEOs and Phthalates. As mentioned before, APEOs are one of the first chemical groups that need to be phased out from production. Thus, efforts in the South-East Pacific region need to continue in order to achieve the phase out by the end of 2016. For the other chemical groups including PFCs, less wet process facilities show violations.

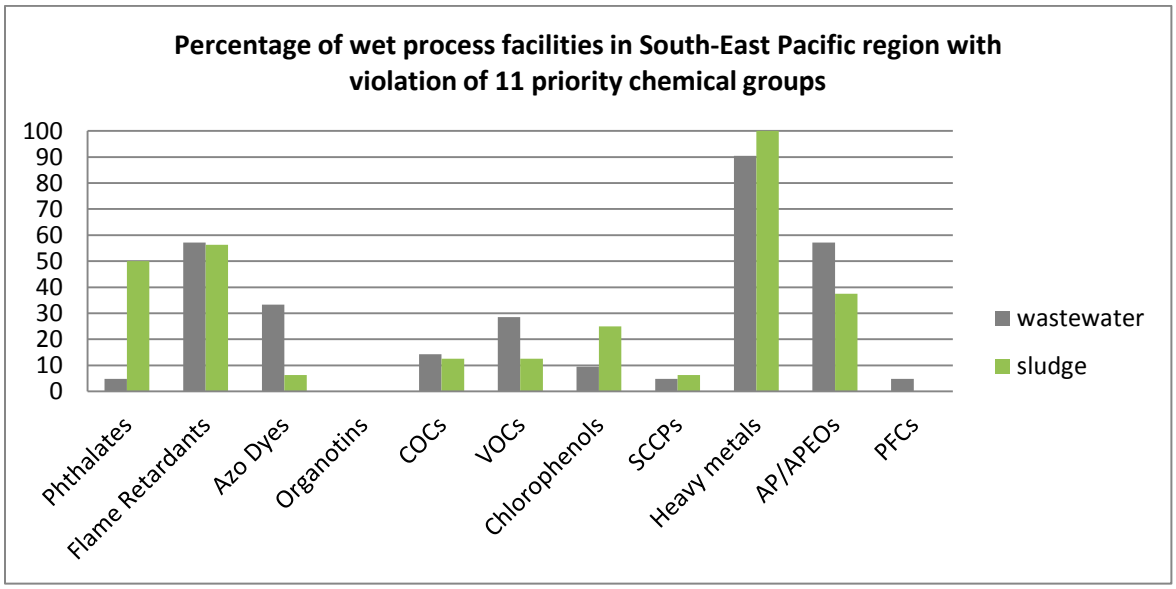

Figure 8: Percentage of wet process facilities in South-East Pacific region with violation of 11 priority chemical groups

4. Conclusion and next steps

The results of the first wastewater and sludge tests in the REWE Group supply chain show that there is a high need for action in order to phase out hazardous chemicals from the private label textile supply chain till 2020. The REWE Group works closely with all textile suppliers and wet process facilities to achieve the aim of a more environment-friendly production by 2020. Currently, the REWE Groups supports suppliers and wet process factories in setting up or improving their chemical management and in the first step setting up a chemical inventory as well as developing Chemical Action Plans to facilitate substitution. Furthermore, the REWE Group holds workshops to provide them with further information and support the implementation. It is important for the REWE Group to work closely with direct suppliers and make them aware of the importance of compliance to the Detox Program because they are the ones holding a business relationship with the wet process facilities and therefore can drive the change in the wet process factilities. Changes within the base of wet process facilities will continue to be a challenge and developing the facilities to become compliant will remain a difficult task.

In 2016 the REWE Group worked with suppliers and wet process facilities to phase out of APEOs/APs and PFCs from the supply chain. This is an ambitious target, since APEOs/APs are used by many wet process facilities in the supply chain. For PFCs the challenge was to find alternatives that can achieve a similar performance.

Regarding remaining chemicals, the elimination will follow a step-by-step approach in accordance with the REWE Group MRSL. The REWE Group is in continuous exchange with brands, service providers and research institutions to determine next steps and to find common solutions for encountered challenges. The REWE Group believes that this challenging target of a safer textile production by 2020 can only be achieved if the REWE Group collaborates and joins forces with other brand and companies. Since the REWE Group as a food retailer does not use the full capacity of the factories for the orders placed, the factories might still use the

banned chemicals for orders of other clients. For example, some chemicals like Azo dyes are legally not allowed to be used for any textile products imported to Germany, but still are used for the production of textiles for other markets like the US. This means even if such chemicals are not used for any REWE Group product and therefore are not detected in the final product the factory may still use the chemicals for the production of products for other clients and it can still be found in the waste water. The REWE Group clearly communicates to the suppliers that the goal is to achieve a fully compliant production (clean-factory-approach), regardless whether the order is produced for the REWE Group or for another client. To change the usual processes in the factories to a chemical management that ensures compliance with the Detox requirements requires a change process in the factory which is even more difficult to achieve if not all customers of the factory drive for the same Detox requirements. Nevertheless, this clean-factory-approach is crucial for the REWE Group, because only a fully compliant production can achieve the significant improvement of water quality the REWE Group strives for.