MANGO DETOX 2015-2016 RESULTS

1. INTRODUCTION

The textile industry is known for the intensive use of many types of chemicals throughout its production processes as manufacturing fabric or thread, dying or printing fabrics or washing and drying the final product among others. Thanks to the DETOX initiative, apparel brands have united under a common goal: zero discharge of hazardous chemicals throughout the whole textile supply chain by 2020.

In December 2012 MANGO decided to sign Greenpeace's DETOX agreement. Since then MANGO has collected and analyzed water samples from main suppliers in 4 countries: China, India, Turkey, and Bangladesh. MANGO started off the DETOX project analyzing wet process factories in China and Turkey in 2013 and India in 2014. In a second phase of the DETOX project MANGO extended its DETOX analysis in Turkey and initiated the collection of waste water samples in Bangladesh throughout 2015 and beginning of 2016.

This document intends to illustrate MANGO's latest findings within the second phase of the DETOX project throughout this past year and a half. MANGO's initial statement of progress and roadmap can be found at:
http://st.mngbcn.com/web/oi/servicios/rsc/pdf/ES/detox/statement.pdf

It is important to note that this document cannot be considered to reflect solely "MANGO results" because MANGO does not have its own factories and all factories visited work for many brands within the textile industry. Therefore this document should be interpreted as a realistic scenario of the status of the textile industry regarding discharge of hazardous chemicals.

2. SAMPLING METHODOLOGY

2.1 Selection Criteria:

Suppliers for the MANGO DETOX project are selected based on the following criteria: volume of production, continuity along seasons, and history of cooperation.

2.2 Calculations:

It is important to keep in mind that percentages presented are accurate estimations.

All calculations are based on volume of production at a certain time (i.e. certain season). Percentage of production with suppliers is variable from season to season therefore we must take into account certain limitations when extrapolating these results beyond the period of time which they refer to.

Results are based on global production excluding "Cut, Make, Trim" (CMT) production carried out in Morocco. MANGO provides the raw materials for this circuit of production, therefore the volume of wet processes in this country are insignificant. Consequently calculations include all countries, suppliers and processes along the supply chain excluding those carried

out in Morocco. Results represent the percentage from total global production (excluding Morocco) which has been analyzed. All factories analyzed correspond to wet process facilities.

2.3 Sampling process:

All sampling has been coordinated by the MANGO CSR team. Prior to the collection of waste water samples suppliers complete an on-site questionnaire regarding all processes carried out within the facility and any chemical products used along their production processes. Once the questionnaire is complete we proceed to the identified discharge point to collect the water samples. It is imperative that the water sample be collected before treatment ("dirty" water) coming directly from production processes. Samples have been collected using the appropriate laboratory bottles and equipment provided by Intertek laboratories.

3. RESULTS

In line with the publics "right-to-know " and the importance of transparency of the global supply chain, we release the results obtained from water samples collected during the last year and a half in the following charts.

A total of 3 different countries were visited for the collection of waste water samples throughout 2015 and beginning of 2016: Turkey, Bangladesh and China. The collected waste water samples represent 24.39 % of MANGO's global production including all collections during season 4 and 5 except those produced in Morocco*[1].

3.1 Turkey Results:

Turkey is MANGO's sixth country with most volume of production. Factories analyzed represent 9.96% of MANGO's total production in Turkey during seasons 4 and 5. Turkey water samples were collected during December 2015. Results reflect a high presence of 9 out of 11 of the priority substance groups found in MANGO's MRSL.

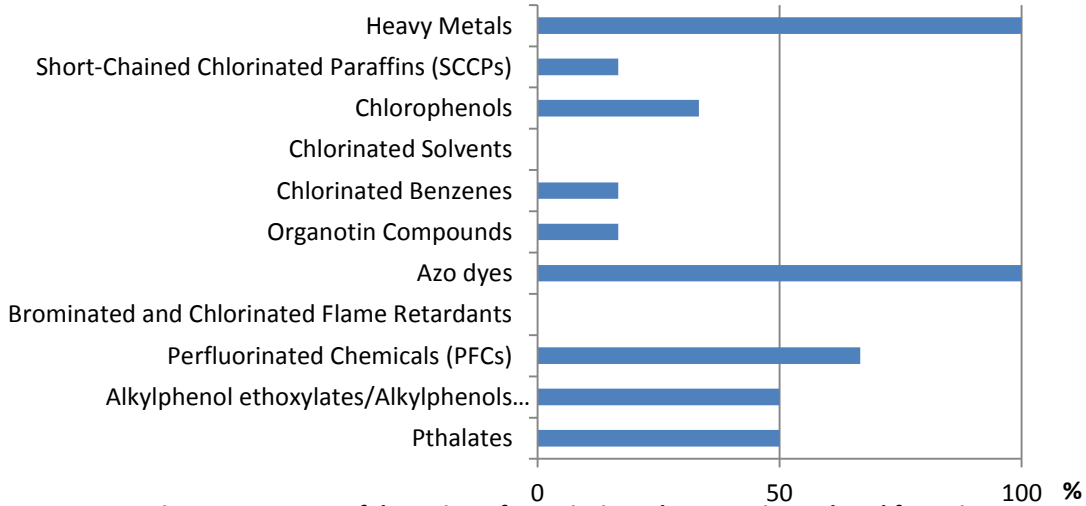

Fig 1. Percentage of detection of 11 priority substances in analyzed factories Turkey Dec. 2015

1. See sampling methodology Section 2.2

The detection of Perfluorinated Chemicals, Akylphenols, Phtlalates and Azo dyes in the majority of the factories is highly worrying. These substances are under the European REACH Regulation as well as legislations from other countries due to their high toxicity and therefore their presence cannot be tolerated; especially as alternatives free of these substances already exist. The detection of heavy metals could be due to the use of dyes, pigment and solvents, as they are used in many textile processes due to their varied properties. Chlorophenols, chlorinated benzenes, organotin compounds and short-chained chlorinated paraffins have also been detected in some factories. It is necessary to instruct suppliers on safer alternatives throughout factory processes to avoid the presence of these substances.

In-water samples were also collected in Turkey. In-water is defined as the input water used for production processes. Therefore in-water is not contaminated by chemicals used throughout production processes as it is the "clean" water entering the facility. Surprisingly results show that in-water samples also contain the presence of hazardous substances. This means that some chemicals are already present in the water before going through the production process and hence their origin is from outside the wet process facility.

In-water results show the presence of heavy metals in all samples as well as the presence of phthalates in one sample and Azo dyes in another.

TURKEY INWATER RESULTS 2015		
	Factory 3	**Factory 6**
Pthalates detected	bis (2-ethylhexyl) phthalate (DEHP)	N/D*
Azo dyes detected	N/D*	4-Chloroaniline, Benzidine
Heavy Metals detected	Chromium, Zinc	Chromium, Zinc, Copper
		*N/D = not detected

3.2 Bangladesh Results:

Bangladesh is MANGO's second country with most volume of production. Factories analyzed represent 58.56 % of MANGO's total production in Bangladesh during seasons 4 and 5. Bangladesh water samples were collected during February 2016. Results are positive as only 3 of the 11 priority substance groups from MANGO's MRSL were detected.

Heavy metals have been detected in all factories tested in Bangladesh. A possible explanation for these results could be the use of dyes, pigments and solvents which are used on many textile processes due to their varied properties. The search for safer alternatives free of heavy metals is an important task in which suppliers must be involved in along with main brands.

Chlorinated Benzenes are present in chemical mixtures mostly used on polyester and polyester blend textiles. They can also be found in dyeing carriers, dyestuffs, levelling agents, deodorizers, fumigants, degreasers, insecticides, herbicides and defoliants. It is recommended that suppliers use safer alternatives as dyeing carries that do not requires additional solvents for dilution and work with suppliers who have phased out or banned the use of chlorinated benzenes from all products.

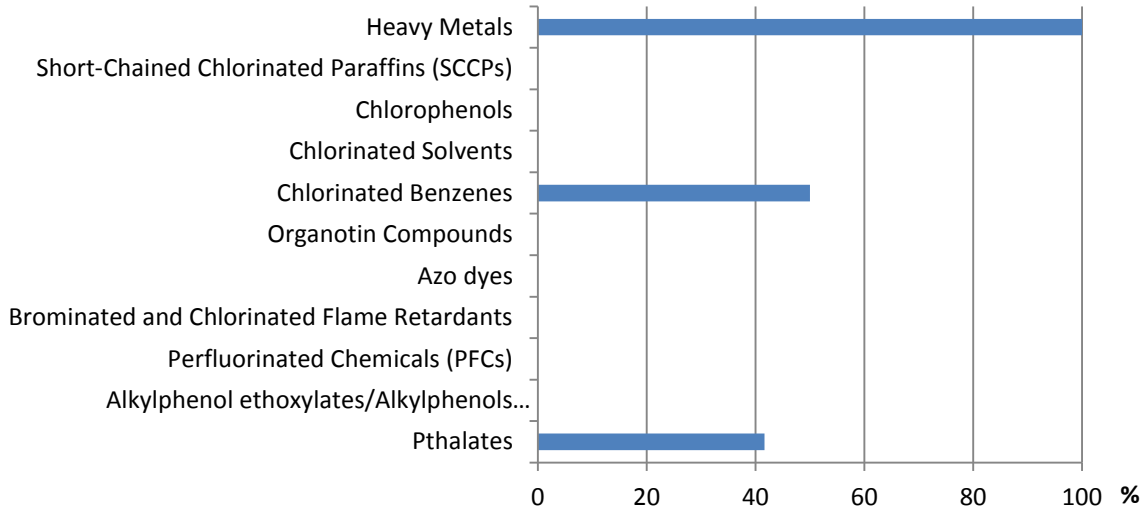

Fig 2. Percentage of detection of 11 priority substances in analyzed factories Bangladesh Feb. 2016.

The presence of Phthalates in some factories in the tested discharge water indicates the use of this substance throughout factory production processes and/or supplier production process. Pthalates can also be found in the piping of production plants which could also results in a possible contamination. The use of safer alternatives throughout factory processes and further education for suppliers regarding the 11 priority substances is necessary to avoid the use of these hazardous chemicals.

3.3 China Results:

China is MANGO's main country of production. China water samples were collected during April 2016. Factories analyzed represent approximately 30% of MANGO's total production in China during seasons 4 and 5. Testing results have not been completed in time to be included in this report but MANGO will update this document with China's corresponding results before July 2016.

4. CONCLUSIONS

Turkey results are worrying because a great number of substances have been detected. Informing suppliers and emphasizing on the importance of eliminating the use of these substances along with recommendations of safer alternatives are crucial steps to move towards the elimination of these chemical substances.

Bangladesh testing shows better results but nevertheless it is still necessary to inform suppliers about the importance of safer alternatives for achieving the elimination of the 11 priority substances

All suppliers are informed of their results along with recommendations regarding the elimination of the 11 priority substances. MANGO will initiate an implementation phase to further involve suppliers in the DETOX project in order to continue to jointly collaborate to achieve DETOX goals.