

Valentino Fashion Group
SUPPLY CHAIN
REPORTING AND MONITORING
NOVEMBER 2014

Further to VALENTINO FASHION GROUP's (VFG) Detox Commitment of 6 February 2013, and in line with the public's "right to know", this document discloses the actions undertaken by VFG in the supervision of its global supply chain up to November 2014, on the road towards zero emissions of hazardous chemical substances by 2020.

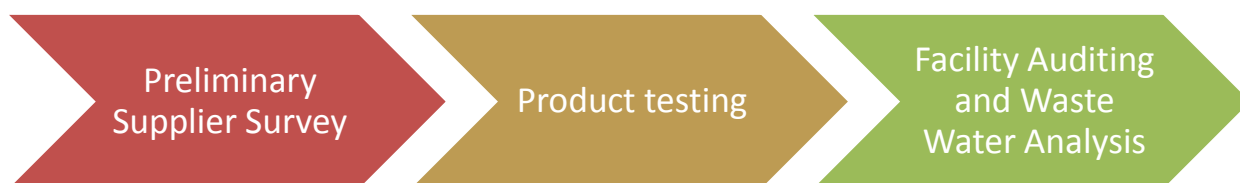
The 11 priority hazardous chemical groups, which are focused by VFG, are:

1. **Azo dyes**
Azo dyes are one of the types of dye used by industry. Some of these, can release hazardous aromatic amines.
2. **Chlorinated solvents**
Chlorinated solvents are normally used to dissolve other substances during textile manufacturing and for cleaning fabrics.
3. **Phthalates**
Phthalates are a group of compounds used mainly as plasticisers in the plastics industry. Key applications include the production of soft polyvinyl chloride (PVC) articles, plastisol prints and high pressure polyester dyeing
4. **Brominated and Chlorinated flame retardants**
Brominated and Chlorinated Flame Retardants are used as fireproof in a wide variety of materials, including textiles.
5. **Organic Tin Compounds**
Organic Tin Compounds are used in biocides and antifungal chemical products.
6. **Chlorophenols**
Chlorophenols are a group of chemicals used as biocides and preservatives.
7. **Short Chain Chlorinated Paraffins (SCCPs)**
SCCPs are used as flame retardants in textile and finishing agents in leather manufacturing.
8. **Heavy Metals**
Heavy metals (such as cadmium, lead and mercury) are often used in dyes and pigments processes for textile and leather; chromium VI could be used in leather tanning process or it can form during tanning process.
9. **Alkylphenols & their ethoxylates (APEO)**
APEOs are particularly effective as dispersing agents, detergents and emulsifiers in textile industry wet processes.
10. **Perfluorinated Chemicals (PFCs)**
The most common PFCs are PFOS and PFOA and its salts. Long chain PFCs are used extensively in numerous industry sectors; in the textile industry, they are found commonly in oil, water and stain repellent treatments.
11. **Chlorinated Benzenes**
Chlorinated Benzenes are used in manufacture of dyes and in chemical intermediates as solvents and biocides.

For further details of specific initiatives relating to the elimination of PHTHALATES, PFCs and APEOs from VFG's supply chain, please see:

APEOs investigation, PHTHALATES investigation, PFC's investigation

The supervision actions were implemented in three successive stages, the aim being to arrive at a complete and conscious vision of VFG's global supply chain.



PRELIMINARY SUPPLIER SURVEY

The objective in the first stage was to systematically gather preliminary data on chemical management and use at production facilities, by means of a self-assessment questionnaire completed by suppliers.

Despite a number of partial responses, once collated, the data provided an initial overview of the chemical risks inherent in VFG's global supply chain and served to guide and inform the later stages of product screening and facility auditing - waste water analysis.

PRODUCT TESTING

Screening for hazardous substances in finished products is conducted on a regular basis within the scope of VFG's product safety procedure.

In conjunction with VFG's Detox Commitment, routine screening activities were reassessed; in November 2013 more stringent detection limits for the 11 priority chemical groups were introduced through the updated restricted substances list (RSL). Communication with suppliers was enhanced to raise awareness of VFG's new goals, and sourcing of raw materials and suppliers became a focus at the product design stage.

FACILITY AUDITING AND WASTE WATER ANALYSIS

In 2013, in compliance with the Detox Commitment, VFG initiated a programme of factory audits and waste water sampling at production facilities where wet processes (dyeing, printing and tanning) are carried out, with abundant use of water.

The majority of audits were conducted at sites in Italy, since these account for 98% of VFG's supply chain, and the remainder at sites in China. The audits were carried out by an independent organization appointed by VFG, Intertek Group plc. .

FACILITY AUDITING

Audits at production sites were designed to assess management of 5 macro-areas of chemical risk:



In procedural terms, two inspectors verified, by means of visual inspections, verification of documents and interviews with managers and workers, numerous aspects relating to the management of chemical substances and the related environmental impacts:

- Approved chemical inventories;
- Chemical risk assessment of raw materials and components;
- Chemical use in manufacturing processes;
- Mixing formulations for materials preparation at the facility;
- Use of chemical substances in wet processes (washing, dyeing, finishing, tanning etc.) and other processes (assembly, packaging etc.);
- Disposal of solid and liquid waste and emissions into the environment;

The final outcome consists of an overall facility score, benchmarked against sector average global scores (data from Intertek Group plc. global sector database), in addition to a breakdown of individual scores for each macro-area of risk.

Upon conclusion of the facility inspection, each supplier receives a detailed assessment report highlighting strengths and weaknesses requiring further action, ranked in order of priority. A second, iterative document, the Continuous Improvement Report (CIR), requires suppliers to set a delivery date for each action. This tool encourages suppliers to work progressively to improve on initial scores.

By conveying VFG's environmental performance goals directly to those involved in the management of chemical substances, the facility audit programme has significantly enhanced chemical awareness within VFG's global supply chain.

AUDIT RESULTS

The graphs presented in the following pages summarise the key findings of facility audits conducted at production sites in Italy and in China.

Graph 1 shows the overall score (facility summary) for each of the 16 facilities in Italy, benchmarked against the national average, and followed by the individual scores for each of the five macro-risk areas.

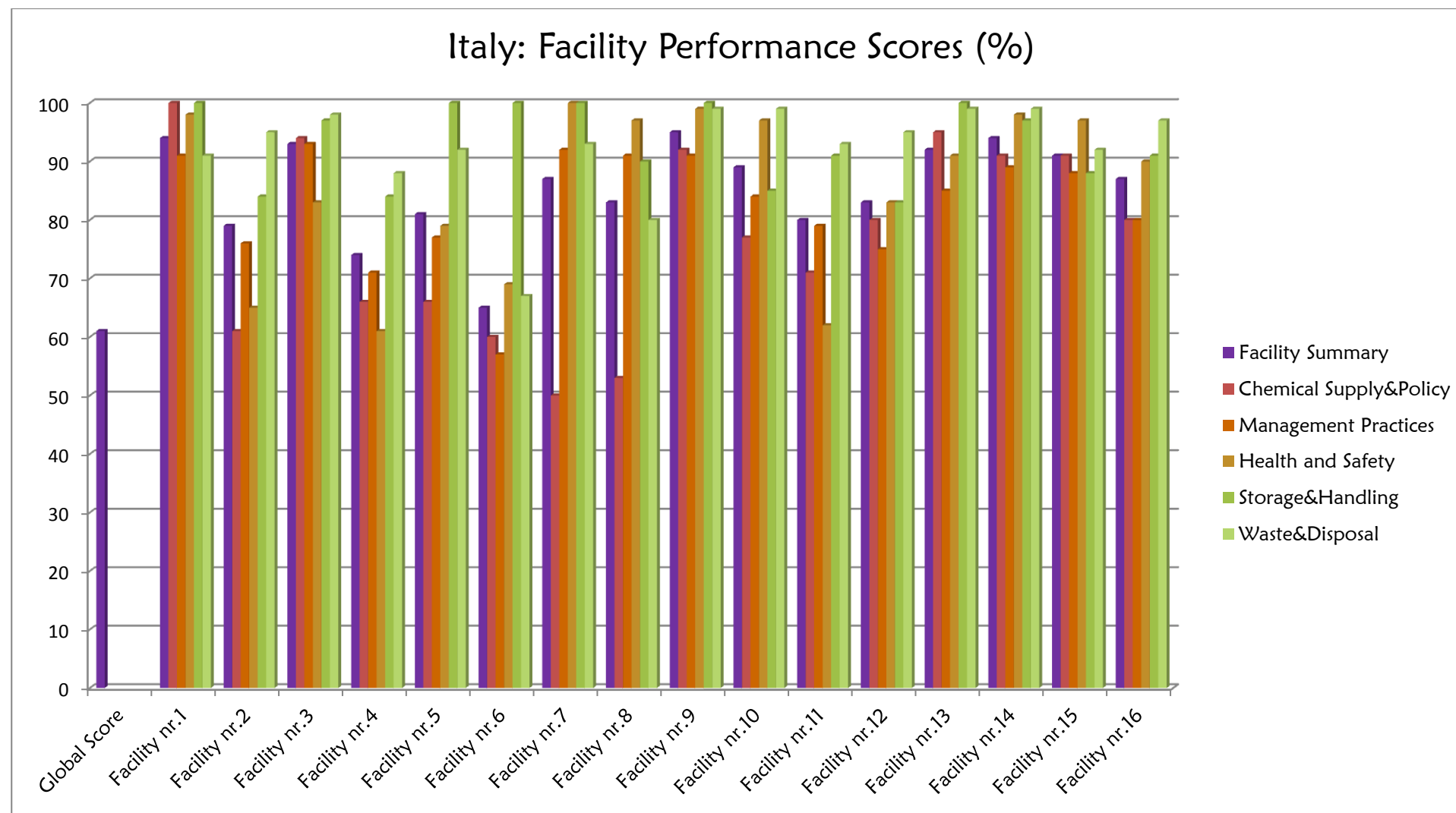
In the same way, Graph 2 presents the results of audits conducted at the 6 facilities in China.

The facility audit results highlight the superior performance of production sites in Italy, all of which achieved overall scores above the national sector average and tend to be more closely aligned to VFG's environmental objectives than sites in China.

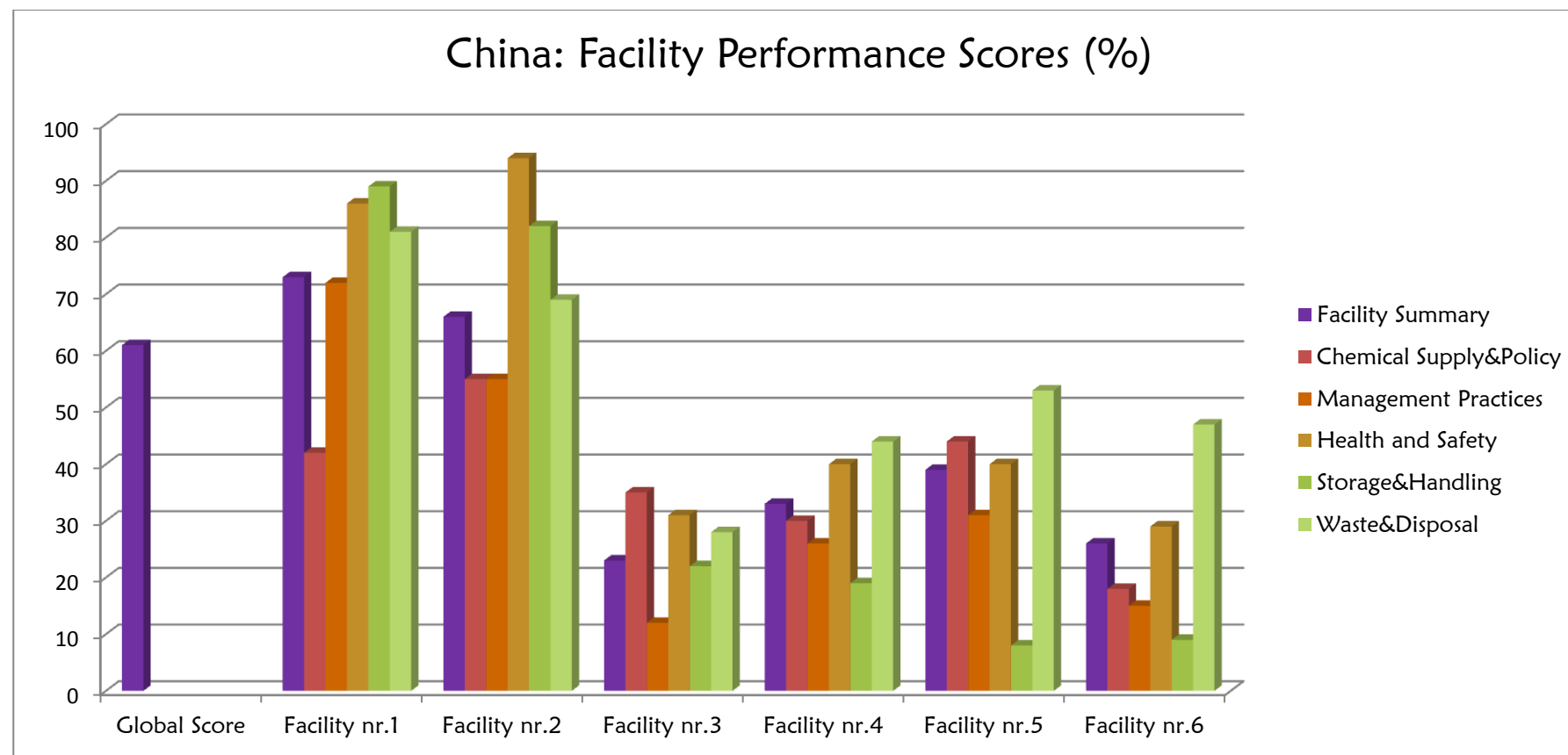
In China, only 2 out of 6 sites achieved overall scores above the national sector average.

In both regions, facility audits have significantly contributed to mapping VFG's global supply chain. The audit reports enable VFG to support suppliers in identifying critical issues and implementing corrective action plans. Supply chain supervision represents another important step towards achieving the goal of zero emissions of hazardous substances by 2020.

GRAPH 1



GRAPH 2



WASTE WATER ANALYSIS

Following the factory audits, water sampling was conducted to detect whether the 11 groups of chemical substances were present in incoming, untreated waste water and, where on-site waste water treatment plants were available, treated waste water. The sampling process involved on-site collection of samples for laboratory analysis based on best current technology detection limits capable of identifying even trace amounts of hazardous chemicals.

Further details of substances and detection limits are available at the following link:

Annex 1 Substance list analyzed with CAS number and Detection Limits

Since the aim of water sampling was to identify all potential sources of water contamination, the operating procedure was as follows:

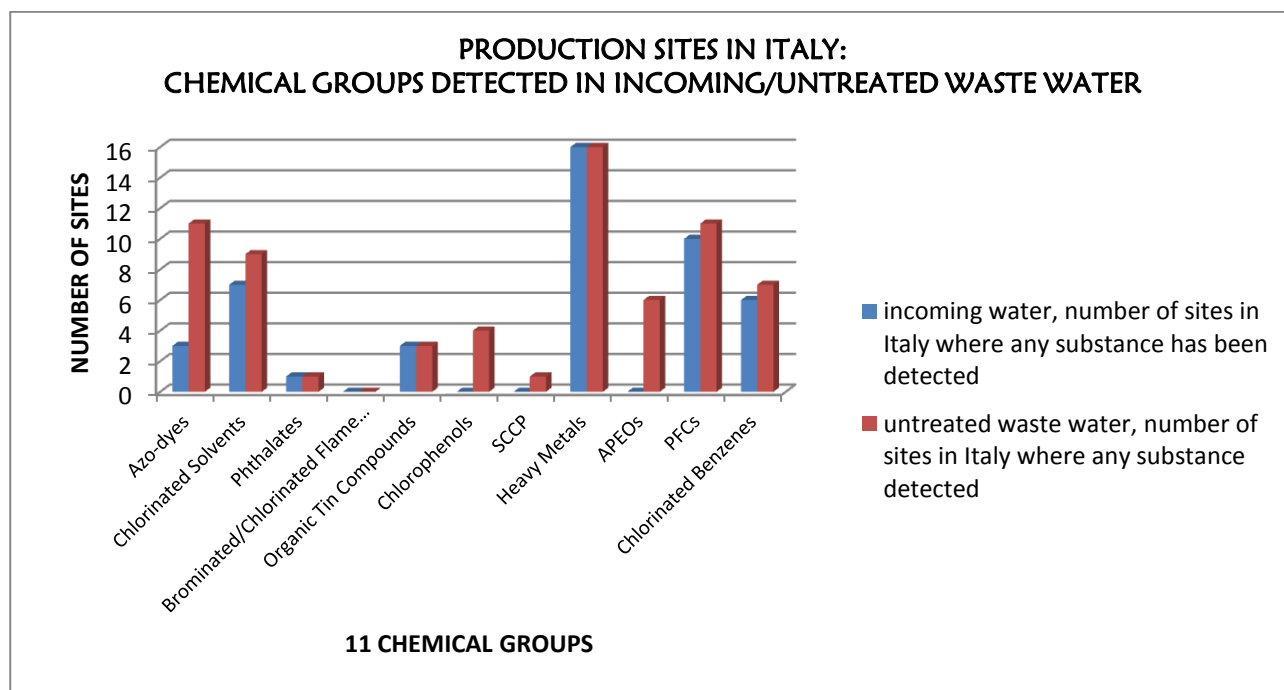
- at facilities with multiple source of incoming water, a sample was taken at each entry point;
- at facilities with on-site waste water treatment plants, samples were taken before and after on-site treatment. However, since the majority of sites discharge waste water into external, collective treatment plants, it was possible to sample treated water only in 2 China facilities.

The following sections summarize the results of water sampling activities conducted at 16 sites in Italy and 6 sites in China during September 2013 to November 2014.

RESULTS FROM SITES IN ITALY

The following graph highlights the total number of sites where each of the 11 groups of chemical substances was detected in incoming and/or untreated waste water at the 16 sites in Italy.

GRAPH 3



Further details of individual substances detected at each sites are available at the following link:

[Annex 2 Italy results more details graphic](#)

[Here below, comments on Graph nr.3:](#)

1. Azo dyes : found in incoming water on 3 facilities; found in untreated waste water on 11 facilities.
In relation to incoming water, only aniline was detected, most probably the result of a chemical reaction.
2. Chlorinated solvents : found in incoming water on 7 facilities; found in untreated waste water on 9 facilities
3. Phthalates : found in incoming water on 1 facility; found in untreated waste water on 1 facility.
4. Brominated and Chlorinated flame retardants : never found
5. Organic Tin Compounds : found in incoming water on 3 facilities; found in untreated waste water on 3 facilities
6. Chlorophenols : never found in incoming water; found in untreated waste water on 4 facilities
7. Short Chain Chlorinated Paraffins : never found in incoming water; found in untreated waste water on 1 facility
8. Heavy Metals : found in incoming water on 16 facilities; found in untreated waste water on 16 facilities

In relation to incoming water, heavy metals are frequently detected and are partly the result of leaching from chrome plated pipes in outdated water supply systems; this specific source of contamination is difficult to eradicate

9. Alkylphenols & their ethoxylates (APEOs) : never found in incoming water; found in untreated waste water on 6 facilities
10. Perfluorinated Chemicals (PFCs) : found in incoming water on 10 facilities; found in untreated waste water on 11 facilities
11. Chlorinated Benzenes : found in incoming water on 6 facilities; found in untreated waste water on 7 facilities

The presence of certain hazardous chemicals in incoming water calls for further investigation, and makes total elimination extremely complex.

It is important to note that in certain industrial areas, water circulates within a closed circuit. Industrial waste water flows into a collective treatment plant and thereafter is fed back into the circuit as incoming water

In relation to the substances detected in untreated waste water, it is important to note that all the sites audited in Italy discharge water to a collective waste water treatment plant, none having on-site facilities.

Many of the substances detected in incoming water were found also in untreated waste water; for APEOs, Phthalates and PFCs, VFG is taking specific action with suppliers to achieve total elimination through substitution, fully aware of the need to reach out to all stakeholders, including raw materials, water authorities, final consumers and, above all, manufacturers of chemical substances.

In fact, it is important to note that at an operational level it is not always possible to identify all potential pollutants in chemical products since complete full details of chemical formulations may not be disclosed in material safety data sheets (MSDS).

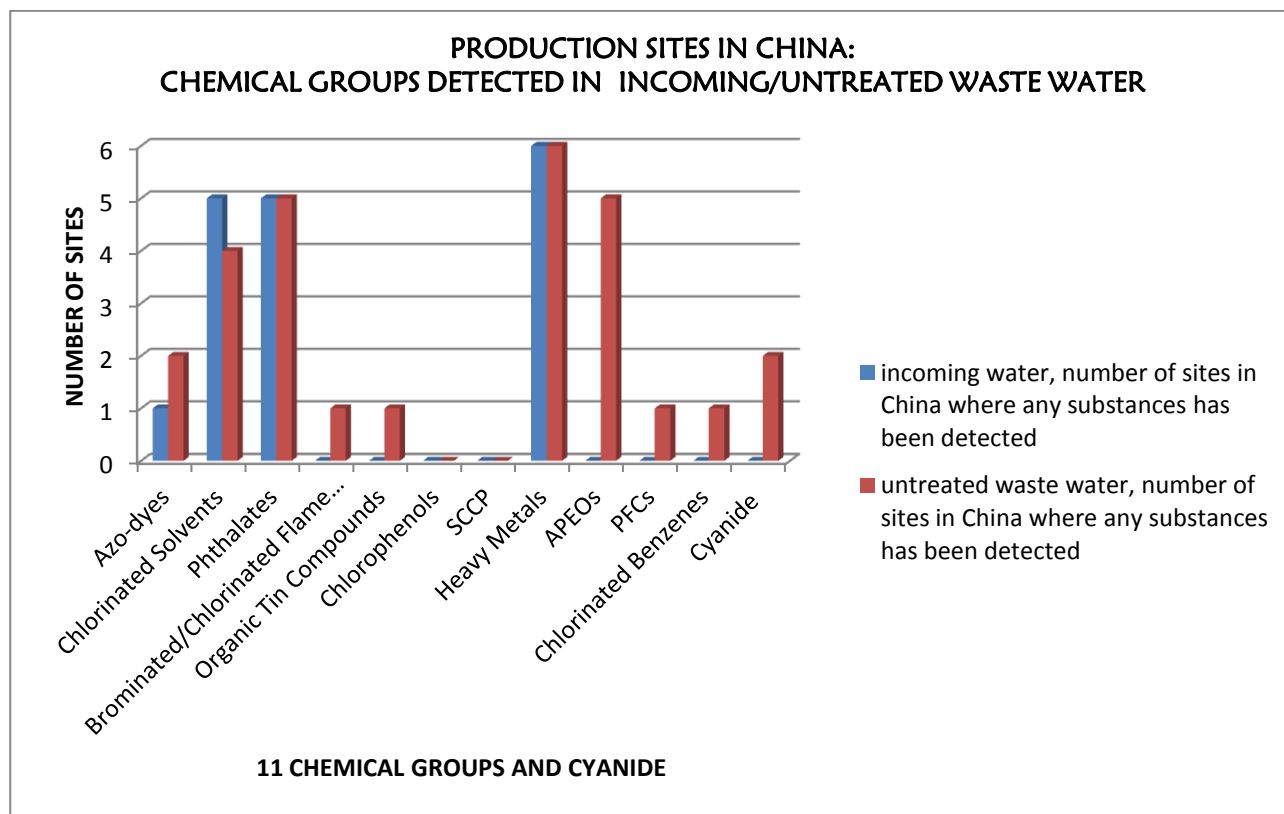
As coming out from our audit, the chemical inventory didn't provide any of 11 chemicals substances.

VFG's environmental commitment towards 2020 has the main purpose of not introducing any hazardous substance to the health of planet and consumers, therefore VFG is performing corrective actions, which are described in the conclusions.

RESULTS FROM SITES IN CHINA

Water sampling in China was conducted for the 11 chemical groups, and in addition for cyanide, in 6 sites.

GRAPH 4



Further details of individual substances detected at each sites are available at the following link:

[Annex 3 China results more details graphic](#)

Here below, comments on Graph nr.4:

1. Azo dyes : found in incoming water on 1 facility; found in untreated waste water on 2 facilities
2. Chlorinated solvents : found in incoming water on 5 facilities; found in untreated waste water on 4 facilities
3. Phthalates : found in incoming water on 5 facilities; found on untreated waste water on 5 facilities

The presence of phthalates calls for constant monitoring of both incoming and waste water. The presence of phthalates in incoming water is frequent in China, and is probably due to the use of low cost plastic piping or poor quality sealants in water supply systems. The phthalate traces detected are subject to considerable variation, and tend to diminish as water is diluted.

4. Brominated and Chlorinated flame retardants : never found in incoming water; found on untreated waste water on 1 facility
5. Organic Tin Compounds : never found in incoming water; found in untreated waste water on 1 facility
6. Chlorophenols : never found
7. Short Chain Chlorinated Paraffins : never found
8. Heavy Metals : found in incoming water on 6 facilities; found in untreated waste water on 6 facilities
9. Alkylphenols & their ethoxylates (APEOs) : never found in incoming water; found in untreated waste water on 5 facilities
10. Perfluorinated Chemicals (PFCs) : never found in incoming water; found in untreated waste water on 1 facility
11. Chlorinated Benzenes : never found in incoming water; found in untreated waste water on 1 facility
12. Cyanide : never found in incoming water; found in untreated waste water on 2 facilities

At the two sites where waste water sampling was possible after treatment, note that certain substances were not totally eliminated and consequently were discharged into the environment even after treatment.

VFG is focused on plants with the main problems but considering that said plants are a small part of its supply chain, VFG will take the proper decisions in order to achieve the Detox commitment, also considering to choose other plants.

CONCLUSIONS AND FOLLOW UP

In the pursuit of zero discharges of hazardous chemicals from products and processes in the supply chain by 2020, VFG is currently taking action in the following areas:

- monitoring completion of post-audit continuous improvement report (CIR modules) by suppliers and delivery of expected outcomes with a view to organizing the programme of follow-up audits and water sampling, thereby assessing real progress towards the achievement of objectives;
- urging suppliers to disclose chemical discharge data via the IPE¹ online platform, in line with the public's "right to know"; despite the technical difficulties in accessing and uploading data, VFG actively encourages all suppliers to cooperate in sharing data;
- urging suppliers to investigate sources of contamination detected within production processes in the light of audit and waste water sampling results, taking into consideration structural, geographical and sector-specific factors;
- ongoing screening of raw materials and finished products, on the basis of best technology detection limits;
- urging suppliers to conduct detailed analysis of all MSDS at production sites and to verify chemical substances used in the production cycle;
- ongoing communication with all actors within the supply chain to raise awareness to VFG's Detox goals, as well as identification of new sites willing to participate in the auditing programme;
- ongoing research into valid substitutes for the 3 priority chemical groups (APEOs, PHTHALATES and PFCs) and public disclosure of documentation on the state of the art;

For further details of specific initiatives relating to the elimination of phthalates, PFC and APEOs from VFG's supply chain, please see:

APEOs investigation, PHTHALATES investigation, PFCs investigation

VFG is urging suppliers to follow its pathway, and to take up the Detox Commitment, as some have already done.

VFG is fully aware that only with the active participation of the entire fashion industry it is possible to deliver the desired outcomes on a global scale; for example, the chemical industry plays a key role on elimination of hazardous chemicals from their formulations. VFG is closely monitoring initiatives undertaken by other firms within the context of the Detox Commitment, willing to take part in all collective efforts and to share its experiences with others.

¹ IPE (Institute for Public and Environmental Affairs) is a non-profit organization established in China in 2006. The main aim is to monitor firms' environmental performance and to promote public participation in environmental management. IPE promotes environmental progress by fostering the public disclosure of testing performed by certified laboratories on the basis of common and globally recognized test methods.

ANNEX 1

VALENTINO FASHION GROUP - WATER SAMPLE TEST METHODS AND DETECTION LIMITS	UPDATED TO NOVEMBER 2014
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Test Conducted	Method	Compound(s)	Cas NO.	Detection limit
Azo dyes	With Reference to DIN 38407-16, EN 14362-1/3 (Modified), By Gas Chromatographic - Mass Spectrometric (GC-MS) And High Performance Liquid Chromatographic (HPLC) Analysis	1,4-Phenylenediamine	106-50-3	0,1 µg/L
		2,4,5-Trimethylaniline	137-17-7	
		2,4-Diaminoanisole	615-05-4	
		2,4-Diaminotoluene	95-80-7	
		2,4-Xylidine	95-68-1	
		2,6-Xylidine	87-62-7	
		2-Chloroaniline	95-51-2	
		2-Naphthylamine	91-59-8	
		3,3'-Dichlorobenzidine	91-94-1	
		3,3'-Dimethoxybenzidine	119-90-4	
		3,3'-Dimethyl-4,4' diaminodiphenylmethane	838-88-0	
		3,3'-Dimethylbenzidine	119-93-7	
		4,4'-Diaminodiphenylmethane	101-77-9	
		4,4'-Methylene-Bis (2-Chloroaniline)	101-14-4	
		4,4'-Oxydianiline	101-80-4	
		4,4'-Thiodianiline	139-65-1	
		4-Aminodiphenyl	92-67-1	
		4-Chloroaniline	106-47-8	
		4-Chloro-o-Toluidine	95-69-2	
		5-Nitro-o-anisidine	99-59-2	
		5-Nitro-o-toluidine	99-55-8	
		4-Aminoazobenzene	60-09-3	
		Aniline	62-53-3	
		Benzidine	92-87-5	
		m-Toluidine	108-44-1	
		n,n-Diethylaniline	91-66-7	
		n-Ethylaniline	103-69-5	
		n-Methylaniline	100-61-8	
		o-Aminoazotoluene	97-56-3	
		o-Anisidine	90-04-0	
		o-Toluidine	95-53-4	
		p-Cresidine	120-71-8	
		p-Toluidine	106-49-0	
Chlorinated Solvents	With Reference to EPA 8260B And By Headspace Gag Chromatography Mass Spectrometric (HS-GC/MS) Analysis	Bromodichloromethane	75-27-4	1 µg/L
		Bromoform	75-25-2	
		Carbon tetrachloride	56-23-5	
		Chlorodibromomethane	124-48-1	
		Chloroethane	75-00-3	
		Chloroform	67-66-3	
		Dibromomethane	75-95-3	
		1,1 Dichloroethane	75-34-3	
		1,2-Dichloroethane	107-06-2	
		1,1-Dichloroethene	75-35-4	
		cis-1,2-Dichloroethene	156-59-2	
		trans-1,2-Dichloroethene	156-60-5	
		trans-1,3-Dichloropropene	10061-02-6	
		Hexachlorobutadiene	87-68-3	
		Methylene chloride	75-09-2	
		1,1,2,2-Tetrachloroethane	79-34-5	
		Tetrachloroethene	127-18-4	
		1,1,1-Trichloroethane	71-55-6	
		Trichloroethene	79-01-6	
		Vinyl chloride	75-01-4	
		Hexachloroethane	67-72-1	
		1,1,1,2-Tetrachloroethane	630-20-6	
		1,1,2-Trichloroethane	79-00-5	
		Pentachloroethane	76-01-7	
Phthalates	With Reference To EPA 8270 or ISO/DIN Method And By Gas Chromatography-Mass Spectrometry (GC-MS) Analysis	Bis (2-ethylhexyl) phthalate (DEHP)	117-81-7	1 µg/L
		Butyl benzyl phthalate (BBP)	85-68-7	
		Di-n-butyl phthalate (DBP)	84-74-2	
		Diethyl phthalate	84-66-2	
		Dimethyl phthalate	131-11-3	
		Di-n-octyl phthalate (DNOP)	117-84-0	
		Di-isononyl phthalate (DINP)	28553-12-0	
		Di-iso-decyl phthalate (DIDP)	26761-40-0	
		Di-isobutyl phthalate (DIBP)	84-69-5	
		Di-n-hexyl phthalate	84-75-3	
		Dimethoxyethyl phthalate (DMEP)	117-82-8	
		Di-n-propyl phthalate (DPRP)	131-16-8	
		Di-iso-octyl phthalate (DIOP)	27554-26-3	
		Di-cyclohexyl phthalate (DCHP)	84-61-7	
		Dinonyl phthalate (DNP)	84-76-4	

Brominated And Chlorinated Flame Retardants	With Reference To EPA 527 (Modified), EPA 8321B And By Liquid Chromatography-Mass Spectrometry (LC-MS) And Gas Chromatography - Mass Spectrometry (GC-MS) Analysis	Polybromodiphenyl ethers (PBDEs)	Multiple	Each 0,05 µg/L
		Polybromodiphenyls (PBBs)	Multiple	Each 0,05 µg/L
		Tris(2,3-dibromopropyl) phosphate (TRIS)	126-72-7	0,5 µg/L
		Tetrabromobisphenol A (TBBPA)	79-94-7	0,5 µg/L
		Tris(2-chloroethyl) phosphate (TCEP)	115-96-8	0,05 µg/L
		Bis(2,3-dibromopropyl) phosphate	5412-25-9	0,5 µg/L
		Hexabromocyclododecane (HBCDD)	3194-55-6	0,5 µg/L
		2,2-Bis(bromomethyl)-1,3-propanediol (BBMP)	3296-90-0	0,5 µg/L
Organotin Compounds	With Reference To ISO 17353:2005 And By Gas Chromatography-Mass Spectrometry (GC-MS) Analysis	Tris(1,3-dichloro-isopropyl) phosphate (TDCP)	13674-87-8	0,05 µg/L
		Monobutyltin	Multiple	0,01 µg/L
		Dibutyltin	Multiple	
		Tributyltin	Multiple	
		Tetrabutyltin	1461-25-2	
		Monooctyltin	Multiple	
		Diocetyl tin	Multiple	
		Triphenyltin	Multiple	
Chlorophenols	With Reference To EPA 8270D And By Gas Chromatography-Mass Spectrometry (GC-MS) Analysis	Tricyclohexyltin	Multiple	0,5 µg/L
		Triocetyl tin	Multiple	
		Tripropyltin	Multiple	
		4-Chloro-3-methylphenol	59-50-7	
		2-Chlorophenol, 3-Chlorophenol, 4-Chlorophenol	95-57-8, 108-43-0, 106-48-9	
		2,4-Dichlorophenol	120-83-2	
		2,5-Dichlorophenol	583-78-8	
		2,6-Dichlorophenol	87-65-0	
		Pentachlorophenol (PCP)	87-86-5	
		2,3,4,6-Tetrachlorophenol	58-90-2	
		2,4,5-Trichlorophenol	95-95-4	
		2,4,6-Trichlorophenol	88-06-2	
		2,3,4,5-Tetrachlorophenol	4901-51-3	
		2,3,5,6-Tetrachlorophenol	935-95-5	
		Tetrachlorophenols (TeCP)	25167-83-3	
		2,3,4-Trichlorophenol	15950-66-0	
Short-Chained Chlorinated Paraffins (SCCPs)	With Reference To ISO/PRF 12010 or EPA 8082 (Modified) And By Gas Chromatography-Mass Spectrometry (GC-MS)	2,3,5-Trichlorophenol	933-78-8	0,4 µg/L
		3,4,5-Trichlorophenol	609-19-8	
Heavy Metals	Chromium VI:With Reference To EPA 7196A And By Ion Chromatography-Inductively Coupled Argon Plasma-Mass Spectrometry (IC-ICP-MS) Analysis resp.Ion Chromatography Others:With Reference To EPA 3015A/EPA 3050B & 6020A And By Inductively Coupled Argon Plasma-Mass Spectrometry (ICP-MS) Analysis	3,5-Dichlorophenol	591-35-5	0,5 µg/L
		2,3-Dichlorophenol	576-24-9	
		3,4-Dichlorophenol	95-77-2	
		Short-Chain Chlorinated Paraffins (SCCPs)	85535-84-8	
		Lead, Pb	7439-92-1	
		Cadmium, Cd	7440-43-9	
		Mercury, Hg	7439-97-6	
		Antimony, Sb	7440-36-0	
		Arsenic, As	7440-38-2	
		Chromium, Cr (total)	7440-47-3	
		Cobalt, Co	7440-48-4	
		Copper, Cu	7440-50-8	
Alkylphenol ethoxylates / Alkylphenos (APEOs/APs)	With Reference To ASTM D7065 And By Gas Chromatography-Mass Spectrometry (GC-MS) And By Liquid Chromatography-Mass Spectrometry (LC-MS) Analysis	Nickel, Ni	7440-02-0	1 µg/L
		Zinc, Zn	7440-66-6	
		Total Manganese	7439-96-5	
		Chromium, hexavalent, Cr(VI)	7440-47-3	
		Nonylphenol	104-40-5	
		Octylphenol	140-66-9	
Perfluorinated Chemicals (PFCs)	By Liquid Chromatography - Mass Spectrometry (LC-MS/MS) analysis	Nonylphenol ethoxylates 1+2 (NPEO 1+2)	Multiple	0,01 µg/L
		Octylphenol ethoxylates 1+2 (OPEO 1+2)	Multiple	
		Nonylphenol ethoxylates 3-18 (NPEO 3-18)	-	
		Octylphenol ethoxylates 3-16 (OPEO 3-16)	-	
		Perfluorooctanoic acid (PFOA)	335-67-1	
		Perfluorooctane sulphonates (PFOS)	2795-39-3	
		Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	0,01 µg/L
		Perfluorohexane sulphonates (PFHxS)	355-46-4	
		Perfluorobutanoic acid (PFBA)	375-22-4	
		Perfluorobutane sulphonates (PFBS)	375-73-5	

Chlorinated Benzenes	With Reference To EPA 8260B , EPA 8270D And By Gas Chromatography-Mass Spectrometry (GC-MS) Analysis	Chlorobenzene	108-90-7	0,02 µg/L
		4-Chlorotoluene	106-43-4	
		1,2-Dichlorobenzene	95-50-1	
		1,3-Dichlorobenzene	541-73-1	
		1,4-Dichlorobenzene	106-46-7	
		1,2,4-Trichlorobenzene	120-82-1	
		1,2,3-Trichlorobenzene	87-61-6	
		1,3,5-Trichlorobenzene	108-70-3	
		1,2,3,4-Tetrachlorobenzene	634-66-2	
		1,2,3,5-Tetrachlorobenzene	634-90-2	
		1,2,4,5-Tetrachlorobenzene	95-94-3	
		Pentachlorobenzene	608-93-5	
		Hexachlorobenzene	118-74-1	
Cyanide	With reference to HJ 484 By Spectrophotometer analysis	Cyanide		4 µg/L

ANNEX 2

VALENTINO FASHION GROUP - ITALY UNTREATED WASTEWATER DISCHARGE RESULTS

ND=not detected, Values expressed in µg/l

Name	Source/Sampling date	Azodyes	Chlorinated Solvents	Phthalates	Brominated and Chlorinated Flame Retardants	Organic Tin Compounds	Chlorophenols	Short Chain Chlorinated Paraffines (c10-c13)	Heavy Metals	Alkylphenols ethoxylates/Alkylphenols (APEOs/APs)	Perfluorinated Chemicals (PFCs)	Chlorinated Benzenes
Facility nr.1	IN 5/11/2013	ND	ND	ND	ND	ND	ND	ND	Arsenic 3,6, Copper 4,0, Zinc 4,6	ND	Perfluoro-butanoic acid PFBA 0,02, Perfluoro-pentanoic acid PFPeA 0,24	Chlorobenzene 0,03
Facility nr.1	UNTREATED WASTE WATER 5/11/2013	Aniline 0,12	ND	ND	ND	ND	ND	ND	Arsenic 3,6, Copper 23, Zinc 21, Chromium 13	Nonylphenols NP 8,3	Perfluoro-butanoic acid PFBA 0,17, Perfluoro-pentanoic acid PFPeA 0,52	Chlorobenzene 0,03
Facility nr.2	IN 5/11/2013	ND	ND	ND	ND	ND	ND	ND	Arsenic 1,8, Nickel 2,8, Copper 7,0, Zinc 8,4	ND	Perfluoro-butanoic acid PFBA 0,13, Perfluoro-pentanoic acid PFPeA 0,27	ND
Facility nr.2	UNTREATED WASTE WATER 5/11/2013	Aniline 1,15	Chloroform 12	ND	ND	ND	ND	ND	Arsenic 2,0, Cobalt 5,5, Nickel 7,7, Copper 30, Chromium 82	ND	Perfluoro-butane-sulfonate K-salt L-PFBS 0,03	ND
Facility nr.3	IN 16/10/2013	Aniline 16,5	Methylene chloride 2,0	ND	ND	ND	ND	ND	Arsenic 4,3, Copper 3,8, Zinc 7,6, Chromium 2,3	ND	Perfluoro-butanoic acid PFBA 0,06, Perfluoro-pentanoic acid PFPeA 0,20	Chlorobenzene 0,09
Facility nr.3	UNTREATED WASTE WATER 16/10/2013	ND	ND	ND	ND	ND	ND	Short Chain Chlorinated Paraffines C10-C13 3,2	Lead 3,4, Arsenic 4,9, Antimony 6,5, Cobalt 4,2, Nickel 9,1, Copper 54, Zinc 99, Chromium 90	ND	Perfluoro-butanoic acid PFBA 0,09, Perfluoro-pentanoic acid PFPeA 0,34	Chlorobenzene 0,10
Facility nr.4	IN 16/10/2013	ND	ND	ND	ND	ND	ND	ND	Arsenic 2,3, Nickel 50, Copper 20, Zinc 51, Chromium 2,3	ND	Perfluoro-butanoic acid PFBA 0,07	Chlorobenzene 0,04
Facility nr.4	UNTREATED WASTE WATER 16/10/2013	p-Phenylendiamin 6,4	ND	ND	ND	ND	ND	ND	Lead 2,5, Arsenic 3,2, Antimony 40, Nickel 3,4, Copper 2300, Zinc 81, Chromium 48	Octylphenol ethoxylates OPEO 29, Nonylphenols NP 1,9	Perfluoro-butanoic acid PFBA 10,7	Chlorobenzene 0,06
Facility nr.5	IN 16/10/2013	ND	Tetrachloroethylene 16, Dichloromethane/Methylene chloride 3,0	ND	ND	ND	ND	ND	Mercury 0,16, Arsenic 2,9, Nickel 2,4, Copper 7,7, Zinc 17, Chromium 5,6	ND	ND	Chlorobenzene 0,18
Facility nr.5	UNTREATED WASTE WATER 16/10/2013	Aniline 1,45	Dichloromethane/Methylene chloride 7, Sum Dichloroethylene 1	ND	ND	ND	ND	ND	Lead 5,1, Mercury 0,13, Arsenic 3,5, Nickel 5,9, Copper 19, Zinc 270, Chromium 250	ND	ND	Chlorobenzene 0,18
Facility nr.6	IN 5/11/2013	ND	ND	ND	ND	ND	ND	ND	Arsenic 3,8, Nickel 15, Copper 6,7, Zinc 7,8	ND	Perfluoro-butanoic acid PFBA 0,03, Perfluoro-pentanoic acid PFPeA 0,22	Chlorobenzene 0,04
Facility nr.6	UNTREATED WASTE WATER 5/11/2013	Aniline 7,4, p-Phenylendiamin 0,69	ND	ND	ND	ND	ND	ND	Lead 4,8, Arsenic 6,0, Cobalt 2,6, Nickel 4,8, Copper 76, Zinc 1800, Chromium 29	Nonylphenols NP 3,3	Perfluoro-pentanoic acid PFPeA 0,44, Perfluoro-decanoic acid PFDA 0,02, Perfluoro-octane acid PFOA 0,02, Perfluoro-octane-sulphonic acid PFOS 1,09	Chlorobenzene 0,04
Facility nr.7	IN 7/10/2013	ND	Methylene chloride 8,3	ND	ND	ND	ND	ND	Lead 1,8, Arsenic 2,6, Antimony 49, Copper 33, Zinc 64, Chromium 15, Hexavalent Chromium 10	ND	Perfluoro-octane-sulphonic acid PFOS 0,02	ND
Facility nr.7	UNTREATED WASTE WATER 7/10/2013	Aniline 2,6	Methylene chloride 1,5	ND	ND	ND	ND	ND	Lead 3,7, Arsenic 3,5, Cobalt 43, Antimony 50, Copper 15, Zinc 210, Chromium 4800	ND	Perfluoro-octane-sulphonic acid PFOS 0,02	Dichlorobenzenes 0,17
Facility nr.8	IN 25/11/2013	ND	Dichloromethane/Methylene chloride 2600	ND	ND	ND	ND	ND	Lead 2,3, Arsenic 2,2, Nickel 3,5, Copper 25, Zinc 84, Chromium 40	ND	ND	ND
Facility nr.8	UNTREATED WASTE WATER 25/11/2013	ND	Dichloromethane/Methylene chloride 3000	ND	ND	ND	ND	ND	Lead 0,33, Copper 4,7, Zinc 13, Chromium 8,2, Hexavalent Chromium 6,6	ND	ND	Chlorobenzene 0,19
Facility nr.9	IN 19/11/2013	ND	Dichloromethane/Methylene chloride 2600	ND	ND	ND	ND	ND	Lead 1,3, Arsenic 4,9, Nickel 6,9, Copper 33, Zinc 560, Chromium 14	ND	Perfluoro-octane-sulphonic acid PFOS 2,20	Chlorobenzene 0,15, Trichlorobenzenes 0,11
Facility nr.9	UNTREATED WASTE WATER 19/11/2013	ND	Dichloromethane/Methylene chloride 2700	ND	ND	ND	ND	ND	Lead 0,54, Arsenic 2,3, Copper 4,4, Zinc 32	ND	ND	ND
Facility nr.10	IN FROM WELL 16/05/2014	ND	ND	ND	ND	ND	ND	ND	Cadmium 2,7, Arsenic 9,7, Chromium 2,5, Cobalt 2,4, Copper 28, Nickel 7,9, Zinc 500, Manganese 950	ND	ND	ND
Facility nr.10	IN FROM PIPELINE 16/05/2014	ND	ND	ND	ND	ND	ND	ND	Cadmium 3,0, Arsenic 4,6, Chromium 3,3, Cobalt 1,0, Copper 21, Nickel 3,2, Zinc 77, Manganese 24	ND	ND	ND
Facility nr.10	UNTREATED WASTE WATER 16/05/2014	ND	ND	ND	ND	ND	ND	ND	Cadmium 37, Antimony 1,4, Arsenic 130, Mercury 0,34, Chromium 17000, Cobalt 850, Copper 3900, Nickel 110, Zinc 13000, Manganese 290	ND	Perfluorobutanoic acid PFBA 0,03, Perfluorobutane sulphonates PFBS 0,15	ND
Facility nr.11	IN 27/05/2014	ND	ND	ND	ND	Monobutyltin MBT0,038, Dibutyltin DBT 0,056	ND	ND	Chromium 12, Copper 10, Zinc 10	ND	ND	ND
Facility nr.11	UNTREATED WASTE WATER 27/05/2014	ND	Chloroform 1,5	ND	ND	Diocetyltn DOT 0,05	ND	ND	Lead 1,1, Chromium 20, Copper 41, Zinc 77, Manganese 9	ND	ND	ND

Screening was carried out for 11 group of hazardous chemicals		
Substances not Detected	Substances find in waste water but also in input water	Substances find only in waste water
6	3	2
7	2	2
7	3	1
6	3	2
7	3	1
6	3	2
8	2	1
9	2	0
9	1	1
8	2	1

VALENTINO FASHION GROUP - ITALY UNTREATED WASTEWATER DISCHARGE RESULTS

ND=not detected, Values expressed in µg/l

Name	Source/Sampling date	Azodyes	Chlorinated Solvents	Phthalates	Brominated and Chlorinated Flame Retardants	Organic Tin Compounds	Chlorophenols	Short Chain Chlorinated Paraffines (c10-c13)	Heavy Metals	Alkylphenols ethoxylates/Alkylphenols (APEOs/APs)	Perfluorinated Chemicals (PFCs)	Chlorinated Benzenes
Facility nr.12	IN 27/05/2014	ND	ND	Di-iso-nonyl-phthalate (DINP) 3,4	ND	Dibutyltin DBT 0,24	ND	ND	Chromium 10, Copper 8, Zinc 8, Manganese 6	ND	ND	ND
Facility nr.12	UNTREATED WASTE WATER 27/05/2014	Aniline 3,5	Chloroform 15	ND	ND	ND	ND	ND	Lead 1,1, Chromium 450, Copper 14, Zinc 67, Manganese 12	ND	ND	ND
Facility nr.13	IN 12/11/2014	Aniline 0,61	ND	ND	ND	ND	ND	ND	Arsenic 4,2, Copper 7,6, Zinc 11	ND	Perfluorobutane sulphonates (PFBS) 0,04	ND
Facility nr.13	UNTREATED WASTE WATER 12/11/2014	Chloroaniline 0,14, Naphthylamine 0,10, Dimethyl-diaminodiphenylmethane 1,35, Aniline 3,43	ND	Bis(2-ethylhexyl)phthalate(DEHP) 20, Di-isononyl phthalate(DINP) 8	ND	Monobutyltin 0,072	Chloro-3-methylphenol 52, Chlorophenols 4,5	ND	Lead 1,8, Chromium 44, Copper 20, Zinc 82	Nonylphenols NP 9,9	Perfluorooctanoic (PFOA) 0,48, Perfluorooctane sulphonates (PFOS) 0,18, Perfluoro-n-hexanoic acid (PFHxA) 0,13, Perfluorohexane sulphonates (PFHxS) 0,03, Perfluorobutanoic acid (PFBA) 0,05, Perfluorobutane sulphonates (PFBS) 0,01	ND
Facility nr.14	IN 6/11/2014	Aniline 1,13	ND	ND	ND	ND	ND	ND	Arsenic 1,1, Copper 7,6, Zinc 8,6	ND	Perfluorobutanoic acid PFBA 0,02	ND
Facility nr.14	UNTREATED WASTE WATER 6/11/2014	Trimethylaniline 0,23, Xylidine 0,15, Chloroaniline 0,80, Diaminodiphenylmethane 2,28, Aniline 58	ND	ND	ND	ND	Chloro-3-methylphenol 620, Chlorophenols 5,2	ND	Lead 7,2, Antimony 2,2, Arsenic 4,3, Chromium 39000, Cobalt 15, Copper 77, Nickel 22, Zinc 450, Manganese 320	Nonylphenols NP 7,5	Perfluorooctanoic acid (PFOA) 0,04, Perfluorobotane sulphonates (PFBS) 0,10	ND
Facility nr.15	IN 6/11/2014	ND	Tetrachloroethene 1	ND	ND	Monobutyltin 0,149	ND	ND	Lead 1,1, Arsenic 1,3, Copper 11, Zinc 340	ND	Perfluorooctanoic acid (PFOA) 0,04, Perfluorobutanoic acid (PFBA) 0,03, Perfluorobotane sulphonates (PFBS) 0,01	ND
Facility nr.15	UNTREATED WASTE WATER 6/11/2014	Chloroaniline 0,85, Aniline 93, o-Toluidine 0,15	Chloroform 5, Methylene chloride 6	ND	ND	Monobutyltin 0,019, Dibutyltin 0,295	Chloro-3-methylphenol 190, Chlorophenols 13	ND	Lead 1,3, Arsenic 1,8, Chromium 6800, Cobalt 4,6, Copper 240, Nickel 4,8, Zinc 65, Manganese 23, Chromium hexavalent 5,2	ND	Perfluorooctanoic acid (PFOA) 0,07, Perfluorobotane sulphonates (PFBS) 0,02	ND
Facility nr.16	IN 21/11/2014	ND	Tetrachloroethene 110	ND	ND	ND	ND	ND	Arsenic 7,4, Chromium 6,3, Copper 7,3, Zinc 29	ND	ND	ND
Facility nr.16	UNTREATED WASTE WATER 21/11/2014	Diaminoanisoole 0,19, Chloroaniline 0,41, Aniline 3,5	Tetrachloroethene 30	ND	ND	ND	Chloro-3-methhylphenol 12, Trichlorophenol 5	ND	Lead 3,1, Antimony 11, Arsenic 58, Chromium 330, Copper 87, Nickel 5,2, Zinc 230, Manganese 42	Nonylphenols ethoxylates (1+2) 84, Nonylphenol ethoxylates (3-18) 200	Perfluorooctanoic acis (PFOA) 0,04	ND

Screening was carried out for 11 group of hazardous chemicals		
Substances not Detected	Substances find in waste water but also in input water	Substances find only in waste water

8	1	2
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4	1	6
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6	1	4
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5	1	5
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5	2	4
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ANNEX 3

VALENTINO FASHION GROUP - CHINA WASTEWATER DISCHARGE RESULTS

ND=not detected, Values expressed in µg/l

Name	Source / Sampling date	Azodyes	Chlorinated Solvents	Phtalates	Brominated and Chlorinated Flame Retardants	Organic Tin Compounds	Chlorophenols	Short Chain Chlorinated Paraffines (c10-c13)	Heavy Metals	Alkylphenols ethoxylates/Alkylphenols (APEOs/APs)	Perfluorinated Chemicals (PFCs)	Chlorinated Benzenes	Cyanide
Facility nr.1	IN 11/10/2013	ND	Chloroform 17	Di-(2-ethyl-hexyl)- phthalate(DEHP) 11	ND	ND	ND	ND	Zinc 153, Manganese 7	ND	ND	ND	ND
Facility nr.1	UNTREATED WASTE WATER 11/10/2013	ND	Chloroform 5	Di-(2-ethyl-hexyl)- phthalate(DEHP) 16,8, Di-iso- nonyl-phthalates(DINP) 3,8, Di- iso-decyl-phthalates(DIDP) 2,3, Di-iso-butyl-phthalate(DIBP)1,1	ND	ND	ND	ND	Antimony 1, Arsenic 5, Lead 2, Cadmium 0,7, Cobalt 3,5, Copper 60, Zinc 170, Manganese 123, Chromium 100	Nonylphenols 6,8	Perfluoro-butane-sulfonic acid (PFBS) 0,5	ND	ND
Facility nr.2	IN FROM TAP WATER 18/09/2013	ND	Dichloromethane 2, Chloroform 48	Di-(2-ethyl-hexyl)- phthalate(DEHP) 3,1, Di-butyl- phtalate(DBP) 1, Di-iso-nonyl- phtalate(DINP) 44,3, Di-iso-butyl- phtalate(DIBP) 2	ND	ND	ND	ND	Arsenic 1,6, Copper 2, Zinc 48	ND	ND	ND	ND
Facility nr.2	IN FROM SURFACE WATER 18/09/2013	ND	Dichloromethane 1	Di-(2-ethyl-hexyl)- phthalate(DEHP) 1,8, Di-butyl- phtalate(DBP) 1,5, Di-iso-nonyl- phtalate(DINP) 64,1, Di-iso-butyl- phtalate(DIBP) 4,5	ND	ND	ND	ND	Antimony 12, Arsenic 1, Copper 1, Zinc 14, Manganese 2	ND	ND	ND	ND
Facility nr.2	UNTREATED WASTE WATER 18/09/2013	ND	Dichloromethane 1	Di-(2-ethyl-hexyl)- phthalate(DEHP) 8,4, Di-butyl- phtalate(DBP) 2,8, Di-iso-nonyl- phtalate(DINP) 74,1, Di-iso-butyl- phtalate(DIBP) 3,2	ND	ND	ND	ND	Antimony 2, Lead 1, Cobalt 9, Copper 1, Zinc 60, Manganese 30, Chromium 45	Nonylphenols 10	ND	ND	ND
Facility nr.3	IN 17/09/2013	p-Chloroaniline 0,8	Dichloromethane 3, Chloroform 20	Di-(2-ethyl-hexyl)- phthalate(DEHP) 2,1, Di-butyl- phtalate(DBP) 1,5, Di-iso-nonyl- phtalate(DINP) 9,3, Di-iso-butyl- phtalate(DIBP) 3,1	ND	ND	ND	ND	Antmony 1,6, Copper 1, Zinc 185, Manganese 5	ND	ND	ND	ND
Facility nr.3	WASTE WATER BEFORE TREATMENT 17/09/2013	p-Chloroaniline 2,4	Dichloromethane 5, Chloroform 4	Di-(2-ethyl-hexyl)- phthalate(DEHP) 15,3, Di-iso- nonyl-phtalate(DINP)15,1, Di-iso- butyl-phtalate(DIBP) 4,5	ND	Dibutyltin(DBT) 0,02, Monobutyltin(MBT) 0,02	ND	ND	Antimony 1, Arsenic 2,6, Hexavalent Chromium 5, Cobalt 2,9, Copper 23, Zinc 19, Manganese 17, Chromium 128	Nonylphenols 800, Nonylphenos ethoxylates 5	ND	ND	ND
Facility nr.3	WASTE WATER AFTER TREATMENT 17/09/2013	2-Naphthylamine 2,8, p- Chloroaniline 0,4	Dichloromethane 5, Chloroform 6	Di-(2-ethyl-hexyl)- phthalate(DEHP) 2,5, Di-butyl- phtalate(DBP) 1,8, Di-iso-nonyl- phtalate(DINP) 53,3, Di-iso-butyl- phtalate(DIBP) 4,1	ND	Dibutyltin(DBT) 0,03, Monobutyltin(MBT) 0,01	ND	ND	Antimony 2,2, Arsenic 2,6, Copper 61, Zinc 7, Manganese 3, Chromium 22	Nonylphenols 200	ND	ND	ND
Facility nr.4	IN 17/09/2013	ND	ND	Di-butyl-phtalate(DBP) 18, Di- iso-butyl-phtalate(DIBP) 314	ND	ND	ND	ND	Antimony 2,3, Arsenic 2,3, Cadmium 0,1, Copper 1,5, Zinc 25	ND	ND	ND	ND
Facility nr.4	UNTREATED WASTE WATER 17/09/2013	ND	ND	Di-(2-ethyl-hexyl)- phtalate(DEHP) 3,7, Di-iso-nonyl- phtalate(DINP) 4,6	Tri-(2,3-di-bromo-propyl)- phosphate(TRIS) 962	ND	ND	ND	Antimony 2,0, Arsenic 2,9, Lead 1,4, Copper 82, Zinc 62, Manganese 9, Chromium 29	ND	ND	Dichlorobenzene 0,26	Cyanide 38
Facility nr.5	IN 10/10/2013	ND	Chloroform 10	Di-(2-ethyl-hexyl)- phthalate(DEHP) 11,5	ND	ND	ND	ND	Antimony 1, Zinc 2, Manganese 2	ND	ND	ND	ND
Facility nr.5	WASTE WATER BEFORE TREATMENT 10/10/2013	ND	Chloroform 3	Di-(2-ethyl-hexyl)- phthalate(DEHP) 20,9, Di-butyl- phtalate(DBP) 2,7, Di-iso-nonyl- phtalate(DINP) 12,7, Di-iso- decyl-phtalate(DIDP) 4,8, Di-iso- butyl-phtalate(DIBP) 1,9	ND	ND	ND	ND	Antimony 10, Arsenic 3, Lead 2, Cobalt 2, Copper 12, Zinc 1512, Manganese 105, Chromium 5	Nonylphenols 5	ND	ND	ND
Facility nr.5	WASTE WATER AFTER TREATMENT 10/10/2013	ND	ND	Di-(2-ethyl-hexyl)- phthalate(DEHP) 18,7	ND	ND	ND	ND	Antimony 66, Arsenic 1, Cobalt 1,6, Copper 10, Zinc 26, Manganese 57, Chromium 5	Nonylphenols 2	ND	ND	ND
Facility nr.6	IN 13/12/2013	ND	Chloroform 5,4	ND	ND	ND	ND	ND	Copper 1,3, Manganese 2	ND	ND	ND	ND
Facility nr.6	UNTREATED WASTE WATER 13/12/2013	p-Chloroaniline 2	ND	ND	ND	ND	ND	ND	Cadmium 0,4, Cobalt 5, Copper 60, Zinc 374, Manganese 33, Chromium 104	Nonylphenos 35,2	ND	ND	Cyanide 4

Screening was carried out for 12 group of hazardous chemicals		
Substances not Detected	Substances find in waste water but also in input water	Substances find only in waste water
7	3	2
8	3	1
6	4	2
6	4	2
7	2	3
8	3	1
9	2	1
8	1	3