UNITED COLORS OF BENETTON.

Benetton Group srl

PFCs Elimination Progress

December 2022

Index

Introduction, scope and purpose 2

Foreword, Concept and Background 2

What are PFCs ? 2

Difference between long- and short-chain PFCs 2

Benetton's position 3

Legislation 3

Progress and Achievements 4

What Benetton Group is doing 4

The latest year 5

The experience in chronological order 5

Data and Graphs 9

Water Tests 11

Next steps … 12

Additional Background Information 12

Laboratories 12

Test Methods 12

Detection Limits 12

List of PFCs compounds 13

Introduction, scope and purpose

As part of its zero discharges pledge, Benetton Group (Benetton) is committed to completely eliminate Per-Fluorinated Chemicals (PFCs) from all its products and processes.
The scope and purpose have been declared in the Benetton Group's Detox Commitment to zero discharges[1].
An investigation into the level of compliance with Benetton Group's RSL[2] has begun and has led to more stringent contracts with suppliers that call a progressive reduction of PFCs while aiming for their complete elimination. Benetton is actually working in partnership with the supply-chain and other textile's global leaders to quickly move towards non-PFC technologies. The result will be ensured by a rigorous system of controls that will check for possible traces in the supply-chain.

Foreword, Concept and Background

What are PFCs ?

"Per-and polyfluorinated chemicals (PFCs), or more specifically per-and polyfluoroalkyl substances (PFASs), are a large group of chemicals that have been used since the 1950s as ingredients or intermediates of surfactants and surface protectors for assorted industrial and consumer applications. During the last decade, several PFASs have been recognised as highly persistent, potentially bioaccumulative and toxic. In addition, many PFASs have been detected globally in the environment, biota, humans and food items. Initially, most attention was given to perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), two PFAS chemicals found commonly in the environment, biota and human and most studied with regard to toxicity and ecotoxicity. Lately, more attention has also been given to other PFASs".[3]
PFCs are widely used to make everyday products more resistant to stains, grease and water.
To fully understand all sources of human exposure to PFC, more research is needed in all fields, not only in the textile industry. People, in fact, are most likely exposed to these compounds by consuming PFC-contaminated water or food, or by using products that contain PFCs.

Difference between long- and short-chain PFCs

The PFC family consists of molecules having a carbon backbone, fully surrounded by fluorine. Various "cousins" have carbon backbones of different lengths: PFOS or C8, for example, has 8 carbon atoms, C7 has 7, and so on. Today, there is controversy about the so-called "bad" fluorocarbons (C8) and the "good" ones (C6), "*because C6 produces a by-product (PFHA) which is supposed to be 40 times less bioaccumulative than by-product of PFOA …".*[4]
The smaller the fluorocarbon, the more rapidly it breaks down in the environment.
Unfortunately, the desired textile performances decreases as the number of the carbon atoms diminishes.

[1] http://assets.benettongroup.com/wp-content/uploads/2016/05/Benetton_Group_Detox_Commitment.pdf
[2] http://www.benettongroup.com/sustainability/detox/rsl/
[3] OECD (Organisation for Economic Co-operation and Development) Portal on Perfluorinated Chemicals http://www.oecd.org/ehs/pfc/
[4] http://www.academia.edu/14840918/Finishing_of_Textiles_With_Fluorocarbons

Benetton's position

Since January 2013 Benetton has refused making any distinction between long-chain and short-chain classifications. It has fully embraced the challenge of PFCs elimination, recognizing the importance of a determined action in approaching this matter.

Recently this approach found consensus among scientific bodies that were concerned about the production and release into the environment of PFCs. In fact, the 2015 "Madrid's Statement" affirms:

"While some shorter-chain fluorinated alternatives seem to be less bioaccumulative, they are still as environmentally persistent as long-chain substances or have persistent degradation products. Thus, a switch to short-chain and other fluorinated alternatives may not reduce the amounts of PFASs in the environment. In addition, because some of the shorter-chain PFASs are less effective, larger quantities may be needed to provide the same performance".[5]

Legislation

Legislation under REACH (*Registration, Evaluation, Authorization and Restriction of Chemicals*)[6] restricts the use of some PFCs compounds; these are also restricted under the European Union's POP (Persistent Organic Pollutants) Regulation[7].

Benetton Groups has banned the use of PFCs in manufacturing processes and in all its products.

[5] Scheringer M, Trier X, Cousins IT, de Voogt P, Fletcher T, Wang Z, et al. 2014. Helsingør Statement on poly- & perfluorinated alkyl substances (PFASs). Chemosphere 114: 337-339; doi:10.1016/j.chemosphere.2014.05.044.

[6] https://echa.europa.eu/regulations/reach/legislation

[7] Regulation EC no. No 850/2004 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC, available at http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02004R0850-20151204&qid=1450270037326&from=EN

Progress and Achievements

What Benetton Group is doing

The interest of Benetton in eliminating hazardous chemicals from its products was high even before it committed to Detox. In fact, Benetton required its suppliers to accept an agreement in which the respect of safety on chemicals was an essential part. With reference to the PFCs, Benetton tested products to check the presence of PFOS and PFOA compounds, as they were already restricted from REACH and Oeko Tex® 100. Results of these tests has provided a PFCs use baseline for measuring progress from 2013 that is when Benetton signed the Detox commitment.

Benetton Group's progresses and achievements on PFCs elimination are schematized in Figure1.

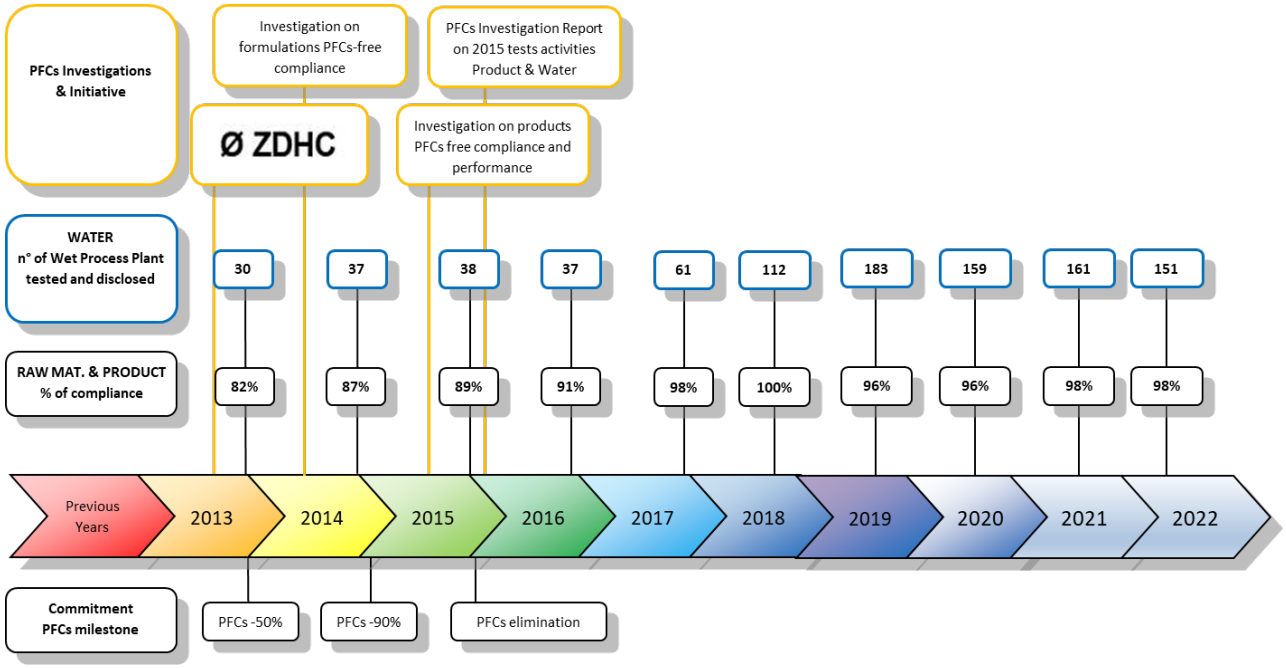


Figure 1 Scheme of Benetton's actions in the PFCs elimination.

The latest year

2022 – During 2022, more than 150 facilities involved in wet process have been verified through the Benetton's Detox Programme. This means they have performed both wastewater tests (according to the ZDHC Wastewater Guideline) and assessments on chemical management, work practice, environmental permits, sustainable resource use, air emission by filling the Higg FEM.

Finished products have been also tested to verify their compliance with Benetton's requirements: **242** tests have been performed for a total of **12,647** PFCs tested compounds. According to the Benetton's RSL review happened at the end of 2020 to be aligned with the most recent and strict regulations, comparing to the previous year, the number of PFC anlytes to be tested has been incresed.
Results show that Benetton almost reached the total elimination of PFCs from its production (being the compliance equal to **98%**) and the few dections are related to small unintentional contaminations in the production processes.

The experience in chronological order

2013 - With the setting and the publishing of the RSL (January 2013), Benetton phased out the PFCs family and begins focusing and testing its products to verify the RSL compliance. Adopting a consistent screening methodology on products became a "must", defined by a calculation tool based on recognized statistical methods and on suppliers basis. Tests are continuously conducted on raw materials and finished goods.
Committed to the "right to know" principle, in 2013 Benetton also begin testing discharges of hazardous chemicals into water used by Wet Process plants pertaining to its supply-chain. Tests and audits are conducted by independent third parties appointed by Benetton. Water test results are disclosed on the Benetton's website[8] for each individual facility.

With regard to the Chinese plants the results are also disclosed on the online platform of the Institute of Public and Environmental Affairs (IPE)[9]. The list of the Chinese plants with their respective links to the IPE platform is also available in a specific section of the Benetton's website[10].
Let us note that staring from 2013, both the list of water test results and the list of Chinese IPE links are updated year by year to make the supply chain as transparent as possible.

Consistently with the finding, Benetton has noticed some of its suppliers that were "positive to PFCs", and requested they to only use sustainable PFC-free chemicals (where "free" means zero).
Furthermore, Benetton has appointed service providers to carry out the environmental audit, in order to raise awareness about a correct and respectful "*modus operandi*" in chemicals use, legal requirements and sustainable production.

[8] https://www.benettongroup.com/en/sustainability/detox/wet-process/water-test-results/
[9] http://wwwen.ipe.org.cn/
[10] https://www.benettongroup.com/en/sustainability/detox/wet-process/ipe-disclosure/

To ensure that PFCs are not present, suppliers were asked for clarifications concerning their chemical inventory and were invited to discuss suitable substitutes. Moreover, they were also asked to perform risk-based checks on used formulations and raw materials/products by submitting samples to a third party laboratory for testing.

In June 2013, Benetton has joined the Zero Discharge of Hazardous Chemicals (ZDHC) Programme[11], to cooperate with other leading brands and retailers committed to the 2020 target of eliminating hazardous chemicals from the textile industry.

2014 - Wanting to further investigate PFC-free chemicals formulations, Benetton tested some of them declared to be fluorine-free water repellents. All products were evaluated against SUBSPORT[12] criteria too. Besides the water repellent properties, Benetton wants to be sure that PFCs are not replaced with other problematic chemicals and, for this, formulations have been tested with reference to all the 11 Detox groups and some other compounds (Table 1).

Table 1: Substitution testing PFC-free formulations.

		Chemicals			
	Substances	**Chemical 1**	**Chemical 2**	**Chemical 3**	**Chemical 4**
1	APs/APEOs	n.d.	n.d.	n.d.	n.d.
2	Phthalates	n.d.	n.d.	n.d.	n.d.
3	Flame Retardants	n.d.	n.d.	n.d.	n.d.
4	Azo Colorants	N/A	N/A	N/A	N/A
5	Organotin Compounds	n.d.	n.d.	n.d.	n.d.
6	PFCs	Traces	n.d.	Traces	n.d.
7	Chlorinated Benzenes and Toluenes	n.d.	n.d.	n.d.	n.d.
8	Solvents	Traces	n.d.	n.d.	n.d.
9	Chlorinated Phenols	n.d.	n.d.	n.d.	n.d.
10	Short Chain Chlorinated Paraffines	n.d.	n.d.	n.d.	n.d.
11	Heavy Metals (Total Pb, Cd, Hg)	n.d.	Traces	n.d.	n.d.
	Formaldehyde	n.d.	Found	n.d.	Found
	Isocyanates	n.d.	Found	n.d.	n.d.
	Colorants	N/A	N/A	N/A	N/A
	Heavy metals extractable	N/A	N/A	N/A	N/A

n.d. = Not Detected (best available technology at the testing lab, per each different substrate)
N/A = Not Applicable

After testing on chemicals Benetton also checks the compliance on finished fabrics to which formulations were applied. Results showed that there was no contamination on fabrics.
With the annual review of the RSL, Benetton has increased the number of single PFCs compounds for testing, bringing them from 30 to 37.

[11] https://www.roadmaptozero.com/
[12] https://www.subsportplus.eu/subsportplus/EN/Home/Home_node.html

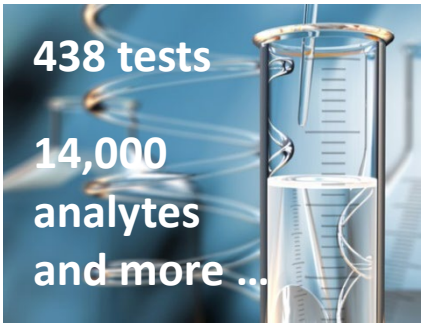
2015 - Finding that some tests performed on materials were not PFC-free, Benetton pressures the whole supply chain to reduce PFCs levels at 0 (zero) by using PFC-free readily available in the market.
Benetton deeply looked at the definition that is all about the concept of *Durable Water Repellency* (DWR) accordingly to the Benetton's styles and their expected use from the end-consumers side.
Three terms, as given by literature, enlightened towards a "Responsible Design" awareness:

- *"Water-resistant: able to resist the penetration of water to some degree but not entirely."*; this is the lowest level of water protection.
- *"Water-repellent: not easily penetrated by water, especially as a result of being treated for such a purpose."* with a surface coating; it's basically just a step up from water-resistant.
- *"Waterproof: impervious to water."* [13]

Benetton's products are designed for everyday life, not for extreme and particular conditions. Therefore on thinking it over, Benetton decided to set a performance to water resistance coherently with the use for which its products are designed, recognizing the priority of "green chemistry" and PFC-free products, although they negatively impact DWR performances.
Screenings from the supply-chain and continuous feedback channels for sharing are in place.

At the end of 2015, Benetton carried out a new investigation to evaluate chemicals comply and water performances. A number of fabrics with PFC-free formulations' finishing have been selected from different suppliers and they have been submitted to 4 different and globally recognized ISO 17025 testing laboratories. The test results complied with banning of PFCs and they also satisfied the required test on performances.

At the end of the year, an investigation focused on tested PFCs (testing period from January 2015 to December 2015) has been made. This is an in-depth exploration of PFCs in raw materials, products and water. The final output is evidence of the very large amount of tests performed: **438** tests – four times the amount carried out in previous years – were carried out, in which more than **14,000** single analytes have been screened.



Investigation Report can be downloaded at the following link:
https://www.benettongroup.com/site/assets/files/1143/ok_benetton_pfcs_investigation.pdf

2016 – Regarding wet process plants, verifications have been conducted by third parties not only in Europe (including Benetton's most important supplier - with its 6 facilities located in 4 different countries of EMEA) but also in many other countries, such as India and China. During this year, **316** tests on products have been performed, for a total of **12,324** tested compounds: results show that it has been got the **91%** of the compliance. During the 2016, thanks to the updating of the RSL, the list of banned PFCs has been increased from 37 to 39 compounds.

[13] Oxford English Dictionary

2017 – As happened in the 2016, following the reduction of the styles, the number of performed test is decreased also in 2017. In spite to **287** tests that have been performed for a total of **11,193** tested compounds, the results show that we reached the **98%** of the compliance. Including in the calculation those categories of products in which PFC's were never found and in which any PFC's use has no sense, the result grows to **99,75%.**

July 2017, publication of the PFC's case study on SUBSPORT

According to exploration and verification of PFC-free alternatives, Benetton conducted an analysis on a particular substance to improve the water-proof characteristic of its products. In fact, even if high DWR performances are not a prerogative for Benetton's products (since they are designed for everyday life and not for extreme conditions), it has been decided to study the DWR performances of the fabrics after a plasma treatment. This process, in fact, makes the PFCs' free chemical additives more effective and allows fabrics to have water repellency characteristics similar to those obtained by using PFCs compounds, helping to offset the gap between the "harmful long chains" and the "safer alternatives". The case study has been published and it is available on the Substitution Portal at the following link:
https://www.subsportplus.eu/subsportplus/EN/Cases/Case-story-database/case-story-database_details_node.html?idDatarecord=560011

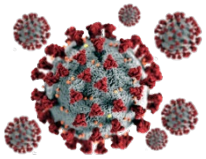
In September 2017, deeply committed to the annual review of its RSL, Benetton Group screened and found some new interesting compounds to investigate, pertaining to 3 different PFC's subcategories such as the PFOS, the salts and the FTA/FTOH. These have been included in the list of the banned PFC's and will be object of test on products over the next year. Here listed the new ones:

PFOS: Perfluorooctanesulfonylfluoride (CAS-Nr. 307-35-7, abbreviation PFOSF)
Salts: Perfluorodecanesulfonate K-salt (CAS-Nr. 2806-16-8, abbreviation PFDS-K)
Perfluorodecanesulfonate ammonium salt (CAS-Nr 3108-42-7, abbreviation APFDS),
Perfluorooctanoate ammonium salt (CAS-Nr. 3825-26-1, abbrevaition APFO)
FTA/FTOH: 1H,1H,2H,2H-Perfluorodecanesulfonate (CAS-Nr. 39108-34-4 , abbreviation 8:2 FTS)

2018 – After years of hard work and thanks to the joined efforts amongst all the supply chain actors and the growing awareness on environmental impact deriving from the textile industries, results of **362** tests, i.e. **15,928** PFCs tested compounds, show the achievement of the total compliance.
Thanks to the adoption of the ZDHC Wastewater Guideline and the Higg FEM, the number of verified wet process plants is increased of more than 50% compared to the previous year.

2019 – Despite the achievement of total compliance obtained in 2018, Benetton Group did not stop its commitment on eliminating PFC from its production processes.
In line with the results obtained in the previous year, also in 2019 the number of verified wet process plants has increased of more than 50%.

351 tests have been performed on finished products for a total of **16, 178** PFCs tested compounds. Comparing to 2018, results show a small decrease in the achievement of the total compliance: 4% of not compliance refers to small unintentional contaminations in the production processes.



2020 – Despite the Covid-19 pandemic that affected the whole globe, Benetton Group continued monitoring its production processes to ensure free PFC styles.
The number of tests performed on finished products is **332,** for a total of **14,241** PFCs tested compounds. As in 2019, Benetton reached **96%** compliance and the dections are related to small unintentional contaminations in the production processes.

2021 – The number of tests performed during 2021 on finished products is **298,** for a total of **13,337** PFCs tested compounds. Compared to the previous year, the compliance percentage increased of 2%, reaching the value of **98%**:

Data and Graphs

Results of the analysis performed in 2022 are compared with the results of the previous years and they are presented in the following graphs. The first graph (Figure 2) represents the number of tests performed every year, starting from 2012.

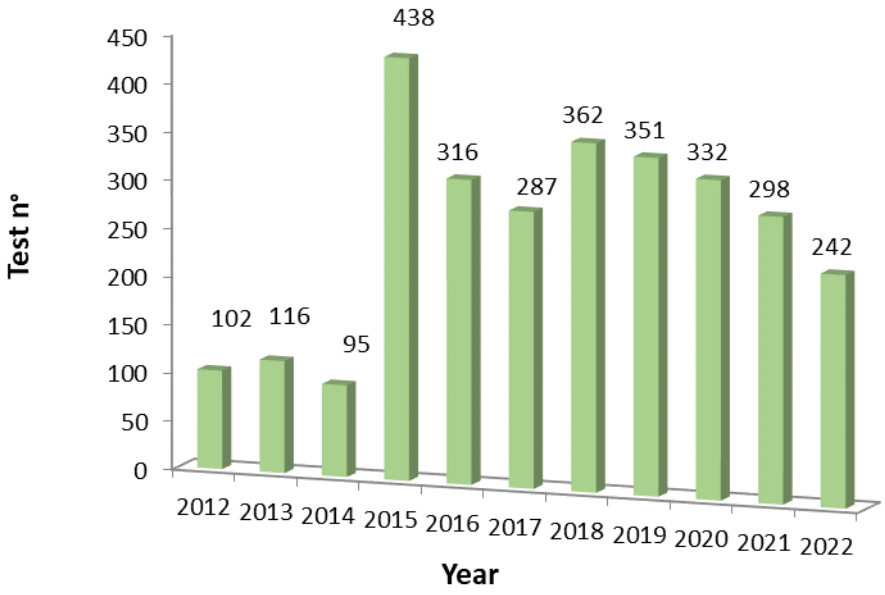


Figure 2 Number of test reports performed.

Figure 3 represents the percentage of obtained compliance during the years, by making tests on raw materials, semi-finished products or finished products.

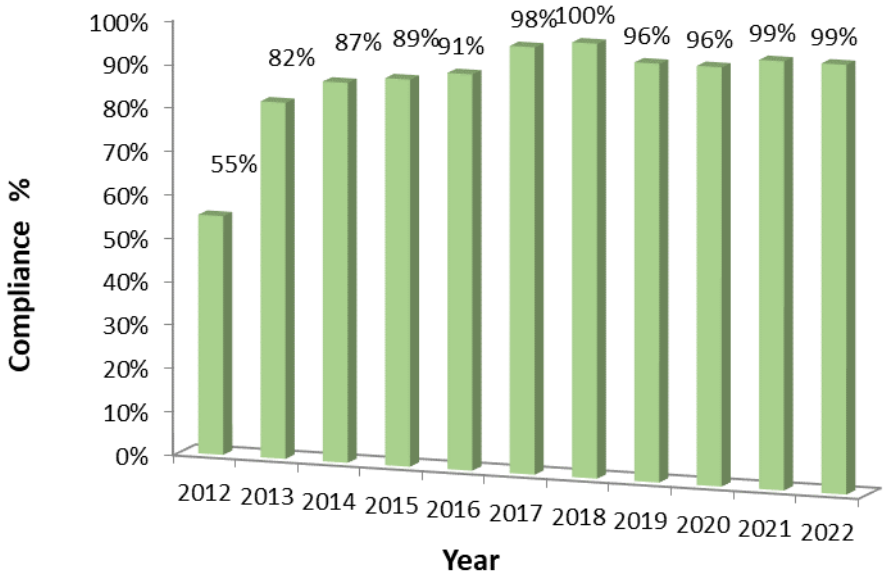


Figure 3 Compliance's percentage.

The following two graphs represent, respectively, the number of tested PFC compounds (Figure 4) and the progress of PFCs elimination (Figure 5).

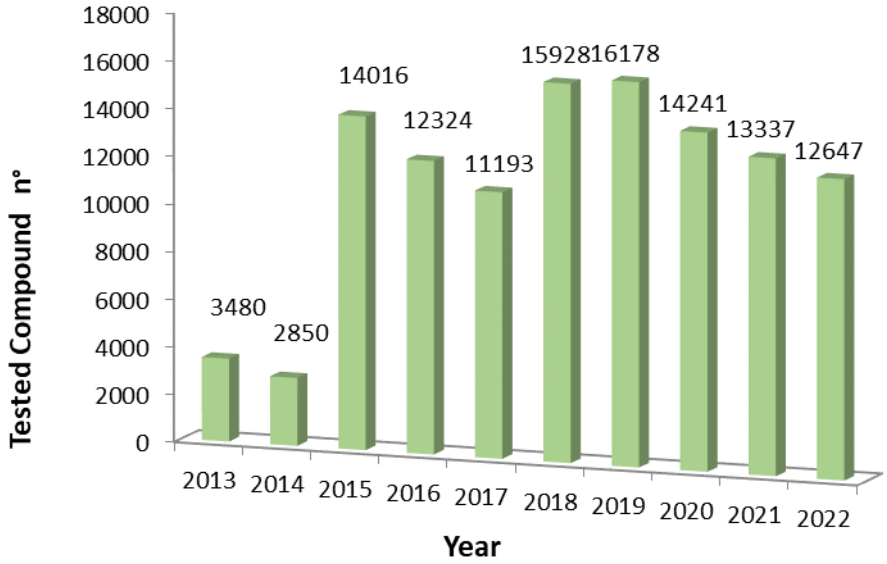


Figure 4 Number of tested PFC compounds.

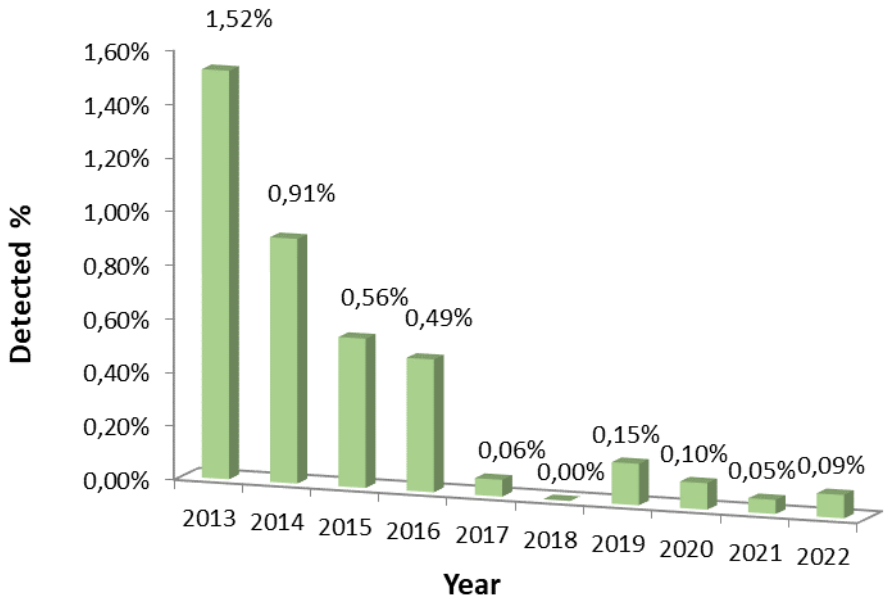


Figure 5 Progress of PFCs elimination.

Note that the percentages shown in Figure 5 refer to the number of detected compounds versus the total number of tested compounds.

Water Tests

As shown in Figure 1, simultaneously to the PFCs tests on the products, since 2013 Benetton is also testing discharges of hazardous chemicals into water used in the Wet Process plants within its supply-chain.

Until 2016, tests consisted in sampling water in three crucial points: *Raw Waste Water - RWW* (sampled at the end of the production line), *Incoming Water – InW* (sampled at the water sourcing point), *Treated Waste Water - TWW* (sampled at the exit of the Effluent Treatment Plant) and testing them for all 11 DETOX Chemical Groups[14] plus Cyanide. In particular, *RWW* is tested for all 12 chemical groups, *InW* and *TWW* are tested in case of findings on RWW and focused on founded groups.

Starting from 2017, with the adoption of the ZDHC Wastewater Guideline, 18 groups are tested: Conventional Parameters, Heavy metals and Cyanide, Alkylphenols and Alkylphenols Ethoxylates (APs/APEOs), Chlorobenzenes and Chlorotoluenes, Chlorophenols, Dyes – Azo, Dyes – Carcinogenic, Dyes – Disperse, Flame Retardant, Glycols, Halogenated Solvents, Organotin Compounds, PFCs, Phthalates, Poly Aromatic Hydrocarbons (PaHs), Volatile Organic Compounds (VOCs).

As already noted in previous sections, all results are available on the Benetton's website and, for Chinese plants, also in the IPE website. In particular, during 2022, water at 151 plants have been tested and their

[14] Alkylphenols and Alkylphenols Ethoxylates (APs/APEOs), Chlorinated Benzenes, Chlorinated Phenols, Colorants; Flame Retardant Products, Short Chain Chlorinated Paraffins, Heavy Metals, Organotin Compounds, PFCs, Phthalates, Solvents.

respective reports have been disclosed on Benetton's website. For 40 of these plants the link to the IPE platform is also available[15] [16].

Next steps …

Benetton will continue to monitor and limit these substances in the supply chain processes and in its products. According to REACH regulation, in which some modification regarding PFCs have been newly introduced, Benetton already took account of the new limit and testing method. They will be soon included and described in the incoming revision of the Benetton's PRSL, as well as some additional compounds.
Benetton will also continue in the screening of the wet process plants, particularly enforcing the verification of supplier's chemical inventory compliance with the Benetton's RSL.

Benetton has taken concrete actions to reach the ambitious goal that the company had set in 2013, benefitting of a cleaner production in the supply chain. Monitoring of PFC-free alternatives remain one of the primary tasks in which Benetton company wants to keep alive. Recurring verifications at all tiers of the supply chain will continue to check compliance of supplier's chemical inventory with RSL of Benetton.

Being firm in its purpose, Benetton continues the intensive test program to identify contamination sources on materials and products, addressing specific communication and "best practices" suggestions.

Additional Background Information

Laboratories

All samples were tested in globally recognized ISO 17025 testing laboratories.

Test Methods

- Raw Materials and Products: CEN/TS 15968
- Wastewater: DIN 38407-42
  Ionic PFC: Concentration or direct injection, LC/MS (-MS)
  Non-ionic PFC (FTOH): derivatization with acetic anhydride followed by GC/MS

*Detection Limits**

- Raw Materials and Products: 0,5 µg/m^2
- Wastewater: 0,01 µg/L (ppb)
  FTOH: 1 µg/L (ppb)

*best reproducible detection limits currently achievable by all testing laboratories

[15] http://www.benettongroup.com/sustainability/detox/wet-process/water-test-results/
[16] http://www.benettongroup.com/sustainability/detox/wet-process/ipe-disclosure/

List of PFCs compounds

Name	CAS-Nr.	Abbreviation
Perfluorooctane sulfonate and related substances	Various	PFOS
Perfluorooctanesulfonic acid	1763-23-1	PFOS
Perfluorooctane sulfonate K-salt	2795-39-3	PFOS-X
Perfluorooctane sulfonate Li-salt	29457-72-5	PFOS-X
Perfluorooctane sulfonate ammonium salt	29081-56-9	PFOS-X
Bis(2-hydroxyethyl)ammonium perfluorooctane sulfonate	70225-14-8	PFOS-X
Tetraethyl ammonium perfluoroctane sulfonate	56773-42-3	PFOS-X
Didecyldimethyl ammonium perfluorooctane sulfonate	251099-16-8	PFOS-X
Perfluorooctanesulfonamide	754-91-6	PFOSA
N-Methyl-Perfluorooctanesulfonamide	31506-32-8	N-Me-FOSA
N-Ethyl-Perfluorooctanesulfonamide	4151-50-2	N-Et-FOSA
N-Methyl-Perfluorooctanesulfonamidoethanol	24448-09-7	N-Me-FOSE
N-Ethyl-Perfluorooctanesulfonamidoethanol	1691-99-2	N-Et-FOSE
Perfluorooctanesulfonylfluoride	307-35-7	PFOSF
1H,1H,2H,2H-Perfluorohexanesulfonic acid	757124-72-4	4:2 FTS
1H,1H,2H,2H-Perfluorooctanesulfonic acid	27619-97-2	6:2 FTS
1H,1H,2H,2H-Perfluorodecanesulfonic acid	39108-34-4	8:2 FTS
1H,1H,2H,2H-Perfluorododecanesulfonic acid	120226-60-0	10:2 FTS
2,3,3,3-tetrafluoro-2-(heptafluoro propoxy)propionic acid	13252-13-6	HFPO-DA
Perfluoropentanoic acid	2706-90-3	PFPeA
Perfluorohexanoic acid	307-24-4	PFHxA
Perfluoroheptanoic acid	375-85-9	PFHpA
7H-Dodecafluoroheptanoic acid	1546-95-8	7HPFHpA
Perfluorooctanoic acid	335-67-1	PFOA
Perfluoro-3,7-dimethyloctanoic acid	172155-07-6	PF-3,7-DMOA
Perfluorooctanoate ammonium salt	3825-26-1	APFO
Perfluorooctanoate Na-salt	335-95-5	Na-PFOA
Perfluorooctanoate K-salt	2395-00-8	K-PFOA
Perfluorooctanoate Ag-salt	335-93-3	Ag-PFOA
Perfluorooctanoyl fluoride	335-66-0	F-PFO
Methyl perfluorooctanoate	376-27-2	Me-PFOA
Ethyl perfluorooctanoate	3108-24-5	Et-PFOA
Perfluorononanoic acid	375-95-1	PFNA
Perfluorononanoate Na-salt	21049-39-8	PFN
Perfluorononanoate ammonium salt	4149-60-4	APFN
Perfluorodecanoic acid	335-76-2	PFDA
2H,2H-Perfluorodecanoic acid	882489-14-7	H2PFDA
Perfluoroundecanoic acid	2058-94-8	PFUnA
2H,2H,3H,3H-Perfluoroundecanoic acid	34598-33-9	4HPFUnA
Perfluorododecanoic acid	307-55-1	PFDoA
Perfluorotridecanoic acid	72629-94-8	PFTrA
Perfluorotetradecanoic acid	376-06-7	PFTeA
Perfluorobutane sulfonic acid	375-73-5; 59933-66-3	PFBS
Perfluorohexane sulfonic acid	355-46-4	PFHxS
Perfluoroheptane sulfonic acid	375-92-8	PFHpS
Perfluorodecane sulfonic acid	335-77-3	PFDS

Perfluorobutanesulfonate K-salt	29420-49-3	PFBS-K
Perfluorohexanesulfonate Na-salt	82382-12-15	PFHxS-Na
Perfluoroheptanesulfonate Na-salt	68555-66-8	PFHpS-Na
Perfluorodecanesulfonate Na-salt	3830-45-3	PFDS-Na
Perfluorodecanesulfonate K-salt	2806-16-8	PFDS-K
Perfluorodecanesulfonate ammonium salt	3108-42-7	APFDS
1H,1H,2H,2H-Perfluorohexane-1-ol	2043-47-2	4:2 FTOH
1H,1H,2H,2H-Perfluoro-1-octanol	647-42-7	6:2 FTOH
1H,1H,2H,2H-Perfluoro-1-decanol	678-39-7	8:2 FTOH
1H,1H,2H,2H-Perfluorododecane-1-ol	865-86-1	10:2 FTOH
1H,1H,2H,2H-Perfluorooctylacrylate	17527-29-6	6:2 FTA
1H,1H,2H,2H-Perfluorodecylacrylate	27905-45-9	8:2 FTA
1H,1H,2H,2H-Perfluorododecylacrylate	17741-60-5	10:2 FTA
1H,1H,2H,2H-Perfluorooctyl methacrylate	2144-53-8	6:2 FTMA
1H,1H,2H,2H-Perfluorodecyl methacrylate	1996-88-9	8:2 FTMA