

PFC
Investigation Report
2018

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COMMITMENT DETOX – PFC APRIL 2018

Miroglio Fashion, accordingly to the deadline as per Greenpeace DETOX commitment is following a path to eliminate PFC from all production processes and supply chain.

Perfluorinated compounds (PFCs)

Perfluorinated compounds are synthetic substances largely used by industry for their well-known waterproof and oilproof properties.

In textile/clothing industry they are mainly used to provide waterproof properties to external fabrics in outdoor garments.

Despite their wide scale use by industries, some studies pointed out that many PFCs are difficult to dispose of, because they remain in the environment and can increase their level due to food chain contamination.

Moreover, some PFCs, once absorbed by the organism, become endocrine disruptors and may affect growth levels and hormonal reproduction.

The most known PFC is Perfluorooctane sulfonic (PFOS), a compound which is highly resistant to degradation and can be enduring into the environment for a very long time.

That compound has been included in persistent organic compounds list (POP) within Stockholm Convention.

All countries that signed DETOX commitment, including the European ones and China, are compelled to take measures in order to limit production and use of this substance.

Use and commerce of PFOS are also forbidden in some application of REACH regulation and Canadian Environmental Protection Act.

Miroglio Fashion, which is not a producer or distributor of waterproof garments, includes in its collection only few of those styles.

SCREENING RESULT

In 2016 we made the first screening, verifying some samples from eight Far East companies.

The last time we checked 49 items from the same productions which confirmed a limited contamination of raw materials and finished product (see 2016 case study).

The major criticalities were found in Chinese items and in particular in long chain perfluorooctane compound.

Following this result, according to DETOX Commitment Roadmap, Miroglio Fashion has taken the following measures:

- Suppliers training and consequent review of all supplying contracts in order to guarantee full respect of limits as per M-RSL;
- Enforcement of audit program in places where wet process take place and water analysis;
- Tests on inside water and wastewater for all companies in all companies where wet process has not been analyzed, publishing the results on IPE platform;
- Introduction and check with related labs about detection limits according to the best available technologies, for all groups of substances present in products and process.

Miroglio Fashion, thanks to case study result, can say that the items brought onto the market don't contain PFCs and guarantee to consumers a high quality standard in terms of chemical security.

Miroglio Fashion is also aware that, taking actively part with all its Supply Chain and fashion industry, through sharing and training, will be able to achieve common goals stated in Greenpeace DETOX commitment.

In 2018, we checked the suppliers once again (in the meantime they are only 4), about which the criticalities were pointed out, making new tests randomly at Buzzilab in Prato.

In the following table you can find the results from the last testing campaign:

Test report nr.	Date of report	Sample composition	Perfluorinated Substances(PFC)	CAS N.	Result (µg/m ²)
14786	08/03/2018	100%PL	Perfluorinated Compounds (PFC)	N.D.	N.D.
14785	08/03/2018	100%PL	Perfluorohexane sulfonic acid (PFHxS)	3871-99-6 / 355-46-4 82382-12-15 / 432-50-7	2,2
14784	08/03/2018	100%PL	Perfluorinated Compounds (PFC)	N.D.	N.D.
14783	08/03/2018	100%PL	6:2 Fluorotelomer alcohol (FTOH 6-2)	647-42-7	14,3
14782	08/03/2018	100%PL	Perfluorinated Compounds (PFC)	N.D.	N.D.
14781	08/03/2018	100%PL	Perfluorinated Compounds (PFC)	N.D.	N.D.
14780	08/03/2018	100%PA	Perfluorinated Compounds (PFC)	N.D.	N.D.
14779	08/03/2018	100%PA	Perfluorinated Compounds PFC)	N.D.	N.D.
14778	08/03/2018	100%PA	4:2 Fluorotelomer alcohol (FTOH 4-2)	2043-47-2	12,8
14719	08/03/2018	100%PA	Perfluorinated Compounds (PFC)	N.D.	N.D.
14718	08/03/2018	100%PA	Perfluorinated Compounds (PFC)	N.D.	N.D.

Note N.D. = Not detectable

From those results, we can state that the situation about contamination from PFCs in water repellent items has highly improved since the last case study which was done by Miroglio in 2016.

In particular, it can be noticed that long-chain perfluorinated compounds have totally disappeared, whereas there are still very little contaminations from short-chain ones, especially telomeres (FTOH 6-2 and FTOH 4-2).

Those micro-contaminations can originate from several things, for example contaminations of water-repellent products used for our items or contaminations from dyes or other textile auxiliaries used in our industrial process.

Miroglio Fashion, according to case study result, can state that all the items put on the market are PFC free, and guarantee to the consumers a high quality standard of chemical security.

Anyways Miroglio Fashion has committed with its suppliers, whose materials have had PFC micro-contaminations, to a “Chemical Management” plan, in order to identify the sources of those contaminations.

Another case study on that subject is planned for biennium 2019-2020.

Below you can find a list of monitored PFCs in the case study with related detection limits :

CE0084	Determinazione di composti perfluorurati (PFC)
Norme	MIP_CE0084_rev2:2018

Rev.1.0 -25/03/2016

Metodica analitica Rif. UNI CEN/TS 15968:2010 - estrazione solvente organico - 2h - ultrasuoni
 Apparecchiatura GC-MSMS (per FTOHs e FTAs) - LC-MSMS/LC-Q-TOF (altri PFCs)
 Data di prova 05/04/2018

Risultati :

Campione contrassegnato	
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Composti perfluorurati a catena corta	CAS N.	LOD	Result
Perfluorohexane (PFHx)	355-42-0	1,00 µg/m ²	
Perfluoropentane (PFPe)	678-26-2	1,00 µg/m ²	
Perfluorocyclobutane (PFCB)	115-25-3	10,00 µg/m ²	
Perfluorbutansulfonic acid (PFBS)	29420-49-3 / 375-73-5 59933-66-3 / 749861-23-2	1,00 µg/m ²	
Perfluorohexane sulfonic acid (PFHxS)	3871-99-6 / 355-46-4 82382-12-15 / 432-50-7	1,00 µg/m ²	
Perfluoro 1-heptanesulphonic acid (PFHpS)	375-92-8 / 60270-55-5 68555-66-8	1,00 µg/m ²	
Perfluorobutanoic acid (PFBA)	375-22-4	1,00 µg/m ²	
Perfluoropentanoic acid (PFPeA)	2706-90-3	1,00 µg/m ²	
Perfluoro n-hexanoic acid (PFHxA)	307-24-4	1,00 µg/m ²	
Perfluoro n-heptanoic acid (PFHpA)	375-85-9	1,00 µg/m ²	
7H-Perfluoroheptanoic acid (HPFHpA)	1546-95-8	1,00 µg/m ²	
4:2 Fluorotelomer alcohol (FTOH 4-2)	2043-47-2	10,00 µg/m ²	
6:2 Fluorotelomer alcohol (FTOH 6-2)	647-42-7	10,00 µg/m ²	

Composti perfluorurati a catena lunga	CAS N.	LOD	Result
Perfluorooctane sulfonic acid (PFOS)	2795-39-3 / 1763-23-1	1,00 µg/m ²	
Perfluorodecane sulfonic acid (PFDS)	335-77-3 / 2806-15-7 / 2806-16-8 / 67906-42-7	1,00 µg/m ²	
Perfluorooctane-sulfonamide (PFOSA)	754-91-6	1,00 µg/m ²	
Perfluoro n-octanoic acid (PFOA)	335-67-1 / 3825-26-1	1,00 µg/m ²	
Perfluoro n-nonanoic acid (PFNA)	375-95-1 / 21049-39-8 / 4149-60-4	1,00 µg/m ²	
Perfluoro n-decanoic acid (PFDA)	335-76-2 / 3108-42-7 / 3830-45-3	1,00 µg/m ²	
Perfluoroundecanoic acid (PFUnA)	2058-94-8 / 4234-23-5	1,00 µg/m ²	
2H,2H,3H,3H-Perfluoroundecanoic acid (HPFUnA)	34598-33-9	1,00 µg/m ²	
Perfluorododecanoic acid (PFDoA)	307-55-1	1,00 µg/m ²	
Perfluorotridecanoic acid (PFTrA)	72629-94-8	1,00 µg/m ²	
Perfluorotetradecanoic acid (PFTA)	376-06-7	1,00 µg/m ²	
Perfluoro-3,7-dimethyloctanoic acid (H2PFDA)	172155-07-6	1,00 µg/m ²	
1H,1H,2H,2H-Perfluorooctane sulfonic acid (H4PFOS 6-2)	27619-97-2	1,00 µg/m ²	
1H,1H,2H,2H-Perfluorooctyl acrylate (FTA 6-2)	17527-29-6	1,00 µg/m ²	
1H,1H,2H,2H-Perfluorodecyl acrylate (FTA 8-2)	27905-45-9	1,00 µg/m ²	
1H,1H,2H,2H-Perfluorododecyl acrylate (FTA 10-2)	17741-60-5	1,00 µg/m ²	
8:2 Fluorotelomer alcohol (FTOH 8-2)	678-39-7	10,00 µg/m ²	
10:2 Fluorotelomer alcohol (FTOH 10-2)	865-86-1	10,00 µg/m ²	
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	24448-09-7	1,00 µg/m ²	
2-(N-Ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	1691-99-2	1,00 µg/m ²	
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	31506-32-8	1,00 µg/m ²	
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	4151-50-2	1,00 µg/m ²	
7H-dodecanefluoroheptane acid (7H-DoFHpA)	1546-95-8	1,00 µg/m ²	
2H,2H-Perfluorodecane acid salts (2H-PFDeA)	27854-31-5	1,00 µg/m ²	
1H,1H,2H,2H-Perfluorooctanesulphonic acid (1H-2H-PFOS)	27619-97-2	1,00 µg/m ²	
1H,1H,2H,2H-Perfluorodecane sulfonate (8:2 FTS)	39108-34-4	1,00 µg/m ²	
2H,2H-Perfluorodecanoic acid (H2PFDeA)	27854-31-5	1,00 µg/m ²	
Perfluoro-1-octanesulfonyl fluoride (POSF)	307-35-7	1,00 µg/m ²	

Nota: LOD = Limite rilevabilità)