

CHEMICAL ELIMINATION PROGRESS REVIEW
DECEMBER 2017

BURBERRY

CONTENTS

EXECUTIVE SUMMARY	3
INTRODUCTION	3
METHODOLOGY	4
TIMELINE OF MONITORING	4
RESULTS	5
CONCLUSION	6
NEXT STEPS	6
ANNEX	7

EXECUTIVE SUMMARY

It is known that the textile and leather industries involve a high usage of chemicals in the manufacturing processes. Residual trace level of unwanted substances may be present on the finished product as indication of their chemical footprint. Burberry is monitoring the progress of unwanted chemical elimination through an ongoing analytical testing programme of raw materials and finished products. This report captures the results of the testing activities, indicating a significant reduction of detections (Figure 1) and concentration levels of most unwanted substances analysed.

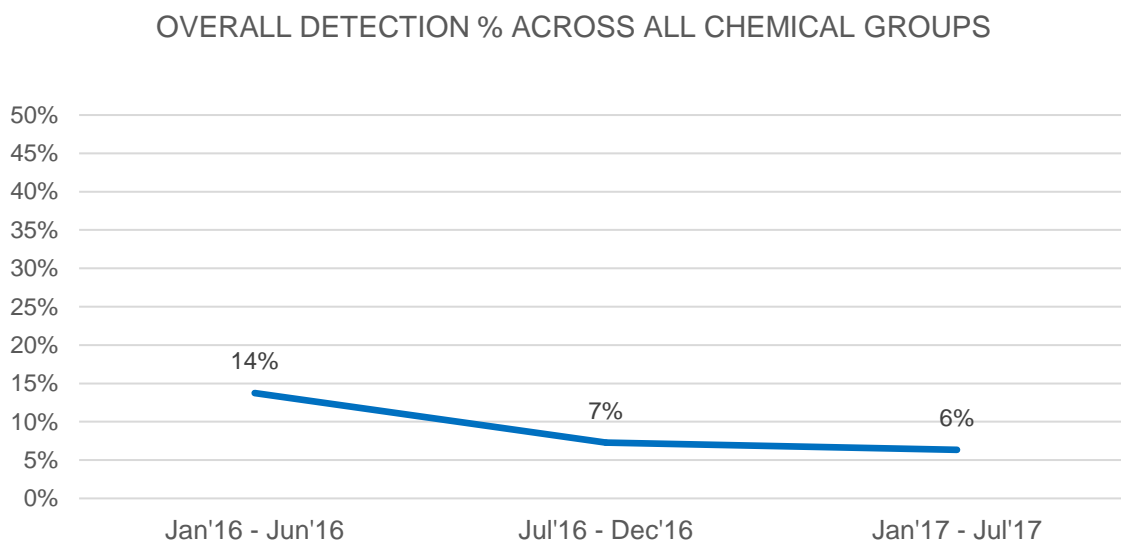


Figure 1

INTRODUCTION

As part of its commitment to eliminate the use of unwanted chemicals from the supply chain, Burberry initiated the implementation of MRSL (Manufacturing Restricted Substances List) and PRSL (Product Restricted Substances List). A testing programme was established to closely monitor the presence of the restricted substances in raw materials and finished products.

This report shows the chemical elimination trend over a period of 19 months (between January 2016 and July 2017) and helps to establish whether implementation of the MRSL and PRSL have been effective in eliminating the use of unwanted chemicals.

In total, approximately 5000 different product samples were tested for the following 8 chemical groups as per Burberry's chemical elimination timeline:

- Phthalates
- Azodyes
- Alkylphenols
- Alkylphenoethoxylates

- Perfluorinated Compounds (PFCs): Long-Chain Carbon 8 (C8), Short-Chain Carbon 6 (C6)
- Chlorophenols
- Short-Chain Chlorinated Paraffins (SCCPs)
- Chlorobenzenes

METHODOLOGY

During the monitoring period, selected bulk production samples of raw materials and finished product were sent by Burberry’s supply chain partners to third-party accredited laboratories in Asia and Europe for analytical testing according to the test applicability provided on the Burberry PRSL (pages 5-9).

1. TIMELINE OF MONITORING

Figure 2 below shows the timeline of monitoring when samples were tested for the respective chemicals.

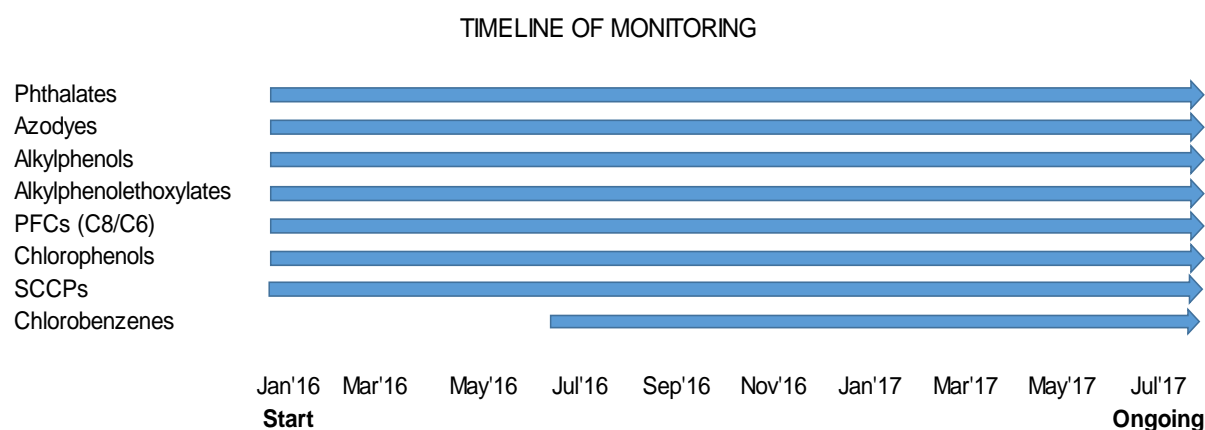


Figure 2

Phthalates, Azodyes, Alkylphenols, Alkylphenoethoxylates, PFCs, SCCPs, and Chlorophenols were all monitored from January 2016 to July 2017 (ongoing). Chlorobenzenes was most recently monitored starting from July 2016.

RESULTS

The results are reported in % detection of chemicals for all samples, and concentration of chemicals detected. Units are in parts per million (ppm) and microgram per square metre (ug/m²). Detailed charts and full list of analytes for each chemical group can be found in Annex 1 and 2 respectively.

- 7 out of 8 chemical groups showed an overall reduction in % detection when samples were tested between January 2016 and July 2017. Similarly, there has been a consistent reduction in the concentration of chemicals detected.
- **Phthalates** – The only group showing a small increase in detection % from 1% to 3% (ref Table 1 A1) over the monitoring period. In contrast, concentration of Phthalates detected decreased (ref Table 1 A2).
- **Azodyes** – Detection % of tested samples remained low under 0.5% and decreased from 0.29% to 0.17% (ref Table 1 B1) over the monitoring period. Similarly, concentration % of Azodyes detected has decreased (ref Table 1 B2).
- **Alkylphenols** – Detection % of tested samples decreased from 8% to 5% (ref Table 1 C1) over the monitoring period. Similarly, concentration % of Alkylphenols detected has decreased (ref Table 1 C2).
- **Alkylphenoethoxylates** – Detection % of tested samples decreased from 25% to 14% (ref Table 1 D1) over the monitoring period. Similarly, concentration % of Alkylphenoethoxylates in the region above 100ppm also reduced from 4.6% to 1.1% (ref Table 1 D2).
- **PFCs (C8 and C6)** – Long-chained (C8) detection % of tested samples decreased from 5% to 0% (ref Table 1 E1) over the monitoring period. Similarly, concentration % of C8 detected has decreased (ref Table 1 E2).

Short-chained (C6) detection % of tested samples decreased from 40% to 1% (ref Table 1 F1) over the monitoring period. Similarly, concentration % of C6 detected has decreased (ref Table 1 F2).

- **Chlorophenols** – Detection % of tested samples decreased from 31% to 29% (ref Table 1 G1). Similarly, concentration % of Chlorophenols in region above 100ppm also reduced from 1.1% to 0.9% (ref Table 1 F2).
- **SCCPs** – No SCCPs were detected in the tested samples over the monitoring period (ref Table 1 H1).
- **Chlorobenzenes** – Detection % of tested samples decreased from 4% to 3% (ref Table 1 I1). Similarly, concentration % of Chlorobenzenes detected has decreased (ref Table 1 I2).

CONCLUSION

- Overall, the implementation of Burberry MRSL and PRSL has reduced the residues of unwanted substances on raw materials and finished products in varying quantities across 7 chemical groups from January 2016 to July 2017.
- The overall encouraging progress, where 7 out of 8 unwanted chemical groups have decreased in the detection % and concentration on samples tested indicates that further improvements can be expected through the continued implementation of the MRSL.
- There is a need for Burberry to continue monitoring the progress of chemical elimination through raw material and finished product testing as an indication of the MRSL implementation effectiveness.

NEXT STEPS

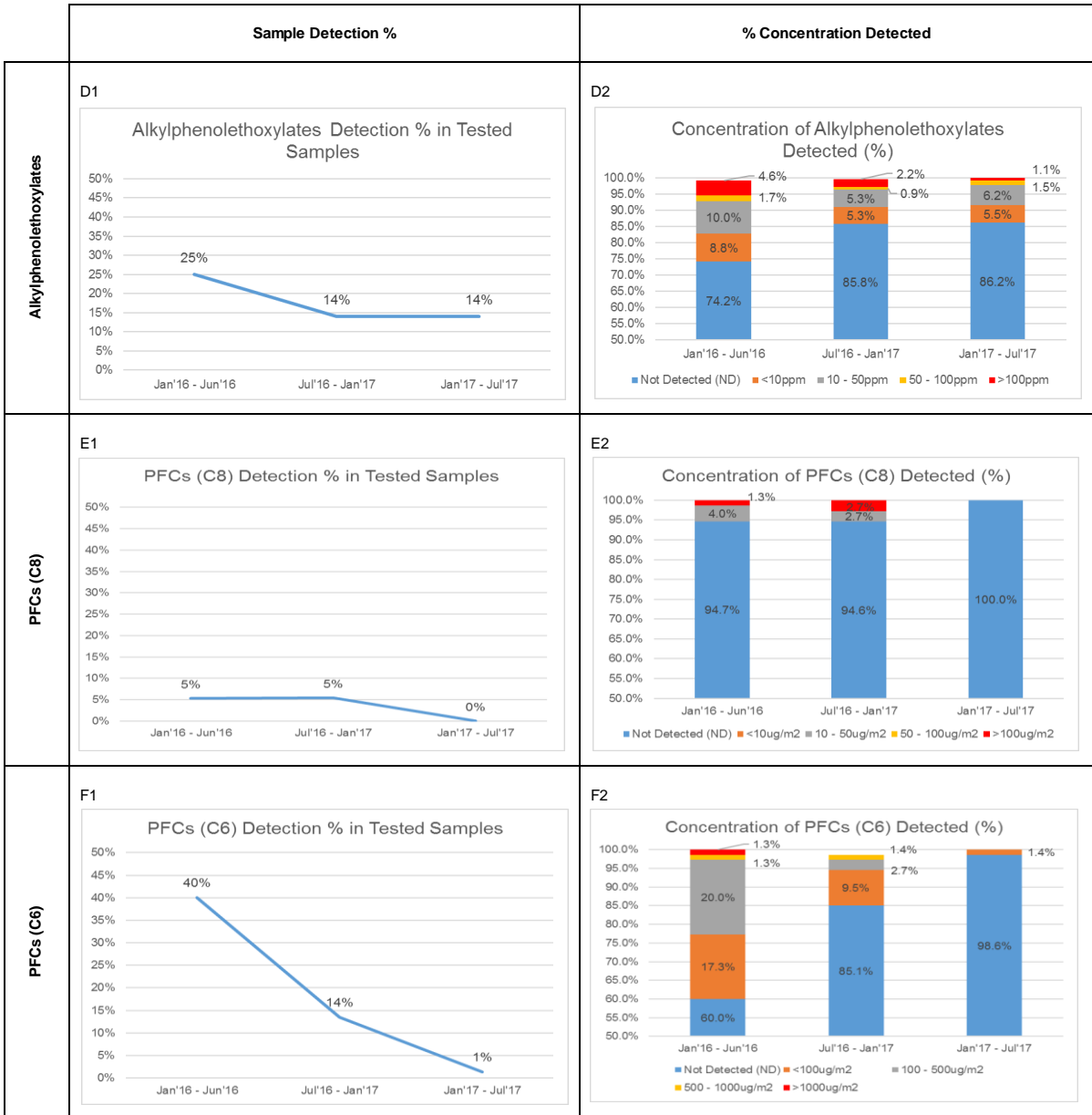
Whilst this programme demonstrates some encouraging trends, Burberry plans to continue and expand the program with the following actions:

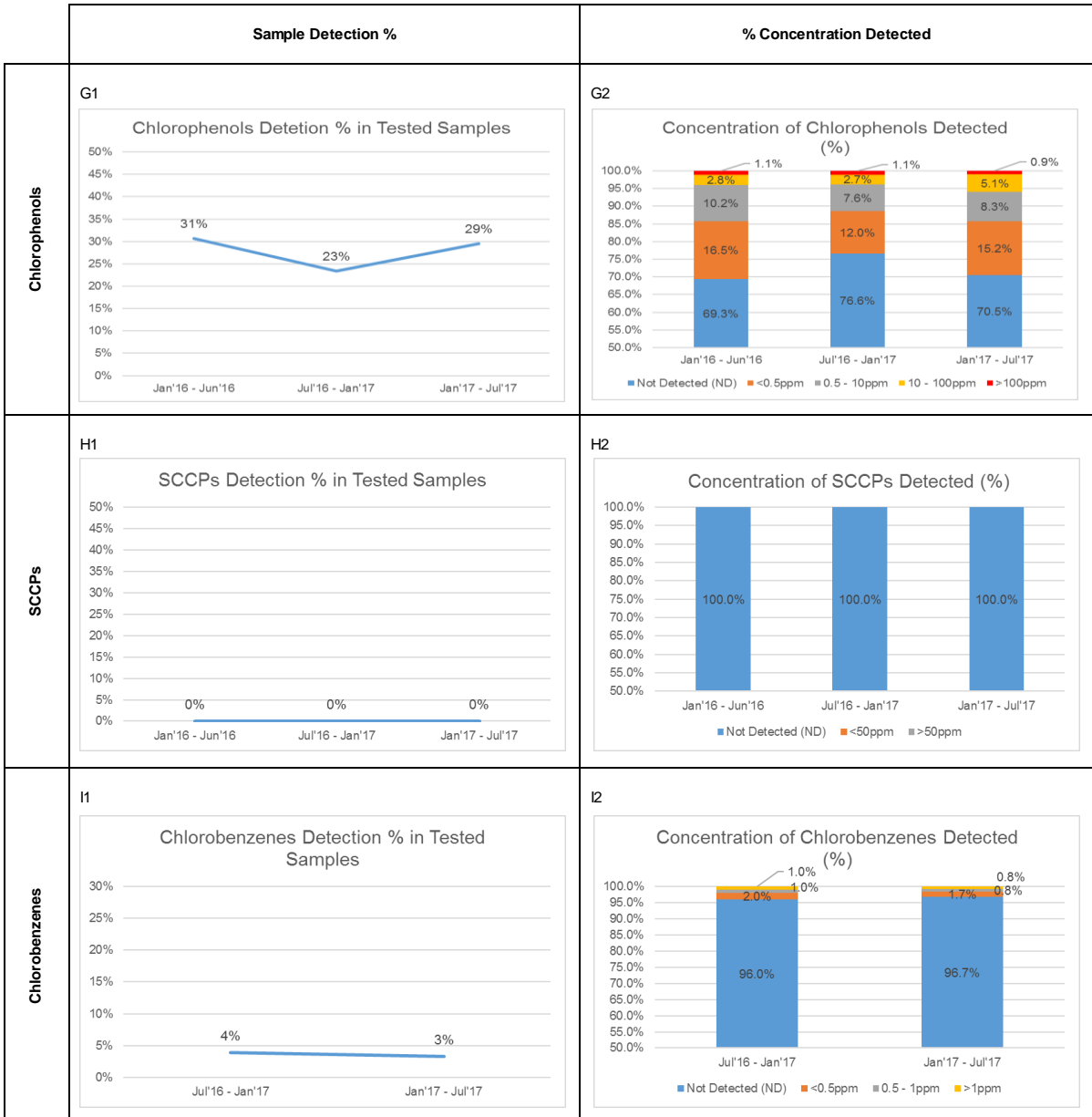
- Increase the list of chemicals monitored (e.g. Organotin have been added in August 2017).
- Continue to encourage Burberry partners to implement similar monitoring programmes to expand the scope of materials tested.
- Expand focus on root cause analysis to determine the source of unwanted substances with partners and collaborate with chemical suppliers for successful chemical substitution.
- Continuous partnership, collaboration, and engagement with the supply chain are necessary to drive the goal of chemical elimination.

Annex 1

Table 1 – Detection % of Samples Tested VS Concentration % Detected

	Sample Detection %	% Concentration Detected																																
Phthalates	<p>A1</p> <p>Phthalates Detection % in Tested Samples</p> <table border="1"> <tr><th>Period</th><th>Detection %</th></tr> <tr><td>Jan'16 - Jun'16</td><td>1%</td></tr> <tr><td>Jul'16 - Jan'17</td><td>2%</td></tr> <tr><td>Jan'17 - Jul'17</td><td>3%</td></tr> </table>	Period	Detection %	Jan'16 - Jun'16	1%	Jul'16 - Jan'17	2%	Jan'17 - Jul'17	3%	<p>A2</p> <p>Concentration of Phthalates Detected (%)</p> <table border="1"> <tr><th>Period</th><th>Not Detected (ND)</th><th><500ppm</th><th>500ppm - 1000ppm</th><th>>1000ppm</th></tr> <tr><td>Jan'16 - Jun'16</td><td>99.3%</td><td>0.7%</td><td>0%</td><td>0%</td></tr> <tr><td>Jul'16 - Jan'17</td><td>98.0%</td><td>1.7%</td><td>0.2%</td><td>0%</td></tr> <tr><td>Jan'17 - Jul'17</td><td>96.7%</td><td>1.7%</td><td>1.4%</td><td>0.3%</td></tr> </table>	Period	Not Detected (ND)	<500ppm	500ppm - 1000ppm	>1000ppm	Jan'16 - Jun'16	99.3%	0.7%	0%	0%	Jul'16 - Jan'17	98.0%	1.7%	0.2%	0%	Jan'17 - Jul'17	96.7%	1.7%	1.4%	0.3%				
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Azodyes	<p>B1</p> <p>Azodyes Detection % in Tested Samples</p> <table border="1"> <tr><th>Period</th><th>Detection %</th></tr> <tr><td>Jan'16 - Jun'16</td><td>0.29%</td></tr> <tr><td>Jul'16 - Jan'17</td><td>0.34%</td></tr> <tr><td>Jan'17 - Jul'17</td><td>0.17%</td></tr> </table>	Period	Detection %	Jan'16 - Jun'16	0.29%	Jul'16 - Jan'17	0.34%	Jan'17 - Jul'17	0.17%	<p>B2</p> <p>Concentration of Azodyes Detected (%)</p> <table border="1"> <tr><th>Period</th><th>Not Detected (ND)</th><th><5ppm</th><th>5 - 10ppm</th><th>10 - 20ppm</th><th>>20ppm</th></tr> <tr><td>Jan'16 - Jun'16</td><td>99.7%</td><td>0.1%</td><td>0.1%</td><td>0.1%</td><td>0%</td></tr> <tr><td>Jul'16 - Jan'17</td><td>99.66%</td><td>0.27%</td><td>0.03%</td><td>0.03%</td><td>0%</td></tr> <tr><td>Jan'17 - Jul'17</td><td>99.8%</td><td>0.1%</td><td>0.1%</td><td>0%</td><td>0%</td></tr> </table>	Period	Not Detected (ND)	<5ppm	5 - 10ppm	10 - 20ppm	>20ppm	Jan'16 - Jun'16	99.7%	0.1%	0.1%	0.1%	0%	Jul'16 - Jan'17	99.66%	0.27%	0.03%	0.03%	0%	Jan'17 - Jul'17	99.8%	0.1%	0.1%	0%	0%
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Alkylphenols	<p>C1</p> <p>Alkylphenols Detection % in Tested Samples</p> <table border="1"> <tr><th>Period</th><th>Detection %</th></tr> <tr><td>Jan'16 - Jun'16</td><td>8%</td></tr> <tr><td>Jul'16 - Jan'17</td><td>3%</td></tr> <tr><td>Jan'17 - Jul'17</td><td>5%</td></tr> </table>	Period	Detection %	Jan'16 - Jun'16	8%	Jul'16 - Jan'17	3%	Jan'17 - Jul'17	5%	<p>C2</p> <p>Concentration of Alkylphenols Detected (%)</p> <table border="1"> <tr><th>Period</th><th>Not Detected (ND)</th><th><6ppm</th><th>6 - 10ppm</th><th>>10ppm</th></tr> <tr><td>Jan'16 - Jun'16</td><td>92.1%</td><td>4.8%</td><td>2.5%</td><td>0.8%</td></tr> <tr><td>Jul'16 - Jan'17</td><td>97.3%</td><td>2.7%</td><td>0%</td><td>0%</td></tr> <tr><td>Jan'17 - Jul'17</td><td>94.9%</td><td>5.1%</td><td>0%</td><td>0%</td></tr> </table>	Period	Not Detected (ND)	<6ppm	6 - 10ppm	>10ppm	Jan'16 - Jun'16	92.1%	4.8%	2.5%	0.8%	Jul'16 - Jan'17	97.3%	2.7%	0%	0%	Jan'17 - Jul'17	94.9%	5.1%	0%	0%				
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Annex 2

Full List of Unwanted Chemical Groups and Analytes

Phthalates Analyte	CAS number	Required Detection Limit
Di(ethylhexyl) phthalate (DEHP)	117-81-7	10 PPM
Bis(2-methoxyethyl) phthalate (DMEP)	117-82-8	10 PPM
Di-n-octyl phthalate (DNOP)	117-84-0	10 PPM
Di-iso-decyl phthalate (DIDP)	26761-40-0	10 PPM
Di-isononyl phthalate (DINP)	28553-12-0	10 PPM
Di-n-hexyl phthalate (DnHP)	84-75-3	10 PPM
Dibutyl phthalate (DBP)	84-74-2	10 PPM
Benzyl butyl phthalate (BBP)	85-68-7	10 PPM
Dinonyl phthalate (DNP)	84-76-4	10 PPM
Diethyl phthalate (DEP)	84-66-2	10 PPM
Di-n-propyl phthalate (DPRP)	131-16-8	10 PPM
Di-isobutyl phthalate (DIBP)	84-69-5	10 PPM
Di-cyclohexyl phthalate (DCHP)	84-61-7	10 PPM
Di-iso-octyl phthalate (DIOP)	27554-26-3	10 PPM
1,2-benzenedicarboxylic acid, di-C7-11 branched and linearalkyl esters (DHNUP)	68515-42-4	10 PPM
1,2-benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)	71888-89-6	10 PPM
Dipentyl phthalate (DPP)	131-18-0	10 PPM
N-pentyl-isopentylphthalate (NPIPP)	776297-69-9	10 PPM
Diisopentyl phthalate (DIPP)	605-50-5	10 PPM
1,2- Benzenedicarboxylic acid, dipentylester, branched and linear	84777-06-0	10 PPM
Dimethyl phthalate (DMP)	131-11-3	10 PPM

Dyes- Azo Analyte	CAS number	Required Detection Limit
4,4'-methylene-bis-(2-chloro-aniline)	101-14-4	5 PPM
4,4'-methylenedianiline / 4,4'-diaminodiphenylmethane	101-77-9	5 PPM
4,4'-oxydianiline	101-80-4	5 PPM
4-chloroaniline / p-Chloraniline	106-47-8	5 PPM
3,3'-dimethoxybenzidine	119-90-4	5 PPM
3,3'dimethylbenzidine	119-93-7	5 PPM
6-methoxy-m-toluidine / p-Cresidine	120-71-8	5 PPM
2,4,5'trimethylaniline	137-17-7	5 PPM
4,4'-thiodianiline	139-65-1	5 PPM
4- aminoazobenzene / p- Aminoazobenzene	60-09-3	5 PPM
4- methoxy-m-phenylenediamine / 2,4- Diaminoanisole	615-05-4	5 PPM
4,4'methylenedi-o-toluidine / 3,3'-dimethyl-4,4'diamino-diphenyl-methane	838-88-0	5 PPM
2,6-xylydine	87-62-7	5 PPM
o-anisidine / 2-methoxyaniline	90-04-0	5 PPM
2-naphthylamine	91-59-8	5 PPM
3,3'-dichlorobenzidine	91-94-1	5 PPM
4-aminodiphenyl	92-67-1	5 PPM
Benzidine	92-87-5	5 PPM
o-toluidine	95-53-4	5 PPM
2,4-xylydine	95-68-1	5 PPM
4-chloro-o-toluidine-m	95-69-2	5 PPM
4-methyl -phenylenediamine / 2,4-toluylendiamine	95-80-7	5 PPM
o-aminoazotoluene	97-56-3	5 PPM
5-nitro-o-toluidine / 2-amino-4-nitrotoluol	99-55-8	5 PPM

AP & APEO incl. isomers

Analyte	CAS Number	Required Detection Limit
Nonylphenol	104-40-5	1 PPM
	25152-52-3	1 PPM
	84852-15-3	1 PPM
	11066-49-2	1 PPM
	25154-52-3	1 PPM
Octylphenol	140-66-9	1 PPM
	27193-28-8	1 PPM
	1806-26-4	1 PPM
Nonylphenol ethoxylates (NPEOs)	9016-45-9	3 PPM
	127087-87-0	3 PPM
	68412-54-4	3 PPM
	37205-87-1	3 PPM
	26027-38-3	3 PPM
Octylphenol ethoxylates (OPEOs)	9002-93-1	3 PPM
	68987-90-6	3 PPM
	9036-19-5	3 PPM

Perfluorinated and Polyfluorinated Chemicals

Analyte	CAS Number	Required Detection Limit
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (EtFOSE)	1691-99-2	1µg/m2
Perfluoro-3,7-dimethylotanoic Acid (PF-3,7-DMOA)	172155-07-6	1µg/m2
1H,1H,2H,2H- Perfluorooctylacrylate (6:2 FTA)	17527-29-6	1µg/m2
1H,1H,2H,2H- Perfluorododecylacrylate (10:2 FTA)	17741-60-5	1µg/m2
Perfluoroundecanoic acid (PFUdA)	2058-94-8	1µg/m2
1H,1H,2H,2H- Perfluorooctanesulphonic acid (1H,1H,2H,2H-PFOS)	27619-97-2	1µg/m2
1H,1H,2H,2H- Perfluorododecylacrylate (8:2 FTA)	27905-45-9	1µg/m2
Perfluorododecanoic acid (PFDoA)	307-55-1	1µg/m2
N-methylperfluoro-1-octanesulfonamide (MeFOA)	31506-32-8	1µg/m2
Perfluorooctanoic acid (PFOA)	335-67-1	1µg/m2
perfluorodecanoic acid (PFDA)	335-76-2	1µg/m2
2H,2H,3H,3H- Perfluoroundecanoic Acid (H4PFUnA)	34598-33-9	1µg/m2
perfluorononanoic acid (PFNA)	375-95-1	1µg/m2
Perfluorotetradecanoic acid (PFTeA)	376-06-7	1µg/m2
N-ethylperfluoro-1-octanesulfonamide (EtFOA)	4151-50-2	1µg/m2
perfluoroundecanoic acid (PFUnA)	4234-23-5	1µg/m2
1H,1H,2H,2H-Perfluoro-1-Decanol (8:2 FTOH)	678-39-7	10µg/m2

Perfluorinated and Polyfluorinated Chemicals (continued)

Analyte	CAS Number	Required Detection Limit
perfluorotridecanoic acid (PFTra)	72629-94-8	1µg/m2
perfluorooctane sulfonamide (PFOSA)	754-91-6	1µg/m2
1H,1H,2H,2H-Perfluoro-1-Dodecanol (10:2 FTOH)	865-86-1	10µg/m2
Perfluorooctane sulfonate (PFOS)	Multiple	1µg/m2
7H-Dodecafluoroheptane Acid	No CAS available	1µg/m2
2H,2H-Perfluorodecane Acid	No CAS available	1µg/m2
1H,1H,2H,2H-Perfluorooctanesulphonic acid	No CAS available	1µg/m2
Perfluorocyclobutane- c-C4F8	115-25-3	1µg/m2
7H-dodecafluoroheptanoate (HPFHpA)	1546-95-8	1µg/m2
1H,1H,2H,2H-Perfluoro-1-Hexanol (4:2 FTOH)	2043-47-2	10µg/m2
Perfluoropentanoic acid (PFPA)	2706-90-3	1µg/m2
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	1µg/m2
Perfluoropentane - C5F14	355-42-0	1µg/m2
Perfluorohexane sulphonates (PFHxS)	355-46-4	1µg/m2
Perfluorobutanoic acid (PFBA)	375-22-4	1µg/m2
Perfluorobutane (PFBS)	375-73-5	1µg/m2
Perfluoroheptanoic acid (PFHpA)	375-85-9	1µg/m2
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	1µg/m2
1H,1H,2H,2H-Perfluoro-1-Oktanol (6:2 FTOH)	647-42-7	10µg/m2
N-Methylheptafluorooctane sulfonamidoethanol (N-Me-FOSE)	24448-09-7	1µg/m2

Chlorophenols

Analyte	CAS number	Required Detection Limit
4-Chloro-3-methylphenol	59-50-7	0.05 PPM
2-Chlorophenol	95-57-8	0.05 PPM
3-chlorophenol	108-43-0	0.05 PPM
4-chlorophenol	106-46-9	0.05 PPM
2,3-dichlorophenol	576-24-9	0.05 PPM
2,4-Dichlorophenol	120-83-2	0.05 PPM
2,5-Dichlorophenol	583-78-8	0.05 PPM
2,6-Dichlorophenol	87-65-0	0.05 PPM
3,4-dichlorophenol	95-77-2	0.05 PPM
3,5-dichlorophenol	591-35-5	0.05 PPM
Trichlorophenol mixed isomers	25167-82-2	0.05 PPM
2,4,5-Trichlorophenol	95-95-4	0.05 PPM
2,4,6-Trichlorophenol	88-06-2	0.05 PPM
2,3,4-Trichlorophenol	15950-66-0	0.05 PPM
2,3,5-Trichlorophenol	933-78-8	0.05 PPM
2,3,6-Trichlorophenol	933-75-5	0.05 PPM
3,4,5-Trichlorophenol	609-19-8	0.05 PPM
Tetrachlorophenol (TeCP) mixed isomers	25167-83-3	0.05 PPM
2,3,4,6-Tetrachlorophenol	58-90-2	0.05 PPM
2,3,4,5-Tetrachlorophenol	4901-51-3	0.05 PPM
2,3,5,6-Tetrachlorophenol	935-95-5	0.05 PPM
Pentachlorophenol (PCP)	87-86-5	0.05 PPM

Chlorinated Paraffins

Analyte	CAS number	Required Detection Limit
SCCP	85535-84-8	50 PPM
MCCP (C14-C17)	85535-85-9	100 PPM

Chlorobenzenes

Analyte	CAS Number	Required Detection Limit
Chlorobenzene	108-90-7	0.1 PPM
1,2-Dichlorobenzene	95-50-1	0.1 PPM
1,3- Dichlorobenzene	541-73-1	0.1 PPM
1,4- Dichlorobenzene	106-46-7	0.1 PPM
1,2,4- Trichlorobenzene	120-82-1	0.1 PPM
1,2,3- Trichlorobenzene	87-61-6	0.1 PPM
1,3,5- Trichlorobenzene	108-70-3	0.1 PPM
1,2,3,4- Tetrachlorobenzene	634-66-2	0.1 PPM
1,2,3,5- Tetrachlorobenzene	634-90-2	0.1 PPM
1,2,4,5- Tetrachlorobenzene	95-94-3	0.1 PPM
Pentachlorobenzene	608-93-5	0.1 PPM
Hexachlorobenzene	118-74-1	0.1 PPM
2-Chlorotoluene	95-49-8	0.1 PPM