

# Supplementary material

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## Occurrence and migration study of chemicals from baking paper and aluminium foil.

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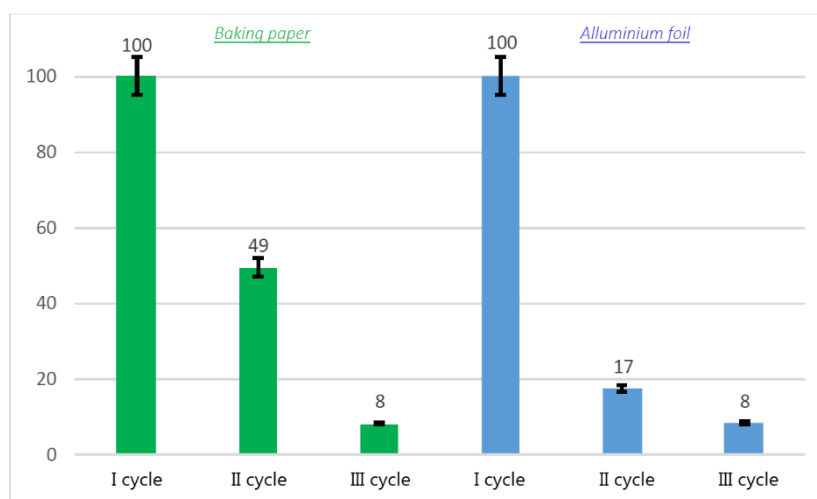
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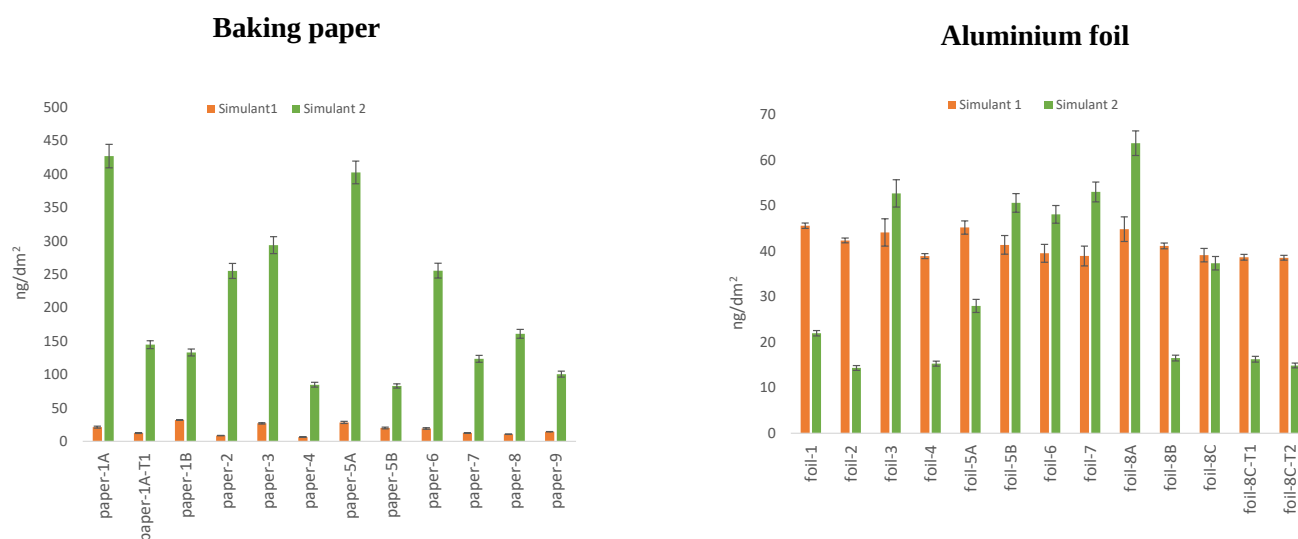
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**Fig. S1.** Histograms showing the relative amount of the total extracted contaminants from baking paper (green/left) and aluminium foil (blue/right) in three subsequent extraction cycles using test 1 conditions.

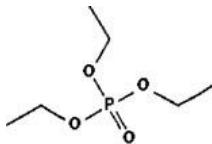
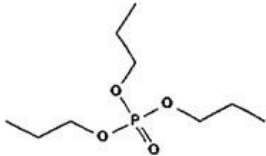
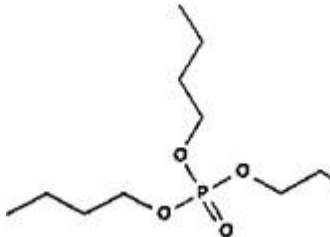
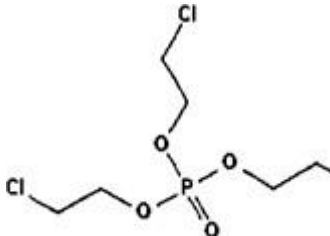
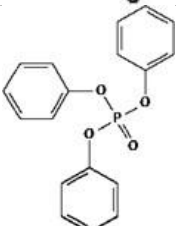
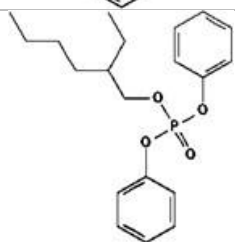
### $\Sigma$ OPEs + $\Sigma$ PFASs

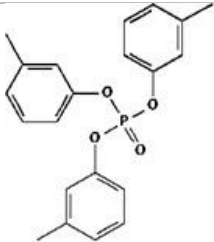
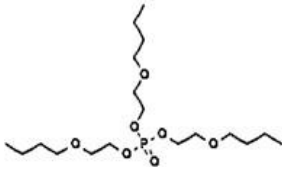
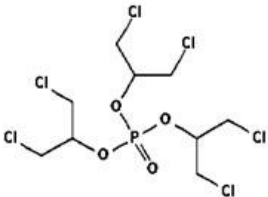
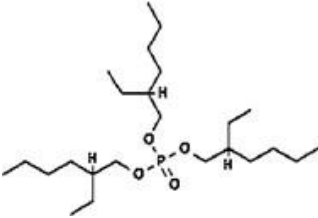


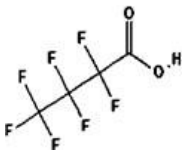
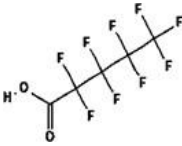
**Fig. S2.** Histograms showing the sum of migration (ng/dm<sup>2</sup>) due both to OPEs and PFASs in baking paper (panel left) and aluminium foil (panel right) relative to the simulant 1 (orange) and simulant 2 (green).

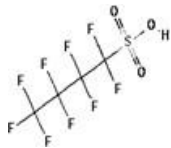
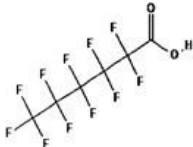
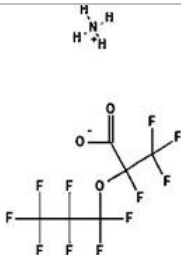
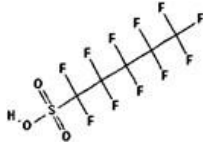
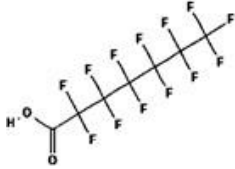
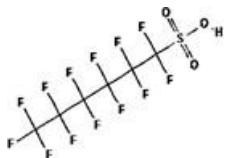
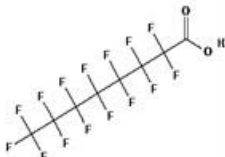
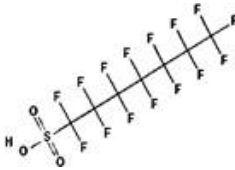
**Table S1.**

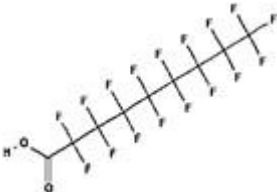
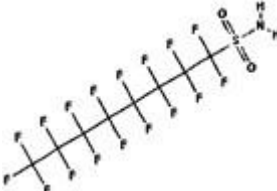
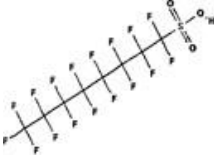
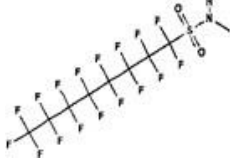
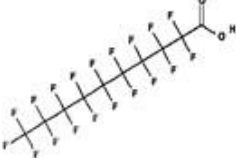
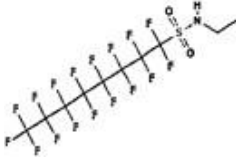
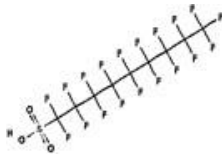
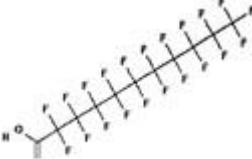
Name and acronym, chemical formula and the structure of the single compounds monitored in this study.

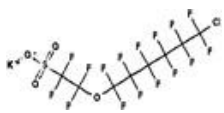
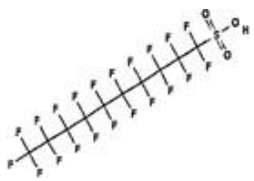
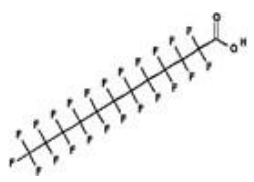
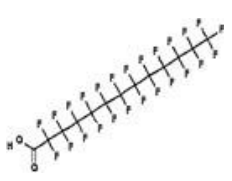
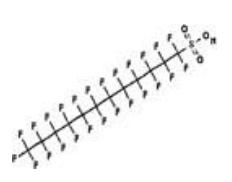
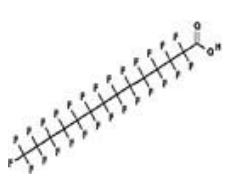
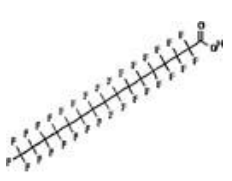
| OPEs                           |         |                     |                          |                                                                                       |
|--------------------------------|---------|---------------------|--------------------------|---------------------------------------------------------------------------------------|
| Name                           | Acronym | Chemical formula    | Molecular weight (g/mol) | Chemical structure                                                                    |
| Triethylphosphate              | TEP     | $C_6H_{15}PO_4$     | 182.2                    |    |
| Tripropyl phosphate            | TPrP    | $C_9H_{21}PO_4$     | 224.2                    |    |
| Tributyl phosphate             | TBuP    | $C_{12}H_{27}PO_4$  | 266.3                    |   |
| Tris(2-chloroethyl)phosphate   | TCEP    | $C_6H_{12}PO_4Cl_2$ | 285.5                    |  |
| Triphenylphosphate             | TPhP    | $C_{18}H_{15}PO_4$  | 326.3                    |  |
| 2-ethylhexyldiphenyl phosphate | EHDPhP  | $C_{20}H_{27}PO_4$  | 362.4                    |  |

|                                       |       |                     |       |                                                                                      |
|---------------------------------------|-------|---------------------|-------|--------------------------------------------------------------------------------------|
| Tri-m-tolyl phosphate                 | TMTP  | $C_{21}H_{21}PO_4$  | 368.4 |   |
| Tris (2-butoxy ethyl ) phosphate      | TBEP  | $C_{18}H_{39}PO_7$  | 398.5 |   |
| Tris(1,3-dichloro-2-propyl) phosphate | TDCPP | $C_9H_{15}PO_4Cl_6$ | 431.3 |   |
| Tris(2-ethylhexyl) phosphate          | TEHP  | $C_{24}H_{51}PO_4$  | 435.0 |  |
| PFAS                                  |       |                     |       |                                                                                      |

| Name                       | Acronym | Chemical formula | Molecular weight (g/mol) | Chemical structure                                                                    |
|----------------------------|---------|------------------|--------------------------|---------------------------------------------------------------------------------------|
| Perfluoro-n-butanoic acid  | PFBA    | $C_3F_7COOH$     | 214.0                    |  |
| Perfluoro-n-pentanoic acid | PFPeA   | $C_4F_9COOH$     | 264.1                    |  |

|                                                               |       |                    |       |                                                                                       |
|---------------------------------------------------------------|-------|--------------------|-------|---------------------------------------------------------------------------------------|
| Perfluoro-1-butanesulfonate                                   | PFBS  | $C_4F_9SO_3H$      | 300.1 |    |
| Perfluoro-n-hexanoic acid                                     | PFHxA | $C_5F_{11}COOH$    | 314.1 |    |
| 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)ammonium propanoate | GenX  | $C_6H_4F_{11}NO_3$ | 347.1 |    |
| Perfluoro-1-pentanesulfonate                                  | PFPeS | $C_5F_{11}SO_3H$   | 350.1 |   |
| Perfluoro-n-heptanoic acid                                    | PFHpA | $C_6F_{13}COOH$    | 364.1 |  |
| Perfluoro-1-hexanesulfonate                                   | PFHxS | $C_6F_{13}SO_3H$   | 400.1 |  |
| Perfluoro-n-octanoic acid                                     | PFOA  | $C_7F_{15}COOH$    | 414.1 |  |
| Perfluoro-1-heptanesulfonate                                  | PFHpS | $C_7F_{15}SO_3H$   | 450.1 |  |

|                                      |        |                         |       |                                                                                       |
|--------------------------------------|--------|-------------------------|-------|---------------------------------------------------------------------------------------|
| Perfluoro-n-nonanoic acid            | PFNA   | $C_8F_{17}COOH$         | 464.1 |    |
| Perfluorooctane sulfonamide          | FOSA   | $C_8F_{17}SO_2NH_2$     | 499.1 |    |
| Perfluoro-1-octanesulfonate          | PFOS   | $C_8F_{17}SO_3H$        | 500.1 |    |
| N-methyl perfluorooctane sulfonamide | MeFOSA | $C_8F_{17}SO_2NHCH_3$   | 513.2 |   |
| Perfluoro-n-decanoic acid            | PFDA   | $C_9F_{19}COOH$         | 514.1 |  |
| N-ethyl perfluorooctane sulfonamide  | EtFOSA | $C_8F_{17}SO_2NHC_2H_5$ | 527.2 |  |
| Perfluoro-1-nonanesulfonate          | PFNS   | $C_9F_{19}SO_3H$        | 550.1 |  |
| Perfluoro-n-undecanoic acid          | PFUnDA | $C_{10}F_{21}COOH$      | 564.1 |  |

|                                                       |          |                     |       |                                                                                       |
|-------------------------------------------------------|----------|---------------------|-------|---------------------------------------------------------------------------------------|
| 6:2 chlorinated<br>polyfluoroalkyl ether<br>sulfonate | Cl-PFESA | $C_8ClF_{16}KO_4S$  | 570.7 |    |
| Perfluoro-1-<br>decanesulfonate                       | PFDS     | $C_{10}F_{21}SO_3H$ | 600.2 |    |
| Perfluoro-n-dodecanoic<br>acid                        | PFDaA    | $C_{11}F_{23}COOH$  | 614.1 |    |
| Perfluoro-n-tridecanoic<br>acid                       | PFTraA   | $C_{12}F_{25}COOH$  | 664.1 |   |
| Perfluoro-1-<br>dodecanesulfonate                     | PFDoS    | $C_{12}F_{25}SO_3H$ | 700.2 |  |
| Perfluoro-n-tetradecanoic<br>acid                     | PFTeDA   | $C_{13}F_{27}COOH$  | 714.1 |  |
| Perfluoro-n-hexadecanoic<br>acid                      | PFHxDA   | $C_{15}F_{31}COOH$  | 814.1 |  |
| Perfluoro-n-octadecanoic<br>acid                      | PFODA    | $C_{17}F_{35}COOH$  | 914.1 |  |

**Table S2. Validation results for Simulant 1**

|                      | Baking paper   |                                    |                                    |            | Alluminum foil |                                    |                                    |            | LOD<br>(ng/dm <sup>2</sup> ) | LOQ<br>(ng/dm <sup>2</sup> ) |
|----------------------|----------------|------------------------------------|------------------------------------|------------|----------------|------------------------------------|------------------------------------|------------|------------------------------|------------------------------|
|                      | R <sup>2</sup> | Intraday<br>repeteability<br>(RSD) | Interday<br>repeteability<br>(RSD) | SSE<br>(%) | R <sup>2</sup> | Intraday<br>repeteability<br>(RDS) | Interday<br>repeteability<br>(RSD) | SSE<br>(%) |                              |                              |
| <b>TPhP</b>          | 0.999          | 2                                  | 7                                  | 85         | 0.990          | 7                                  | 5                                  | 195        | 2.56                         | 5.39                         |
| <b>TPrP</b>          | 0.994          | 1                                  | 14                                 | 215        | 0.990          | 2                                  | 19                                 | 214        | 0.02                         | 0.05                         |
| <b>TBuP</b>          | 0.991          | 2                                  | 25                                 | 38         | 0.991          | 14                                 | 14                                 | 193        | 11.5                         | 18.43                        |
| <b>TCEP</b>          | 0.996          | 4                                  | 3                                  | 81         | 0.968          | 2                                  | 2                                  | 208        | 0.51                         | 0.76                         |
| <b>TEHP</b>          | 0.987          | 17                                 | 20                                 | 91         | 0.987          | 19                                 | 25                                 | 206        | 0.24                         | 0.49                         |
| <b>TDCPP</b>         | 0.986          | 12                                 | 11                                 | 32         | 0.970          | 2                                  | 4                                  | 204        | 1.34                         | 1.44                         |
| <b>TMTP</b>          | 0.987          | 1                                  | 8                                  | 38         | 0.967          | 4                                  | 9                                  | 197        | 0.42                         | 0.85                         |
| <b>EHDPhP</b>        | 0.980          | 5                                  | 24                                 | 64         | 0.976          | 3                                  | 17                                 | 213        | 3.17                         | 8.55                         |
| <b>PFBA</b>          | 0.998          | 5                                  | 2                                  | 209        | 0.996          | 5                                  | 13                                 | 104        | 0.09                         | 0.2                          |
| <b>PFPeA</b>         | 0.996          | 1                                  | 5                                  | 216        | 0.995          | 2                                  | 4                                  | 103        | 0.01                         | 0.02                         |
| <b>PFHxA</b>         | 0.999          | 8                                  | 12                                 | 183        | 0.996          | 9                                  | 16                                 | 99         | 0.09                         | 0.14                         |
| <b>PFHpA</b>         | 0.994          | 3                                  | 3                                  | 209        | 0.999          | 3                                  | 3                                  | 94         | 0.01                         | 0.02                         |
| <b>PFOA</b>          | 0.999          | 3                                  | 3                                  | 208        | 0.998          | 5                                  | 5                                  | 89         | 0.04                         | 0.07                         |
| <b>PFNA</b>          | 0.997          | 3                                  | 3                                  | 214        | 0.996          | 10                                 | 16                                 | 79         | 0.04                         | 0.05                         |
| <b>PFDA</b>          | 0.997          | 3                                  | 7                                  | 211        | 0.997          | 6                                  | 6                                  | 85         | 0.01                         | 0.02                         |
| <b>PFUnDA</b>        | 0.996          | 10                                 | 3                                  | 215        | 0.996          | 4                                  | 5                                  | 83         | 0.04                         | 0.06                         |
| <b>PFDoA</b>         | 0.991          | 4                                  | 4                                  | 192        | 0.997          | 3                                  | 4                                  | 69         | 0.02                         | 0.03                         |
| <b>PFTTrDA</b>       | 0.997          | 6                                  | 10                                 | 132        | 0.999          | 8                                  | 8                                  | 79         | 0.01                         | 0.03                         |
| <b>PFTeDA</b>        | 0.998          | 10                                 | 13                                 | 189        | 0.996          | 7                                  | 8                                  | 49         | 0.01                         | 0.01                         |
| <b>PFHxDA</b>        | 0.994          | 6                                  | 14                                 | 167        | 0.997          | 7                                  | 7                                  | 55         | 0.02                         | 0.03                         |
| <b>PFODA</b>         | 0.999          | 10                                 | 14                                 | 140        | 0.996          | 7                                  | 7                                  | 43         | 0.01                         | 0.01                         |
| <b>PFBS</b>          | 0.993          | 3                                  | 6                                  | 131        | 0.995          | 2                                  | 2                                  | 101        | 3.17                         | 3.7                          |
| <b>PFPeS</b>         | 0.994          | 4                                  | 11                                 | 110        | 0.996          | 10                                 | 10                                 | 87         | 0.04                         | 0.08                         |
| <b>PFHxS</b>         | 0.996          | 1                                  | 3                                  | 209        | 0.998          | 2                                  | 4                                  | 93         | 0.03                         | 0.04                         |
| <b>PFHpS</b>         | 0.994          | 7                                  | 14                                 | 60         | 0.998          | 6                                  | 7                                  | 68         | 0.04                         | 0.09                         |
| <b>PFOS</b>          | 0.992          | 2                                  | 5                                  | 193        | 0.997          | 1                                  | 5                                  | 84         | 0.04                         | 0.05                         |
| <b>PFNS</b>          | 0.995          | 5                                  | 5                                  | 92         | 0.996          | 5                                  | 5                                  | 69         | 0.02                         | 0.04                         |
| <b>PFDS</b>          | 0.995          | 8                                  | 8                                  | 84         | 0.999          | 4                                  | 5                                  | 69         | 0.02                         | 0.04                         |
| <b>PFDoS</b>         | 0.994          | 7                                  | 8                                  | 170        | 0.998          | 3                                  | 3                                  | 56         | 0.01                         | 0.01                         |
| <b>FOSA</b>          | 0.996          | 17                                 | 19                                 | 147        | 0.998          | 29                                 | 29                                 | 86         | 0.12                         | 0.2                          |
| <b>EtFOSA</b>        | 0.996          | 14                                 | 13                                 | 165        | 0.998          | 2                                  | 3                                  | 47         | 0.03                         | 0.06                         |
| <b>GenX</b>          | 0.992          | 8                                  | 18                                 | 177        | 0.997          | 11                                 | 11                                 | 87         | 0.22                         | 0.52                         |
| <b>MeFOSA</b>        | 0.971          | 12                                 | 14                                 | 154        | 0.997          | 5                                  | 5                                  | 44         | 0.01                         | 0.02                         |
| <b>Cl-<br/>PFONS</b> | 0.998          | 4                                  | 4                                  | 201        | 0.997          | 1                                  | 2                                  | 57         | 0.01                         | 0.01                         |

**Table S3. Validation results for Simulant 2**

|                 | Baking paper   |                                    |                                    |            | Alluminum foil |                                    |                                    |            |                              |                              |
|-----------------|----------------|------------------------------------|------------------------------------|------------|----------------|------------------------------------|------------------------------------|------------|------------------------------|------------------------------|
|                 | R <sup>2</sup> | Intraday<br>repeteability<br>(RSD) | Interday<br>repeteability<br>(RSD) | SSE<br>(%) | R <sup>2</sup> | Intraday<br>repeteability<br>(RSD) | Interday<br>repeteability<br>(RSD) | SSE<br>(%) | LOD<br>(ng/dm <sup>2</sup> ) | LOQ<br>(ng/dm <sup>2</sup> ) |
| <b>TPrP</b>     | 0.974          | 8                                  | 9                                  | 90         | 0.981          | 2                                  | 10                                 | 100        | 1.90                         | 2.91                         |
| <b>TEP</b>      | 0.994          | 3                                  | 6                                  | 66         | 0.978          | 1                                  | 16                                 | 59         | 13.67                        | 14.62                        |
| <b>TBEP</b>     | 0.980          | 5                                  | 17                                 | 49         | 0.996          | 10                                 | 28                                 | 115        | 9.47                         | 12.23                        |
| <b>TMTTP</b>    | 0.991          | 3                                  | 3                                  | 74         | 0.974          | 1                                  | 3                                  | 75         | 0.40                         | 0.50                         |
| <b>PFPeA</b>    | 0.989          | 7                                  | 4                                  | 132        | 0.997          | 10                                 | 24                                 | 130        | 0.01                         | 0.02                         |
| <b>PFHxA</b>    | 0.987          | 3                                  | 3                                  | 159        | 0.997          | 18                                 | 24                                 | 122        | 0.02                         | 0.03                         |
| <b>PFHpA</b>    | 0.999          | 5                                  | 10                                 | 143        | 0.998          | 18                                 | 20                                 | 111        | 0.02                         | 0.03                         |
| <b>PFOA</b>     | 0.985          | 2                                  | 5                                  | 157        | 0.999          | 19                                 | 19                                 | 135        | 0.28                         | 0.45                         |
| <b>PFNA</b>     | 0.985          | 13                                 | 13                                 | 102        | 0.999          | 19                                 | 19                                 | 141        | 0.20                         | 0.41                         |
| <b>PFDA</b>     | 0.991          | 8                                  | 28                                 | 176        | 0.998          | 22                                 | 22                                 | 162        | 0.10                         | 0.10                         |
| <b>PFBS</b>     | 0.993          | 4                                  | 5                                  | 82         | 0.995          | 4                                  | 4                                  | 118        | 0.31                         | 0.39                         |
| <b>PFPeS</b>    | 0.984          | 3                                  | 3                                  | 91         | 0.998          | 16                                 | 21                                 | 108        | 0.01                         | 0.02                         |
| <b>PFHxS</b>    | 0.988          | 2                                  | 2                                  | 140        | 0.999          | 18                                 | 22                                 | 100        | 0.04                         | 0.05                         |
| <b>PFHpS</b>    | 0.991          | 4                                  | 4                                  | 98         | 0.996          | 27                                 | 29                                 | 91         | 0.08                         | 0.10                         |
| <b>PFOS</b>     | 0.992          | 7                                  | 7                                  | 132        | 0.995          | 18                                 | 20                                 | 140        | 0.10                         | 0.14                         |
| <b>PFNS</b>     | 0.986          | 13                                 | 33                                 | 96         | 0.997          | 14                                 | 21                                 | 141        | 0.09                         | 0.14                         |
| <b>PFDS</b>     | 0.988          | 7                                  | 16                                 | 77         | 0.999          | 17                                 | 17                                 | 108        | 0.80                         | 1.73                         |
| <b>FOSA</b>     | 0.990          | 16                                 | 18                                 | 114        | 0.998          | 20                                 | 33                                 | 141        | 0.10                         | 0.15                         |
| <b>GenX</b>     | 0.993          | 2                                  | 3                                  | 161        | 0.998          | 4                                  | 4                                  | 208        | 0.02                         | 0.03                         |
| <b>CI-PFESA</b> | 0.986          | 4                                  | 4                                  | 97         | 0.997          | 4                                  | 5                                  | 163        | 0.05                         | 0.06                         |