Accessory publication

Field intercomparison on the determination of volatile and semi-volatile polyfluorinated compounds in Air

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Fig. A1. Location and setup of the sampling site at Barsbüttel (BAR).
Sampling schedule

**Fig. A2.** Sampling schedule and Lab colour codes. \( n \) (High Vol) = 114; \( n \) (SIP disk, sorbent-impregnated polyurethane foam disk), 2 per period = 12 (Lab A, C), 2 per period = 4 (Lab B, D); \( n \) (SPMD, semipermeable membrane device), 6 per period = 36. I–VI: period numbers. I, 2 April 2007–4 June 2007; II, 4 June 2007–30 July 2007; III, 30 July 2007–1 October 2007; IV, 1 October 2007–3 December 2007; V, 3 December 2007–4 February 2008; VI, 4 February 2008–31 March 2008. Field blanks were taken once per month \( n = 12 \) (high-volume samples) or at the end of each period \( n = 6 \) (passive samples).

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</thead>
<tbody>
<tr>
<td>A</td>
<td>SIP disk</td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
<td>V</td>
<td>VI</td>
<td></td>
<td></td>
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<tr>
<td>B</td>
<td>SPMD</td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
<td>V</td>
<td>VI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>SIP disk</td>
<td>–</td>
<td>II</td>
<td>–</td>
<td>–</td>
<td>V</td>
<td>–</td>
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</tr>
<tr>
<td>C</td>
<td>SIP disk</td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
<td>V</td>
<td>VI</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>D</td>
<td>High Vol</td>
<td>–</td>
<td>II</td>
<td>–</td>
<td>–</td>
<td>V</td>
<td>–</td>
<td></td>
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</tr>
</tbody>
</table>

Field blanks were taken continuously for 3 and 4 days.
## Analytes

### Table A1. Analytical standards, their acronym, structure, and CAS number

n.a., not available

<table>
<thead>
<tr>
<th>Analytes</th>
<th>Acronym</th>
<th>Structure</th>
<th>CAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>fluorotelomer alcohols (FTOHs)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4:2 fluorotelomer alcohol</td>
<td>4:2 FTOH</td>
<td>(\text{F}_3\text{C}\text{CF}_2\text{CF}_2\text{CF}_2\text{CH}_2\text{CH}_2\text{OH})</td>
<td>2043-47-2</td>
</tr>
<tr>
<td>6:2 fluorotelomer alcohol</td>
<td>6:2 FTOH</td>
<td>(\text{F}_3\text{C}\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CH}_2\text{CH}_2\text{OH})</td>
<td>647-42-7</td>
</tr>
<tr>
<td>8:2 fluorotelomer alcohol</td>
<td>8:2 FTOH</td>
<td>(\text{F}_3\text{C}\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CH}_2\text{CH}_2\text{OH})</td>
<td>678-39-7</td>
</tr>
<tr>
<td>10:2 fluorotelomer alcohol</td>
<td>10:2 FTOH</td>
<td>(\text{F}_3\text{C}\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CH}_2\text{CH}_2\text{OH})</td>
<td>865-86-1</td>
</tr>
<tr>
<td>12:2 fluorotelomer alcohol</td>
<td>12:2 FTOH</td>
<td>(\text{F}_3\text{C}\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CH}_2\text{CH}_2\text{OH})</td>
<td>39239-77-5</td>
</tr>
<tr>
<td>fluorotelomer acrylates (FTAs)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6:2 fluorotelomer acrylate</td>
<td>6:2 FTA</td>
<td>(\text{O}\text{C}\text{H}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CH}_2\text{OH})</td>
<td>17527-29-6</td>
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<tr>
<td>8:2 fluorotelomer acrylate</td>
<td>8:2 FTA</td>
<td>(\text{O}\text{C}\text{H}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CH}_2\text{OH})</td>
<td>27905-45-9</td>
</tr>
<tr>
<td>10:2 fluorotelomer acrylate</td>
<td>10:2 FTA</td>
<td>(\text{O}\text{C}\text{H}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CH}_2\text{OH})</td>
<td>17741-60-5</td>
</tr>
<tr>
<td>perfluoroalkyl sulfonamids (FASAs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N-Methyl-perfluorobutane sulfonamide</td>
<td>MeFBSA</td>
<td>(\text{F}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CH}_3\text{N}\text{O}\text{H})</td>
<td>n.a.</td>
</tr>
<tr>
<td>N-Methyl-perfluorooctane sulfonamide</td>
<td>MeFOSA</td>
<td>(\text{F}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CH}_3\text{N}\text{O}\text{H})</td>
<td>31506-32-8</td>
</tr>
<tr>
<td>N-Ethyl perfluorooctane sulfonamide</td>
<td>EtFOSA</td>
<td>(\text{F}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CH}_2\text{N}\text{O}\text{H})</td>
<td>4151-50-2</td>
</tr>
<tr>
<td>N,N-dimethylperfluorooctane sulfonamide</td>
<td>Me\textsubscript{2}FOSA</td>
<td>(\text{F}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CH}_3\text{N}\text{O}\text{H})</td>
<td>213181-78-3</td>
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<tr>
<td>perfluoroalkyl sulfonamide ethanols (FASEs)</td>
<td>MeFBSE</td>
<td>MeFOSE</td>
<td>EtFOSE</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
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<tr>
<td>N-Methyl-perfluorobutane sulfonamido ethanol</td>
<td>n.a.</td>
<td>24448-09-7</td>
<td>1691-99-2</td>
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<td>N-Methyl-perfluorooctane sulfonamido ethanol</td>
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<tr>
<td>N-Ethyl-perfluorooctane sulfonamido ethanol</td>
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</table>
### Sampling rates and effective volumes

**Table A2. Linear SIP disk and SPMD sampling rates \( (R_s, \text{ m}^3 \text{ day}^{-1}) \) reported in literature**

Note that linear sampling rates were not applicable to calculate SIP-based FTOH concentrations in this study since SIP disks already reached the equilibrium uptake phase. n.a., not analysed

<table>
<thead>
<tr>
<th>Compound</th>
<th>( R_s ) (SIP disk) ( \text{(Shoeib et al.}^{[25]} )</th>
<th>( R_s ) (SPMD) ( \text{(Fiedler et al.}^{[30]} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:2 FTOH</td>
<td>4.6</td>
<td>n.a.</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>4.6</td>
<td>1.4</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>4.6</td>
<td>2.6</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>MeFOSA</td>
<td>2.6</td>
<td>n.a.</td>
</tr>
<tr>
<td>EtFOSA</td>
<td>2.6</td>
<td>n.a.</td>
</tr>
<tr>
<td>MeFBSE</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>MeFOSE</td>
<td>1.5</td>
<td>n.a.</td>
</tr>
<tr>
<td>EtFOSE</td>
<td>1.4</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

**Table A3. Effective volumes (m³) used in this study to calculate FTOH air concentrations from SIP sampling**

<table>
<thead>
<tr>
<th>Deployment time (in days)</th>
<th>Period I</th>
<th>Period II</th>
<th>Period III</th>
<th>Period IV</th>
<th>Period V</th>
<th>Period VI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average air temperature (°C)</td>
<td>12.2</td>
<td>17.1</td>
<td>15.3</td>
<td>6.9</td>
<td>4.4</td>
<td>4.7</td>
</tr>
<tr>
<td>Effective air volumes (m³)</td>
<td>160</td>
<td>121</td>
<td>137</td>
<td>198</td>
<td>210</td>
<td>190</td>
</tr>
<tr>
<td>6:2 FTOH</td>
<td>155</td>
<td>118</td>
<td>133</td>
<td>193</td>
<td>206</td>
<td>186</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>158</td>
<td>121</td>
<td>136</td>
<td>194</td>
<td>207</td>
<td>188</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>132</td>
<td>102</td>
<td>114</td>
<td>162</td>
<td>176</td>
<td>162</td>
</tr>
</tbody>
</table>
**Polyfluorinated compound (PFC) concentrations in the intercomparison standard solution**

Table A4. PFC concentrations (pg µL⁻¹) in a circulated intercomparison standard solution

Nominal concentration, 50 pg µL⁻¹; s.d., standard deviation; r.s.d., relative standard deviation; n.a., not analysed

<table>
<thead>
<tr>
<th>Compound</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>c ± s.d. (r.s.d., %)</td>
<td>c ± s.d. (r.s.d., %)</td>
<td>c ± s.d. (r.s.d., %)</td>
<td>c ± s.d. (r.s.d., %)</td>
</tr>
<tr>
<td>4:2 FTOH</td>
<td>n.a.</td>
<td>38 ± 16 (43)</td>
<td>68 ± 3.8 (5.6)</td>
<td>44 ± 0.3 (0.7)</td>
</tr>
<tr>
<td>6:2 FTOH</td>
<td>49 ± 1.5 (3.0)</td>
<td>65 ± 12 (18)</td>
<td>60 ± 2.8 (4.6)</td>
<td>45 ± 0.3 (0.8)</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>31 ± 1.2 (3.8)</td>
<td>37 ± 13 (36)</td>
<td>45 ± 3.8 (8.5)</td>
<td>41 ± 0.5 (1.1)</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>27 ± 0.5 (1.9)</td>
<td>54 ± 11 (20)</td>
<td>45 ± 4.4 (9.9)</td>
<td>40 ± 0.4 (0.9)</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.a.</td>
<td>n.a.</td>
<td>54 ± 7.7 (14.4)</td>
<td>39 ± 0.8 (1.9)</td>
</tr>
<tr>
<td>6:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>57 ± 2.0 (3.6)</td>
<td>40 ± 0.2 (0.5)</td>
</tr>
<tr>
<td>8:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>58 ± 3.7 (6.3)</td>
<td>42 ± 0.4 (0.9)</td>
</tr>
<tr>
<td>10:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>39 ± 0.5 (1.2)</td>
</tr>
<tr>
<td>MeFBSA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>21 ± 2.8 (13.3)</td>
<td>35 ± 0.3 (0.8)</td>
</tr>
<tr>
<td>MeFOSA</td>
<td>22 ± 0.9 (4.2)</td>
<td>n.a.</td>
<td>42 ± 0.8 (1.8)</td>
<td>39 ± 0.2 (0.5)</td>
</tr>
<tr>
<td>EtFOSA</td>
<td>27 ± 0.4 (1.4)</td>
<td>n.a.</td>
<td>41 ± 2.6 (6.3)</td>
<td>37 ± 0.3 (0.8)</td>
</tr>
<tr>
<td>MeFBSE</td>
<td>n.a.</td>
<td>n.a.</td>
<td>45 ± 3.1 (6.8)</td>
<td>34 ± 0.4 (1.0)</td>
</tr>
<tr>
<td>MeFOSE</td>
<td>21 ± 1.6 (7.7)</td>
<td>n.a.</td>
<td>73 ± 2.2 (3.1)</td>
<td>37 ± 2.4 (6.5)</td>
</tr>
<tr>
<td>EtFOSE</td>
<td>21 ± 2.7 (13)</td>
<td>n.a.</td>
<td>43 ± 4.6 (10.7)</td>
<td>36 ± 1.7 (4.8)</td>
</tr>
</tbody>
</table>
PFC concentrations during the sampling periods

Table A5. Concentrations (pg m⁻³) of volatile PFCs determined by passive sampling and concentrations averages of high-volume samples for period I

n.a., not analysed; n.d., not detected

<table>
<thead>
<tr>
<th>Compound</th>
<th>Lab A (SIP disk)</th>
<th>Lab B (SPMD)</th>
<th>Lab C (SIP disk)</th>
<th>Lab D (High Vol)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:2 FTOH</td>
<td>n.a.</td>
<td>n.d.</td>
<td>n.d.</td>
<td>0.4</td>
</tr>
<tr>
<td>6:2 FTOH</td>
<td>11</td>
<td>n.d.</td>
<td>12</td>
<td>25</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>54</td>
<td>55</td>
<td>52</td>
<td>97</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>19</td>
<td>12</td>
<td>20</td>
<td>34</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.a.</td>
<td>n.a.</td>
<td>8.5</td>
<td>8.9</td>
</tr>
<tr>
<td>6:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>2.0</td>
</tr>
<tr>
<td>8:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>4.0</td>
</tr>
<tr>
<td>10:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1.2</td>
</tr>
<tr>
<td>MeFBSA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>2.3</td>
</tr>
<tr>
<td>MeFOSA</td>
<td>2.5</td>
<td>n.a.</td>
<td>5.6</td>
<td>1.7</td>
</tr>
<tr>
<td>EtFOSA</td>
<td>1.6</td>
<td>n.a.</td>
<td>0.7</td>
<td>1.3</td>
</tr>
<tr>
<td>MeFBSE</td>
<td>n.a.</td>
<td>n.a.</td>
<td>7.0</td>
<td>1.9</td>
</tr>
<tr>
<td>MeFOSE</td>
<td>7</td>
<td>n.a.</td>
<td>n.d.</td>
<td>2.2</td>
</tr>
<tr>
<td>EtFOSE</td>
<td>n.d.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Table A6. Concentrations (pg m⁻³) of volatile PFCs determined by passive sampling and concentrations averages of high-volume samples for period II

n.a., not analysed; n.d., not detected

<table>
<thead>
<tr>
<th>Compound</th>
<th>Lab A (SIP disk)</th>
<th>Lab B (SPMD)</th>
<th>Lab C (SIP disk)</th>
<th>Lab D (High Vol)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:2 FTOH</td>
<td>n.a.</td>
<td>n.d.</td>
<td>n.d.</td>
<td>0.0</td>
</tr>
<tr>
<td>6:2 FTOH</td>
<td>14</td>
<td>n.d.</td>
<td>13</td>
<td>34</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>74</td>
<td>38</td>
<td>63</td>
<td>108</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>31</td>
<td>5.4</td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.a.</td>
<td>n.a.</td>
<td>10</td>
<td>9.2</td>
</tr>
<tr>
<td>6:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>3.7</td>
</tr>
<tr>
<td>8:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>6.4</td>
</tr>
<tr>
<td>10:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1.6</td>
</tr>
<tr>
<td>MeFBSA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>6.9</td>
</tr>
<tr>
<td>MeFOSA</td>
<td>3.9</td>
<td>n.a.</td>
<td>5.1</td>
<td>6.3</td>
</tr>
<tr>
<td>EtFOSA</td>
<td>1.6</td>
<td>n.a.</td>
<td>n.d.</td>
<td>2.4</td>
</tr>
<tr>
<td>MeFBSE</td>
<td>n.a.</td>
<td>n.a.</td>
<td>4.2</td>
<td>6.2</td>
</tr>
<tr>
<td>MeFOSE</td>
<td>13</td>
<td>n.a.</td>
<td>n.d.</td>
<td>4.5</td>
</tr>
<tr>
<td>EtFOSE</td>
<td>5.4</td>
<td>n.a.</td>
<td>n.d.</td>
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</tr>
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</table>
Table A7. Concentrations (pg m\(^{-3}\)) of volatile PFCs determined by passive sampling and concentrations averages of high-volume samples for period III

n.a., not analysed; n.d., not detected

<table>
<thead>
<tr>
<th>Compound</th>
<th>Lab A (SIP disk)</th>
<th>Lab B (SPMD)</th>
<th>Lab C (SIP disk)</th>
<th>Lab D (High Vol)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:2 FTOH</td>
<td>n.a.</td>
<td>n.d.</td>
<td>n.d.</td>
<td>0.2</td>
</tr>
<tr>
<td>6:2 FTOH</td>
<td>35</td>
<td>n.d.</td>
<td>12</td>
<td>37</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>62</td>
<td>59</td>
<td>74</td>
<td>69</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>33</td>
<td>13</td>
<td>17</td>
<td>33</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.a.</td>
<td>n.a.</td>
<td>8.4</td>
<td>9.6</td>
</tr>
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<td>6:2 FTA</td>
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<td>n.a.</td>
<td>n.d.</td>
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</tr>
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<td>n.a.</td>
<td>n.d.</td>
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</tr>
<tr>
<td>10:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1.6</td>
</tr>
<tr>
<td>MeFBSA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>1.2</td>
</tr>
<tr>
<td>MeFOSA</td>
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<td>n.a.</td>
<td>3.7</td>
<td>2.8</td>
</tr>
<tr>
<td>EtFOSA</td>
<td>1.4</td>
<td>n.a.</td>
<td>2.8</td>
<td>1.3</td>
</tr>
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<td>3.4</td>
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<td>EtFOSE</td>
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<td>n.a.</td>
<td>n.d.</td>
<td>1.7</td>
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</table>

Table A8. Concentrations (pg m\(^{-3}\)) of volatile PFCs determined by passive sampling and concentrations averages of high-volume samples for period IV

n.a., not analysed; n.d., not detected

<table>
<thead>
<tr>
<th>Compound</th>
<th>Lab A (SIP disk)</th>
<th>Lab B (SPMD)</th>
<th>Lab C (SIP disk)</th>
<th>Lab D (High Vol)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:2 FTOH</td>
<td>n.a.</td>
<td>n.d.</td>
<td>n.d.</td>
<td>0.4</td>
</tr>
<tr>
<td>6:2 FTOH</td>
<td>24</td>
<td>n.d.</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>61</td>
<td>n.d.</td>
<td>63</td>
<td>54</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>27</td>
<td>n.d.</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.a.</td>
<td>n.a.</td>
<td>2.0</td>
<td>3.8</td>
</tr>
<tr>
<td>6:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>1.1</td>
</tr>
<tr>
<td>8:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>5.0</td>
</tr>
<tr>
<td>10:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1.6</td>
</tr>
<tr>
<td>MeFBSA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>1.6</td>
</tr>
<tr>
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<td>3.9</td>
<td>n.a.</td>
<td>2.9</td>
<td>1.7</td>
</tr>
<tr>
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<td>1.5</td>
<td>2.0</td>
</tr>
<tr>
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<td>n.a.</td>
<td>7.7</td>
<td>3.0</td>
</tr>
<tr>
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<td>n.a.</td>
<td>9.0</td>
<td>2.2</td>
</tr>
<tr>
<td>EtFOSE</td>
<td>4.7</td>
<td>n.a.</td>
<td>n.d.</td>
<td>1.1</td>
</tr>
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</table>
Table A9. Concentrations (pg m$^{-3}$) of volatile PFCs determined by passive sampling and concentrations of high-volume samples for period V

n.a., not analysed; n.d., not detected

<table>
<thead>
<tr>
<th>Compound</th>
<th>Lab A (SIP disk)</th>
<th>Lab B (SPMD)</th>
<th>Lab C (SIP disk)</th>
<th>Lab D (High Vol)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:2 FTOH</td>
<td>n.a.</td>
<td>n.d.</td>
<td>n.d.</td>
<td>0.5</td>
</tr>
<tr>
<td>6:2 FTOH</td>
<td>24</td>
<td>n.d.</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>58</td>
<td>n.d.</td>
<td>61</td>
<td>38</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>36</td>
<td>n.d.</td>
<td>17</td>
<td>8.6</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.a.</td>
<td>n.a.</td>
<td>3.9</td>
<td>15</td>
</tr>
<tr>
<td>6:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>1.4</td>
</tr>
<tr>
<td>8:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>3.6</td>
</tr>
<tr>
<td>10:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>4.0</td>
</tr>
<tr>
<td>MeFBSA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>3.6</td>
</tr>
<tr>
<td>MeFOSA</td>
<td>6.2</td>
<td>n.a.</td>
<td>2.5</td>
<td>1.5</td>
</tr>
<tr>
<td>EtFOSA</td>
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<td>n.a.</td>
<td>1.8</td>
<td>0.8</td>
</tr>
<tr>
<td>MeFBSE</td>
<td>n.a.</td>
<td>n.a.</td>
<td>6.1</td>
<td>1.4</td>
</tr>
<tr>
<td>MeFOSE</td>
<td>15</td>
<td>n.a.</td>
<td>5.4</td>
<td>1.1</td>
</tr>
<tr>
<td>EtFOSE</td>
<td>3.1</td>
<td>n.a.</td>
<td>n.d.</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Table A10. Concentrations (pg m$^{-3}$) of volatile PFCs determined by passive sampling and concentrations averages of high-volume samples for period VI

n.a., not analysed; n.d., not detected

<table>
<thead>
<tr>
<th>Compound</th>
<th>Lab A (SIP disk)</th>
<th>Lab B (SPMD)</th>
<th>Lab C (SIP disk)</th>
<th>Lab D (High Vol)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:2 FTOH</td>
<td>n.a.</td>
<td>n.d.</td>
<td>n.d.</td>
<td>0.8</td>
</tr>
<tr>
<td>6:2 FTOH</td>
<td>29</td>
<td>n.d.</td>
<td>22</td>
<td>12</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>64</td>
<td>n.d.</td>
<td>72</td>
<td>48</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>32</td>
<td>n.d.</td>
<td>19</td>
<td>15</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.a.</td>
<td>n.a.</td>
<td>3.0</td>
<td>14</td>
</tr>
<tr>
<td>6:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>1.2</td>
</tr>
<tr>
<td>8:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>3.2</td>
</tr>
<tr>
<td>10:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>3.9</td>
</tr>
<tr>
<td>MeFBSA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>2.4</td>
</tr>
<tr>
<td>MeFOSA</td>
<td>5.4</td>
<td>n.a.</td>
<td>2.7</td>
<td>1.2</td>
</tr>
<tr>
<td>EtFOSA</td>
<td>1.5</td>
<td>n.a.</td>
<td>2.4</td>
<td>0.7</td>
</tr>
<tr>
<td>MeFBSE</td>
<td>n.a.</td>
<td>n.a.</td>
<td>7.7</td>
<td>1.7</td>
</tr>
<tr>
<td>MeFOSE</td>
<td>14</td>
<td>n.a.</td>
<td>4.7</td>
<td>1.2</td>
</tr>
<tr>
<td>EtFOSE</td>
<td>3.5</td>
<td>n.a.</td>
<td>n.d.</td>
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</table>
Variation in derived air concentrations expressed as the ratio of active/passive

Table A11. Ratios for active: SIP-derived air concentrations for 6:2 FTOH

<table>
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<tr>
<th>Period</th>
<th>A (SIP disk)</th>
<th>B (SPMD)</th>
<th>C (SIP disk)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>2.2</td>
<td>n.d.</td>
<td>2.2</td>
</tr>
<tr>
<td>II</td>
<td>2.4</td>
<td>n.d.</td>
<td>2.6</td>
</tr>
<tr>
<td>III</td>
<td>1.0</td>
<td>n.d.</td>
<td>3.0</td>
</tr>
<tr>
<td>IV</td>
<td>0.9</td>
<td>n.d.</td>
<td>1.9</td>
</tr>
<tr>
<td>V</td>
<td>0.6</td>
<td>n.d.</td>
<td>0.9</td>
</tr>
<tr>
<td>VI</td>
<td>0.4</td>
<td>n.d.</td>
<td>0.6</td>
</tr>
<tr>
<td>Mean</td>
<td>1.3</td>
<td>n.d.</td>
<td>1.9</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.8</td>
<td>n.d.</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Table A12. Ratios for active: SIP-derived air concentrations for 8:2 FTOH

<table>
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<tr>
<th>Period</th>
<th>A (SIP disk)</th>
<th>B (SPMD)</th>
<th>C (SIP disk)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>1.8</td>
<td>1.8</td>
<td>1.9</td>
</tr>
<tr>
<td>II</td>
<td>1.5</td>
<td>2.8</td>
<td>1.7</td>
</tr>
<tr>
<td>III</td>
<td>1.1</td>
<td>1.2</td>
<td>0.9</td>
</tr>
<tr>
<td>IV</td>
<td>0.9</td>
<td>n.d.</td>
<td>0.9</td>
</tr>
<tr>
<td>V</td>
<td>0.7</td>
<td>n.d.</td>
<td>0.6</td>
</tr>
<tr>
<td>VI</td>
<td>0.8</td>
<td>n.d.</td>
<td>0.7</td>
</tr>
<tr>
<td>Mean</td>
<td>1.1</td>
<td>1.9</td>
<td>1.1</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.4</td>
<td>0.8</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Table A13. Ratios for active: SIP-derived air concentrations for 10:2 FTOH

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<th>A (SIP disk)</th>
<th>B (SPMD)</th>
<th>C (SIP disk)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
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<td>2.8</td>
<td>1.7</td>
</tr>
<tr>
<td>II</td>
<td>1.1</td>
<td>6.0</td>
<td>1.3</td>
</tr>
<tr>
<td>III</td>
<td>1.0</td>
<td>2.5</td>
<td>1.9</td>
</tr>
<tr>
<td>IV</td>
<td>0.7</td>
<td>n.d.</td>
<td>1.0</td>
</tr>
<tr>
<td>V</td>
<td>0.2</td>
<td>n.d.</td>
<td>0.5</td>
</tr>
<tr>
<td>VI</td>
<td>0.5</td>
<td>n.d.</td>
<td>0.8</td>
</tr>
<tr>
<td>Mean</td>
<td>0.9</td>
<td>3.8</td>
<td>1.2</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.6</td>
<td>1.9</td>
<td>0.5</td>
</tr>
</tbody>
</table>
### Table A14. Ratios for active: SIP-derived air concentrations for 12:2 FTOH

<table>
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<th>A (SIP disk)</th>
<th>B (SPMD)</th>
<th>C (SIP disk)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>n.a.</td>
<td>1.0</td>
</tr>
<tr>
<td>II</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0.9</td>
</tr>
<tr>
<td>III</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1.1</td>
</tr>
<tr>
<td>IV</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1.9</td>
</tr>
<tr>
<td>V</td>
<td>n.a.</td>
<td>n.a.</td>
<td>3.8</td>
</tr>
<tr>
<td>VI</td>
<td>n.a.</td>
<td>n.a.</td>
<td>4.6</td>
</tr>
<tr>
<td><strong>mean</strong></td>
<td>n.a.</td>
<td>n.a.</td>
<td><strong>2.2</strong></td>
</tr>
<tr>
<td><strong>s.d.</strong></td>
<td>n.a.</td>
<td>n.a.</td>
<td><strong>1.6</strong></td>
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### Table A15. Ratios for active: SIP-derived air concentrations for MeFOSA

<table>
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<th>A (SIP disk)</th>
<th>B (SPMD)</th>
<th>C (SIP disk)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>n.a.</td>
<td>0.3</td>
</tr>
<tr>
<td>II</td>
<td>1.6</td>
<td>n.a.</td>
<td>1.2</td>
</tr>
<tr>
<td>III</td>
<td>0.8</td>
<td>n.a.</td>
<td>0.7</td>
</tr>
<tr>
<td>IV</td>
<td>0.4</td>
<td>n.a.</td>
<td>0.6</td>
</tr>
<tr>
<td>V</td>
<td>0.2</td>
<td>n.a.</td>
<td>0.6</td>
</tr>
<tr>
<td>VI</td>
<td>0.2</td>
<td>n.a.</td>
<td>0.4</td>
</tr>
<tr>
<td><strong>mean</strong></td>
<td>0.7</td>
<td>n.a.</td>
<td><strong>0.7</strong></td>
</tr>
<tr>
<td><strong>s.d.</strong></td>
<td>0.5</td>
<td>n.a.</td>
<td><strong>0.3</strong></td>
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</tbody>
</table>

### Table A16. Ratios for active: SIP-derived air concentrations for EtFOSA

<table>
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<th>A (SIP disk)</th>
<th>B (SPMD)</th>
<th>C (SIP disk)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
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<td>n.a.</td>
<td>1.9</td>
</tr>
<tr>
<td>II</td>
<td>1.5</td>
<td>n.a.</td>
<td>n.d.</td>
</tr>
<tr>
<td>III</td>
<td>0.9</td>
<td>n.a.</td>
<td>0.5</td>
</tr>
<tr>
<td>IV</td>
<td>2.0</td>
<td>n.a.</td>
<td>1.3</td>
</tr>
<tr>
<td>V</td>
<td>0.7</td>
<td>n.a.</td>
<td>0.4</td>
</tr>
<tr>
<td>VI</td>
<td>0.5</td>
<td>n.a.</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>mean</strong></td>
<td>1.1</td>
<td>n.a.</td>
<td><strong>0.9</strong></td>
</tr>
<tr>
<td><strong>s.d.</strong></td>
<td>0.6</td>
<td>n.a.</td>
<td><strong>0.7</strong></td>
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</table>
Table A17.  Ratios for active: SIP-derived air concentrations for MeFBSE

<table>
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<th>B (SPMD)</th>
<th>C (SIP disk)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>n.a.</td>
<td>0.3</td>
</tr>
<tr>
<td>II</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1.5</td>
</tr>
<tr>
<td>III</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0.3</td>
</tr>
<tr>
<td>IV</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0.4</td>
</tr>
<tr>
<td>V</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0.2</td>
</tr>
<tr>
<td>VI</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0.2</td>
</tr>
<tr>
<td>mean</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0.5</td>
</tr>
<tr>
<td>s.d.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0.5</td>
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</tbody>
</table>

Table A18.  Ratios for active: SIP-derived air concentrations for MeFOSE

<table>
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<tr>
<th>Period</th>
<th>A (SIP disk)</th>
<th>B (SPMD)</th>
<th>C (SIP disk)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>0.3</td>
<td>n.a.</td>
<td>n.d.</td>
</tr>
<tr>
<td>II</td>
<td>0.3</td>
<td>n.a.</td>
<td>n.d.</td>
</tr>
<tr>
<td>III</td>
<td>0.2</td>
<td>n.a.</td>
<td>0.3</td>
</tr>
<tr>
<td>IV</td>
<td>0.2</td>
<td>n.a.</td>
<td>0.2</td>
</tr>
<tr>
<td>V</td>
<td>0.1</td>
<td>n.a.</td>
<td>0.2</td>
</tr>
<tr>
<td>VI</td>
<td>0.1</td>
<td>n.a.</td>
<td>0.2</td>
</tr>
<tr>
<td>mean</td>
<td>0.2</td>
<td>n.a.</td>
<td>0.2</td>
</tr>
<tr>
<td>s.d.</td>
<td>0.1</td>
<td>n.a.</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Table A19.  Ratios for active: SIP-derived air concentrations for EtFOSE

<table>
<thead>
<tr>
<th>Period</th>
<th>A (SIP disk)</th>
<th>B (SPMD)</th>
<th>C (SIP disk)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>n.d.</td>
<td>n.a.</td>
<td>n.d.</td>
</tr>
<tr>
<td>II</td>
<td>0.2</td>
<td>n.a.</td>
<td>n.d.</td>
</tr>
<tr>
<td>III</td>
<td>0.3</td>
<td>n.a.</td>
<td>n.d.</td>
</tr>
<tr>
<td>IV</td>
<td>0.2</td>
<td>n.a.</td>
<td>n.d.</td>
</tr>
<tr>
<td>V</td>
<td>0.1</td>
<td>n.a.</td>
<td>n.d.</td>
</tr>
<tr>
<td>VI</td>
<td>0.2</td>
<td>n.a.</td>
<td>n.d.</td>
</tr>
<tr>
<td>mean</td>
<td>0.2</td>
<td>n.a.</td>
<td>n.d.</td>
</tr>
<tr>
<td>s.d.</td>
<td>0.1</td>
<td>n.a.</td>
<td>n.d.</td>
</tr>
</tbody>
</table>

n.a., not analysed; n.d., not detected
Passive air sampling (PAS) field sampling rates calibrated by high-volume samples

Table A20. Sampling rates (m$^3$ day$^{-1}$) calculated for period I using high-volume data

$T$, annual temperature average (°C), 12.2°C; $U$, annual wind speed average (m s$^{-1}$), 2.3 m s$^{-1}$; n.a., not analysed; n.c., not calculated; n.d., not detected

<table>
<thead>
<tr>
<th>Compound</th>
<th>Lab A (SIP disk)</th>
<th>Lab B (SPMD)</th>
<th>Lab C (SIP disk)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:2 FTOH</td>
<td>n.c.</td>
<td>n.a.</td>
<td>n.c.</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>n.c.</td>
<td>0.8</td>
<td>n.c.</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>n.c.</td>
<td>0.9</td>
<td>n.c.</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.c.</td>
<td>n.a.</td>
<td>n.c.</td>
</tr>
<tr>
<td>MeFOSA</td>
<td>6.6</td>
<td>n.a.</td>
<td>7.4</td>
</tr>
<tr>
<td>EtFOSA</td>
<td>4.2</td>
<td>n.a.</td>
<td>1.2</td>
</tr>
<tr>
<td>MeFBSE</td>
<td>n.a.</td>
<td>n.a.</td>
<td>3.8</td>
</tr>
<tr>
<td>MeFOSE</td>
<td>8.6</td>
<td>n.a.</td>
<td>n.d.</td>
</tr>
<tr>
<td>EtFOSE</td>
<td>n.d.</td>
<td>n.a.</td>
<td>n.d.</td>
</tr>
</tbody>
</table>

Table A21. Sampling rates (m$^3$ day$^{-1}$) calculated for period II using high-volume data

$T$, 17.1°C; $U$, 2.1 m s$^{-1}$; n.a., not analysed; n.c., not calculated; n.d., not detected

<table>
<thead>
<tr>
<th>Compound</th>
<th>Lab B (SPMD)</th>
<th>Lab C (SIP disk)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:2 FTOH</td>
<td>n.c.</td>
<td>n.a.</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>n.c.</td>
<td>0.4</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>n.c.</td>
<td>n.a.</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.a.</td>
<td>1.9</td>
</tr>
<tr>
<td>MeFOSA</td>
<td>2.3</td>
<td>n.a.</td>
</tr>
<tr>
<td>EtFOSA</td>
<td>n.a.</td>
<td>0.7</td>
</tr>
<tr>
<td>MeFBSE</td>
<td>8.0</td>
<td>n.a.</td>
</tr>
<tr>
<td>MeFOSE</td>
<td>9.7</td>
<td>n.a.</td>
</tr>
<tr>
<td>EtFOSE</td>
<td>0.8</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Table A22: Sampling rates (m$^3$ day$^{-1}$) calculated for period III using high-volume data

$T$, 15.3°C; $U$, 2.1 m s$^{-1}$; n.a., not analysed; n.c., not calculated; n.d., not detected

<table>
<thead>
<tr>
<th>Compound</th>
<th>Lab B (SPMD)</th>
<th>Lab C (SIP disk)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:2 FTOH</td>
<td>n.c.</td>
<td>n.a.</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>n.c.</td>
<td>2.5</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>n.c.</td>
<td>3.5</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.c.</td>
<td>n.a.</td>
</tr>
<tr>
<td>MeFOSA</td>
<td>6.0</td>
<td>n.a.</td>
</tr>
<tr>
<td>EtFOSA</td>
<td>4.0</td>
<td>3.1</td>
</tr>
<tr>
<td>MeFBSE</td>
<td>n.a.</td>
<td>3.4</td>
</tr>
<tr>
<td>MeFOSE</td>
<td>12.4</td>
<td>n.a.</td>
</tr>
<tr>
<td>EtFOSE</td>
<td>7.5</td>
<td>n.a.</td>
</tr>
</tbody>
</table>
Table A23. Sampling rates ($m^3$ day$^{-1}$) calculated for period IV using high-volume data

$T$, 6.9°C; $U$, 2.0 m s$^{-1}$; n.a., not analysed; n.c., not calculated; n.d., not detected

<table>
<thead>
<tr>
<th>Compound</th>
<th>Sampling rate ($m^3$ day$^{-1}$)</th>
<th>Period IV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A (SIP disk)</td>
<td>B (SPMD)</td>
</tr>
<tr>
<td>6:2 FTOH</td>
<td>n.c.</td>
<td>n.a.</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>n.c.</td>
<td>n.d.</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>n.c.</td>
<td>n.d.</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.c.</td>
<td>n.a.</td>
</tr>
<tr>
<td>MeFOSA</td>
<td>10.3</td>
<td>n.a.</td>
</tr>
<tr>
<td>EtFOSA</td>
<td>1.7</td>
<td>n.a.</td>
</tr>
<tr>
<td>MeFBSE</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>MeFOSE</td>
<td>16.7</td>
<td>n.a.</td>
</tr>
<tr>
<td>EtFOSE</td>
<td>9.8</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Table A24. Sampling rates ($m^3$ day$^{-1}$) calculated for period V using high-volume data

$T$, 4.4°C; $U$, 3.7 m s$^{-1}$; n.a., not analysed; n.c., not calculated; n.d., not detected

<table>
<thead>
<tr>
<th>Compound</th>
<th>Sampling rate ($m^3$ day$^{-1}$)</th>
<th>Period V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A (SIP disk)</td>
<td>B (SPMD)</td>
</tr>
<tr>
<td>6:2 FTOH</td>
<td>n.c.</td>
<td>n.a.</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>n.c.</td>
<td>n.d.</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>n.c.</td>
<td>n.d.</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.c.</td>
<td>n.a.</td>
</tr>
<tr>
<td>MeFOSA</td>
<td>19.0</td>
<td>n.a.</td>
</tr>
<tr>
<td>EtFOSA</td>
<td>4.6</td>
<td>n.a.</td>
</tr>
<tr>
<td>MeFBSE</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>MeFOSE</td>
<td>37.1</td>
<td>n.a.</td>
</tr>
<tr>
<td>EtFOSE</td>
<td>16.0</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Table A25. Sampling rates ($m^3$ day$^{-1}$) calculated for period VI using high-volume data

$T$, 4.7°C; $U$, 3.9 m s$^{-1}$; n.a., not analysed; n.c., not calculated; n.d., not detected

<table>
<thead>
<tr>
<th>Compound</th>
<th>Sampling rate ($m^3$ day$^{-1}$)</th>
<th>Period VI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A (SIP disk)</td>
<td>B (SPMD)</td>
</tr>
<tr>
<td>6:2 FTOH</td>
<td>n.c.</td>
<td>n.a.</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>n.c.</td>
<td>n.d.</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>n.c.</td>
<td>n.d.</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.c.</td>
<td>n.a.</td>
</tr>
<tr>
<td>MeFOSA</td>
<td>20.0</td>
<td>n.a.</td>
</tr>
<tr>
<td>EtFOSA</td>
<td>7.4</td>
<td>n.a.</td>
</tr>
<tr>
<td>MeFBSE</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>MeFOSE</td>
<td>33.2</td>
<td>n.a.</td>
</tr>
<tr>
<td>EtFOSE</td>
<td>13.6</td>
<td>n.a.</td>
</tr>
</tbody>
</table>
### MDLs and IDLs

#### Table A26. Instrumental detection limits (IDL, pg µL\(^{-1}\))

<table>
<thead>
<tr>
<th>Compound</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:2 FTOH</td>
<td>n.a.</td>
<td>10</td>
<td>11</td>
<td>0.8</td>
</tr>
<tr>
<td>6:2 FTOH</td>
<td>0.9</td>
<td>5</td>
<td>2.1</td>
<td>0.9</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>1.1</td>
<td>5</td>
<td>1.0</td>
<td>0.8</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>0.6</td>
<td>5</td>
<td>1.0</td>
<td>0.8</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.a.</td>
<td>n.a.</td>
<td>5.9</td>
<td>0.8</td>
</tr>
<tr>
<td>6:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1.9</td>
<td>0.1</td>
</tr>
<tr>
<td>8:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>10:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0.1</td>
</tr>
<tr>
<td>MeFBSA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>MeFOSA</td>
<td>0.1</td>
<td>n.a.</td>
<td>1.1</td>
<td>0.1</td>
</tr>
<tr>
<td>EtFOSA</td>
<td>0.1</td>
<td>n.a.</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>MeFBSE</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1.9</td>
<td>0.1</td>
</tr>
<tr>
<td>MeFOSE</td>
<td>1.0</td>
<td>n.a.</td>
<td>3.6</td>
<td>0.1</td>
</tr>
<tr>
<td>EtFOSE</td>
<td>0.6</td>
<td>n.a.</td>
<td>3.6</td>
<td>0.2</td>
</tr>
</tbody>
</table>

#### Table A27. Method detection limits (MDL)

MDLs (pg m\(^{-3}\)) for lab A, B, C were estimated from MDLs (pg mL\(^{-1}\)). For FTOHs, MDLs (pg m\(^{-3}\)) = MDLs (pg mL\(^{-1}\)) average effective volume (sampling duration of 60 days). For FASAs and FASEs, MDLs (pg m\(^{-3}\)) = MDLs (pg mL\(^{-1}\)) (60 days) sampling rate calculated in this study (Table 3). n.a., not analysed; n.d., not detected

<table>
<thead>
<tr>
<th>Compound</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:2 FTOH</td>
<td>n.a.</td>
<td>20</td>
<td>37</td>
<td>3.0</td>
<td>n.a.</td>
<td>n.d.</td>
<td>22</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>6:2 FTOH</td>
<td>0.6</td>
<td>15</td>
<td>10</td>
<td>2.3</td>
<td>1.8</td>
<td>n.d.</td>
<td>5.9</td>
<td>&lt;0.9</td>
</tr>
<tr>
<td>8:2 FTOH</td>
<td>0.7</td>
<td>15</td>
<td>2.9</td>
<td>4.5</td>
<td>2.1</td>
<td>36</td>
<td>1.8</td>
<td>&lt;0.7</td>
</tr>
<tr>
<td>10:2 FTOH</td>
<td>0.4</td>
<td>10</td>
<td>3.1</td>
<td>1.8</td>
<td>1.2</td>
<td>13</td>
<td>1.9</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>12:2 FTOH</td>
<td>n.a.</td>
<td>n.a.</td>
<td>14</td>
<td>1.1</td>
<td>n.a.</td>
<td>n.a.</td>
<td>9.9</td>
<td>&lt;0.4</td>
</tr>
<tr>
<td>6:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>8.9</td>
<td>1.2</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>&lt;0.2</td>
</tr>
<tr>
<td>8:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1.1</td>
<td>0.3</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>10:2 FTA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0.1</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>MeFBSA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1.0</td>
<td>0.7</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0.9</td>
<td>&lt;0.3</td>
</tr>
<tr>
<td>MeFOSA</td>
<td>0.1</td>
<td>n.a.</td>
<td>3.8</td>
<td>0.9</td>
<td>0.1</td>
<td>n.a.</td>
<td>1.3</td>
<td>&lt;0.4</td>
</tr>
<tr>
<td>EtFOSA</td>
<td>0.1</td>
<td>n.a.</td>
<td>1.0</td>
<td>0.3</td>
<td>0.3</td>
<td>n.a.</td>
<td>0.3</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>MeFBSE</td>
<td>n.a.</td>
<td>n.a.</td>
<td>2.1</td>
<td>0.2</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0.7</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>MeFOSE</td>
<td>0.6</td>
<td>n.a.</td>
<td>13</td>
<td>1.0</td>
<td>0.5</td>
<td>n.a.</td>
<td>3.4</td>
<td>&lt;0.2</td>
</tr>
<tr>
<td>EtFOSE</td>
<td>0.4</td>
<td>n.a.</td>
<td>4.3</td>
<td>0.2</td>
<td>0.5</td>
<td>n.a.</td>
<td>n.d.</td>
<td>&lt;0.4</td>
</tr>
</tbody>
</table>
Recovery rates

Table A28. Average recovery rates (R, %) of PFCs determined by different sampling techniques

Note: signal enhancement was involved at lab A and C. s.d., standard deviation (%); r.s.d., relative standard deviation (%); n.a., not analysed

<table>
<thead>
<tr>
<th>Compound</th>
<th>Average recovery rates (%)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A (SIP disk)</td>
<td>B (SPMD)</td>
<td>C (SIP disk)</td>
<td>D (High Vol)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>R ± s.d. (r.s.d.)</td>
<td>R ± s.d. (r.s.d.)</td>
<td>R ± s.d. (r.s.d.)</td>
<td>R ± s.d. (r.s.d.)</td>
<td></td>
</tr>
<tr>
<td>13C 4:2 FTOH</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>21 ± 13 (1.1)</td>
<td></td>
</tr>
<tr>
<td>13C 6:2 FTOH</td>
<td>90 ± 22 (24)</td>
<td>n.a.</td>
<td>85 ± 26 (31)</td>
<td>39 ± 20 (1.1)</td>
<td></td>
</tr>
<tr>
<td>13C 8:2 FTOH</td>
<td>70 ± 19 (26)</td>
<td>54 ± 8.6 (16)</td>
<td>129 ± 43 (34)</td>
<td>49 ± 23 (1.3)</td>
<td></td>
</tr>
<tr>
<td>13C 10:2 FTOH</td>
<td>117 ± 13 (11)</td>
<td>63 ± 14 (22)</td>
<td>108 ± 45 (41)</td>
<td>45 ± 32 (1.2)</td>
<td></td>
</tr>
<tr>
<td>D3 MeFOSA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>76 ± 19 (24)</td>
<td>41 ± 19 (0.7)</td>
<td></td>
</tr>
<tr>
<td>D5 EtFOSA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>85 ± 9 (11)</td>
<td>45 ± 19 (1.2)</td>
<td></td>
</tr>
<tr>
<td>D7 MeFOSE</td>
<td>n.a.</td>
<td>n.a.</td>
<td>101 ± 14 (14)</td>
<td>60 ± 27 (1.5)</td>
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</tr>
<tr>
<td>D9 EtFOSE</td>
<td>n.a.</td>
<td>n.a.</td>
<td>103 ± 16 (15)</td>
<td>59 ± 21 (1.0)</td>
<td></td>
</tr>
<tr>
<td>5:1 FA</td>
<td>n.a.</td>
<td>n.a.</td>
<td>75 ± 12 (16)</td>
<td>n.a.</td>
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</tr>
<tr>
<td>7:1 FA</td>
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<td>n.a.</td>
<td>75 ± 33 (44)</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td>9:1 FA</td>
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<td>n.a.</td>
<td>105 ± 31 (30)</td>
<td>n.a.</td>
<td></td>
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<td>11:1 FA</td>
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<td>n.a.</td>
<td>136 ± 34 (25)</td>
<td>n.a.</td>
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</tr>
</tbody>
</table>
### Blanks

**Table A29. Average laboratory and field blanks (pg m⁻³)**

n.a., not analysed; n.d., not detected

<table>
<thead>
<tr>
<th></th>
<th>lab A (SIP disk)</th>
<th>lab B (SPMD)</th>
<th>lab C (SIP disk)</th>
<th>lab D (High Vol)</th>
<th>lab A (SIP disk)</th>
<th>lab B (SPMD)</th>
<th>lab C (SIP disk)</th>
<th>lab D (High Vol)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:2 FTOH</td>
<td>n.a.</td>
<td>n.d.</td>
<td>n.d.</td>
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<td>n.d.</td>
<td>n.d.</td>
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<td>6:2 FTOH</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0.4</td>
<td>0.2</td>
<td>n.d.</td>
<td>6.3</td>
<td>25</td>
<td>0.8</td>
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<td>8:2 FTOH</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0.3</td>
<td>0.1</td>
<td>3.4</td>
<td>1.5</td>
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<td>1.0</td>
</tr>
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<td>10:2 FTOH</td>
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<td>n.a.</td>
<td>0.1</td>
<td>0.1</td>
<td>n.a.</td>
<td>0.6</td>
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<tr>
<td>12:2 FTOH</td>
<td>n.a.</td>
<td>n.a.</td>
<td>2.6</td>
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<td>n.a.</td>
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<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
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<td>n.a.</td>
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<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1.0</td>
</tr>
<tr>
<td>MeFBSA</td>
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<td>n.a.</td>
<td>n.a.</td>
<td>n.d.</td>
<td>n.a.</td>
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<td>2.2</td>
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<tr>
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<td>n.d.</td>
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<td>n.a.</td>
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