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Per- och polyfluorerade alkylsubstanser (PFAS) i mark och biota på Frösön

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Rapport till Naturvårdsverket

Överenskommelse NV-06350-22

Uppsala, 2023-12-07

NATIONELL MILJÖÖVERVAKNING PÅ UPPDRAG AV NATURVÅRDSVERKET

ÄRENDENNUMMER	NV-06350-22
AVTALSNUMMER	212-22-004
PROGRAMOMRÅDE	Regeringsuppdrag Kunskap om PFAS i livsmedel och miljö
DELPROGRAM	Screening

Per- och polyfluorerade alkylsubstanser (PFAS) i mark och biota på Frösön

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Rapporttitel och undertitel Per- och polyfluorerade alkylsubstanser (PFAS) i mark och biota på Frösön	**Beställare** Naturvårdsverket 106 48 Stockholm **Finansiering** Nationell MÖ

Nyckelord för plats
Jämtland, Östersund, Frösön

Nyckelord för ämne
PFAS, biota, näringskedja, taggsvamp, blåbär, lingon, hallon, älg, rådjur, skogssork, näringskedja, bioackumulation, biomagnifikation,

Tidpunkt för insamling av underlagsdata
2021 – 2022

Sammanfattning

Per- och polyfluorerade alkylsubstanser (PFAS) omfattar högfluorerade ämnen och representerar industriellt framställda svårnedbrytningsbara kemikalier med påvisade hälsoeffekter.

I studien som genomfördes på Frösön och ett referensområde nära Umeå har vi samlat in prover från olika matriser som ingår i den terrestra näringskedjan. Proverna har analyserats för totalt 24 PFAS.

Halterna av Summa PFAS visade stora variationer mellan arterna där halterna på Frösön fördelade sig enligt följande för markprover, svamp och bär: lingon < hallon < blåbär < blek taggsvamp << jord. Lingon hade de lägsta halterna bland biota (1,8±1,2 ng/g torrvikt) och blek taggsvamp de högsta (54,7±20,6 ng/g torrvikt). För viltproverna fördelade sig halterna enligt följande: lunga-älg ≈ muskel-älg < muskel-rådjur < lunga-rådjur < lever-älg < lever-rådjur << muskel-skogssork << hjärta-skogssork << mjälte-skogssork <<< njure-skogssork <<< lever-skogssork där halterna i lever hos skogssork var 4787,8±1229,2 ng/g våtvikt.

EU:s gränsvärden för summa (PFAS4) i viltkött (muskel) överskreds inte i något av de undersökta proverna. Ett muskelprov från ett rådjur låg dock nära gränsvärdet för PFOS på 5 ng/g våtvikt (uppmätt halt 4,3 ng/g våtvikt). Gränsvärdet för PFOS i slaktbiprodukter (50 ng/g våtvikt) överskreds i leverprover från två rådjur.

De uppmätta PFAS koncentrationerna i jord, blek taggsvamp och viltet – framför allt skogssork – är bekymmersamma ur ett ekosystemhälsa- och One Health perspektiv.

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Sammanfattning

Per- och polyfluorerade alkylsubstanser (PFAS) omfattar en grupp på i dagsläget över 4700 högfluorerade ämnen och representerar industriellt framställda kemikalier. Deras vatten-, fett- och smutsavstötande egenskaper har lett till breda användningsområden inklusive brandskum, skidvalla, hudvårdsprodukter och impregnering av kläder. Deras kemiska egenskaper medför att de är svårnedbrytningsbara där persistensen ökar med längden av kolkedjorna. Ett flertal PFAS-ämnen har påvisade hälsoeffekter inklusive nedsatt immunförsvar och att vara reproduktionsstörande och cancerframkallande.

Förekomsten av PFAS kan ofta kopplas till punktutsläpp (till exempel brandskum) med sekundär transport via vattendrag. PFAS transporteras och sprids även långväga via luften från industriella processer. Detta har medfört att PFAS numera är spridda i de flesta miljöer. I Sverige har förhöjda halter av PFAS påvisats i bland annat grund- och/eller dricksvatten i Uppsala, Ronneby och på Frösön, Östersunds kommun. På Frösön uppmättes även höga halter i fisk, vilket resulterade i tillfälliga kostråd.

De flesta studierna på PFAS har genomförts på vatten och vattenlevande organismer. I dagsläget är dock kunskapen om PFAS i terrestra miljöer och biota samt spridningen av PFAS i den terrestra näringskedjan och i näringsväv bristfällig. I den föreliggande studien har vi därför samlat in prover från olika matriser som ingår i den terrestra näringskedjan. Vid valet av biota iakttogs både relevansen för människans hälsa och ekosystemhälsa. Provtagningen som genomfördes under sensommaren och hösten 2022 inkluderade därför jord, blek taggsvamp, hallon, blåbär, lingon och skogssork på Frösön och referenslokaler utanför Umeå som är opåverkade av lokala punktkällor för PFAS. Provtagningen på Frösön genomfördes på olika platser och där ingick även klövvilt. Jägare har bidragit med prover på rådjur och älg under jaktsäsongen 2021-2022. Proverna har analyserats för totalt 22 olika PFAS. PFAS analyserades för skogssork i muskel, hjärta, lever, lunga, njure och mjälte. För klövviltet analyserades muskel, lever och njure.

Halterna av Summa PFAS visade stora variationer mellan de studerade arterna där medelkoncentrationerna ± standardfel (ng/g torrvikt) på Frösön fördelade sig enligt följande för markproverna, blek taggsvamp och bären: lingon (1,8 ± 1,2; *n* = 3) < hallon (3,1 ± 1,1; *n* = 3) < blåbär (7,3 ± 1,9; *n* = 3) < blek taggsvamp (54,7 ± 20,6; *n* = 3) << jord (196 ± 179; *n* = 10). För viltproverna där halterna uttrycktes per våtvikt fördelade sig medelkoncentrationerna ± standardfel (ng/g våtvikt) enligt följande: lunga (älg) (3,2 ± 0,5; *n* = 7) ≈ muskel (älg) (3,7 ± 0,7; *n* = 7) < rådjur (muskel) (5,0 ± 0,5; *n* = 9) < lunga (rådjur) (7,9 ± 3,6; *n* = 10) < lever (älg) (55,4 ± 16,3; *n* = 8) < lever (rådjur) (84,0 ± 46,7; *n* = 10) << muskel (skogssork) (238 ± 78,0; *n* = 12) << hjärta (skogssork) (458,0 ± 129,5; *n* = 12) << mjälte (skogssork) (621 ± 210; *n* = 12) <<< njure (skogssork) (2280 ± 829; *n* = 12) <<< lever (skogssork) (4790 ± 1230; *n* = 12).

EU:s gränsvärden för PFHxS, PFOS, PFOA, PFNA och deras summa (PFAS4) i viltkött (muskel) överskreds inte i något av de undersökta proverna. Ett muskelprov från ett rådjur låg dock nära

gränsvärdet för PFOS på 5 ng/g våtvikt (uppmätt halt 4,3 ng/g våtvikt). Gränsvärdet för PFOS i slaktbiprodukter (50 ng/g våtvikt) överskreds i leverprover från två rådjur.

Europeiska myndigheten för livsmedelssäkerhet (EFSA) rekommenderar ett tolerabelt veckointag (TVI) av PFAS4 på 4,4 ng/kg kroppsvikt. Detta intag riskerar att överskridas vid regelbunden konsumtion av rådjurskött från Frösön. Konsumeras 200 g kött (muskel) vid en måltid skulle det totala intaget av PFOS bli 860 ng vilket motsvarar 12,3 ng/kg för en person på 70 kg.

De tre rådjur med de högsta leverhalterna av PFAS4 (>45 ng/g våtvikt) sköts på Bynäset eller nära landtungan till Bynäset, dvs. nära brandövningsplatsen som vid tidigare studier identifierades som förorenad med höga halter av PFAS. Det är också i de skogliga miljöerna kring denna plats där skogssorkarna fångades och ingen av dessa hade en PFAS4 halt lägre än 474 ng/g våtvikt (max 11 600 ng/g våtvikt).

Uppmätta halter i bär och blek taggsvamp skiljde sig inte mellan Frösön och referensområdet utanför Umeå. I och med att alla halter av PFCAs i blek taggsvamp var högre än 18 ng/g torrvikt (max 98,3 ng/g torrvikt) misstänker vi att blek taggsvamp har en affinitet för upptag av PFAS.

PFAS-profilerna varierade mellan provtyperna. På Frösön dominerades PFAS-profilerna i blek taggsvamp, hallon och blåbär av PFBA, medan lingon dominerades av PFHxA följt av PFBS och PFBA. Detta mönster var liknande i referensproverna med undantaget att PFBA enbart utgjorde cirka en tredjedel av PFAS koncentrationerna i hallon. PFAS i jordproverna från Frösön och viltproverna dominerades däremot av PFOS med undantaget för muskelproverna av rådjur och älg som dominerades av PFBA och andra PFCAs. Leverproverna av älgarna dominerades till nästan lika delar av PFCAs och PFSAs (52% respektive 48%).

Bioackumulationsfaktorerna för flera PFAS hos skogssork var högre för taggsvamp och jord än för bären och var >100 i 27 fall. Bioackumulationsfaktorerna hos klövviltet däremot var låga för jorden men >1 för flera PFAS från taggsvampen, vilket indikerar potentiell bioackumulation.

De uppmätta PFAS koncentrationerna i jord, blek taggsvamp och viltet – framför allt skogssork – är bekymmersamma ur ett ekosystemhälsa- och One Health-perspektiv. Om skogssorkarna i denna studie har fått i sig PFAS4 via konsumtion av bär, svamp eller ryggradslösa djur inklusive daggmaskar och insekter är i nuläget okänt. De beräknade bioackumulationsfaktorerna indikerar att skogssorken kan ha fått i sig PFAS via jord och svampar. I och med att skogssorken gräver sina egna underjordiska gångar kan upptag eventuellt ske också via inandning av damm från jordpartiklar. Skogssork är Europas vanligaste däggdjur och stapelföda för många rovdjur inkl. rödräv, pärluggla och mårddjur. Pärlugglans byten utgörs av så mycket som 90% skogssork. De delvis extremt höga koncentrationerna av PFAS4 i sorkarna utgör därför inte enbart en potentiell hälsorisk för skogssorkarna utan även för deras rovdjur. PFAS försvagar immunförsvaret hos däggdjur. Hos skogssorkar kan detta innebära även ökad mottaglighet för till exempel sorkfebervirus som sprids från skogssork till människor och som orsakar sorkfeber hos människor, en vanlig zoonotisk sjukdom i regionen.

Skogshare ingick inte i provtagningen. I framtida studier är det dock angeläget att studera PFAS också i skogshare i och med att den utgör ett viktigt jaktbart vilt och i flera avseenden ekologiskt liknar skogssorken som i denna studie visade de högsta koncentrationerna.

Introduction

Per- and polyfluoroalkyl substances (PFAS) include today more than 4700 synthetic organofluorine chemical compounds with hydrophilic, lipophilic and dirt repellent properties (Chelcea et al., 2020). Since their introduction in the 1950s, they have been broadly used in amongst others aqueous firefighting foam, cosmetics, textiles, carpets, coatings, plastics, and ski wax. Their chemical properties make them persistent organic pollutants that are potential bioaccumulative and toxic (Ahrens and Bundschuh, 2014). They are toxic since many PFAS compromise the immune system, are hormone-disrupting, alter reproductive development and are cancerogenic (Dickman and Aga, 2022).

The environmental burden of PFAS has shown high spatial variation. PFAS can be emitted via point sources and locally deposited, while they also have shown long-range water and atmospheric transport or even translocation via migratory wildlife, or a combination of multiple transport pathways. For example, multiple PFAS have been emitted locally at firefighting training sites with further transport of the compounds to recipients and the atmosphere (Ahrens and Bundschuh, 2014; Evich et al., 2022; Koch et al., 2019). These transportation and dispersal mechanisms have contributed to PFAS nowadays being present ubiquitously in the environment.

Most studies on PFAS have been performed in groundwater, surface water and aquatic biota and aquatic food webs (Kurwadkar et al., 2022). Our knowledge on the terrestrial fate of PFAS including occurrence and concentrations along terrestrial food chains and food webs is therefore limited. Recent findings urge us however to fill these gaps in knowledge. Partly extreme high PFAS concentrations have been detected in surface and groundwater and fish close to firefighting training sites (Axelsson and Bard, 2015). These PFAS do not stay in aquatic food webs. Plant-uptake, digestion of PFAS-coated soil particles by invertebrates and uptake of PFAS-rich dust are all mechanisms that can contribute to PFAS also entering the terrestrial food chain with risk of bioaccumulation and biomagnification in consumers and predators. In fact, PFAS have been detected in multiple terrestrial biota including earthworms (reviewed by Burkhard and Votava, 2023), voles (Ecke et al., 2020; Grønnestad et al., 2019) and their predators (Bustnes et al., 2015), reindeer (Roos et al., 2022), roedeer (Falk et al., 2012) and polar bears (Smithwick et al., 2005).

Small mammals are keystone species for the functioning of boreal ecosystems. They consume mushrooms as well as plants and their berries, and contribute to the dispersal of cryptogams and vascular plants (Ericson, 1977; Hansson, 1988). They are also important staple food for multiple mammalian and avian predators (Hörnfeldt et al., 1990; Krebs and Myers, 1974). Their key role in bottom-up and top-down ecosystem processes makes small mammals therefore suitable model species to increase our understanding of the terrestrial fate of PFAS. The bank vole (*Myodes glareolus*) is Europe’s most common mammal (Mitchell-Jones et al., 1999). Even if the species is generally regarded as granivorous and herbivorous, it frequently also consumes mushrooms and invertebrates (Hansson, 1979a; Hansson, 1985b). Due to their limited home ranges (up to ca. 0.4 ha) (Bergstedt, 1966; Löfgren, 1995), micropollutants detected in their tissue likely reflect local exposure (e.g., Ecke et al., 2020; Ecke et al., 2018). Ungulates like roedeer (*Capreolus capreolus*) and moose (*Alces alces*) are browsers mainly feeding on twigs of trees and shrubs with roedeer however also feeding on for example crops (Spitzer et al., 2020). Also roedeer and moose might consume mushrooms and berries (either deliberately or accidentally) (Cederlund et al., 1980). The home range of roedeer is indeed considerably smaller (0.5 km^2) than that of moose (ca. 72 km^2) (Jones et al., 2009), but compared to bank voles, it is more difficult to link uptake of pollutants to potential point sources in ungulates.

In previous studies of PFAS on the island Frösön at lake Storsjön, central Sweden, partly extreme PFAS concentrations were detected in groundwater (>400,000 ng/L) (Axelsson and Bard, 2015), and concentrations in fish (Modin, 2021) have resulted in dietary recommendations. These findings pose the opportunity and need to study the fate of PFAS in the terrestrial food web on this island.

We therefore studied PFAS in soil and biota (mushrooms, berries of vascular plants, voles, and ungulates) with mushrooms, berries, and ungulates representing important complementary local year-round food sources (either fresh or frozen) for human consumption. PFAS accumulate and damage liver tissue (reviewed by Costello et al., 2022). We therefore predicted PFAS concentrations in bank voles, roedeer and moose to be highest in liver. Based on feeding and movement ecology, we hypothesized that bank voles have higher PFAS concentrations than roedeer and moose and that their concentrations are higher than those in soil, berries, and mushrooms (see also Fig. 1).

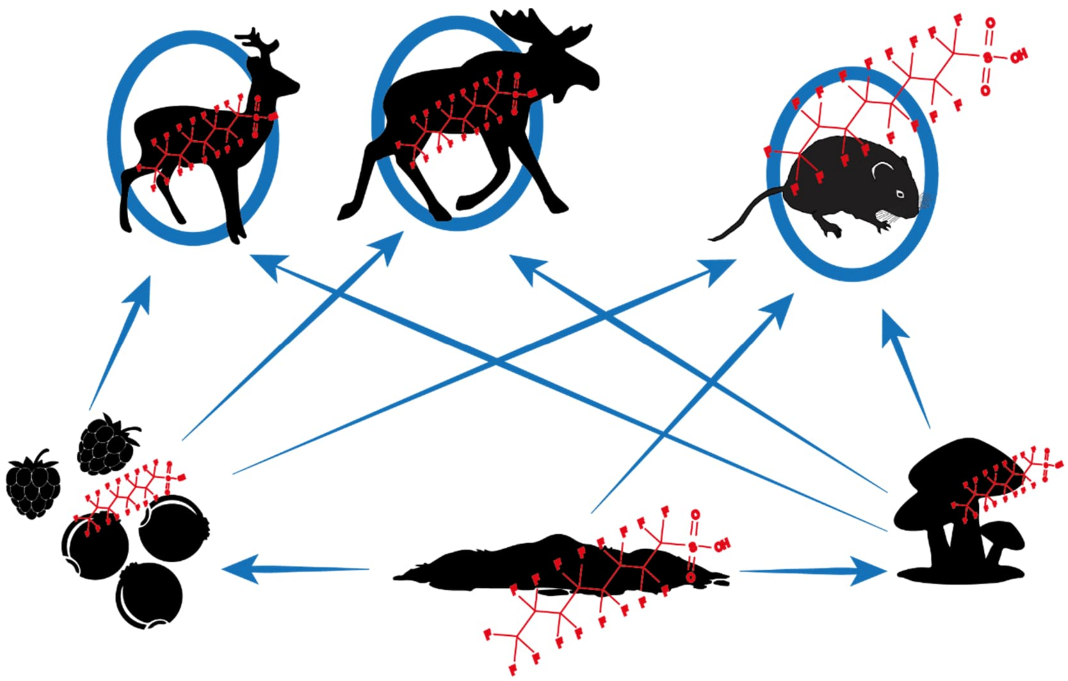

Figure 1. Schematic illustration of the projected bioaccumulation and biomagnification pathways of PFAS (per- and polyfluoroalkyl substances) in the studied trophic network at Frösön, northern Sweden. PFAS in soil are likely to be taken up by dwarf-shrubs including lingonberry (*Vaccinium vitis-ideae*), blueberry (*V. myrtillus*) and raspberry (*Rubus idaeus*) and mushrooms (here sweet tooth *Hydnum repandum*). Berries and mushrooms are important foodstuff for bank voles (*Myodes glareolus*) (Hansson, 1971; Hansson, 1985b) and might also be eaten (either deliberately or accidentally) by ungulates including roedeer (*Capreolus capreolus*) and moose (*Alces alces*) (Cederlund et al., 1980).

Materials and Methods

Field sampling

To reflect potential exposure to and bioaccumulation and biomagnification of PFAS, we sampled soil (*n* = 21 pooled samples), berries of dwarf-shrubs lingonberry (*Vaccinium vitis-ideae*) (*n* = 6 pooled samples), blueberry (*V. myrtillus*) (*n* = 6 pooled samples), and raspberry (*Rubus idaeus*) (*n* = 6 pooled samples), the edible mushroom sweet tooth (*Hydnum repandum*) (*n* = 6 pooled samples), as well as tissues and organs of bank voles (*n* = 32 specimens), roedeer (*n* = 10) and moose (*n* = 8). Samples were taken on the island of Frösön (41.6 km^2) at lake Storsjön, boreal central Sweden, that has been identified as a hotspot of PFAS contamination in Sweden (Axelsson and Bard, 2015; Modin, 2021) (Fig. 2). As a reference, soil, berries and mushrooms were also sampled in reference areas near Umeå, northern Sweden (Fig. 2). Bank voles were snap-trapped opportunistically in forested areas during three trapping sessions (13-14 July, 11-12 August and 13-14 September 2022) using dried apples as bait. Soil, berries, and mushrooms were sampled on Frösön concurrently with the small mammal sampling in August and September 2022, and also in August and September 2022 in the reference areas. Soil samples of ca. 50 g were taken from the organic soil layer (O-horizon) and put in plastic bags. Berries from 40-80 plants/clones were sampled to generate pooled samples of ca. 200 g wet weight (ww). Pooled samples for mushrooms comprised 4-5 fruitbodies to generate 200-250 g ww. Localities had an inter-distance of at least 100 m. All samples were stored in a portable freezer (-20°C) during fieldwork and stored until processing in the laboratory at -20°C. Bank voles were dissected in a BSL-2 (biosafety level 2) laboratory and muscle, liver, heart, kidney, and spleen were extracted and stored at -20°C until further processing. The tissue and organs of the 32 bank voles where prior laboratory analyses pooled to 12 samples in a stratified-random process. First, voles were classified as males and females, and as juveniles and adults, respectively. Individual vole samples were than randomly assigned to one of these functional groups.

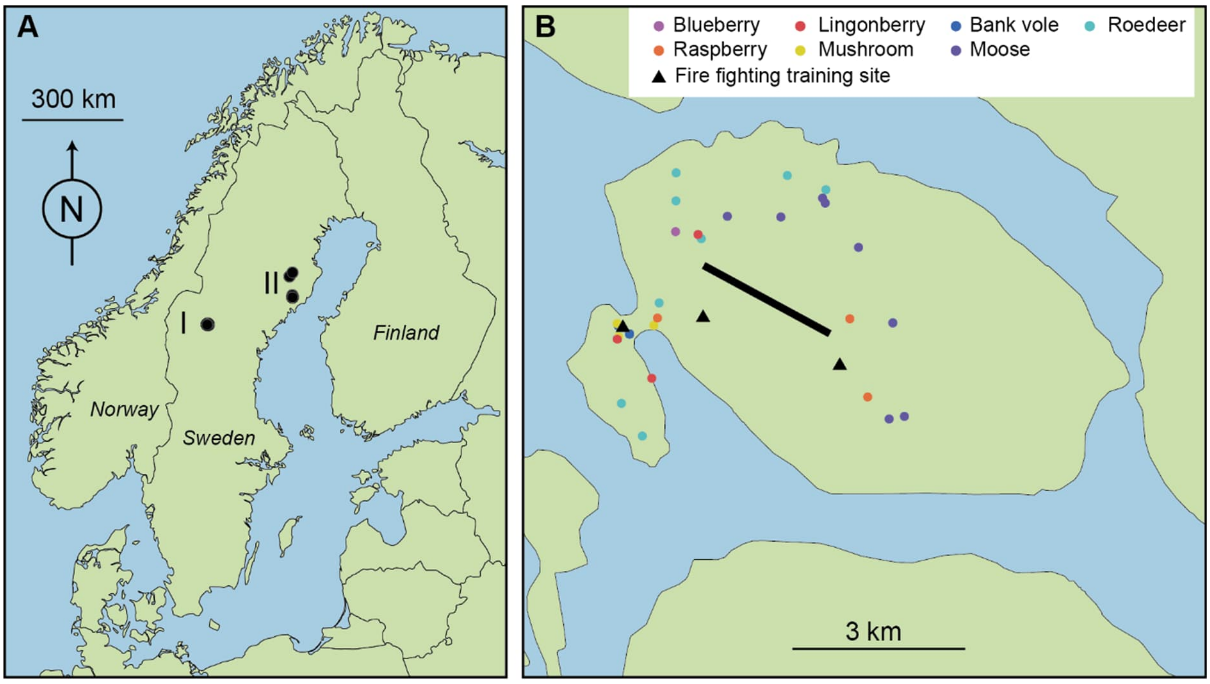

Figure 2. Map of Sweden and neighbouring countries showing (A) the study area on the island Frösön (I) and the reference area near the city of Umeå (II) and (B) a detailed map of the sampling localities (coloured filled circles) for the studied matrices on Frösön. The black line on Frösön in (B) represents the runway of Åre Östersund airport. Soil was sampled at the same sites where berries and mushrooms were sampled, except for some sites where only lingonberries were sampled.

Samples of roedeer and moose on Frösön were provided by local hunting teams during the hunting season 18 September 2021 – 21 January 2022 (see Appendix 1 for details on individual samples). Hunters followed a standard protocol and provided ca. 1 cm^3 samples of muscle, lung, and liver that they put in plastic zip-bags and stored at -20°C in the premises of the municipality of Östersund. After the hunting season, samples were transported on icepacks to the laboratory.

The sampling of small mammals was approved by the Animal Ethics Committee in Umeå (A 18-2019) and by the Swedish Environmental Protection Agency (NV-07483-19). All applicable institutional and national guidelines for the use of animals were followed.

Chemicals

In total, 22 target PFAS were included namely C_3-C_{13} PFCA (PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFNA, PFDA, PFUnDA, PFDoDA, PFTriDA, PFTeDA), C_4-C_{10} PFSA (PFBS, PFPeS, PFHxS, PFHpS, PFOS, PFNS, PFDS), 4:2, 6:2 and 8:2 fluorotelomer sulfonates (4:2 FTSA, 6:2 FTSA, 8:2 FTSA), and perfluorooctane sulfonamide (FOSA). For PFHxS and PFOS the linear and branched isomers were quantified separately (L-PFHxS, B-PFHxS, L-PFOS, and B-PFOS, respectively). In addition, 17 mass-labeled internal standards (IS) were used, which were spiked to the samples before extraction (Wellington Laboratories): $^{13}C_4$-PFBA, $^{13}C_5$-PFPeA, $^{13}C_5$-PFHxA, $^{13}C_4$-PFHpA, $^{13}C_8$-PFOA, $^{13}C_9$-PFNA, $^{13}C_6$-PFDA, $^{13}C_7$-PFUnDA, $^{13}C_3$-PFDoDA, $^{13}C_2$-PFTeDA, $^{13}C_3$-PFBS, $^{13}C_3$-PFHxS, $^{13}C_8$-PFOS, $^{13}C_2$-4:2 FTSA, $^{13}C_2$-6:2 FTSA, $^{13}C_2$-8:2 FTSA, $^{13}C_8$-FOSA.

Sample preparation

All tissue biota samples were extracted using a sample aliquot of approximately 0.5 g homogenized tissue in a Precellys® Evolution vial, add 3 mL acetonitrile and spiked with 5 ng absolute for individual PFAS IS mixture (100 µL of 0.05 µg/mL). The samples were homogenized and extracted using Precellys® Evolution, setting the parameters as 5000 rpm, 2 x 40 sec, 20 sec break in between. Subsequently, sonicate the Precellys® Evolution vial for 30 min and then centrifuge the vial (3000 rpm for min) and transfer the supernatant into a new 15 mL polypropylene (PP) tube. Repeat sonication extraction with 3 mL acetonitrile for 30 min and centrifugation (3000 rpm for 5 min) and transfer the supernatant into the 15 mL PP tube. Put the 15 mL tube into a freezer (-20 °C) for >16 h to crush the proteins. Thereafter, the PP-tube was centrifugated at 4000 rpm at -5 °C for 15 min and the supernatant was transferred into a new PP-tube. Then, the supernatant was concentrated to 1 mL under a gentle steam of nitrogen. For clean-up, the 1 mL extracts were transferred into a 1.7 mL Eppendorf centrifuge tube containing 25 mg ENVI-Carb and 50 µL glacial acetic acid. After vortexing for 30 sec, the Eppendorf centrifuge tube was centrifuged at 4000 rpm at -5°C for 15 min. Finally, the supernatant was transferred into a 1.5 mL PP-vial and stored in a freezer (-20 °C) before analysis.

The soil, mushroom and berry samples were first freeze-dried until the samples were dry (3-7 days). Approximately 1 g dry weight (dw) sample aliquots were weighted into 15 mL PP-tubes. Then, 2.5 ng absolute for individual PFAS IS mixture (50 µL of 0.05 µg/mL) and 3 mL methanol were added and sonicated for 30 min. After centrifugation at 3000 rpm for 15 min, the supernatant was transferred into another 15 mL PP-tube. The extraction was repeated twice with 3 mL methanol with 20 min sonication. The combined extracts were run through an ENVI carb cartridge (1 g, 12 cc) and collect the sample clean tube. The extraction 15 PP-tube was three times with methanol and transferred through the cartridge and then air was pressed through the cartridge using a syringe. Then, the extract was concentrated to 100 µL and transferred to a 1.5 mL PP. Finally, 400 µL methanol was added, vortex and then transferred into a 1.5 mL PP-vial and stored in a freezer (-20 °C) before analysis (for details see Nassazzi et al. (2022)).

Instrumental analysis

Instrumental analysis was performed using ultra-high pressure liquid-chromatography (SCIEX ExionLC AC system) coupled to tandem mass spectrometry (SCIEX Triple Quad™ 3500) (UHPLC-MS/MS). The column oven was set to 40 °C, and 10 µL of sample were injected into a Phenomenex Kinetex C18 (30 × 2.1 mm, 1.7 µm) precolumn coupled to a Phenomenex Gemini C18 (50 mm × 2 mm, 3 µm) analytical column for chromatographic separation. The mobile phase consisted of MilliQ water with 10 mM ammonium acetate and MeOH. Data evaluation was performed using SciexOS software (2.0) (for details see Nassazzi et al. (2022)).

Data conversion from fresh weight to dry weight

PFAS in soil, mushrooms and berries were based on freeze-dried samples and hence expressed as concentration in ng/g dry weight. To enable comparison with the wildlife samples that were expressed in ng/g wet weight, we calculated factors for conversion from wet weight to dry weight. For the ungulate samples, we used 0.5-1.4 g wet weight from the samples of the 18 specimens that were included in our study, freeze-dried them (typically 5 days and up to 7 days until samples were dry) and calculated the water content.

For the vole samples, we unfortunately did not have any material left after the PFAS analyses. For the conversion of concentrations in muscle, liver, kidney and spleen, we therefore used data on tissue/organ wet and dry weight from 64 bank vole specimens that were included in Ecke et al. (2018). To achieve conversion factors between heart and dry weight in bank vole hearts, we used hearts from 19 bank voles trapped in spring and autumn 2022 near the city of Umeå, northern Sweden that we freeze-dried like the ungulate samples.

We calculated the dry weight of the samples according to

$$Concentration_{dry\ weight} = \frac{Concentration_{wet\ weight}}{\left(1 - \frac{Water\ content\ (\%)}{100}\right)}$$

Statistical analyses

For statistical analyses, concentrations that were below limit of quantification (LOQ) were replaced by half of LOQ. We only included PFAS in the statistical analyses that were detected in at least two samples. Based on the results of the analysed PFAS, we combined the respective PFAS to calculate the sum of all PFAS, PFAS4 (sum of PFOA, PFNA, PFHxS, and PFOS), PFCAs, PFSAs, and the sum of precursors.

To assess potential bioaccumulation of PFAS from soil to biota and from mushrooms and berries to herbivores (bank voles and ungulates), we calculated bioaccumulation factors according to

$$BAF = \frac{C_O}{C_E}$$

with *BAF* representing the bioaccumulation factor, C_O the concentration in the organism and C_E the concentration in the environment. We calculated BAFs from soil to biota and from mushrooms and berries to herbivores. BAFs >1 were interpreted as bioaccumulation with risk for biomagnification.

To meet assumptions for parametric tests, concentrations were Box-Cox-transformed prior analyses. We used principal component analysis (Jongman et al., 1995) to reduce the PFAS that had no missing values to a few essential components. Only principal components (PCs) that explained more than 10% of the variance among the PFAS variables were considered.

We computed one-way ANOVA on PFAS concentrations on Frösön to analyse if concentrations (all expressed in dry weight) varied among matrices (soil, raspberry, blueberry, lingonberry, sweet tooth, bank vole muscle, kidney, heart, liver, and spleen, as well as roedeer and moose kidney, lung, and liver). Differences in PFAS concentrations between Frösön and the reference localities were analysed by *t*-tests.

Statistical analyses were performed in R (Team, 2021) using the packages 'car', 'stats' and 'vegan' supported by visualisation with packages 'ggplot2' and 'ggfortify'.

When relating identified PFAS concentrations to thresholds for food safety, we replaced all values below LOQ by 0.

Results

Of the 22 analysed PFAS, all PFAS were detected in at least two samples and considered for visualization and statistical analysis, and 15 PFAS had no missing values (see Appendix 2).

Reducing the dimensions of PFAS, the first two PCs explained 66% of all variation among PFAS concentrations with the first PC that explained 46% of the variation being dominated by in ascending importance PFHpS, 8:2 FTSA, L-PFHxS, PFDS, PFDoDA, L-PFOS, PFDA, and PFNA, while PC2 that explained 20% was dominated by PFHpA, PFOA, PFBS, and PFHxA (Fig. 3a). Bank vole samples where mainly associated with PC1 and their partly high PC scores indicated high PFAS concentrations (Fig. 3b, c). In addition, one soil and one mushroom sample from Frösön indicated high PFAS concentrations (Fig. 3b). Non-vole samples separated mainly along the PFAS gradient of PC2 (Fig. 3c).

The general patterns of the PCA were confirmed by further statistical analyses. PFAS concentrations on Frösön showed large variations among the studied species, tissues, and organs. The mean concentrations ± standard error (ng/g dw) of the sum of PFAS showed the following ascending pattern for soil, mushroom and berries: lingonberry (1.8 ± 1.2, n = 3) < raspberry (3.1 ± 1.1, n = 3) < blueberry (7.3 ± 1.9, n = 3) < sweet tooth (54.7 ± 20.6; n = 3) << soil (196 ± 179, n = 10) (see also Fig. 4, Appendix 2). For the wildlife samples that were expressed in wet weight, the mean concentrations ± standard error (ng/g ww) showed the following pattern: lung (moose) (3.2 ± 0.5, n = 7) ≈ muscle (moose) (3,7 ± 0,7; n = 7) < roedeer (muscle) (5.0 ± 0.5, n = 9) < lung (roedeer) (7.9 ± 3.6, n = 10) < liver (moose) (55.4 ± 16.3, n = 8) < liver (roedeer) (84.0 ± 46,7; n = 10) << muscle (bank vole) (238 ± 78.0, n = 12) << heart (bank vole) (458 ± 130, n = 12) << spleen (bank vole) (621 ± 210, n = 12) <<< kidney (bank vole) (2280 ± 829, n = 12) <<< liver (bank vole) (4790 ± 1230, n = 12) (see also Fig. 5-6, Appendix 2).

The concentrations of the 22 PFAS differed among studied samples (Table 1, see also Fig. 4-6). The linear and branched PFOS in soil showed higher concentrations on Frösön compared with the reference localities, while the concentrations of all other PFAS did not show any difference (Appendix 3; see also Fig. 4). PFAS in neither berries nor the mushroom differed between Frösön and the reference localities (*t*-tests; Appendix 3).

The PFAS profiles varied among samples and localities. In soil on Frösön, L-PFOS was on average the dominating PFAS (~74%), while PFAS in soil samples in the reference localities were more evenly distributed with PFBA, PFPeA, and 8:2 FTSA contributing with a total of ~43% (Fig. 4). On Frösön, the PFAS profiles in mushroom, raspberry and blueberry were dominated by PFBA, while PFHxA followed by PFBS and PFBA dominated in lingonberry (Fig. 4). This pattern was similar in the reference samples, except that PFBA only constituted to ca. 1/3 of PFAS concentrations in raspberry, while PFBA were the dominating PFAS on Frösön (Fig. 4).

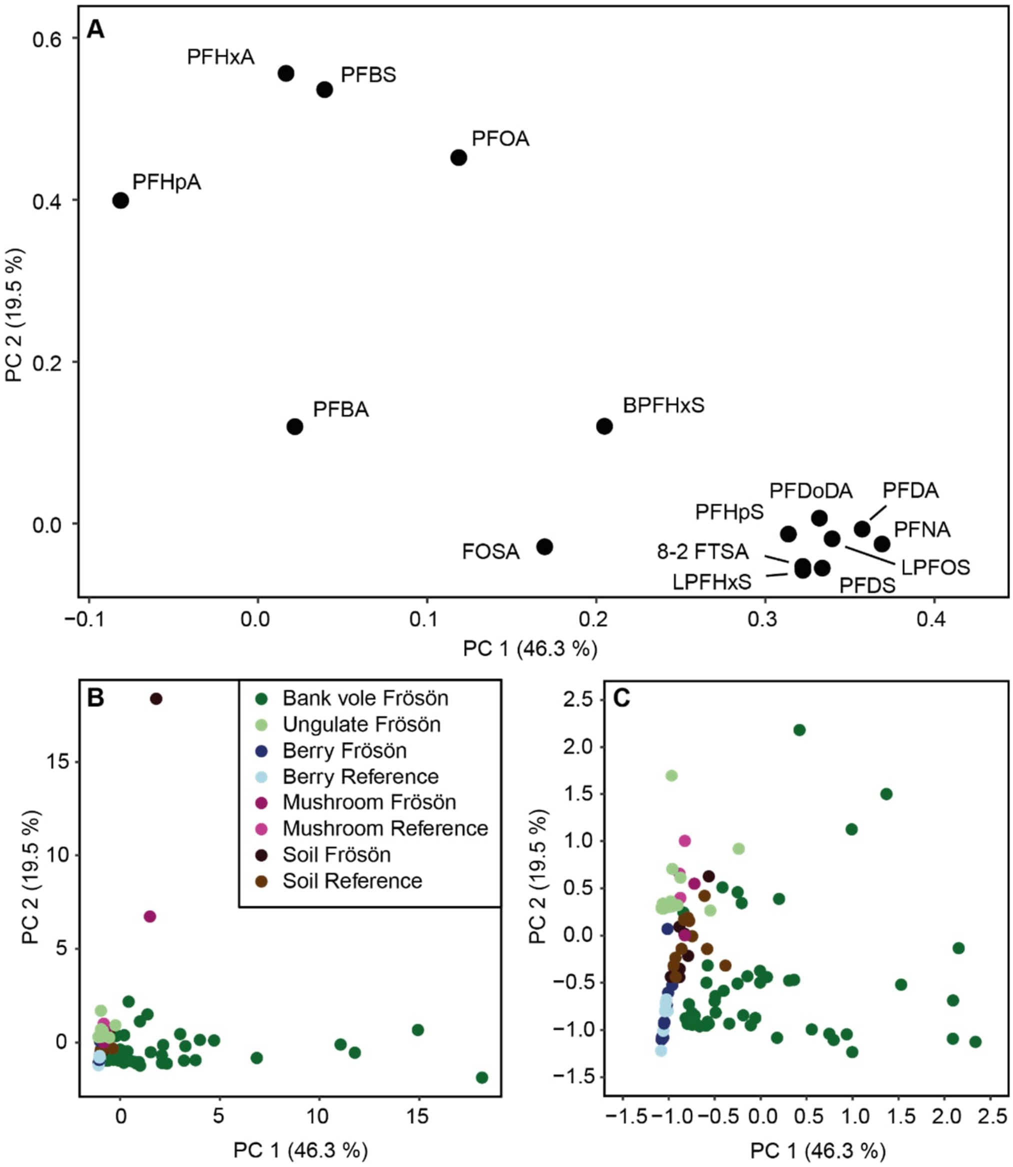

Figure 3. Principal component analysis (PCA) on 14 PFAS in environmental samples (soil, mushrooms, berries, ungulates, and bank voles on the island of Frösön and in the reference areas. The PC loadings (A) illustrate the compositional similarities among the different PFAS, while the PC scores (B, C) illustrate the similarities in PFAS concentrations among the different samples, with (C) representing an enlargement of the PC scores for PC1 and PC2, respectively, < 2.5. Percentage of explained variation are given for the first two PCs. PFHXs is represented by its linear and branched isomers.

In bank voles, PFAS concentrations were highest in liver with L-PFOS being the dominating PFAS (>65%) in all tissues and organs (Fig. 5). Also in roedeer and moose, PFAS concentrations were highest in liver and like in bank voles dominated by L-PFOS in liver and lung (Fig. 6). However, muscle in the ungulates compared with bank vole were dominated by PFBA (Fig. 5, 6).

Summarizing PFAS into PFCAs, PFSAs, and precursors revealed that the reference soil samples, as well as all mushroom and berry samples and ungulate muscles were dominated by PFCAs (Fig. 7). In contrast, all vole samples, ungulate lung samples and roe deer liver were dominated by PFSAs and the proportion of PFCAs and PFSAs was similar in moose liver (52% and 48%, respectively). (Fig. 7).

Table 1. Analysis of Variance (ANOVA) of different PFAS and their sums on Frösön showing sum of squares (SS), degrees of freedom (*df*), *F*-statistic (*F*) and *p*-values (*P*). Differences were tested among soil, fruits of lingonberry, blueberry, and raspberry, mushrooms, and tissues in bank voles (muscle, heart, lung, liver, kidney, and spleen), roedeer and moose (muscle, liver, kidney).

PFAS	SS	*df*	*F*	*P*
PFBA	141.12	15	4.46	0.000
PFPeA	261.39	15	13.29	0.000
PFHxA	66.11	15	7.74	0.000
PFHpA	128.74	15	28.42	0.000
PFOA	147.53	15	15.78	0.000
PFNA	231.21	15	52.29	0.000
PFDA	183.30	15	38.41	0.000
PFUnDA	237.98	15	66.24	0.000
PFDoDA	326.84	15	41.58	0.000
PFTriDA	332.79	15	74.89	0.000
PFTeDA	227.18	15	21.19	0.000
PFBS	39.26	15	6.93	0.000
PFPeS	192.13	15	14.54	0.000
L-PFHxS	631.29	15	39.13	0.000
B-PFHxS	236.36	15	6.23	0.000
PFHpS	724.58	15	56.85	0.000
L-PFOS	1388.29	15	64.53	0.000
B-PFOS	1151.02	14	58.16	0.000
PFNS	900.73	15	133.91	0.000
PFDS	488.37	15	44.75	0.000
FOSA	0.61	4	14.56	0.000
4:2 FTSA	278.96	15	62.25	0.000
6:2 FTSA	32.88	10	15.65	0.000
8:2 FTSA	122.16	6	27.12	0.000
∑PFCAs	182.53	15	27.46	0.000
∑PFSAs	746.71	15	67.90	0.000
∑Precursors	184.29	15	74.15	0.000
∑PFAS	272.87	15	65.43	0.000

The three roedeer with the highest PFAS4 concentrations (>45 ng/g ww) were hunted on the isthmus Bynäset or close to the isthmus, i.e., close to the firefighting training site on Bynäset (westernmost firefighting training site in Fig. 2). It is also on this isthmus all bank voles were trapped and none of these had a PFAS4 concentration lower than 474 ng/g ww (max 11 600 ng/g ww).

The bioaccumulation factors (BAFs) for several PFAS in bank voles were overall higher for mushrooms and soil than for berries and were in 27 cases >100 (Fig. 8, Appendix 4). In contrast, the bioaccumulation factors for PFAS in the ungulates were overall low for soil but were >1 for several

PFAS originating from especially mushrooms and were even >100 for L-PFOS and B-PFOS in a liver of a roedeer (Fig. 8, Appendix 4). Overall, in ungulates, bioaccumulation factors were lower in lung and muscle than in liver, while in voles all studied tissues and organs showed bioaccumulation for several PFAS that originated from multiple sources (Fig. 8, Appendix 4).

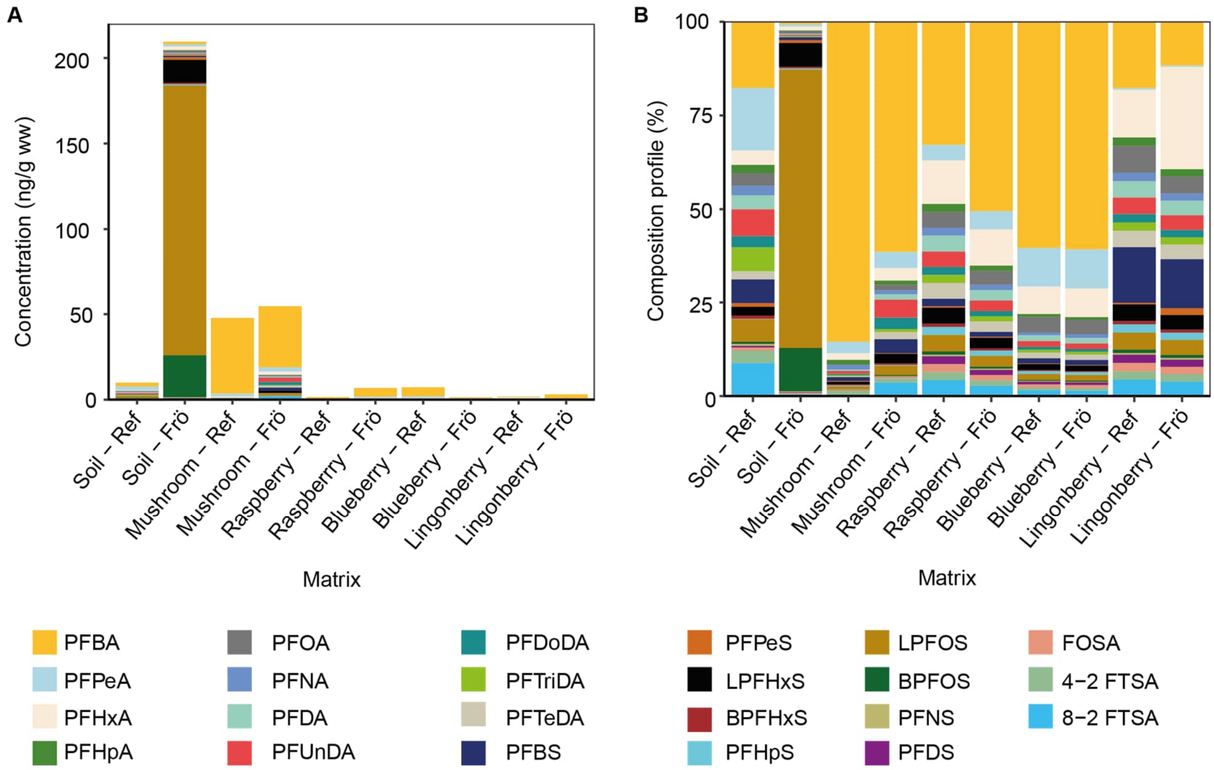

Figure 4. Mean concentrations of PFAS (per- and polyfluoroalkyl substances) in soil, mushrooms, berries, in the reference area (Ref; see Figure 2) and on the island of Frösön (Frö), northern Sweden (A). (B) represents the composition profile (relative concentration) of the studied PFAS.

Discussion

Our study revealed partly extremely high concentrations of PFOS in biota and provides valuable insights in the potential trophic fate of PFAS from soil via mushrooms and berries to herbivores. As expected, PFAS concentrations were highest in liver of bank vole, roedeer and moose, which is in line with previous findings in rodents (Costello et al., 2022) and ungulates (Falk et al., 2012).

Despite rather high concentrations of PFOS in soil, this PFAS was not accumulated by berries, while the mushroom sweet tooth showed high affinity for PFOS, which is also supported by previous studies on oyster mushroom (*Pleurotus ostreatus*) (Golovko et al., 2022).

The high bioaccumulation factors in bank voles for several PFAS originating in soil and/or mushroom suggest bioaccumulation, which is also supported by similar PFAS profiles of soil on Frösön and bank vole tissue and organs. These findings are further supported by the feeding ecology of bank voles. Bank voles frequently feed on berries of raspberry, blueberry, and lingonberry (Hansson, 1979a; Hansson, 1985a; Hansson, 1985b). This is likely also the case in our study, and the rather low PFAS concentrations in berries in the present study did not result in bioaccumulation in bank voles. Also mushrooms are important foodstuff for bank voles (Hansson, 1979a), which in our study might explain mushroom-dependent bioaccumulation of PFAS in bank voles. However, the PFAS profiles in mushrooms differ from those in bank voles, which suggests that also other foodstuff might be involved in the bioaccumulation of PFAS in the food web on Frösön. Indeed, bioaccumulation pathways from sweet tooth to bank voles need to be assessed more carefully in future studies.

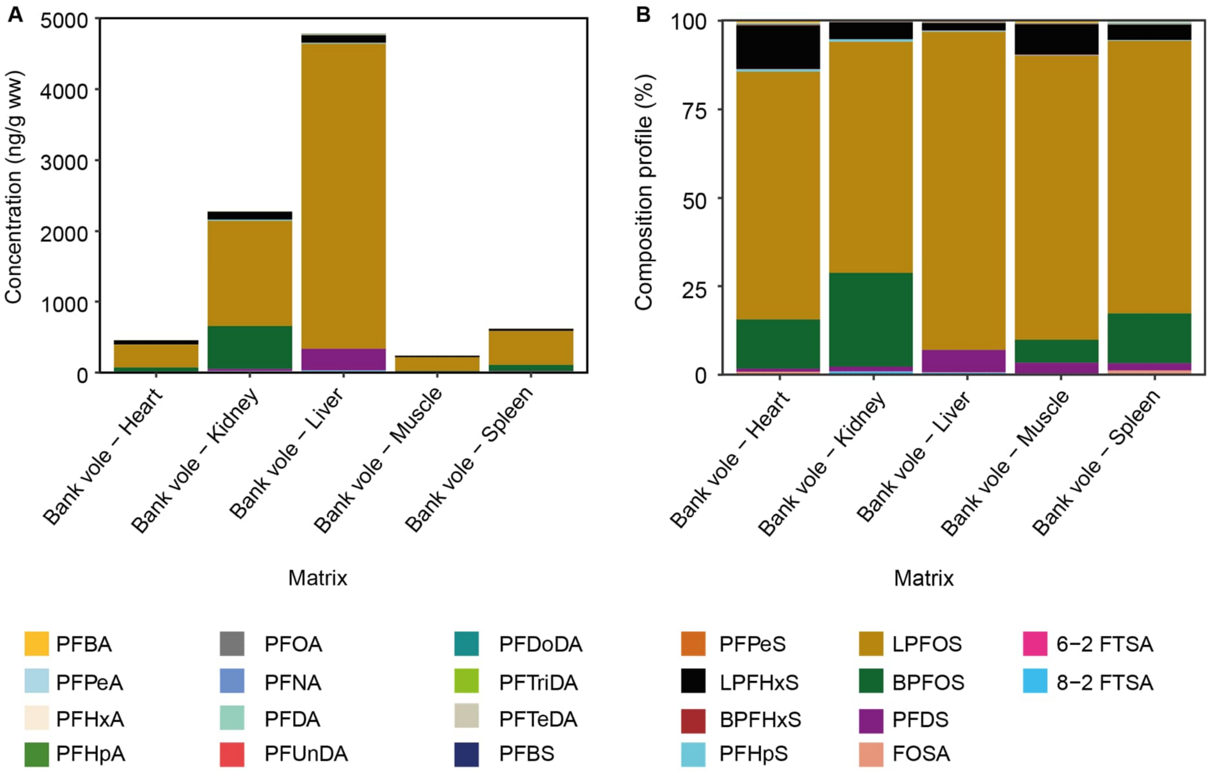

Figure 5. Mean concentrations of PFAS (per- and polyfluoroalkyl substances) in organs and tissue of bank voles on the island of Frösön, northern Sweden (A). (B) represents the composition profile (relative concentration) of the studied PFAS.

The identified PFAS concentrations in soil, sweet tooth, and wildlife – especially in bank vole – is worrisome from the perspective of ecosystem health and One Health. Our study suggests soil to be an important PFAS source for bank voles. We did not study the gut content of the bank voles. We therefore do not know their actual foodstuff and whether the here studied potential PFAS sources (soil, mushrooms, berries) are the actual sources of the high PFAS concentrations in bank voles. The calculated bioaccumulation factors however strongly suggest soil and mushrooms to be important PFAS sources for bank voles. Despite bank voles being classified as herbivores, they also consume invertebrates and mineral particles are commonly found in their stomach (Hansson, 1971; Hansson, 1979b; Hansson, 1985a; Hansson, 1985b). In fact, future studies should include the role of macroinvertebrates in general and earthworms in particular for bioaccumulation of PFAS in bank voles (sensu Grønnestad et al., 2019). Isotopic instead of foodstuff analyses of gut content can then be used to identify food sources (e.g., Magnusson et al., 2019). Bank voles dig their own burrows and dust formed during digging – resulting in either inhaling or digestion of PFAS-coated dust particles – could be an important PFAS source.

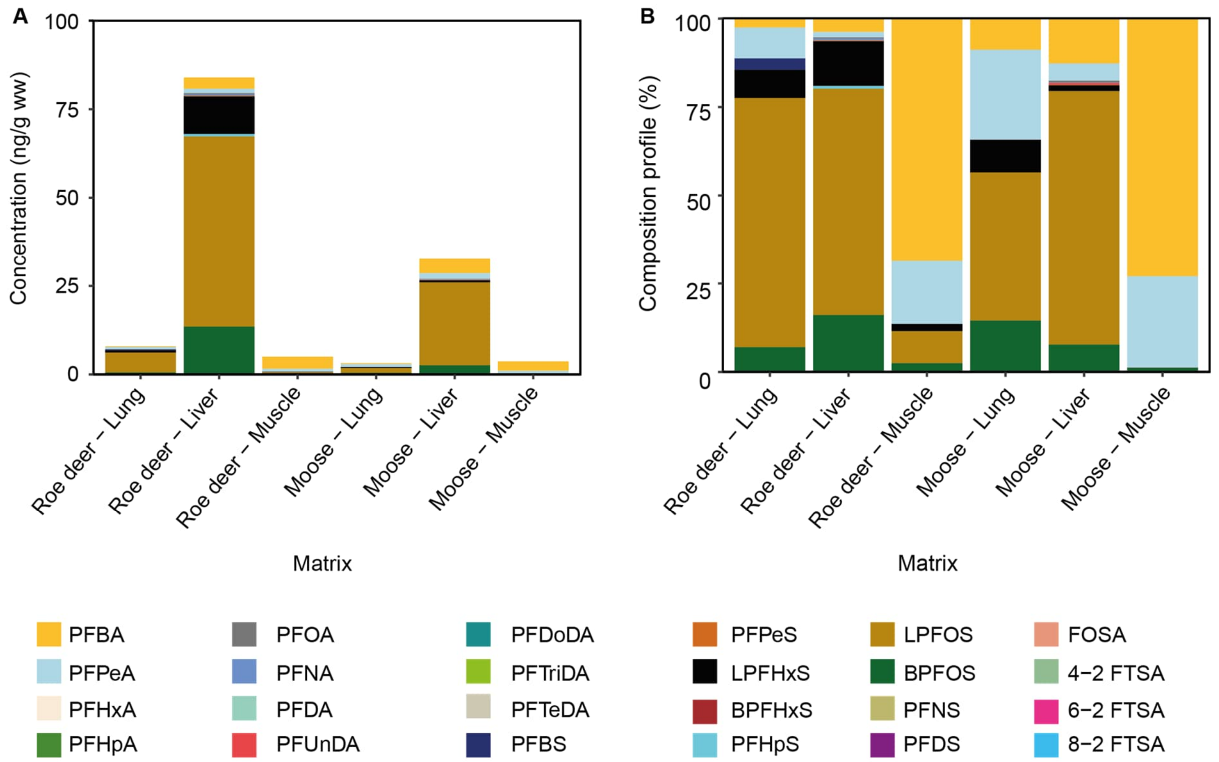

Figure 6. Mean concentrations of PFAS (per- and polyfluoroalkyl substances) the ungulates roedeer and moose on the island of Frösön, northern Sweden (A). (B) represents the composition profile (relative concentration) of the studied PFAS.

The bank vole is Europe's most common mammal (Mitchell-Jones et al., 1999) and important staple food for many mammalian and avian predators (Hipkiss and Hörnfeldt, 2004; Hipkiss et al., 2008; Hörnfeldt et al., 1990). Tengmalm's owl (*Aegulius funereus*) depends to up to 90% on bank voles as prey species (unpublished data). The partly identified extreme PFAS concentrations found in bank voles (>4000 ng/g ww) compared with for example 16 ng/g ww in a PFAS contaminated skiing area in Norway (Grønnestad et al., 2019) are therefore not only a potential health risk for the bank voles, but also for their predators. Since the predators have broader home ranges than their prey (Tengmalm's owl for example ca. 2 km^2; Kouba et al., 2017), predators could in addition contribute to secondary distribution of PFAS.

PFAS compromises the immune system of mammals (Beans, 2021). The high PFAS concentrations in bank voles are therefore a potential health risk for the specimens and could induce increased susceptibility to infection with Puumala orthohantavirus (PUUV). PUUV causes the zoonotic disease nephropathia epidemica (vole fever) in humans (Khalil et al., 2019; Khalil et al., 2014; Vapalahti et al., 2003). PFAS in bank voles could therefore potentially also pose a threat to human health.

Mountain hare (*Lepus timidus*) is a common and popular game species in northern Sweden. The species was not included in our study. Ecologically, mountain hare resembles bank voles. The high

PFAS concentrations found in bank voles therefore urge to gain knowledge on PFAS in mountain hare, which is also important from a food safety perspective.

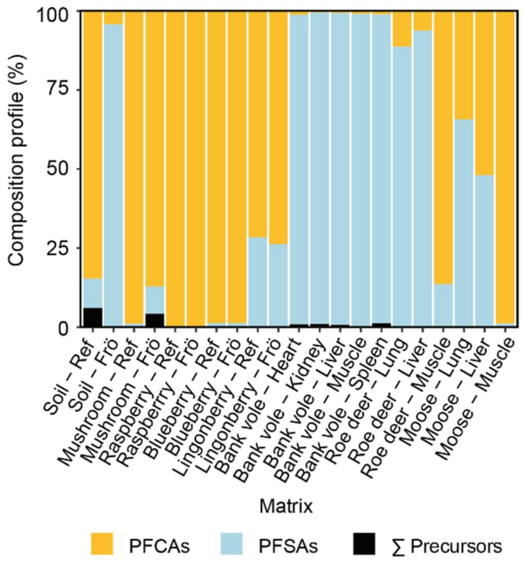

Figure 7. Composition profiles (relative concentration) of PFAS (per- and polyfluoroalkyl substances) divided into PFCAs (perfluoroalkyl carboxylic acids), PFSAs (perfluoroalkyl sulfonic acids) and the sum (Σ) of precursors in soil, mushrooms, berries, and organs and tissue of bank voles as well as the ungulates roedeer and moose in the reference area (Ref; see Figure 2) and on the island of Frösön (Frö), northern Sweden. Bank voles and ungulates were only sampled on Frösön.

Currently, there are no maximum levels for human consumption of PFAS in mushrooms and berries. For the sum of PFAS, the concentrations in sweet tooth on Frösön were all higher than 21 ng/g dw (max 92.6 ng/g dw; PFAS4 max 11.3 ng/g dw) suggesting that consumption of this species should be limited. The non-difference of PFAS concentrations in mushroom and berries between Frösön and the reference areas was surprising. This might either suggest that mushrooms and the studied plant species do not accumulate PFAS or that also the reference areas were impacted by PFAS originating from diffuse sources.

The maximum levels for PFOS, PFOA, PFNA, PFHxS, and their sum (PFAS4) in meat (5.0, 3.5, 1.5, 0.6, and 9.0, respectively) (European Commission, 2022) were not exceeded in any of the samples. However, the muscle of one roedeer was close to the threshold level of 5.0 ng/g ww for PFOS (4.3 ng/g ww). The maximum level for PFOS in offal (50 ng/g ww) were however exceeded in liver of two roedeer.

The European Food Safety Authority (EFSA) recommends a tolerable weekly intake (TWI) for PFAS4 of 4.4 ng/kg body weight per week[1]. This threshold will be exceeded if regularly consuming roedeer meat from the island Frösön. Upon consumption of for example 200 g roedeer meat, a person with a body weight of 70 kg will have an intake of 860 ng PFOS corresponding to 12.3 ng/kg. Based on our results, authorities should therefore consider making recommendations for consumption of game meat that originates from or has parts of its home range on Frösön.

[1] https://www.efsa.europa.eu/en/news/pfas-food-efsa-assesses-risks-and-sets-tolerable-intake

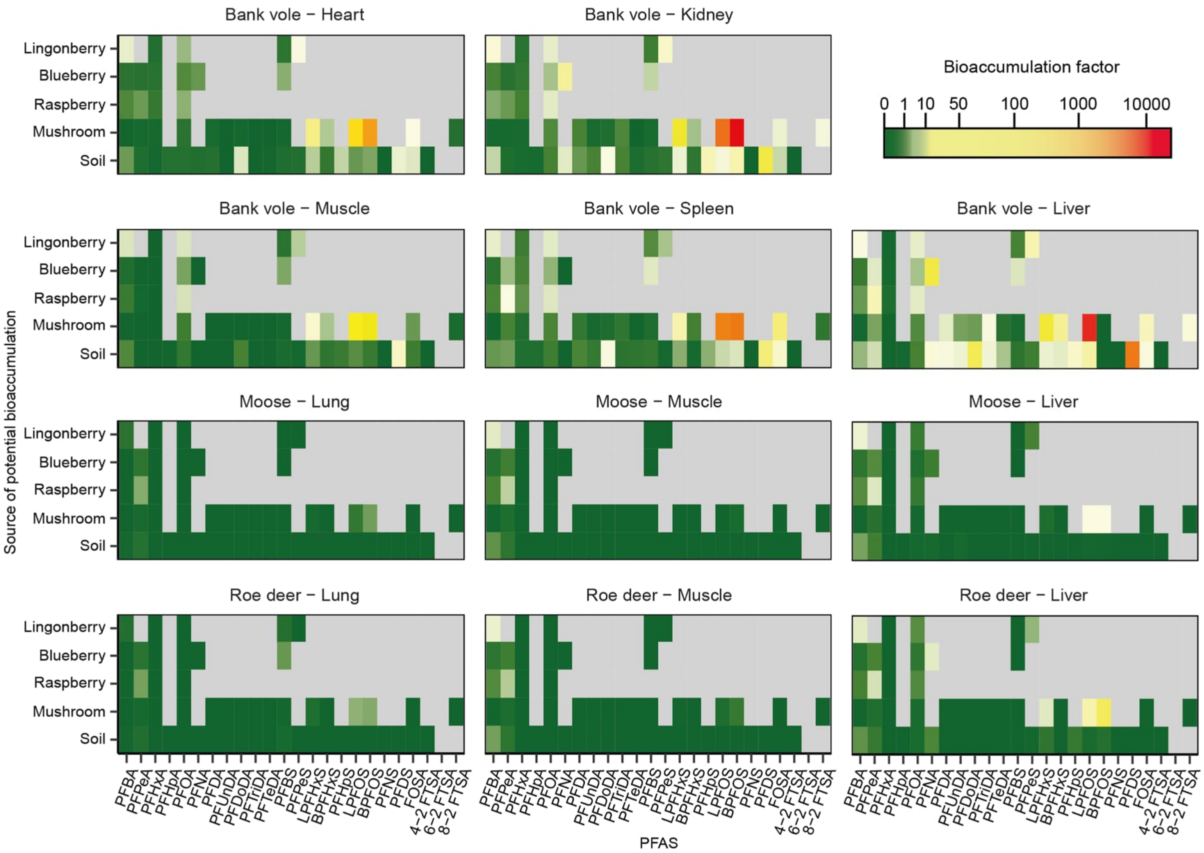

Figure 8. Bioaccumulation factors represented as colour ramp for 24 PFAS in tissue and organs of bank voles, roedeer and moose. The y-axis represents the potential source of bioaccumulation. Grey areas represent missing data.

Acknowledgements

We thank the hunting teams on Frösön for supporting our study with samples from roedeer and moose, Åke Nordström for field and lab assistance, and Mikael Marberg for lab assistance. Hanna Modin provided important insight into PFAS on Frösön, administrated the distribution of sampling kits to hunters and handled storage of samples from game species. The study was funded by Future One Health, Swedish University of Agricultural Sciences (SLU.ua.2021.4.1-3058) and the Swedish Environmental Protection Agency (NV-06350-22).

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Appendix 1. Details for each sample included in the study.

Final ID	Y-coordinate (RT90 2.5gV)	X-coordinate (RT90 2.5gV)	Species	Sex	Age	Weight	Year	Month	Day
FRO-01	7009547	1431674	Sweet tooth				2022	8	12
FRO-02	7009736	1432290	Sweet tooth				2022	8	18
FRO-03	7009776	1431653	Sweet tooth				2022	8	18
FRO-04	7008441	1435984	Raspberry				2022	8	12
FRO-05	7009808	1435691	Raspberry				2022	8	12
FRO-06	7009863	1432354	Raspberry				2022	8	18
FRO-07	7009501	1431654	Blueberry				2022	8	12
FRO-08	7011356	1432687	Blueberry				2022	8	19
FRO-09	7011301	1433077	Blueberry				2022	8	19
FRO-10	7009547	1431674	Soil				2022	8	12
FRO-11	7009736	1432290	Soil				2022	8	18
FRO-12	7009776	1431653	Soil				2022	8	18
FRO-13	7008441	1435984	Soil				2022	8	12
FRO-14	7009808	1435691	Soil				2022	8	12
FRO-15	7009863	1432354	Soil				2022	8	18
FRO-16	7009501	1431654	Soil				2022	8	12
FRO-17	7011356	1432687	Soil				2022	8	19
FRO-18	7011301	1433077	Soil				2022	8	19
FRO-19	7009501	1431654	Lingonberry				2022	9	14
FRO-20	7008812	1432242	Lingonberry				2022	9	14
FRO-21	7011301	1433077	Lingonberry				2022	9	14
FRO-22	7008812	1432242	Soil				2022	9	14
REF-01	7087636	1688131	Sweet tooth				2022	8	15
REF-02	7087787	1687677	Sweet tooth				2022	9	1
REF-03	7087731	1687986	Sweet tooth				2022	9	1
REF-04	7087740	1688267	Raspberry				2022	8	15
REF-05	7093802	1687723	Raspberry				2022	8	15

Appendix 1. Continued.

Final ID	Y-coordinate (RT90 2.5gV)	X-coordinate (RT90 2.5gV)	Species	Sex	Age	Weight	Year	Month	Day
REF-06	7087488	1687744	Raspberry				2022	8	15
REF-07	7087386	1688130	Blueberry				2022	8	15
REF-08	7087645	1688069	Blueberry				2022	8	15
REF-09	7087716	1687905	Blueberry				2022	8	15
REF-10	7087636	1688131	Soil				2022	8	15
REF-11	7087787	1687677	Soil				2022	9	1
REF-12	7087731	1687986	Soil				2022	9	1
REF-13	7087740	1688267	Soil				2022	8	15
REF-14	7093802	1687723	Soil				2022	8	15
REF-15	7087488	1687744	Soil				2022	8	15
REF-16	7087386	1688130	Soil				2022	8	15
REF-17	7087645	1688069	Soil				2022	8	15
REF-18	7087716	1687905	Soil				2022	8	15
REF-19	7087386	1688130	Lingonberry				2022	9	15
REF-20	7149769	1679642	Lingonberry				2022	9	17
REF-21	7161243	1688781	Lingonberry				2022	9	27
REF-22	7149769	1679642	Soil				2022	9	17
REF-23	7161243	1688781	Soil				2022	9	27
Ungulate_1	7009728	1436437	Roedeer	Male	Juvenile		2021	10	2
Ungulate_10	7008383	1431711	Roedeer	Male	Adult		2021	10	12
Ungulate_11	7012050	1435304	Roedeer	Female	Juvenile		2021	10	2
Ungulate_12	7012375	1432710	Roedeer	Female	Juvenile		2021	10	3
Ungulate_13	7012305	1434639	Roedeer	Female	Juvenile		2021	10	9
Ungulate_14	7011888	1432700	Roedeer	Female	Juvenile		2021	10	10
Ungulate_15	7011043	1435858	Moose	Male	Juvenile		2021	10	26
Ungulate_16	7008097	1436617	Moose	Female	Juvenile		2021	10	17
Ungulate_17	7011818	1435290	Moose	Male	Juvenile		2021	10	6
Ungulate_18	7011905	1435245	Moose	Male	Adult		2021	11	20
Ungulate_2	7009728	1436437	Roedeer	Female	Juvenile		2021	10	2

Appendix 1. Continued.

Final ID	Y-coordinate (RT90 2.5gV)	X-coordinate (RT90 2.5gV)	Species	Sex	Age	Weight	Year	Month	Day
Ungulate_3	7009728	1436437	Moose	Female	Adult		2021	10	12
Ungulate_4	7008055	1436352	Moose	Female	Juvenile		2021	10	23
Ungulate_5	7011611	1433589	Moose	Male	Juvenile		2021	9	18
Ungulate_6	7010125	1432387	Roedeer	Female	Juvenile		2022	1	16
Ungulate_7	7011228	1433132	Roedeer	Male	Juvenile		2022	1	21
Ungulate_8	7011587	1434517	Moose		Juvenile		2021	12	16
Ungulate_9	7007814	1432066	Roedeer	Male	Juvenile		2021	10	2
VolePool_1	7009593	1431867	Bank vole	Female	Juvenile	15.6	2022	7	13
VolePool_1	7009507	1431655	Bank vole	Female	Juvenile	11.1	2022	8	11
VolePool_1	7009593	1431867	Bank vole	Female	Juvenile	14.2	2022	9	13
VolePool_10	7009738	1431674	Bank vole	Male	Adult	24.9	2022	7	13
VolePool_10	7009593	1431867	Bank vole	Male	Adult	23	2022	7	13
VolePool_10	7009593	1431867	Bank vole	Male	Adult	18.2	2022	7	13
VolePool_11	7009593	1431867	Bank vole	Male	Adult	17.7	2022	7	14
VolePool_11	7009507	1431655	Bank vole	Male	Adult	26	2022	7	14
VolePool_11	7009507	1431655	Bank vole	Male	Adult	22.6	2022	8	11
VolePool_12	7009593	1431867	Bank vole	Male	Adult	17.6	2022	8	12
VolePool_12	7009507	1431655	Bank vole	Male	Adult	20.5	2022	8	12
VolePool_2	7009738	1431674	Bank vole	Female	Juvenile	13.9	2022	9	13
VolePool_2	7009738	1431674	Bank vole	Female	Juvenile	13.6	2022	9	13
VolePool_2	7009738	1431674	Bank vole	Female	Juvenile	13.8	2022	9	13
VolePool_3	7009738	1431674	Bank vole	Female	Juvenile	11.4	2022	9	13
VolePool_3	7009507	1431655	Bank vole	Female	Juvenile	14.1	2022	9	13
VolePool_3	7009738	1431674	Bank vole	Female	Juvenile	14.1	2022	9	14
VolePool_4	7009738	1431674	Bank vole	Female	Adult	27.7	2022	7	14
VolePool_4	7009738	1431674	Bank vole	Female	Adult	24.8	2022	7	14
VolePool_4	7009738	1431674	Bank vole	Female	Adult	27.3	2022	8	11
VolePool_5	7009507	1431655	Bank vole	Female	Adult	19	2022	8	11
VolePool_5	7009507	1431655	Bank vole	Female	Adult	17.2	2022	9	14

Appendix 1. Continued.

Final ID	Y-coordinate (RT90 2.5gV)	X-coordinate (RT90 2.5gV)	Species	Sex	Age	Weight	Year	Month	Day
VolePool_6	7009738	1431674	Bank vole	Male	Juvenile	12.4	2022	8	12
VolePool_6	7009507	1431655	Bank vole	Male	Juvenile	17.2	2022	8	12
VolePool_6	7009507	1431655	Bank vole	Male	Juvenile	11.2	2022	9	13
VolePool_7	7009507	1431655	Bank vole	Male	Juvenile	15.8	2022	9	13
VolePool_7	7009507	1431655	Bank vole	Male	Juvenile	14.2	2022	9	13
VolePool_7	7009593	1431867	Bank vole	Male	Juvenile	17.3	2022	9	14
VolePool_8	7009738	1431674	Bank vole	Male	Juvenile	14.1	2022	9	14
VolePool_8	7009738	1431674	Bank vole	Male	Juvenile	10.6	2022	9	14
VolePool_9	7009507	1431655	Bank vole	Male	Juvenile	15.8	2022	9	14
VolePool_9	7009507	1431655	Bank vole	Male	Juvenile	17.9	2022	9	14

Appendix 2. Raw data for 22 PFAS in soil and biota on the island of Frösön and in reference areas near Umeå, northern Sweden. For wildlife (bank vole, roedeer, and moose), concentrations are given in ng/g dw, for other samples (soil, mushroom, and berries) in ng/g ww.

Final ID	Locality	Species/Tissue	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTriDA	PFTeDA	PFBS	PFPeS	LPFHxS	BPFHxS	PFHpS	LPFOS	BPFOS	PFNS	PFDS	FOSA	4:2 FTSA	6:2 FTSA	8:2 FTSA
FRO-01	Frösön	Mushroom	43.30	3.19	5.37	<LOQ	2.44	<LOQ	2.29	7.62	3.98	1.13	3.31	5.37	<LOQ	3.79	0.43	<LOQ	4.21	0.46	<LOQ	<LOQ	0.33	<LOQ		5.37
FRO-02	Frösön	Mushroom	16.90	3.09	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.59	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.25	<LOQ		0.93
FRO-03	Frösön	Mushroom	47.00	1.44	0.48	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.77	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
FRO-04	Frösön	Raspberry	3.66	0.45	0.76	<LOQ	0.35	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
FRO-05	Frösön	Raspberry	2.29	0.18	0.21	<LOQ	0.13	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
FRO-06	Frösön	Raspberry	0.90	0.04	0.35	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
FRO-07	Frösön	BlueBerry	3.33	<LOQ	0.35	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
FRO-08	Frösön	BlueBerry	5.69	1.27	0.82	<LOQ	0.40	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
FRO-09	Frösön	BlueBerry	6.71	1.45	0.81	<LOQ	0.57	0.14	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.14	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
FRO-10	Frösön	Soil	4.09	2.36	17.10	2.38	8.65	0.85	1.02	1.41	<LOQ	0.64	0.15	8.66	15.40	131.00	7.20	6.92	1474.00	243.00	3.25	2.91	2.94	<LOQ		<LOQ
FRO-11	Frösön	Soil	1.72	1.52	1.18	0.48	0.83	0.40	1.08	1.15	0.50	0.76	0.31	<LOQ	<LOQ	0.58	<LOQ	<LOQ	8.05	0.26	<LOQ	<LOQ	0.13	0.41		<LOQ
FRO-12	Frösön	Soil	0.71	0.37	0.48	<LOQ	<LOQ	<LOQ	0.26	0.31	<LOQ	0.19	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	10.40	0.22	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
FRO-13	Frösön	Soil	1.23	<LOQ	<LOQ	<LOQ	<LOQ	0.15	<LOQ	<LOQ	<LOQ	0.16	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.73	0.06	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
FRO-14	Frösön	Soil	0.66	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.30	<LOQ	0.98	0.23	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.46	0.06	<LOQ	<LOQ	<LOQ	0.43		<LOQ
FRO-15	Frösön	Soil	0.62	<LOQ	<LOQ	<LOQ	<LOQ	0.15	0.41	0.29	<LOQ	0.30	0.12	<LOQ	<LOQ	0.51	<LOQ	0.06	16.10	0.75	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
FRO-16	Frösön	Soil	2.05	0.75	0.73	0.37	<LOQ	0.20	0.50	0.80	<LOQ	0.30	0.13	<LOQ	<LOQ	1.55	0.24	0.13	51.40	0.74	0.80	1.20	0.92	<LOQ		<LOQ
FRO-17	Frösön	Soil	1.03	0.46	0.43	<LOQ	<LOQ	0.21	0.36	0.38	<LOQ	0.20	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	2.59	0.08	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
FRO-18	Frösön	Soil	1.73	0.82	0.48	0.40	0.50	0.28	0.34	0.64	<LOQ	0.42	0.20	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	1.49	0.09	<LOQ	<LOQ	<LOQ	0.39		<LOQ
FRO-19	Frösön	LingonBerry	0.89	<LOQ	2.53	<LOQ	0.18	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.43	0.15	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
FRO-20	Frösön	LingonBerry	0.18	<LOQ	<LOQ	<LOQ	0.14	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.43	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
FRO-21	Frösön	LingonBerry	<LOQ	<LOQ	<LOQ	<LOQ	0.12	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.43	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
FRO-22	Frösön	Soil	0.61	7.31	0.49	<LOQ	0.46	0.28	0.50	0.69	<LOQ	0.40	0.25	<LOQ	<LOQ	1.01	<LOQ	0.05	14.50	0.35	<LOQ	<LOQ	0.18	0.34		<LOQ
REF-01	Reference	Mushroom_Ref	15.50	1.36	1.10	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.44	0.15	0.36	<LOQ	<LOQ	<LOQ	0.25	<LOQ	0.35	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-02	Reference	Mushroom_Ref	20.90	1.57	1.61	<LOQ	<LOQ	<LOQ	0.51	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.46	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-03	Reference	Mushroom_Ref	96.50	1.82	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.38	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		0.12

Appendix 2. Continued

Final ID	Locality	Species/Tissue	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTriDA	PFTeDA	PFBS	PFPeS	LPFHxS	BPFHxS	PFHpS	LPFOS	BPFOS	PFNS	PFDS	FOSA	4:2 FTSA	6:2 FTSA	8:2 FTSA
REF-04	Reference	Raspberry_Ref	0.39	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-05	Reference	Raspberry_Ref	0.38	0.35	0.57	<LOQ	0.23	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-06	Reference	Raspberry_Ref	2.17	<LOQ	0.40	<LOQ	0.13	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-07	Reference	BlueBerry_Ref	2.16	0.65	0.65	<LOQ	0.37	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-08	Reference	BlueBerry_Ref	8.97	0.66	0.30	<LOQ	0.36	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.13	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-09	Reference	BlueBerry_Ref	3.77	1.27	0.85	<LOQ	0.29	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-10	Reference	Soil_Ref	0.97	0.50	0.52	<LOQ	0.58	0.55	0.78	1.30	0.42	0.38	0.18	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.62	0.11	<LOQ	<LOQ	0.14	<LOQ		<LOQ
REF-11	Reference	Soil_Ref	7.95	1.24	0.89	0.45	0.57	0.49	0.79	1.71	0.55	0.90	0.28	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	1.21	0.08	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-12	Reference	Soil_Ref	2.28	1.16	0.77	0.47	<LOQ	0.38	0.62	1.04	0.44	0.69	0.29	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.97	0.06	<LOQ	<LOQ	<LOQ	0.32		<LOQ
REF-13	Reference	Soil_Ref	0.59	<LOQ	<LOQ	<LOQ	0.47	0.37	0.52	1.13	1.39	4.77	1.21	<LOQ	<LOQ	1.06	<LOQ	0.03	1.49	0.12	<LOQ	<LOQ	0.18	2.79		2.24
REF-14	Reference	Soil_Ref	1.52	1.57	0.62	0.40	<LOQ	0.57	0.75	0.97	<LOQ	0.39	0.15	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	1.38	0.09	<LOQ	<LOQ	0.22	<LOQ		<LOQ
REF-15	Reference	Soil_Ref	1.05	0.37	<LOQ	<LOQ	0.44	<LOQ	<LOQ	0.23	<LOQ	0.22	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.04	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-16	Reference	Soil_Ref	1.31	17.40	0.66	<LOQ	0.45	0.15	0.38	0.82	<LOQ	0.32	0.10	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.37	0.04	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-17	Reference	Soil_Ref	1.96	0.33	0.54	0.42	0.59	0.38	0.59	1.01	<LOQ	0.56	0.29	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.78	0.06	<LOQ	<LOQ	0.15	0.28		<LOQ
REF-18	Reference	Soil_Ref	3.80	<LOQ	0.57	0.41	0.50	0.43	0.37	0.72	<LOQ	0.36	0.17	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.78	0.08	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-19	Reference	LingonBerry_Ref	0.17	<LOQ	0.32	<LOQ	0.23	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.43	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-20	Reference	LingonBerry_Ref	0.75	<LOQ	0.32	<LOQ	0.16	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.43	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-21	Reference	LingonBerry_Ref	0.61	<LOQ	0.47	<LOQ	0.23	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.43	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-22	Reference	Soil_Ref	0.64	0.32	<LOQ	<LOQ	<LOQ	0.13	0.29	0.56	<LOQ	0.27	0.18	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.42	0.04	<LOQ	<LOQ	<LOQ	<LOQ		<LOQ
REF-23	Reference	Soil_Ref	3.04	0.68	<LOQ	<LOQ	0.56	<LOQ	<LOQ	0.70	<LOQ	0.43	0.25	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.38	0.05	<LOQ	<LOQ	<LOQ	0.35		<LOQ
Ungulate_1	Frösön	Roe_deer_Liver	4.30	1.73	<LOQ	<LOQ	<LOQ	0.74	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	1.16	<LOQ	<LOQ	5.68	0.59	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_1	Frösön	Roe_deer_Lung	<LOQ	0.80	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_1	Frösön	Roe_deer_Muscle	4.09	0.99	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_10	Frösön	Roe_deer_Liver	4.25	1.22	<LOQ	<LOQ	<LOQ	0.62	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.71	54.90	<LOQ	1.99	76.60	20.40	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_10	Frösön	Roe_deer_Lung	2.00	0.72	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	2.16	<LOQ	<LOQ	8.17	0.76	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_10	Frösön	Roe_deer_Muscle	3.56	0.86	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.64	<LOQ	<LOQ	<LOQ	0.27	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_11	Frösön	Roe_deer_Liver	1.89	1.28	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	1.87	0.86	<LOQ	<LOQ	<LOQ			<LOQ

Appendix 2. Continued

Final ID	Locality	Species/Tissue	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTriDA	PFTeDA	PFBS	PFPeS	LPFHxS	BPFHxS	PFHpS	LPFOS	BPFOS	PFNS	PFDS	FOSA	4:2 FTSA	6:2 FTSA	8:2 FTSA
Ungulate_11	Frösön	Roe_deer_Lung	<LOQ	0.79	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_11	Frösön	Roe_deer_Muscle	3.16	0.72	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_12	Frösön	Roe_deer_Liver	4.51	1.32	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.43	<LOQ	0.24	30.80	6.04	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_12	Frösön	Roe_deer_Lung	<LOQ	0.67	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	6.61	0.98	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_12	Frösön	Roe_deer_Muscle	2.53	0.73	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.33	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_13	Frösön	Roe_deer_Liver	2.52	1.12	<LOQ	<LOQ	<LOQ	0.41	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.91	<LOQ	<LOQ	7.57	1.78	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_13	Frösön	Roe_deer_Lung	<LOQ	0.55	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.21	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_13	Frösön	Roe_deer_Muscle	3.39	0.75	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_14	Frösön	Roe_deer_Liver	2.86	1.27	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	3.21	0.63	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_14	Frösön	Roe_deer_Lung	<LOQ	0.69	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_14	Frösön	Roe_deer_Muscle	3.56	0.94	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_15	Frösön	Moose_Liver	3.26	1.39	<LOQ	<LOQ	1.21	<LOQ	<LOQ	0.20	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.45	<LOQ	<LOQ	24.00	2.08	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_15	Frösön	Moose_Lung																								
Ungulate_15	Frösön	Moose_Muscle	3.50	0.70	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_16	Frösön	Moose_Liver	4.48	1.25	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.21	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.29	<LOQ	<LOQ	13.20	1.20	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_16	Frösön	Moose_Lung	<LOQ	0.86	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.28	<LOQ	<LOQ	<LOQ	0.27	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_16	Frösön	Moose_Muscle	<LOQ	1.01	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_17	Frösön	Moose_Liver	2.99	1.45	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.19	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.38	<LOQ	<LOQ	27.50	4.18	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_17	Frösön	Moose_Lung	<LOQ	0.96	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.32	<LOQ	<LOQ	1.90	0.64	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_17	Frösön	Moose_Muscle	<LOQ	1.00	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_18	Frösön	Moose_Liver	3.41	1.51	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.47	<LOQ	<LOQ	24.50	3.81	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_18	Frösön	Moose_Lung	<LOQ	0.69	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.43	<LOQ	<LOQ	1.82	0.68	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_18	Frösön	Moose_Muscle	3.64	0.90	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_2	Frösön	Roe_deer_Liver	3.06	1.37	<LOQ	<LOQ	<LOQ	0.53	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.80	<LOQ	<LOQ	10.40	1.99	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_2	Frösön	Roe_deer_Lung	<LOQ	0.77	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.23	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_2	Frösön	Roe_deer_Muscle	4.17	1.35	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_3	Frösön	Moose_Liver	7.11	1.57	<LOQ	<LOQ	<LOQ	0.44	<LOQ	0.21	<LOQ	<LOQ	<LOQ	<LOQ	0.24	0.60	<LOQ	<LOQ	25.90	2.51	<LOQ	<LOQ	<LOQ			<LOQ

Appendix 2. Continued

Final ID	Locality	Species/Tissue	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTriDA	PFTeDA	PFBS	PFPeS	LPFHxS	BPFHxS	PFHpS	LPFOS	BPFOS	PFNS	PFDS	FOSA	4:2 FTSA	6:2 FTSA	8:2 FTSA
Ungulate_3	Frösön	Moose_Lung	1.94	0.75	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.26	<LOQ	<LOQ	<LOQ	0.37	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_3	Frösön	Moose_Muscle	3.70	0.87	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.29	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_4	Frösön	Moose_Liver	4.67	1.96	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.20	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.59	<LOQ	<LOQ	14.90	1.31	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_4	Frösön	Moose_Lung	<LOQ	0.96	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.32	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_4	Frösön	Moose_Muscle	4.68	1.28	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_5	Frösön	Moose_Liver	4.61	1.41	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.19	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	1.04	<LOQ	<LOQ	30.60	2.35	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_5	Frösön	Moose_Lung	<LOQ	0.85	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.51	<LOQ	<LOQ	2.76	0.37	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_5	Frösön	Moose_Muscle	3.27	0.93	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_6	Frösön	Roe_deer_Liver	2.76	1.20	<LOQ	<LOQ	1.78	0.88	<LOQ	0.22	<LOQ	<LOQ	<LOQ	<LOQ	1.22	41.70	<LOQ	4.03	338.00	91.60	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_6	Frösön	Roe_deer_Lung	<LOQ	0.66	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	2.94	<LOQ	<LOQ	31.40	2.54	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_6	Frösön	Roe_deer_Muscle	2.97	0.72	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.30	<LOQ	<LOQ	4.07	0.29	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_7	Frösön	Roe_deer_Liver	2.99	1.37	<LOQ	<LOQ	<LOQ	0.46	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	1.81	<LOQ	0.26	25.40	5.81	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_7	Frösön	Roe_deer_Lung	<LOQ	0.70	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	2.53	<LOQ	0.52	<LOQ	<LOQ	5.90	0.67	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_7	Frösön	Roe_deer_Muscle	3.55	1.00	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.24	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_8	Frösön	Moose_Liver	2.61	2.29	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.29	0.45	<LOQ	<LOQ	27.20	2.77	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_8	Frösön	Moose_Lung	<LOQ	0.55	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.24	<LOQ	<LOQ	2.80	0.56	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_8	Frösön	Moose_Muscle																								
Ungulate_9	Frösön	Roe_deer_Liver	2.56	1.05	<LOQ	<LOQ	1.06	0.46	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	4.33	<LOQ	0.25	38.60	5.30	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_9	Frösön	Roe_deer_Lung	<LOQ	0.59	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.47	<LOQ	<LOQ	3.83	0.40	<LOQ	<LOQ	<LOQ			<LOQ
Ungulate_9	Frösön	Roe_deer_Muscle																								
VolePool_1	Frösön	BankVole_Heart	5.88	0.81	<LOQ	0.22	1.19	1.17	1.37	<LOQ	0.47	<LOQ	<LOQ	0.15	2.75	181.00	<LOQ	5.26	533.00	47.00		6.68	9.15		<LOQ	3.22
VolePool_1	Frösön	BankVole_Kidney	5.78	1.87	0.66	<LOQ	1.77	2.61	2.65	2.90	1.02	1.02	0.22	0.38	2.52	134.00	<LOQ	20.20	1361.00	312.00		41.30	4.99		<LOQ	18.90
VolePool_1	Frösön	BankVole_Liver	6.71	1.69	<LOQ	<LOQ	2.16	7.26	10.90	12.00	6.88	7.94	0.79	0.58	4.24	253.00	32.70	27.50	443<LOQ			44<LOQ	22.80		<LOQ	67.70
VolePool_1	Frösön	BankVole_Muscle	2.17	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.22	<LOQ	<LOQ	0.15	0.44	42.00	2.81	1.14	206.00	11.90		3.06	1.08		<LOQ	1.04
VolePool_1	Frösön	BankVole_Spleen	1.94	<LOQ	2.52	<LOQ	2.10	<LOQ	1.46	2.44	1.23	0.69	0.43	0.80	0.10	57.80	<LOQ	3.93	756.00	74.40		26.50	4.27		<LOQ	4.13
VolePool_10	Frösön	BankVole_Heart	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	<LOQ	<LOQ	0.15	0.10	8.50	<LOQ	2.53	96.40	24.10		1.94	0.75		<LOQ	<LOQ
VolePool_10	Frösön	BankVole_Kidney	1.28	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.48	0.58	<LOQ	0.15	0.10	40.50	<LOQ	15.40	1622.00	464.00		32.90	0.64		<LOQ	6.59

Appendix 2. Continued

Final ID	Locality	Species/Tissue	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTriDA	PFTeDA	PFBS	PFPeS	LPFHxS	BPFHxS	PFHpS	LPFOS	BPFOS	PFNS	PFDS	FOSA	4:2 FTSA	6:2 FTSA	8:2 FTSA
VolePool_10	Frösön	BankVole_Liver	0.32	0.88	<LOQ	<LOQ	<LOQ	<LOQ	1.16	2.70	3.47	6.90	0.63	0.15	0.10	26.40	<LOQ	8.15	2903.00			151.00	1.56		<LOQ	8.97
VolePool_10	Frösön	BankVole_Muscle	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	0.10	6.93	<LOQ	<LOQ	103.00	8.28		0.91	0.17		<LOQ	<LOQ
VolePool_10	Frösön	BankVole_Spleen	<LOQ	1.68	0.72	0.15	<LOQ	<LOQ	<LOQ	<LOQ	0.22	0.20	<LOQ	0.15	0.10	7.11	<LOQ	<LOQ	197.00	31.80		6.69	4.32		<LOQ	<LOQ
VolePool_11	Frösön	BankVole_Heart	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.31	<LOQ	<LOQ	0.15	0.10	49.60	<LOQ	1.55	76.80	2<LOQ		2.76	13.40		<LOQ	1.16
VolePool_11	Frösön	BankVole_Kidney	0.71	<LOQ	<LOQ	0.11	1.33	1.65	<LOQ	<LOQ	0.49	0.26	<LOQ	0.15	0.10	274.00	<LOQ	21.00	725.00	192.00		23.60	5.38		<LOQ	63.90
VolePool_11	Frösön	BankVole_Liver	0.18	15.80	<LOQ	<LOQ	0.84	1.43	1.61	2.60	1.91	1.20	0.27	0.15	0.10	76.40	2.92	5.56	127<LOQ			107.00	6.89		<LOQ	62.70
VolePool_11	Frösön	BankVole_Muscle	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	0.10	20.10	<LOQ	<LOQ	25.60	1.93		0.74	0.77		<LOQ	<LOQ
VolePool_11	Frösön	BankVole_Spleen	<LOQ	1.27	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	<LOQ	<LOQ	0.15	0.10	19.40	<LOQ	<LOQ	58.10	1<LOQ		4.61	39.00		<LOQ	1.33
VolePool_12	Frösön	BankVole_Heart	1.59	1.42	0.79	<LOQ	0.94	<LOQ	<LOQ	<LOQ	0.33	<LOQ	<LOQ	0.34	0.10	4.60	<LOQ	<LOQ	56.80	19.90		0.67	0.41		<LOQ	<LOQ
VolePool_12	Frösön	BankVole_Kidney	5.53	0.23	<LOQ	<LOQ	1.01	<LOQ	<LOQ	<LOQ	0.25	<LOQ	<LOQ	0.38	0.10	20.10	<LOQ	5.69	574.00	165.00		3.55	0.39		0.85	1.60
VolePool_12	Frösön	BankVole_Liver	3.09	10.30	<LOQ	<LOQ	1.36	<LOQ	<LOQ	1.06	0.67	0.54	<LOQ	0.15	0.10	13.20	<LOQ	2.55	1222.00			29.90	0.63		0.69	2.06
VolePool_12	Frösön	BankVole_Muscle	0.98	0.24	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	0.10	2.02	<LOQ	<LOQ	36.30	4.36		0.23	<LOQ		<LOQ	<LOQ
VolePool_12	Frösön	BankVole_Spleen	1.51	2.66	<LOQ	0.12	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	0.10	3.10	<LOQ	<LOQ	72.50	15.70		1.37	1.75		<LOQ	<LOQ
VolePool_2	Frösön	BankVole_Heart	5.86	0.19	<LOQ	0.28	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	0.10	47.10	<LOQ	1.46	235.00	25.50		1.65	0.27		<LOQ	<LOQ
VolePool_2	Frösön	BankVole_Kidney	3.58	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	<LOQ	<LOQ	0.15	0.10	27.30	<LOQ	4.83	373.00	87.40		5.04	0.17		<LOQ	<LOQ
VolePool_2	Frösön	BankVole_Liver	5.59	3.35	<LOQ	<LOQ	<LOQ	2.36	2.54	2.23	0.84	1.76	0.17	0.15	0.22	71.40	<LOQ	6.87	3086.00			182.00	0.43		<LOQ	6.89
VolePool_2	Frösön	BankVole_Muscle	2.45	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	0.10	12.10	<LOQ	<LOQ	101.00	6.75		0.95	<LOQ		<LOQ	<LOQ
VolePool_2	Frösön	BankVole_Spleen	2.60	<LOQ	<LOQ	0.30	1.87	<LOQ	<LOQ	<LOQ	0.41	<LOQ	<LOQ	0.68	0.10	32.60	<LOQ	<LOQ	335.00	56.20		7.36	0.37		<LOQ	<LOQ
VolePool_3	Frösön	BankVole_Heart	6.75	1.40	0.77	0.62	0.89	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.44	0.62	34.90	1.62	2.00	20<LOQ	19.90		1.95	0.37		<LOQ	<LOQ
VolePool_3	Frösön	BankVole_Kidney	3.06	0.36	<LOQ	<LOQ	0.95	<LOQ	<LOQ	<LOQ	0.62	<LOQ	<LOQ	0.50	0.37	31.10	1.15	3.68	38<LOQ	65.90		8.35	0.43		<LOQ	1.71
VolePool_3	Frösön	BankVole_Liver	2.72	0.83	<LOQ	0.15	1.41	3.17	4.18	4.74	2.51	3.24	0.44	0.89	1.75	63.90	4.89	5.98	3073.00			217.00	1.39		<LOQ	7.90
VolePool_3	Frösön	BankVole_Muscle	1.04	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	0.10	10.40	<LOQ	<LOQ	78.40	4.59		0.78	0.11		<LOQ	<LOQ
VolePool_3	Frösön	BankVole_Spleen	1.51	<LOQ	1.57	<LOQ	1.25	<LOQ	<LOQ	<LOQ	0.77	<LOQ	<LOQ	0.67	0.10	18.90	<LOQ	1.63	265.00	43.70		6.78	<LOQ		<LOQ	<LOQ
VolePool_4	Frösön	BankVole_Heart	3.07	0.68	0.79	0.60	0.93	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	0.10	1.29	<LOQ	<LOQ	28.10	2.34		0.28	0.14		<LOQ	<LOQ
VolePool_4	Frösön	BankVole_Kidney	0.77	<LOQ	<LOQ	0.16	<LOQ	<LOQ	<LOQ	<LOQ	0.44	0.28	<LOQ	0.15	0.10	5.08	<LOQ	2.84	242.00	47.20		2.58	0.11		<LOQ	2.59
VolePool_4	Frösön	BankVole_Liver	0.20	6.56	<LOQ	<LOQ	<LOQ	<LOQ	1.24	2.07	1.16	0.56	0.28	0.15	0.10	5.49	<LOQ	1.04	469.00			11.60	0.23		<LOQ	1.09
VolePool_4	Frösön	BankVole_Muscle	<LOQ	<LOQ	<LOQ	0.10	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	0.10	0.77	<LOQ	<LOQ	15.60	0.85		67.00	<LOQ		<LOQ	<LOQ

Appendix 2. Continued

Final ID	Locality	Species/Tissue	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTriDA	PFTeDA	PFBS	PFPeS	LPFHxS	BPFHxS	PFHpS	LPFOS	BPFOS	PFNS	PFDS	FOSA	4:2 FTSA	6:2 FTSA	8:2 FTSA
VolePool_4	Frösön	BankVole_Spleen	<LOQ	2.02	<LOQ	0.23	<LOQ	<LOQ	<LOQ	<LOQ	0.17	<LOQ	<LOQ	0.15	0.10	0.75	<LOQ	<LOQ	28.20	4.26		0.90	0.63		<LOQ	<LOQ
VolePool_5	Frösön	BankVole_Heart	0.63	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	1.03	<LOQ	0.53	<LOQ	<LOQ	0.15	0.21	113.00	<LOQ	5.03	1206.00	13<LOQ		15.10	3.68		<LOQ	4.87
VolePool_5	Frösön	BankVole_Kidney	1.97	<LOQ	1.22	0.35	1.54	7.45	4.82	3.02	1.65	1.84	0.23	0.59	1.99	44<LOQ	<LOQ	59.20	5983.00	320<LOQ		156.00	2.92		0.79	128.00
VolePool_5	Frösön	BankVole_Liver	0.91	4.50	0.62	<LOQ	1.06	10.40	13.60	13.00	9.11	7.02	0.84	0.38	0.80	252.00	<LOQ	21.20	10749.00			1202.00	8.37		0.56	124.00
VolePool_5	Frösön	BankVole_Muscle	0.55	<LOQ	<LOQ	0.15	0.91	<LOQ	<LOQ	<LOQ	0.29	<LOQ	<LOQ	0.34	0.10	61.90	<LOQ	1.51	799.00	53.30		7.78	0.69		<LOQ	4.39
VolePool_5	Frösön	BankVole_Spleen	0.57	2.74	<LOQ	0.10	<LOQ	<LOQ	1.18	<LOQ	0.85	0.71	0.16	0.15	0.10	42.40	<LOQ	4.30	1162.00	242.00		54.20	11.20		<LOQ	6.34
VolePool_6	Frösön	BankVole_Heart	2.48	0.40	<LOQ	<LOQ	0.89	<LOQ	<LOQ	<LOQ	0.66	0.23	0.19	0.36	2.32	79.10	2.73	2.88	176.00	43.60		4.57	1.67		<LOQ	<LOQ
VolePool_6	Frösön	BankVole_Kidney	3.08	<LOQ	<LOQ	0.16	0.79	<LOQ	<LOQ	<LOQ	0.29	0.21	<LOQ	0.15	2.49	62.20	3.81	8.14	382.00	101.00		9.60	0.48		<LOQ	<LOQ
VolePool_6	Frösön	BankVole_Liver	2.68	2.92	<LOQ	0.11	1.31	3.11	3.62	6.29	3.38	4.06	0.58	0.82	3.81	117.00	8.41	1<LOQ	2736.00			183.00	1.69		<LOQ	9.39
VolePool_6	Frösön	BankVole_Muscle	1.60	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	0.26	26.40	0.77	<LOQ	106.00	12.10		1.54	0.18		<LOQ	<LOQ
VolePool_6	Frösön	BankVole_Spleen	0.97	0.28	<LOQ	<LOQ	0.88	<LOQ	<LOQ	<LOQ	0.31	<LOQ	<LOQ	0.32	0.40	28.50	<LOQ	<LOQ	171.00	28.30		6.28	0.97		<LOQ	<LOQ
VolePool_7	Frösön	BankVole_Heart	0.69	0.20	0.60	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.38	<LOQ	<LOQ	0.65	0.10	4.52	<LOQ	<LOQ	91.70	15.00		2.00	0.79		<LOQ	1.03
VolePool_7	Frösön	BankVole_Kidney	1.01	<LOQ	0.72	<LOQ	0.92	1.05	<LOQ	<LOQ	0.31	<LOQ	<LOQ	0.15	0.10	5.07	<LOQ	2.16	283.00	45.50		5.84	0.21		<LOQ	4.19
VolePool_7	Frösön	BankVole_Liver	0.56	1.61	<LOQ	<LOQ	1.09	2.49	4.80	3.88	1.88	1.42	0.31	0.15	0.10	7.18	<LOQ	1.94	1371.00			77.90	0.36		<LOQ	8.21
VolePool_7	Frösön	BankVole_Muscle	0.29	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	0.10	1.29	<LOQ	<LOQ	34.60	1.71		0.36	<LOQ		<LOQ	<LOQ
VolePool_7	Frösön	BankVole_Spleen	0.32	11.30	<LOQ	0.15	<LOQ	<LOQ	<LOQ	<LOQ	0.11	<LOQ	<LOQ	0.16	0.10	1.20	<LOQ	<LOQ	76.20	8.20		3.17	0.88		<LOQ	<LOQ
VolePool_8	Frösön	BankVole_Heart	6.09	<LOQ	0.11	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.29	<LOQ	<LOQ	0.15	1.14	77.00	1.47	12.80	552.00	204.00		5.60	2.45		<LOQ	<LOQ
VolePool_8	Frösön	BankVole_Kidney	22.60	0.86	1.17	<LOQ	1.75	2.73	<LOQ	1.06	0.59	0.47	<LOQ	0.71	1.29	135.00	<LOQ	25.00	3659.00	135<LOQ		42.70	1.39		0.76	4.11
VolePool_8	Frösön	BankVole_Liver	13.70	1.21	0.75	0.20	1.35	7.54	6.69	4.95	3.53	7.91	0.44	0.85	1.91	173.00	5.10	34.00	1138<LOQ			621.00	3.92		<LOQ	21.40
VolePool_8	Frösön	BankVole_Muscle	6.51	<LOQ	<LOQ	<LOQ	6.17	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.35	0.25	34.00	1.26	1.67	473.00	38.40		3.05	0.44		<LOQ	<LOQ
VolePool_8	Frösön	BankVole_Spleen	10.30	<LOQ	1.54	<LOQ	2.13	<LOQ	1.94	1.47	0.64	0.26	0.18	1.74	0.10	73.50	1.25	4.31	199<LOQ	309.00		27.10	4.61		0.88	<LOQ
VolePool_9	Frösön	BankVole_Heart	4.99	0.69	1.27	0.32	1.09	<LOQ	<LOQ	<LOQ	0.43	<LOQ	<LOQ	0.51	0.37	70.20	1.05	4.81	596.00	211.00		5.24	0.74		0.59	1.22
VolePool_9	Frösön	BankVole_Kidney	11.70	1.16	0.91	<LOQ	1.22	1.78	1.08	<LOQ	0.33	0.22	<LOQ	0.50	1.28	112.00	<LOQ	20.60	2311.00	1205.00		24.70	0.71		<LOQ	10.90
VolePool_9	Frösön	BankVole_Liver	8.23	11.00	<LOQ	0.15	0.77	3.62	4.09	2.97	1.80	3.40	0.26	0.60	1.51	149.00	<LOQ	28.60	8957.00			397.00	1.93		<LOQ	20.30
VolePool_9	Frösön	BankVole_Muscle	2.56	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.15	0.10	24.30	<LOQ	1.26	316.00	40.70		1.52	0.19		<LOQ	<LOQ
VolePool_9	Frösön	BankVole_Spleen	3.73	3.02	<LOQ	0.14	<LOQ	<LOQ	<LOQ	<LOQ	0.31	0.23	<LOQ	0.15	0.10	32.70	<LOQ	2.85	628.00	223.00		10.50	5.94		<LOQ	<LOQ

Appendix 3. Results of t-tests between PFAS concentrations on the Island of Frösön and the reference localities near Umeå, northern Sweden.

PFAS	Sample type	Mean - Frösön	Mean - Reference	*t*-value	*df*	*P*
PFBA	Soil	0.19	0.56	-1.13	19	0.274
PFPeA	Soil	-0.39	-0.3	-0.15	19	0.886
PFHxA	Soil	-0.51	-0.85	0.79	19	0.438
PFHpA	Soil	-1.21	-1.32	0.4	19	0.697
PFOA	Soil	-0.76	-0.85	0.23	19	0.821
PFNA	Soil	-1.99	-1.67	-0.63	19	0.534
PFDA	Soil	-1.18	-1.06	-0.3	19	0.769
PFUnDA	Soil	-0.93	-0.23	-1.89	19	0.074
PFDoDA	Soil	-2.29	-1.79	-1.44	19	0.167
PFTriDA	Soil	-1.63	-1.08	-1.16	19	0.262
PFTeDA	Soil	-4.13	-2.82	-1.41	19	0.175
PFBS	Soil	0.01	-0.21	1.05	19	0.306
PFPeS	Soil	-1.91	-2.38	1.05	19	0.306
LPFHxS	Soil	-0.59	-1.52	1.84	19	0.081
BPFHxS	Soil	-2.85	-3.49	1.37	19	0.187
PFHpS	Soil	-4.43	-5.91	1.92	19	0.071
LPFOS	Soil	1.95	-0.46	3.63	19	0.002
BPFOS	Soil	-1.22	-3.1	2.72	19	0.014
PFNS	Soil	-2.14	-2.79	1.53	19	0.141
PFDS	Soil	-3.43	-4.42	1.57	19	0.132
FOSA	Soil	-4.69	-5.46	0.71	19	0.487
4:2-FTSA	Soil	-2.58	-2.58	0	19	0.996
6:2-FTSA	Soil				0	
8:2-FTSA	Soil	0.03	0.1	-0.95	19	0.353
∑PFCAs	Soil	1.45	1.66	-0.98	19	0.34
∑PFSAs	Soil	2.16	0.79	3.23	19	0.004
∑Precursors	Soil	0.41	0.35	0.52	19	0.609
∑PFAS	Soil	2.35	1.98	1.48	19	0.154

Appendix 3. Continued

PFAS	Sample type	Mean - Frösön	Mean - Reference	*t*-value	*df*	*P*
PFBA	Mushroom	4.11	4.10	0.018	4	0.987
PFPeA	Mushroom	0.95	0.47	1.598	4	0.185
PFHxA	Mushroom	-0.63	-0.75	0.072	4	0.946
PFHpA	Mushroom	-0.45	-0.45		4	
PFOA	Mushroom	-1.25	-2.35	1.000	4	0.374
PFNA	Mushroom	-0.48	-0.48		4	
PFDA	Mushroom	-2.37	-2.87	0.263	4	0.806
PFUnDA	Mushroom	-0.24	-1.12	1.000	4	0.374
PFDoDA	Mushroom	0.02	-4.57	2.503	4	0.067
PFTriDA	Mushroom	-2.90	-4.23	0.873	4	0.432
PFTeDA	Mushroom	-6.59	-7.34	0.158	4	0.882
PFBS	Mushroom	0.08	-0.65	1.000	4	0.374
PFPeS	Mushroom	-2.38	-2.38		4	
LPFHxS	Mushroom	-0.38	-1.16	1.000	4	0.374
BPFHxS	Mushroom	-2.87	-3.17	0.261	4	0.807
PFHpS	Mushroom	-2.39	-2.39		4	
LPFOS	Mushroom	-1.37	-0.95	-0.304	4	0.776
BPFOS	Mushroom	-3.71	-5.18	1.000	4	0.374
PFNS	Mushroom	-2.79	-2.79		4	
PFDS	Mushroom	-4.42	-4.42		4	
FOSA	Mushroom	-2.97	-5.22	1.975	4	0.119
4:2-FTSA	Mushroom	-0.51	-0.51		4	
6:2-FTSA	Mushroom				0	
8:2-FTSA	Mushroom	-1.15	-4.12	1.553	4	0.195
∑PFCAs	Mushroom	2.66	2.58	0.288	4	0.788
∑PFSAs	Mushroom	1.02	0.58	0.670	4	0.539
∑Precursors	Mushroom	0.52	-0.23	1.670	4	0.170
∑PFAS	Mushroom	2.80	2.69	0.382	4	0.722
PFBA	Raspberyy	0.71	-0.35	1.47	4	0.216

Appendix 3. Continued

PFAS	Sample type	Mean - Frösön	Mean - Reference	*t*-value	*df*	*P*
PFPeA	Raspberyy	-1.66	-2.53	0.91	4	0.413
PFHxA	Raspberyy	-0.97	-1.43	0.58	4	0.592
PFHpA	Raspberyy	-2.63	-2.63		4	
PFOA	Raspberyy	-2.07	-2.20	0.14	4	0.898
PFNA	Raspberyy	-3.70	-3.70		4	
PFDA	Raspberyy	-2.69	-2.69		4	
PFUnDA	Raspberyy	-2.88	-2.88		4	
PFDoDA	Raspberyy	-6.34	-6.34		4	
PFTriDA	Raspberyy	-7.78	-7.78		4	
PFTeDA	Raspberyy	-3.76	-3.76		4	
PFBS	Raspberyy	-3.25	-3.25		4	
PFPeS	Raspberyy	-5.94	-5.94		4	
LPFHxS	Raspberyy	-2.47	-2.47		4	
BPFHxS	Raspberyy	-8.50	-8.50		4	
PFHpS	Raspberyy	-3.36	-3.36		4	
LPFOS	Raspberyy	-2.12	-2.12		4	
BPFOS	Raspberyy	-4.33	-4.33		4	
PFNS	Raspberyy	-4.47	-4.47		4	
PFDS	Raspberyy	-4.42	-4.42		4	
FOSA	Raspberyy	-6.80	-6.80		4	
4:2-FTSA	Raspberyy	-6.25	-6.25		4	
6:2-FTSA	Raspberyy				0	
8:2-FTSA	Raspberyy	-2.86	-2.86		4	
∑PFCAs	Raspberyy	1.07	0.63	1.15	4	0.312
∑PFSAs	Raspberyy	-0.68	-0.68		4	
∑Precursors	Raspberyy	-1.85	-1.85		4	
∑PFAS	Raspberyy	1.26	0.94	1.16	4	0.311
PFBA	Blueberry	1.75	1.55	0.37	4	0.728
PFPeA	Blueberry	-0.89	-0.19	-0.57	4	0.599

Appendix 3. Continued

PFAS	Sample type	Mean - Frösön	Mean - Reference	*t*-value	*df*	*P*
PFHxA	Blueberry	-0.49	-0.60	0.25	4	0.812
PFHpA	Blueberry	-2.63	-2.63		4	
PFOA	Blueberry	-1.61	-1.01	-0.65	4	0.550
PFNA	Blueberry	-3.26	-3.70	1.00	4	0.374
PFDA	Blueberry	-2.69	-2.69		4	
PFUnDA	Blueberry	-2.88	-2.88		4	
PFDoDA	Blueberry	-6.34	-6.34		4	
PFTriDA	Blueberry	-7.78	-7.78		4	
PFTeDA	Blueberry	-3.76	-3.76		4	
PFBS	Blueberry	-2.50	-2.53	0.05	4	0.964
PFPeS	Blueberry	-5.94	-5.94		4	
LPFHxS	Blueberry	-2.47	-2.47		4	
BPFHxS	Blueberry	-8.50	-8.50		4	
PFHpS	Blueberry	-3.36	-3.36		4	
LPFOS	Blueberry	-2.12	-2.12		4	
BPFOS	Blueberry	-4.33	-4.33		4	
PFNS	Blueberry	-4.47	-4.47		4	
PFDS	Blueberry	-4.42	-4.42		4	
FOSA	Blueberry	-6.80	-6.80		4	
4:2-FTSA	Blueberry	-6.25	-6.25		4	
6:2-FTSA	Blueberry				0	
8:2-FTSA	Blueberry	-2.86	-2.86		4	
∑PFCAs	Blueberry	1.64	1.60	0.14	4	0.893
∑PFSAs	Blueberry	-0.57	-0.58	0.07	4	0.948
∑Precursors	Blueberry	-1.85	-1.85		4	
∑PFAS	Blueberry	1.74	1.71	0.14	4	0.892
PFBA	Lingonberry	-1.37	-0.80	-0.72	4	0.512
PFPeA	Lingonberry	-3.30	-3.30		4	
PFHxA	Lingonberry	-1.57	-1.03	-0.43	4	0.691

Appendix 3. Continued

PFAS	Sample type	Mean - Frösön	Mean - Reference	*t*-value	*df*	*P*
PFHpA	Lingonberry	-2.63	-2.63		4	
PFOA	Lingonberry	-1.73	-1.45	-2.21	4	0.092
PFNA	Lingonberry	-3.70	-3.70		4	
PFDA	Lingonberry	-2.69	-2.69		4	
PFUnDA	Lingonberry	-2.88	-2.88		4	
PFDoDA	Lingonberry	-6.34	-6.34		4	
PFTriDA	Lingonberry	-7.78	-7.78		4	
PFTeDA	Lingonberry	-3.76	-3.76		4	
PFBS	Lingonberry	-0.88	-0.88		4	
PFPeS	Lingonberry	-4.68	-5.94	1.00	4	0.374
LPFHxS	Lingonberry	-2.47	-2.47		4	
BPFHxS	Lingonberry	-8.50	-8.50		4	
PFHpS	Lingonberry	-3.36	-3.36		4	
LPFOS	Lingonberry	-2.12	-2.12		4	
BPFOS	Lingonberry	-4.33	-4.33		4	
PFNS	Lingonberry	-4.47	-4.47		4	
PFDS	Lingonberry	-4.42	-4.42		4	
FOSA	Lingonberry	-6.80	-6.80		4	
4:2-FTSA	Lingonberry	-6.25	-6.25		4	
6:2-FTSA	Lingonberry				0	
8:2-FTSA	Lingonberry	-2.86	-2.86		4	
∑PFCAs	Lingonberry	0.39	0.50	-0.25	4	0.815
∑PFSAs	Lingonberry	-0.07	-0.12	1.00	4	0.374
∑Precursors	Lingonberry	-1.85	-1.85		4	
∑PFAS	Lingonberry	0.95	0.96	0.00	4	0.998

Appendix 4. Bioaccumulation factors (BAF) for PFAS in different species and tissues. Ref refers to the reference areas near Umeå.

PFAS	Species & Tissue	Source of BAF	BAF
PFBA	Mushroom-Ref	Soil	19.41
PFPeA	Mushroom-Ref	Soil	0.74
PFHxA	Mushroom-Ref	Soil	2.17
PFHpA	Mushroom-Ref	Soil	0.00
PFOA	Mushroom-Ref	Soil	0.00
PFNA	Mushroom-Ref	Soil	0.00
PFDA	Mushroom-Ref	Soil	0.37
PFUnDA	Mushroom-Ref	Soil	0.00
PFDoDA	Mushroom-Ref	Soil	0.58
PFTriDA	Mushroom-Ref	Soil	0.06
PFTeDA	Mushroom-Ref	Soil	0.42
PFBS	Mushroom-Ref	Soil	
PFPeS	Mushroom-Ref	Soil	
LPFHxS	Mushroom-Ref	Soil	0.00
BPFHxS	Mushroom-Ref	Soil	
PFHpS	Mushroom-Ref	Soil	0.00
LPFOS	Mushroom-Ref	Soil	0.52
BPFOS	Mushroom-Ref	Soil	0.00
PFDS	Mushroom-Ref	Soil	
FOSA	Mushroom-Ref	Soil	0.00
6:2-FTSA	Mushroom-Ref	Soil	
8:2-FTSA	Mushroom-Ref	Soil	0.20
PFNS	Mushroom-Ref	Soil	
4:2-FTSA	Mushroom-Ref	Soil	0.00
PFBA	Mushroom	Soil	24.74
PFPeA	Mushroom	Soil	1.89
PFHxA	Mushroom	Soil	0.93
PFHpA	Mushroom	Soil	0.00
PFOA	Mushroom	Soil	0.78
PFNA	Mushroom	Soil	0.00
PFDA	Mushroom	Soil	1.71
PFUnDA	Mushroom	Soil	4.26
PFDoDA	Mushroom	Soil	35.50
PFTriDA	Mushroom	Soil	0.86
PFTeDA	Mushroom	Soil	7.90
PFBS	Mushroom	Soil	2.07
PFPeS	Mushroom	Soil	0.00
LPFHxS	Mushroom	Soil	0.09
BPFHxS	Mushroom	Soil	0.19
PFHpS	Mushroom	Soil	0.00
LPFOS	Mushroom	Soil	0.01
BPFOS	Mushroom	Soil	0.01
PFDS	Mushroom	Soil	0.00
FOSA	Mushroom	Soil	0.46
6:2-FTSA	Mushroom	Soil	
8:2-FTSA	Mushroom	Soil	
PFNS	Mushroom	Soil	0.00
4:2-FTSA	Mushroom	Soil	0.00

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFBA	Raspberry-Ref	Soil	0.43
PFPeA	Raspberry-Ref	Soil	0.05
PFHxA	Raspberry-Ref	Soil	0.78
PFHpA	Raspberry-Ref	Soil	0.00
PFOA	Raspberry-Ref	Soil	0.32
PFNA	Raspberry-Ref	Soil	0.00
PFDA	Raspberry-Ref	Soil	0.00
PFUnDA	Raspberry-Ref	Soil	0.00
PFDoDA	Raspberry-Ref	Soil	0.00
PFTriDA	Raspberry-Ref	Soil	0.00
PFTeDA	Raspberry-Ref	Soil	0.00
PFBS	Raspberry-Ref	Soil	
PFPeS	Raspberry-Ref	Soil	
LPFHxS	Raspberry-Ref	Soil	0.00
BPFHxS	Raspberry-Ref	Soil	
PFHpS	Raspberry-Ref	Soil	0.00
LPFOS	Raspberry-Ref	Soil	0.00
BPFOS	Raspberry-Ref	Soil	0.00
PFDS	Raspberry-Ref	Soil	
FOSA	Raspberry-Ref	Soil	0.00
6:2-FTSA	Raspberry-Ref	Soil	
8:2-FTSA	Raspberry-Ref	Soil	0.00
PFNS	Raspberry-Ref	Soil	
4:2-FTSA	Raspberry-Ref	Soil	0.00
PFBA	Raspberry	Soil	1.58
PFPeA	Raspberry	Soil	0.16
PFHxA	Raspberry	Soil	0.21
PFHpA	Raspberry	Soil	0.00
PFOA	Raspberry	Soil	0.16
PFNA	Raspberry	Soil	0.00
PFDA	Raspberry	Soil	0.00
PFUnDA	Raspberry	Soil	0.00
PFDoDA	Raspberry	Soil	0.00
PFTriDA	Raspberry	Soil	0.00
PFTeDA	Raspberry	Soil	0.00
PFBS	Raspberry	Soil	0.00
PFPeS	Raspberry	Soil	0.00
LPFHxS	Raspberry	Soil	0.00
BPFHxS	Raspberry	Soil	0.00
PFHpS	Raspberry	Soil	0.00
LPFOS	Raspberry	Soil	0.00
BPFOS	Raspberry	Soil	0.00
PFDS	Raspberry	Soil	0.00
FOSA	Raspberry	Soil	0.00
6:2-FTSA	Raspberry	Soil	
8:2-FTSA	Raspberry	Soil	
PFNS	Raspberry	Soil	0.00
4:2-FTSA	Raspberry	Soil	0.00
PFBA	BlueBerry-Ref	Soil	2.18
PFPeA	BlueBerry-Ref	Soil	0.40

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFHxA	BlueBerry-Ref	Soil	1.44
PFHpA	BlueBerry-Ref	Soil	0.00
PFOA	BlueBerry-Ref	Soil	0.91
PFNA	BlueBerry-Ref	Soil	0.00
PFDA	BlueBerry-Ref	Soil	0.00
PFUnDA	BlueBerry-Ref	Soil	0.00
PFDoDA	BlueBerry-Ref	Soil	0.00
PFTriDA	BlueBerry-Ref	Soil	0.00
PFTeDA	BlueBerry-Ref	Soil	0.00
PFBS	BlueBerry-Ref	Soil	
PFPeS	BlueBerry-Ref	Soil	
LPFHxS	BlueBerry-Ref	Soil	0.00
BPFHxS	BlueBerry-Ref	Soil	
PFHpS	BlueBerry-Ref	Soil	0.00
LPFOS	BlueBerry-Ref	Soil	0.00
BPFOS	BlueBerry-Ref	Soil	0.00
PFDS	BlueBerry-Ref	Soil	
FOSA	BlueBerry-Ref	Soil	0.00
6:2-FTSA	BlueBerry-Ref	Soil	
8:2-FTSA	BlueBerry-Ref	Soil	0.00
PFNS	BlueBerry-Ref	Soil	
4:2-FTSA	BlueBerry-Ref	Soil	0.00
PFBA	BlueBerry	Soil	3.63
PFPeA	BlueBerry	Soil	0.67
PFHxA	BlueBerry	Soil	0.32
PFHpA	BlueBerry	Soil	0.00
PFOA	BlueBerry	Soil	0.31
PFNA	BlueBerry	Soil	0.19
PFDA	BlueBerry	Soil	0.00
PFUnDA	BlueBerry	Soil	0.00
PFDoDA	BlueBerry	Soil	0.00
PFTriDA	BlueBerry	Soil	0.00
PFTeDA	BlueBerry	Soil	0.00
PFBS	BlueBerry	Soil	0.11
PFPeS	BlueBerry	Soil	0.00
LPFHxS	BlueBerry	Soil	0.00
BPFHxS	BlueBerry	Soil	0.00
PFHpS	BlueBerry	Soil	0.00
LPFOS	BlueBerry	Soil	0.00
BPFOS	BlueBerry	Soil	0.00
PFDS	BlueBerry	Soil	0.00
FOSA	BlueBerry	Soil	0.00
6:2-FTSA	BlueBerry	Soil	
8:2-FTSA	BlueBerry	Soil	
PFNS	BlueBerry	Soil	0.00
4:2-FTSA	BlueBerry	Soil	0.00
PFBA	LingonBerry-Ref	Soil	0.22
PFPeA	LingonBerry-Ref	Soil	0.00
PFHxA	LingonBerry-Ref	Soil	0.88
PFHpA	LingonBerry-Ref	Soil	0.00

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFOA	LingonBerry-Ref	Soil	0.55
PFNA	LingonBerry-Ref	Soil	0.00
PFDA	LingonBerry-Ref	Soil	0.00
PFUnDA	LingonBerry-Ref	Soil	0.00
PFDoDA	LingonBerry-Ref	Soil	0.00
PFTriDA	LingonBerry-Ref	Soil	0.00
PFTeDA	LingonBerry-Ref	Soil	0.00
PFBS	LingonBerry-Ref	Soil	
PFPeS	LingonBerry-Ref	Soil	
LPFHxS	LingonBerry-Ref	Soil	0.00
BPFHxS	LingonBerry-Ref	Soil	
PFHpS	LingonBerry-Ref	Soil	0.00
LPFOS	LingonBerry-Ref	Soil	0.00
BPFOS	LingonBerry-Ref	Soil	0.00
PFDS	LingonBerry-Ref	Soil	
FOSA	LingonBerry-Ref	Soil	0.00
6:2-FTSA	LingonBerry-Ref	Soil	
8:2-FTSA	LingonBerry-Ref	Soil	0.00
PFNS	LingonBerry-Ref	Soil	
4:2-FTSA	LingonBerry-Ref	Soil	0.00
PFBA	LingonBerry	Soil	0.25
PFPeA	LingonBerry	Soil	0.00
PFHxA	LingonBerry	Soil	0.40
PFHpA	LingonBerry	Soil	0.00
PFOA	LingonBerry	Soil	0.14
PFNA	LingonBerry	Soil	0.00
PFDA	LingonBerry	Soil	0.00
PFUnDA	LingonBerry	Soil	0.00
PFDoDA	LingonBerry	Soil	0.00
PFTriDA	LingonBerry	Soil	0.00
PFTeDA	LingonBerry	Soil	0.00
PFBS	LingonBerry	Soil	0.50
PFPeS	LingonBerry	Soil	0.03
LPFHxS	LingonBerry	Soil	0.00
BPFHxS	LingonBerry	Soil	0.00
PFHpS	LingonBerry	Soil	0.00
LPFOS	LingonBerry	Soil	0.00
BPFOS	LingonBerry	Soil	0.00
PFDS	LingonBerry	Soil	0.00
FOSA	LingonBerry	Soil	0.00
6:2-FTSA	LingonBerry	Soil	
8:2-FTSA	LingonBerry	Soil	
PFNS	LingonBerry	Soil	0.00
4:2-FTSA	LingonBerry	Soil	0.00
PFBA	BankVole-Heart	Soil	8.09
PFPeA	BankVole-Heart	Soil	1.31
PFHxA	BankVole-Heart	Soil	0.64
PFHpA	BankVole-Heart	Soil	1.72
PFOA	BankVole-Heart	Soil	1.74
PFNA	BankVole-Heart	Soil	1.43

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFDA	BankVole-Heart	Soil	1.65
PFUnDA	BankVole-Heart	Soil	0.00
PFDoDA	BankVole-Heart	Soil	21.73
PFTriDA	BankVole-Heart	Soil	0.16
PFTeDA	BankVole-Heart	Soil	0.43
PFBS	BankVole-Heart	Soil	1.20
PFPeS	BankVole-Heart	Soil	1.60
LPFHxS	BankVole-Heart	Soil	15.30
BPFHxS	BankVole-Heart	Soil	2.84
PFHpS	BankVole-Heart	Soil	16.47
LPFOS	BankVole-Heart	Soil	7.48
BPFOS	BankVole-Heart	Soil	9.53
PFDS	BankVole-Heart	Soil	36.20
FOSA	BankVole-Heart	Soil	24.91
6:2-FTSA	BankVole-Heart	Soil	
8:2-FTSA	BankVole-Heart	Soil	
PFNS	BankVole-Heart	Soil	0.00
4:2-FTSA	BankVole-Heart	Soil	0.00
PFBA	BankVole-Kidney	Soil	16.65
PFPeA	BankVole-Kidney	Soil	1.30
PFHxA	BankVole-Kidney	Soil	0.88
PFHpA	BankVole-Kidney	Soil	0.84
PFOA	BankVole-Kidney	Soil	4.25
PFNA	BankVole-Kidney	Soil	27.05
PFDA	BankVole-Kidney	Soil	7.53
PFUnDA	BankVole-Kidney	Soil	4.61
PFDoDA	BankVole-Kidney	Soil	51.90
PFTriDA	BankVole-Kidney	Soil	4.41
PFTeDA	BankVole-Kidney	Soil	1.27
PFBS	BankVole-Kidney	Soil	1.80
PFPeS	BankVole-Kidney	Soil	2.69
LPFHxS	BankVole-Kidney	Soil	37.62
BPFHxS	BankVole-Kidney	Soil	2.63
PFHpS	BankVole-Kidney	Soil	103.99
LPFOS	BankVole-Kidney	Soil	44.61
BPFOS	BankVole-Kidney	Soil	116.01
PFDS	BankVole-Kidney	Soil	341.28
FOSA	BankVole-Kidney	Soil	16.83
6:2-FTSA	BankVole-Kidney	Soil	
8:2-FTSA	BankVole-Kidney	Soil	
PFNS	BankVole-Kidney	Soil	0.00
4:2-FTSA	BankVole-Kidney	Soil	0.00
PFBA	BankVole-Liver	Soil	12.18
PFPeA	BankVole-Liver	Soil	17.50
PFHxA	BankVole-Liver	Soil	0.26
PFHpA	BankVole-Liver	Soil	0.65
PFOA	BankVole-Liver	Soil	4.26
PFNA	BankVole-Liver	Soil	64.52
PFDA	BankVole-Liver	Soil	47.74
PFUnDA	BankVole-Liver	Soil	38.42

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFDoDA	BankVole-Liver	Soil	290.54
PFTriDA	BankVole-Liver	Soil	41.31
PFTeDA	BankVole-Liver	Soil	14.07
PFBS	BankVole-Liver	Soil	2.28
PFPeS	BankVole-Liver	Soil	3.75
LPFHxS	BankVole-Liver	Soil	35.16
BPFHxS	BankVole-Liver	Soil	28.46
PFHpS	BankVole-Liver	Soil	84.11
LPFOS	BankVole-Liver	Soil	128.15
BPFOS	BankVole-Liver	Soil	0.00
PFDS	BankVole-Liver	Soil	3451.84
FOSA	BankVole-Liver	Soil	47.19
6:2-FTSA	BankVole-Liver	Soil	
8:2-FTSA	BankVole-Liver	Soil	
PFNS	BankVole-Liver	Soil	0.00
4:2-FTSA	BankVole-Liver	Soil	0.00
PFBA	BankVole-Muscle	Soil	5.25
PFPeA	BankVole-Muscle	Soil	0.07
PFHxA	BankVole-Muscle	Soil	0.00
PFHpA	BankVole-Muscle	Soil	0.29
PFOA	BankVole-Muscle	Soil	2.83
PFNA	BankVole-Muscle	Soil	0.00
PFDA	BankVole-Muscle	Soil	0.00
PFUnDA	BankVole-Muscle	Soil	0.00
PFDoDA	BankVole-Muscle	Soil	4.26
PFTriDA	BankVole-Muscle	Soil	0.00
PFTeDA	BankVole-Muscle	Soil	0.00
PFBS	BankVole-Muscle	Soil	1.08
PFPeS	BankVole-Muscle	Soil	0.50
LPFHxS	BankVole-Muscle	Soil	7.52
BPFHxS	BankVole-Muscle	Soil	2.72
PFHpS	BankVole-Muscle	Soil	3.26
LPFOS	BankVole-Muscle	Soil	6.07
BPFOS	BankVole-Muscle	Soil	3.15
PFDS	BankVole-Muscle	Soil	89.39
FOSA	BankVole-Muscle	Soil	3.64
6:2-FTSA	BankVole-Muscle	Soil	
8:2-FTSA	BankVole-Muscle	Soil	
PFNS	BankVole-Muscle	Soil	0.00
4:2-FTSA	BankVole-Muscle	Soil	0.00
PFBA	BankVole-Spleen	Soil	7.55
PFPeA	BankVole-Spleen	Soil	8.56
PFHxA	BankVole-Spleen	Soil	1.42
PFHpA	BankVole-Spleen	Soil	1.51
PFOA	BankVole-Spleen	Soil	3.67
PFNA	BankVole-Spleen	Soil	0.00
PFDA	BankVole-Spleen	Soil	4.77
PFUnDA	BankVole-Spleen	Soil	3.05
PFDoDA	BankVole-Spleen	Soil	48.11
PFTriDA	BankVole-Spleen	Soil	2.24

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFTeDA	BankVole-Spleen	Soil	2.55
PFBS	BankVole-Spleen	Soil	2.84
PFPeS	BankVole-Spleen	Soil	0.45
LPFHxS	BankVole-Spleen	Soil	10.99
BPFHxS	BankVole-Spleen	Soil	0.78
PFHpS	BankVole-Spleen	Soil	11.09
LPFOS	BankVole-Spleen	Soil	16.91
BPFOS	BankVole-Spleen	Soil	19.84
PFDS	BankVole-Spleen	Soil	176.10
FOSA	BankVole-Spleen	Soil	82.56
6:2-FTSA	BankVole-Spleen	Soil	
8:2-FTSA	BankVole-Spleen	Soil	
PFNS	BankVole-Spleen	Soil	0.00
4:2-FTSA	BankVole-Spleen	Soil	0.00
PFBA	Roe-deer-Lung	Soil	0.39
PFPeA	Roe-deer-Lung	Soil	1.46
PFHxA	Roe-deer-Lung	Soil	0.00
PFHpA	Roe-deer-Lung	Soil	0.00
PFOA	Roe-deer-Lung	Soil	0.00
PFNA	Roe-deer-Lung	Soil	0.00
PFDA	Roe-deer-Lung	Soil	0.00
PFUnDA	Roe-deer-Lung	Soil	0.00
PFDoDA	Roe-deer-Lung	Soil	0.00
PFTriDA	Roe-deer-Lung	Soil	0.00
PFTeDA	Roe-deer-Lung	Soil	0.00
PFBS	Roe-deer-Lung	Soil	0.83
PFPeS	Roe-deer-Lung	Soil	0.00
LPFHxS	Roe-deer-Lung	Soil	0.13
BPFHxS	Roe-deer-Lung	Soil	0.00
PFHpS	Roe-deer-Lung	Soil	0.00
LPFOS	Roe-deer-Lung	Soil	0.10
BPFOS	Roe-deer-Lung	Soil	0.06
PFDS	Roe-deer-Lung	Soil	0.00
FOSA	Roe-deer-Lung	Soil	0.00
6:2-FTSA	Roe-deer-Lung	Soil	
8:2-FTSA	Roe-deer-Lung	Soil	
PFNS	Roe-deer-Lung	Soil	0.00
4:2-FTSA	Roe-deer-Lung	Soil	0.00
PFBA	Roe-deer-Liver	Soil	6.80
PFPeA	Roe-deer-Liver	Soil	2.95
PFHxA	Roe-deer-Liver	Soil	0.00
PFHpA	Roe-deer-Liver	Soil	0.00
PFOA	Roe-deer-Liver	Soil	0.84
PFNA	Roe-deer-Liver	Soil	5.06
PFDA	Roe-deer-Liver	Soil	0.00
PFUnDA	Roe-deer-Liver	Soil	0.12
PFDoDA	Roe-deer-Liver	Soil	0.00
PFTriDA	Roe-deer-Liver	Soil	0.00
PFTeDA	Roe-deer-Liver	Soil	0.00
PFBS	Roe-deer-Liver	Soil	0.00

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFPeS	Roe-deer-Liver	Soil	0.39
LPFHxS	Roe-deer-Liver	Soil	2.44
BPFHxS	Roe-deer-Liver	Soil	0.00
PFHpS	Roe-deer-Liver	Soil	2.93
LPFOS	Roe-deer-Liver	Soil	1.06
BPFOS	Roe-deer-Liver	Soil	1.70
PFDS	Roe-deer-Liver	Soil	0.00
FOSA	Roe-deer-Liver	Soil	0.00
6:2-FTSA	Roe-deer-Liver	Soil	
8:2-FTSA	Roe-deer-Liver	Soil	
PFNS	Roe-deer-Liver	Soil	0.00
4:2-FTSA	Roe-deer-Liver	Soil	0.00
PFBA	Roe-deer-Muscle	Soil	8.76
PFPeA	Roe-deer-Muscle	Soil	2.42
PFHxA	Roe-deer-Muscle	Soil	0.00
PFHpA	Roe-deer-Muscle	Soil	0.00
PFOA	Roe-deer-Muscle	Soil	0.00
PFNA	Roe-deer-Muscle	Soil	0.00
PFDA	Roe-deer-Muscle	Soil	0.00
PFUnDA	Roe-deer-Muscle	Soil	0.00
PFDoDA	Roe-deer-Muscle	Soil	0.00
PFTriDA	Roe-deer-Muscle	Soil	0.00
PFTeDA	Roe-deer-Muscle	Soil	0.00
PFBS	Roe-deer-Muscle	Soil	0.00
PFPeS	Roe-deer-Muscle	Soil	0.00
LPFHxS	Roe-deer-Muscle	Soil	0.03
BPFHxS	Roe-deer-Muscle	Soil	0.00
PFHpS	Roe-deer-Muscle	Soil	0.00
LPFOS	Roe-deer-Muscle	Soil	0.01
BPFOS	Roe-deer-Muscle	Soil	0.02
PFDS	Roe-deer-Muscle	Soil	0.00
FOSA	Roe-deer-Muscle	Soil	0.00
6:2-FTSA	Roe-deer-Muscle	Soil	
8:2-FTSA	Roe-deer-Muscle	Soil	
PFNS	Roe-deer-Muscle	Soil	0.00
4:2-FTSA	Roe-deer-Muscle	Soil	0.00
PFBA	Moose-Lung	Soil	0.56
PFPeA	Moose-Lung	Soil	1.73
PFHxA	Moose-Lung	Soil	0.00
PFHpA	Moose-Lung	Soil	0.00
PFOA	Moose-Lung	Soil	0.00
PFNA	Moose-Lung	Soil	0.00
PFDA	Moose-Lung	Soil	0.00
PFUnDA	Moose-Lung	Soil	0.00
PFDoDA	Moose-Lung	Soil	0.00
PFTriDA	Moose-Lung	Soil	0.00
PFTeDA	Moose-Lung	Soil	0.00
PFBS	Moose-Lung	Soil	0.00
PFPeS	Moose-Lung	Soil	0.00
LPFHxS	Moose-Lung	Soil	0.06

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
BPFHxS	Moose-Lung	Soil	0.00
PFHpS	Moose-Lung	Soil	0.00
LPFOS	Moose-Lung	Soil	0.02
BPFOS	Moose-Lung	Soil	0.05
PFDS	Moose-Lung	Soil	0.00
FOSA	Moose-Lung	Soil	0.00
6:2-FTSA	Moose-Lung	Soil	
8:2-FTSA	Moose-Lung	Soil	
PFNS	Moose-Lung	Soil	0.00
4:2-FTSA	Moose-Lung	Soil	0.00
PFBA	Moose-Liver	Soil	9.20
PFPeA	Moose-Liver	Soil	3.79
PFHxA	Moose-Liver	Soil	0.00
PFHpA	Moose-Liver	Soil	0.00
PFOA	Moose-Liver	Soil	0.46
PFNA	Moose-Liver	Soil	0.70
PFDA	Moose-Liver	Soil	0.00
PFUnDA	Moose-Liver	Soil	0.81
PFDoDA	Moose-Liver	Soil	0.00
PFTriDA	Moose-Liver	Soil	0.00
PFTeDA	Moose-Liver	Soil	0.00
PFBS	Moose-Liver	Soil	0.00
PFPeS	Moose-Liver	Soil	0.14
LPFHxS	Moose-Liver	Soil	0.13
BPFHxS	Moose-Liver	Soil	0.00
PFHpS	Moose-Liver	Soil	0.00
LPFOS	Moose-Liver	Soil	0.48
BPFOS	Moose-Liver	Soil	0.33
PFDS	Moose-Liver	Soil	0.00
FOSA	Moose-Liver	Soil	0.00
6:2-FTSA	Moose-Liver	Soil	
8:2-FTSA	Moose-Liver	Soil	
PFNS	Moose-Liver	Soil	0.00
4:2-FTSA	Moose-Liver	Soil	0.00
PFBA	Moose-Muscle	Soil	6.77
PFPeA	Moose-Muscle	Soil	2.57
PFHxA	Moose-Muscle	Soil	0.00
PFHpA	Moose-Muscle	Soil	0.00
PFOA	Moose-Muscle	Soil	0.00
PFNA	Moose-Muscle	Soil	0.00
PFDA	Moose-Muscle	Soil	0.00
PFUnDA	Moose-Muscle	Soil	0.00
PFDoDA	Moose-Muscle	Soil	0.00
PFTriDA	Moose-Muscle	Soil	0.00
PFTeDA	Moose-Muscle	Soil	0.00
PFBS	Moose-Muscle	Soil	0.00
PFPeS	Moose-Muscle	Soil	0.00
LPFHxS	Moose-Muscle	Soil	0.00
BPFHxS	Moose-Muscle	Soil	0.00
PFHpS	Moose-Muscle	Soil	0.00

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
LPFOS	Moose-Muscle	Soil	0.00
BPFOS	Moose-Muscle	Soil	0.01
PFDS	Moose-Muscle	Soil	0.00
FOSA	Moose-Muscle	Soil	0.00
6:2-FTSA	Moose-Muscle	Soil	
8:2-FTSA	Moose-Muscle	Soil	
PFNS	Moose-Muscle	Soil	0.00
4:2-FTSA	Moose-Muscle	Soil	0.00
PFBA	BankVole-Heart	Mushroom	0.33
PFPeA	BankVole-Heart	Mushroom	0.69
PFHxA	BankVole-Heart	Mushroom	0.68
PFHpA	BankVole-Heart	Mushroom	
PFOA	BankVole-Heart	Mushroom	2.23
PFNA	BankVole-Heart	Mushroom	
PFDA	BankVole-Heart	Mushroom	0.97
PFUnDA	BankVole-Heart	Mushroom	0.00
PFDoDA	BankVole-Heart	Mushroom	0.61
PFTriDA	BankVole-Heart	Mushroom	0.19
PFTeDA	BankVole-Heart	Mushroom	0.05
PFBS	BankVole-Heart	Mushroom	0.58
PFPeS	BankVole-Heart	Mushroom	
LPFHxS	BankVole-Heart	Mushroom	163.10
BPFHxS	BankVole-Heart	Mushroom	14.62
PFHpS	BankVole-Heart	Mushroom	
LPFOS	BankVole-Heart	Mushroom	842.21
BPFOS	BankVole-Heart	Mushroom	1513.98
PFDS	BankVole-Heart	Mushroom	
FOSA	BankVole-Heart	Mushroom	53.62
6:2-FTSA	BankVole-Heart	Mushroom	
8:2-FTSA	BankVole-Heart	Mushroom	1.68
PFNS	BankVole-Heart	Mushroom	
4:2-FTSA	BankVole-Heart	Mushroom	
PFBA	BankVole-Kidney	Mushroom	0.67
PFPeA	BankVole-Kidney	Mushroom	0.69
PFHxA	BankVole-Kidney	Mushroom	0.94
PFHpA	BankVole-Kidney	Mushroom	
PFOA	BankVole-Kidney	Mushroom	5.46
PFNA	BankVole-Kidney	Mushroom	
PFDA	BankVole-Kidney	Mushroom	4.41
PFUnDA	BankVole-Kidney	Mushroom	1.08
PFDoDA	BankVole-Kidney	Mushroom	1.46
PFTriDA	BankVole-Kidney	Mushroom	5.11
PFTeDA	BankVole-Kidney	Mushroom	0.16
PFBS	BankVole-Kidney	Mushroom	0.87
PFPeS	BankVole-Kidney	Mushroom	
LPFHxS	BankVole-Kidney	Mushroom	401.00
BPFHxS	BankVole-Kidney	Mushroom	13.53
PFHpS	BankVole-Kidney	Mushroom	
LPFOS	BankVole-Kidney	Mushroom	5021.97
BPFOS	BankVole-Kidney	Mushroom	18422.34

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFDS	BankVole-Kidney	Mushroom	
FOSA	BankVole-Kidney	Mushroom	36.23
6:2-FTSA	BankVole-Kidney	Mushroom	
8:2-FTSA	BankVole-Kidney	Mushroom	45.51
PFNS	BankVole-Kidney	Mushroom	
4:2-FTSA	BankVole-Kidney	Mushroom	
PFBA	BankVole-Liver	Mushroom	0.49
PFPeA	BankVole-Liver	Mushroom	9.24
PFHxA	BankVole-Liver	Mushroom	0.28
PFHpA	BankVole-Liver	Mushroom	
PFOA	BankVole-Liver	Mushroom	5.47
PFNA	BankVole-Liver	Mushroom	
PFDA	BankVole-Liver	Mushroom	27.95
PFUnDA	BankVole-Liver	Mushroom	9.03
PFDoDA	BankVole-Liver	Mushroom	8.19
PFTriDA	BankVole-Liver	Mushroom	47.81
PFTeDA	BankVole-Liver	Mushroom	1.78
PFBS	BankVole-Liver	Mushroom	1.10
PFPeS	BankVole-Liver	Mushroom	
LPFHxS	BankVole-Liver	Mushroom	374.79
BPFHxS	BankVole-Liver	Mushroom	146.70
PFHpS	BankVole-Liver	Mushroom	
LPFOS	BankVole-Liver	Mushroom	14425.52
BPFOS	BankVole-Liver	Mushroom	0.00
PFDS	BankVole-Liver	Mushroom	
FOSA	BankVole-Liver	Mushroom	101.58
6:2-FTSA	BankVole-Liver	Mushroom	
8:2-FTSA	BankVole-Liver	Mushroom	63.63
PFNS	BankVole-Liver	Mushroom	
4:2-FTSA	BankVole-Liver	Mushroom	
PFBA	BankVole-Muscle	Mushroom	0.21
PFPeA	BankVole-Muscle	Mushroom	0.04
PFHxA	BankVole-Muscle	Mushroom	0.00
PFHpA	BankVole-Muscle	Mushroom	
PFOA	BankVole-Muscle	Mushroom	3.64
PFNA	BankVole-Muscle	Mushroom	
PFDA	BankVole-Muscle	Mushroom	0.00
PFUnDA	BankVole-Muscle	Mushroom	0.00
PFDoDA	BankVole-Muscle	Mushroom	0.12
PFTriDA	BankVole-Muscle	Mushroom	0.00
PFTeDA	BankVole-Muscle	Mushroom	0.00
PFBS	BankVole-Muscle	Mushroom	0.52
PFPeS	BankVole-Muscle	Mushroom	
LPFHxS	BankVole-Muscle	Mushroom	80.12
BPFHxS	BankVole-Muscle	Mushroom	14.02
PFHpS	BankVole-Muscle	Mushroom	
LPFOS	BankVole-Muscle	Mushroom	683.31
BPFOS	BankVole-Muscle	Mushroom	499.52
PFDS	BankVole-Muscle	Mushroom	
FOSA	BankVole-Muscle	Mushroom	7.84

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
6:2-FTSA	BankVole-Muscle	Mushroom	
8:2-FTSA	BankVole-Muscle	Mushroom	1.08
PFNS	BankVole-Muscle	Mushroom	
4:2-FTSA	BankVole-Muscle	Mushroom	
PFBA	BankVole-Spleen	Mushroom	0.31
PFPeA	BankVole-Spleen	Mushroom	4.52
PFHxA	BankVole-Spleen	Mushroom	1.52
PFHpA	BankVole-Spleen	Mushroom	
PFOA	BankVole-Spleen	Mushroom	4.71
PFNA	BankVole-Spleen	Mushroom	
PFDA	BankVole-Spleen	Mushroom	2.79
PFUnDA	BankVole-Spleen	Mushroom	0.72
PFDoDA	BankVole-Spleen	Mushroom	1.36
PFTriDA	BankVole-Spleen	Mushroom	2.59
PFTeDA	BankVole-Spleen	Mushroom	0.32
PFBS	BankVole-Spleen	Mushroom	1.38
PFPeS	BankVole-Spleen	Mushroom	
LPFHxS	BankVole-Spleen	Mushroom	117.17
BPFHxS	BankVole-Spleen	Mushroom	4.03
PFHpS	BankVole-Spleen	Mushroom	
LPFOS	BankVole-Spleen	Mushroom	1903.89
BPFOS	BankVole-Spleen	Mushroom	3150.16
PFDS	BankVole-Spleen	Mushroom	
FOSA	BankVole-Spleen	Mushroom	177.73
6:2-FTSA	BankVole-Spleen	Mushroom	
8:2-FTSA	BankVole-Spleen	Mushroom	2.62
PFNS	BankVole-Spleen	Mushroom	
4:2-FTSA	BankVole-Spleen	Mushroom	
PFBA	Roe-deer-Lung	Mushroom	0.02
PFPeA	Roe-deer-Lung	Mushroom	0.77
PFHxA	Roe-deer-Lung	Mushroom	0.00
PFHpA	Roe-deer-Lung	Mushroom	
PFOA	Roe-deer-Lung	Mushroom	0.00
PFNA	Roe-deer-Lung	Mushroom	
PFDA	Roe-deer-Lung	Mushroom	0.00
PFUnDA	Roe-deer-Lung	Mushroom	0.00
PFDoDA	Roe-deer-Lung	Mushroom	0.00
PFTriDA	Roe-deer-Lung	Mushroom	0.00
PFTeDA	Roe-deer-Lung	Mushroom	0.00
PFBS	Roe-deer-Lung	Mushroom	0.40
PFPeS	Roe-deer-Lung	Mushroom	
LPFHxS	Roe-deer-Lung	Mushroom	1.43
BPFHxS	Roe-deer-Lung	Mushroom	0.00
PFHpS	Roe-deer-Lung	Mushroom	
LPFOS	Roe-deer-Lung	Mushroom	11.35
BPFOS	Roe-deer-Lung	Mushroom	10.23
PFDS	Roe-deer-Lung	Mushroom	
FOSA	Roe-deer-Lung	Mushroom	0.00
6:2-FTSA	Roe-deer-Lung	Mushroom	
8:2-FTSA	Roe-deer-Lung	Mushroom	0.00

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFNS	Roe-deer-Lung	Mushroom	
4:2-FTSA	Roe-deer-Lung	Mushroom	
PFBA	Roe-deer-Liver	Mushroom	0.27
PFPeA	Roe-deer-Liver	Mushroom	1.56
PFHxA	Roe-deer-Liver	Mushroom	0.00
PFHpA	Roe-deer-Liver	Mushroom	
PFOA	Roe-deer-Liver	Mushroom	1.08
PFNA	Roe-deer-Liver	Mushroom	
PFDA	Roe-deer-Liver	Mushroom	0.00
PFUnDA	Roe-deer-Liver	Mushroom	0.03
PFDoDA	Roe-deer-Liver	Mushroom	0.00
PFTriDA	Roe-deer-Liver	Mushroom	0.00
PFTeDA	Roe-deer-Liver	Mushroom	0.00
PFBS	Roe-deer-Liver	Mushroom	0.00
PFPeS	Roe-deer-Liver	Mushroom	
LPFHxS	Roe-deer-Liver	Mushroom	26.00
BPFHxS	Roe-deer-Liver	Mushroom	0.00
PFHpS	Roe-deer-Liver	Mushroom	
LPFOS	Roe-deer-Liver	Mushroom	118.79
BPFOS	Roe-deer-Liver	Mushroom	270.41
PFDS	Roe-deer-Liver	Mushroom	
FOSA	Roe-deer-Liver	Mushroom	0.00
6:2-FTSA	Roe-deer-Liver	Mushroom	
8:2-FTSA	Roe-deer-Liver	Mushroom	0.00
PFNS	Roe-deer-Liver	Mushroom	
4:2-FTSA	Roe-deer-Liver	Mushroom	
PFBA	Roe-deer-Muscle	Mushroom	0.35
PFPeA	Roe-deer-Muscle	Mushroom	1.28
PFHxA	Roe-deer-Muscle	Mushroom	0.00
PFHpA	Roe-deer-Muscle	Mushroom	
PFOA	Roe-deer-Muscle	Mushroom	0.00
PFNA	Roe-deer-Muscle	Mushroom	
PFDA	Roe-deer-Muscle	Mushroom	0.00
PFUnDA	Roe-deer-Muscle	Mushroom	0.00
PFDoDA	Roe-deer-Muscle	Mushroom	0.00
PFTriDA	Roe-deer-Muscle	Mushroom	0.00
PFTeDA	Roe-deer-Muscle	Mushroom	0.00
PFBS	Roe-deer-Muscle	Mushroom	0.00
PFPeS	Roe-deer-Muscle	Mushroom	
LPFHxS	Roe-deer-Muscle	Mushroom	0.30
BPFHxS	Roe-deer-Muscle	Mushroom	0.00
PFHpS	Roe-deer-Muscle	Mushroom	
LPFOS	Roe-deer-Muscle	Mushroom	1.18
BPFOS	Roe-deer-Muscle	Mushroom	2.97
PFDS	Roe-deer-Muscle	Mushroom	
FOSA	Roe-deer-Muscle	Mushroom	0.00
6:2-FTSA	Roe-deer-Muscle	Mushroom	
8:2-FTSA	Roe-deer-Muscle	Mushroom	0.00
PFNS	Roe-deer-Muscle	Mushroom	
4:2-FTSA	Roe-deer-Muscle	Mushroom	

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFBA	Moose-Lung	Mushroom	0.02
PFPeA	Moose-Lung	Mushroom	0.91
PFHxA	Moose-Lung	Mushroom	0.00
PFHpA	Moose-Lung	Mushroom	
PFOA	Moose-Lung	Mushroom	0.00
PFNA	Moose-Lung	Mushroom	
PFDA	Moose-Lung	Mushroom	0.00
PFUnDA	Moose-Lung	Mushroom	0.00
PFDoDA	Moose-Lung	Mushroom	0.00
PFTriDA	Moose-Lung	Mushroom	0.00
PFTeDA	Moose-Lung	Mushroom	0.00
PFBS	Moose-Lung	Mushroom	0.00
PFPeS	Moose-Lung	Mushroom	
LPFHxS	Moose-Lung	Mushroom	0.67
BPFHxS	Moose-Lung	Mushroom	0.00
PFHpS	Moose-Lung	Mushroom	
LPFOS	Moose-Lung	Mushroom	2.75
BPFOS	Moose-Lung	Mushroom	8.62
PFDS	Moose-Lung	Mushroom	
FOSA	Moose-Lung	Mushroom	0.00
6:2-FTSA	Moose-Lung	Mushroom	
8:2-FTSA	Moose-Lung	Mushroom	0.00
PFNS	Moose-Lung	Mushroom	
4:2-FTSA	Moose-Lung	Mushroom	
PFBA	Moose-Liver	Mushroom	0.37
PFPeA	Moose-Liver	Mushroom	2.00
PFHxA	Moose-Liver	Mushroom	0.00
PFHpA	Moose-Liver	Mushroom	
PFOA	Moose-Liver	Mushroom	0.60
PFNA	Moose-Liver	Mushroom	
PFDA	Moose-Liver	Mushroom	0.00
PFUnDA	Moose-Liver	Mushroom	0.19
PFDoDA	Moose-Liver	Mushroom	0.00
PFTriDA	Moose-Liver	Mushroom	0.00
PFTeDA	Moose-Liver	Mushroom	0.00
PFBS	Moose-Liver	Mushroom	0.00
PFPeS	Moose-Liver	Mushroom	
LPFHxS	Moose-Liver	Mushroom	1.35
BPFHxS	Moose-Liver	Mushroom	0.00
PFHpS	Moose-Liver	Mushroom	
LPFOS	Moose-Liver	Mushroom	53.68
BPFOS	Moose-Liver	Mushroom	52.42
PFDS	Moose-Liver	Mushroom	
FOSA	Moose-Liver	Mushroom	0.00
6:2-FTSA	Moose-Liver	Mushroom	
8:2-FTSA	Moose-Liver	Mushroom	0.00
PFNS	Moose-Liver	Mushroom	
4:2-FTSA	Moose-Liver	Mushroom	
PFBA	Moose-Muscle	Mushroom	0.27
PFPeA	Moose-Muscle	Mushroom	1.35

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFHxA	Moose-Muscle	Mushroom	0.00
PFHpA	Moose-Muscle	Mushroom	
PFOA	Moose-Muscle	Mushroom	0.00
PFNA	Moose-Muscle	Mushroom	
PFDA	Moose-Muscle	Mushroom	0.00
PFUnDA	Moose-Muscle	Mushroom	0.00
PFDoDA	Moose-Muscle	Mushroom	0.00
PFTriDA	Moose-Muscle	Mushroom	0.00
PFTeDA	Moose-Muscle	Mushroom	0.00
PFBS	Moose-Muscle	Mushroom	0.00
PFPeS	Moose-Muscle	Mushroom	
LPFHxS	Moose-Muscle	Mushroom	0.00
BPFHxS	Moose-Muscle	Mushroom	0.00
PFHpS	Moose-Muscle	Mushroom	
LPFOS	Moose-Muscle	Mushroom	0.00
BPFOS	Moose-Muscle	Mushroom	0.97
PFDS	Moose-Muscle	Mushroom	
FOSA	Moose-Muscle	Mushroom	0.00
6:2-FTSA	Moose-Muscle	Mushroom	
8:2-FTSA	Moose-Muscle	Mushroom	0.00
PFNS	Moose-Muscle	Mushroom	
4:2-FTSA	Moose-Muscle	Mushroom	
PFBA	BankVole-Heart	Blueberry	2.23
PFPeA	BankVole-Heart	Blueberry	1.96
PFHxA	BankVole-Heart	Blueberry	2.02
PFHpA	BankVole-Heart	Blueberry	
PFOA	BankVole-Heart	Blueberry	5.60
PFNA	BankVole-Heart	Blueberry	7.49
PFDA	BankVole-Heart	Blueberry	
PFUnDA	BankVole-Heart	Blueberry	
PFDoDA	BankVole-Heart	Blueberry	
PFTriDA	BankVole-Heart	Blueberry	
PFTeDA	BankVole-Heart	Blueberry	
PFBS	BankVole-Heart	Blueberry	10.81
PFPeS	BankVole-Heart	Blueberry	
LPFHxS	BankVole-Heart	Blueberry	
BPFHxS	BankVole-Heart	Blueberry	
PFHpS	BankVole-Heart	Blueberry	
LPFOS	BankVole-Heart	Blueberry	
BPFOS	BankVole-Heart	Blueberry	
PFDS	BankVole-Heart	Blueberry	
FOSA	BankVole-Heart	Blueberry	
6:2-FTSA	BankVole-Heart	Blueberry	
8:2-FTSA	BankVole-Heart	Blueberry	
PFNS	BankVole-Heart	Blueberry	
4:2-FTSA	BankVole-Heart	Blueberry	
PFBA	BankVole-Kidney	Blueberry	4.59
PFPeA	BankVole-Kidney	Blueberry	1.95
PFHxA	BankVole-Kidney	Blueberry	2.80
PFHpA	BankVole-Kidney	Blueberry	

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFOA	BankVole-Kidney	Blueberry	13.69
PFNA	BankVole-Kidney	Blueberry	141.69
PFDA	BankVole-Kidney	Blueberry	
PFUnDA	BankVole-Kidney	Blueberry	
PFDoDA	BankVole-Kidney	Blueberry	
PFTriDA	BankVole-Kidney	Blueberry	
PFTeDA	BankVole-Kidney	Blueberry	
PFBS	BankVole-Kidney	Blueberry	16.28
PFPeS	BankVole-Kidney	Blueberry	
LPFHxS	BankVole-Kidney	Blueberry	
BPFHxS	BankVole-Kidney	Blueberry	
PFHpS	BankVole-Kidney	Blueberry	
LPFOS	BankVole-Kidney	Blueberry	
BPFOS	BankVole-Kidney	Blueberry	
PFDS	BankVole-Kidney	Blueberry	
FOSA	BankVole-Kidney	Blueberry	
6:2-FTSA	BankVole-Kidney	Blueberry	
8:2-FTSA	BankVole-Kidney	Blueberry	
PFNS	BankVole-Kidney	Blueberry	
4:2-FTSA	BankVole-Kidney	Blueberry	
PFBA	BankVole-Liver	Blueberry	3.36
PFPeA	BankVole-Liver	Blueberry	26.22
PFHxA	BankVole-Liver	Blueberry	0.82
PFHpA	BankVole-Liver	Blueberry	
PFOA	BankVole-Liver	Blueberry	13.71
PFNA	BankVole-Liver	Blueberry	337.91
PFDA	BankVole-Liver	Blueberry	
PFUnDA	BankVole-Liver	Blueberry	
PFDoDA	BankVole-Liver	Blueberry	
PFTriDA	BankVole-Liver	Blueberry	
PFTeDA	BankVole-Liver	Blueberry	
PFBS	BankVole-Liver	Blueberry	20.58
PFPeS	BankVole-Liver	Blueberry	
LPFHxS	BankVole-Liver	Blueberry	
BPFHxS	BankVole-Liver	Blueberry	
PFHpS	BankVole-Liver	Blueberry	
LPFOS	BankVole-Liver	Blueberry	
BPFOS	BankVole-Liver	Blueberry	
PFDS	BankVole-Liver	Blueberry	
FOSA	BankVole-Liver	Blueberry	
6:2-FTSA	BankVole-Liver	Blueberry	
8:2-FTSA	BankVole-Liver	Blueberry	
PFNS	BankVole-Liver	Blueberry	
4:2-FTSA	BankVole-Liver	Blueberry	
PFBA	BankVole-Muscle	Blueberry	1.45
PFPeA	BankVole-Muscle	Blueberry	0.11
PFHxA	BankVole-Muscle	Blueberry	0.00
PFHpA	BankVole-Muscle	Blueberry	
PFOA	BankVole-Muscle	Blueberry	9.12
PFNA	BankVole-Muscle	Blueberry	0.00

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFDA	BankVole-Muscle	Blueberry	
PFUnDA	BankVole-Muscle	Blueberry	
PFDoDA	BankVole-Muscle	Blueberry	
PFTriDA	BankVole-Muscle	Blueberry	
PFTeDA	BankVole-Muscle	Blueberry	
PFBS	BankVole-Muscle	Blueberry	9.72
PFPeS	BankVole-Muscle	Blueberry	
LPFHxS	BankVole-Muscle	Blueberry	
BPFHxS	BankVole-Muscle	Blueberry	
PFHpS	BankVole-Muscle	Blueberry	
LPFOS	BankVole-Muscle	Blueberry	
BPFOS	BankVole-Muscle	Blueberry	
PFDS	BankVole-Muscle	Blueberry	
FOSA	BankVole-Muscle	Blueberry	
6:2-FTSA	BankVole-Muscle	Blueberry	
8:2-FTSA	BankVole-Muscle	Blueberry	
PFNS	BankVole-Muscle	Blueberry	
4:2-FTSA	BankVole-Muscle	Blueberry	
PFBA	BankVole-Spleen	Blueberry	2.08
PFPeA	BankVole-Spleen	Blueberry	12.82
PFHxA	BankVole-Spleen	Blueberry	4.49
PFHpA	BankVole-Spleen	Blueberry	
PFOA	BankVole-Spleen	Blueberry	11.82
PFNA	BankVole-Spleen	Blueberry	0.00
PFDA	BankVole-Spleen	Blueberry	
PFUnDA	BankVole-Spleen	Blueberry	
PFDoDA	BankVole-Spleen	Blueberry	
PFTriDA	BankVole-Spleen	Blueberry	
PFTeDA	BankVole-Spleen	Blueberry	
PFBS	BankVole-Spleen	Blueberry	25.64
PFPeS	BankVole-Spleen	Blueberry	
LPFHxS	BankVole-Spleen	Blueberry	
BPFHxS	BankVole-Spleen	Blueberry	
PFHpS	BankVole-Spleen	Blueberry	
LPFOS	BankVole-Spleen	Blueberry	
BPFOS	BankVole-Spleen	Blueberry	
PFDS	BankVole-Spleen	Blueberry	
FOSA	BankVole-Spleen	Blueberry	
6:2-FTSA	BankVole-Spleen	Blueberry	
8:2-FTSA	BankVole-Spleen	Blueberry	
PFNS	BankVole-Spleen	Blueberry	
4:2-FTSA	BankVole-Spleen	Blueberry	
PFBA	Roe-deer-Lung	Blueberry	0.11
PFPeA	Roe-deer-Lung	Blueberry	2.18
PFHxA	Roe-deer-Lung	Blueberry	0.00
PFHpA	Roe-deer-Lung	Blueberry	
PFOA	Roe-deer-Lung	Blueberry	0.00
PFNA	Roe-deer-Lung	Blueberry	0.00
PFDA	Roe-deer-Lung	Blueberry	
PFUnDA	Roe-deer-Lung	Blueberry	

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFDoDA	Roe-deer-Lung	Blueberry	
PFTriDA	Roe-deer-Lung	Blueberry	
PFTeDA	Roe-deer-Lung	Blueberry	
PFBS	Roe-deer-Lung	Blueberry	7.51
PFPeS	Roe-deer-Lung	Blueberry	
LPFHxS	Roe-deer-Lung	Blueberry	
BPFHxS	Roe-deer-Lung	Blueberry	
PFHpS	Roe-deer-Lung	Blueberry	
LPFOS	Roe-deer-Lung	Blueberry	
BPFOS	Roe-deer-Lung	Blueberry	
PFDS	Roe-deer-Lung	Blueberry	
FOSA	Roe-deer-Lung	Blueberry	
6:2-FTSA	Roe-deer-Lung	Blueberry	
8:2-FTSA	Roe-deer-Lung	Blueberry	
PFNS	Roe-deer-Lung	Blueberry	
4:2-FTSA	Roe-deer-Lung	Blueberry	
PFBA	Roe-deer-Liver	Blueberry	1.87
PFPeA	Roe-deer-Liver	Blueberry	4.42
PFHxA	Roe-deer-Liver	Blueberry	0.00
PFHpA	Roe-deer-Liver	Blueberry	
PFOA	Roe-deer-Liver	Blueberry	2.71
PFNA	Roe-deer-Liver	Blueberry	26.48
PFDA	Roe-deer-Liver	Blueberry	
PFUnDA	Roe-deer-Liver	Blueberry	
PFDoDA	Roe-deer-Liver	Blueberry	
PFTriDA	Roe-deer-Liver	Blueberry	
PFTeDA	Roe-deer-Liver	Blueberry	
PFBS	Roe-deer-Liver	Blueberry	0.00
PFPeS	Roe-deer-Liver	Blueberry	
LPFHxS	Roe-deer-Liver	Blueberry	
BPFHxS	Roe-deer-Liver	Blueberry	
PFHpS	Roe-deer-Liver	Blueberry	
LPFOS	Roe-deer-Liver	Blueberry	
BPFOS	Roe-deer-Liver	Blueberry	
PFDS	Roe-deer-Liver	Blueberry	
FOSA	Roe-deer-Liver	Blueberry	
6:2-FTSA	Roe-deer-Liver	Blueberry	
8:2-FTSA	Roe-deer-Liver	Blueberry	
PFNS	Roe-deer-Liver	Blueberry	
4:2-FTSA	Roe-deer-Liver	Blueberry	
PFBA	Roe-deer-Muscle	Blueberry	2.41
PFPeA	Roe-deer-Muscle	Blueberry	3.63
PFHxA	Roe-deer-Muscle	Blueberry	0.00
PFHpA	Roe-deer-Muscle	Blueberry	
PFOA	Roe-deer-Muscle	Blueberry	0.00
PFNA	Roe-deer-Muscle	Blueberry	0.00
PFDA	Roe-deer-Muscle	Blueberry	
PFUnDA	Roe-deer-Muscle	Blueberry	
PFDoDA	Roe-deer-Muscle	Blueberry	
PFTriDA	Roe-deer-Muscle	Blueberry	

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFTeDA	Roe-deer-Muscle	Blueberry	
PFBS	Roe-deer-Muscle	Blueberry	0.00
PFPeS	Roe-deer-Muscle	Blueberry	
LPFHxS	Roe-deer-Muscle	Blueberry	
BPFHxS	Roe-deer-Muscle	Blueberry	
PFHpS	Roe-deer-Muscle	Blueberry	
LPFOS	Roe-deer-Muscle	Blueberry	
BPFOS	Roe-deer-Muscle	Blueberry	
PFDS	Roe-deer-Muscle	Blueberry	
FOSA	Roe-deer-Muscle	Blueberry	
6:2-FTSA	Roe-deer-Muscle	Blueberry	
8:2-FTSA	Roe-deer-Muscle	Blueberry	
PFNS	Roe-deer-Muscle	Blueberry	
4:2-FTSA	Roe-deer-Muscle	Blueberry	
PFBA	Moose-Lung	Blueberry	0.15
PFPeA	Moose-Lung	Blueberry	2.59
PFHxA	Moose-Lung	Blueberry	0.00
PFHpA	Moose-Lung	Blueberry	
PFOA	Moose-Lung	Blueberry	0.00
PFNA	Moose-Lung	Blueberry	0.00
PFDA	Moose-Lung	Blueberry	
PFUnDA	Moose-Lung	Blueberry	
PFDoDA	Moose-Lung	Blueberry	
PFTriDA	Moose-Lung	Blueberry	
PFTeDA	Moose-Lung	Blueberry	
PFBS	Moose-Lung	Blueberry	0.00
PFPeS	Moose-Lung	Blueberry	
LPFHxS	Moose-Lung	Blueberry	
BPFHxS	Moose-Lung	Blueberry	
PFHpS	Moose-Lung	Blueberry	
LPFOS	Moose-Lung	Blueberry	
BPFOS	Moose-Lung	Blueberry	
PFDS	Moose-Lung	Blueberry	
FOSA	Moose-Lung	Blueberry	
6:2-FTSA	Moose-Lung	Blueberry	
8:2-FTSA	Moose-Lung	Blueberry	
PFNS	Moose-Lung	Blueberry	
4:2-FTSA	Moose-Lung	Blueberry	
PFBA	Moose-Liver	Blueberry	2.54
PFPeA	Moose-Liver	Blueberry	5.68
PFHxA	Moose-Liver	Blueberry	0.00
PFHpA	Moose-Liver	Blueberry	
PFOA	Moose-Liver	Blueberry	1.50
PFNA	Moose-Liver	Blueberry	3.67
PFDA	Moose-Liver	Blueberry	
PFUnDA	Moose-Liver	Blueberry	
PFDoDA	Moose-Liver	Blueberry	
PFTriDA	Moose-Liver	Blueberry	
PFTeDA	Moose-Liver	Blueberry	
PFBS	Moose-Liver	Blueberry	0.00

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFPeS	Moose-Liver	Blueberry	
LPFHxS	Moose-Liver	Blueberry	
BPFHxS	Moose-Liver	Blueberry	
PFHpS	Moose-Liver	Blueberry	
LPFOS	Moose-Liver	Blueberry	
BPFOS	Moose-Liver	Blueberry	
PFDS	Moose-Liver	Blueberry	
FOSA	Moose-Liver	Blueberry	
6:2-FTSA	Moose-Liver	Blueberry	
8:2-FTSA	Moose-Liver	Blueberry	
PFNS	Moose-Liver	Blueberry	
4:2-FTSA	Moose-Liver	Blueberry	
PFBA	Moose-Muscle	Blueberry	1.87
PFPeA	Moose-Muscle	Blueberry	3.84
PFHxA	Moose-Muscle	Blueberry	0.00
PFHpA	Moose-Muscle	Blueberry	
PFOA	Moose-Muscle	Blueberry	0.00
PFNA	Moose-Muscle	Blueberry	0.00
PFDA	Moose-Muscle	Blueberry	
PFUnDA	Moose-Muscle	Blueberry	
PFDoDA	Moose-Muscle	Blueberry	
PFTriDA	Moose-Muscle	Blueberry	
PFTeDA	Moose-Muscle	Blueberry	
PFBS	Moose-Muscle	Blueberry	0.00
PFPeS	Moose-Muscle	Blueberry	
LPFHxS	Moose-Muscle	Blueberry	
BPFHxS	Moose-Muscle	Blueberry	
PFHpS	Moose-Muscle	Blueberry	
LPFOS	Moose-Muscle	Blueberry	
BPFOS	Moose-Muscle	Blueberry	
PFDS	Moose-Muscle	Blueberry	
FOSA	Moose-Muscle	Blueberry	
6:2-FTSA	Moose-Muscle	Blueberry	
8:2-FTSA	Moose-Muscle	Blueberry	
PFNS	Moose-Muscle	Blueberry	
4:2-FTSA	Moose-Muscle	Blueberry	
PFBA	BankVole-Heart	Raspberry	5.11
PFPeA	BankVole-Heart	Raspberry	8.02
PFHxA	BankVole-Heart	Raspberry	3.00
PFHpA	BankVole-Heart	Raspberry	
PFOA	BankVole-Heart	Raspberry	11.22
PFNA	BankVole-Heart	Raspberry	
PFDA	BankVole-Heart	Raspberry	
PFUnDA	BankVole-Heart	Raspberry	
PFDoDA	BankVole-Heart	Raspberry	
PFTriDA	BankVole-Heart	Raspberry	
PFTeDA	BankVole-Heart	Raspberry	
PFBS	BankVole-Heart	Raspberry	
PFPeS	BankVole-Heart	Raspberry	
LPFHxS	BankVole-Heart	Raspberry	

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
BPFHxS	BankVole-Heart	Raspberry	
PFHpS	BankVole-Heart	Raspberry	
LPFOS	BankVole-Heart	Raspberry	
BPFOS	BankVole-Heart	Raspberry	
PFDS	BankVole-Heart	Raspberry	
FOSA	BankVole-Heart	Raspberry	
6:2-FTSA	BankVole-Heart	Raspberry	
8:2-FTSA	BankVole-Heart	Raspberry	
PFNS	BankVole-Heart	Raspberry	
4:2-FTSA	BankVole-Heart	Raspberry	
PFBA	BankVole-Kidney	Raspberry	10.53
PFPeA	BankVole-Kidney	Raspberry	7.97
PFHxA	BankVole-Kidney	Raspberry	4.17
PFHpA	BankVole-Kidney	Raspberry	
PFOA	BankVole-Kidney	Raspberry	27.40
PFNA	BankVole-Kidney	Raspberry	
PFDA	BankVole-Kidney	Raspberry	
PFUnDA	BankVole-Kidney	Raspberry	
PFDoDA	BankVole-Kidney	Raspberry	
PFTriDA	BankVole-Kidney	Raspberry	
PFTeDA	BankVole-Kidney	Raspberry	
PFBS	BankVole-Kidney	Raspberry	
PFPeS	BankVole-Kidney	Raspberry	
LPFHxS	BankVole-Kidney	Raspberry	
BPFHxS	BankVole-Kidney	Raspberry	
PFHpS	BankVole-Kidney	Raspberry	
LPFOS	BankVole-Kidney	Raspberry	
BPFOS	BankVole-Kidney	Raspberry	
PFDS	BankVole-Kidney	Raspberry	
FOSA	BankVole-Kidney	Raspberry	
6:2-FTSA	BankVole-Kidney	Raspberry	
8:2-FTSA	BankVole-Kidney	Raspberry	
PFNS	BankVole-Kidney	Raspberry	
4:2-FTSA	BankVole-Kidney	Raspberry	
PFBA	BankVole-Liver	Raspberry	7.71
PFPeA	BankVole-Liver	Raspberry	107.23
PFHxA	BankVole-Liver	Raspberry	1.21
PFHpA	BankVole-Liver	Raspberry	
PFOA	BankVole-Liver	Raspberry	27.44
PFNA	BankVole-Liver	Raspberry	
PFDA	BankVole-Liver	Raspberry	
PFUnDA	BankVole-Liver	Raspberry	
PFDoDA	BankVole-Liver	Raspberry	
PFTriDA	BankVole-Liver	Raspberry	
PFTeDA	BankVole-Liver	Raspberry	
PFBS	BankVole-Liver	Raspberry	
PFPeS	BankVole-Liver	Raspberry	
LPFHxS	BankVole-Liver	Raspberry	
BPFHxS	BankVole-Liver	Raspberry	
PFHpS	BankVole-Liver	Raspberry	

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
LPFOS	BankVole-Liver	Raspberry	
BPFOS	BankVole-Liver	Raspberry	
PFDS	BankVole-Liver	Raspberry	
FOSA	BankVole-Liver	Raspberry	
6:2-FTSA	BankVole-Liver	Raspberry	
8:2-FTSA	BankVole-Liver	Raspberry	
PFNS	BankVole-Liver	Raspberry	
4:2-FTSA	BankVole-Liver	Raspberry	
PFBA	BankVole-Muscle	Raspberry	3.32
PFPeA	BankVole-Muscle	Raspberry	0.46
PFHxA	BankVole-Muscle	Raspberry	0.00
PFHpA	BankVole-Muscle	Raspberry	
PFOA	BankVole-Muscle	Raspberry	18.26
PFNA	BankVole-Muscle	Raspberry	
PFDA	BankVole-Muscle	Raspberry	
PFUnDA	BankVole-Muscle	Raspberry	
PFDoDA	BankVole-Muscle	Raspberry	
PFTriDA	BankVole-Muscle	Raspberry	
PFTeDA	BankVole-Muscle	Raspberry	
PFBS	BankVole-Muscle	Raspberry	
PFPeS	BankVole-Muscle	Raspberry	
LPFHxS	BankVole-Muscle	Raspberry	
BPFHxS	BankVole-Muscle	Raspberry	
PFHpS	BankVole-Muscle	Raspberry	
LPFOS	BankVole-Muscle	Raspberry	
BPFOS	BankVole-Muscle	Raspberry	
PFDS	BankVole-Muscle	Raspberry	
FOSA	BankVole-Muscle	Raspberry	
6:2-FTSA	BankVole-Muscle	Raspberry	
8:2-FTSA	BankVole-Muscle	Raspberry	
PFNS	BankVole-Muscle	Raspberry	
4:2-FTSA	BankVole-Muscle	Raspberry	
PFBA	BankVole-Spleen	Raspberry	4.78
PFPeA	BankVole-Spleen	Raspberry	52.43
PFHxA	BankVole-Spleen	Raspberry	6.69
PFHpA	BankVole-Spleen	Raspberry	
PFOA	BankVole-Spleen	Raspberry	23.66
PFNA	BankVole-Spleen	Raspberry	
PFDA	BankVole-Spleen	Raspberry	
PFUnDA	BankVole-Spleen	Raspberry	
PFDoDA	BankVole-Spleen	Raspberry	
PFTriDA	BankVole-Spleen	Raspberry	
PFTeDA	BankVole-Spleen	Raspberry	
PFBS	BankVole-Spleen	Raspberry	
PFPeS	BankVole-Spleen	Raspberry	
LPFHxS	BankVole-Spleen	Raspberry	
BPFHxS	BankVole-Spleen	Raspberry	
PFHpS	BankVole-Spleen	Raspberry	
LPFOS	BankVole-Spleen	Raspberry	
BPFOS	BankVole-Spleen	Raspberry	

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFDS	BankVole-Spleen	Raspberry	
FOSA	BankVole-Spleen	Raspberry	
6:2-FTSA	BankVole-Spleen	Raspberry	
8:2-FTSA	BankVole-Spleen	Raspberry	
PFNS	BankVole-Spleen	Raspberry	
4:2-FTSA	BankVole-Spleen	Raspberry	
PFBA	Roe-deer-Lung	Raspberry	0.25
PFPeA	Roe-deer-Lung	Raspberry	8.92
PFHxA	Roe-deer-Lung	Raspberry	0.00
PFHpA	Roe-deer-Lung	Raspberry	
PFOA	Roe-deer-Lung	Raspberry	0.00
PFNA	Roe-deer-Lung	Raspberry	
PFDA	Roe-deer-Lung	Raspberry	
PFUnDA	Roe-deer-Lung	Raspberry	
PFDoDA	Roe-deer-Lung	Raspberry	
PFTriDA	Roe-deer-Lung	Raspberry	
PFTeDA	Roe-deer-Lung	Raspberry	
PFBS	Roe-deer-Lung	Raspberry	
PFPeS	Roe-deer-Lung	Raspberry	
LPFHxS	Roe-deer-Lung	Raspberry	
BPFHxS	Roe-deer-Lung	Raspberry	
PFHpS	Roe-deer-Lung	Raspberry	
LPFOS	Roe-deer-Lung	Raspberry	
BPFOS	Roe-deer-Lung	Raspberry	
PFDS	Roe-deer-Lung	Raspberry	
FOSA	Roe-deer-Lung	Raspberry	
6:2-FTSA	Roe-deer-Lung	Raspberry	
8:2-FTSA	Roe-deer-Lung	Raspberry	
PFNS	Roe-deer-Lung	Raspberry	
4:2-FTSA	Roe-deer-Lung	Raspberry	
PFBA	Roe-deer-Liver	Raspberry	4.30
PFPeA	Roe-deer-Liver	Raspberry	18.07
PFHxA	Roe-deer-Liver	Raspberry	0.00
PFHpA	Roe-deer-Liver	Raspberry	
PFOA	Roe-deer-Liver	Raspberry	5.43
PFNA	Roe-deer-Liver	Raspberry	
PFDA	Roe-deer-Liver	Raspberry	
PFUnDA	Roe-deer-Liver	Raspberry	
PFDoDA	Roe-deer-Liver	Raspberry	
PFTriDA	Roe-deer-Liver	Raspberry	
PFTeDA	Roe-deer-Liver	Raspberry	
PFBS	Roe-deer-Liver	Raspberry	
PFPeS	Roe-deer-Liver	Raspberry	
LPFHxS	Roe-deer-Liver	Raspberry	
BPFHxS	Roe-deer-Liver	Raspberry	
PFHpS	Roe-deer-Liver	Raspberry	
LPFOS	Roe-deer-Liver	Raspberry	
BPFOS	Roe-deer-Liver	Raspberry	
PFDS	Roe-deer-Liver	Raspberry	
FOSA	Roe-deer-Liver	Raspberry	

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
6:2-FTSA	Roe-deer-Liver	Raspberry	
8:2-FTSA	Roe-deer-Liver	Raspberry	
PFNS	Roe-deer-Liver	Raspberry	
4:2-FTSA	Roe-deer-Liver	Raspberry	
PFBA	Roe-deer-Muscle	Raspberry	5.54
PFPeA	Roe-deer-Muscle	Raspberry	14.84
PFHxA	Roe-deer-Muscle	Raspberry	0.00
PFHpA	Roe-deer-Muscle	Raspberry	
PFOA	Roe-deer-Muscle	Raspberry	0.00
PFNA	Roe-deer-Muscle	Raspberry	
PFDA	Roe-deer-Muscle	Raspberry	
PFUnDA	Roe-deer-Muscle	Raspberry	
PFDoDA	Roe-deer-Muscle	Raspberry	
PFTriDA	Roe-deer-Muscle	Raspberry	
PFTeDA	Roe-deer-Muscle	Raspberry	
PFBS	Roe-deer-Muscle	Raspberry	
PFPeS	Roe-deer-Muscle	Raspberry	
LPFHxS	Roe-deer-Muscle	Raspberry	
BPFHxS	Roe-deer-Muscle	Raspberry	
PFHpS	Roe-deer-Muscle	Raspberry	
LPFOS	Roe-deer-Muscle	Raspberry	
BPFOS	Roe-deer-Muscle	Raspberry	
PFDS	Roe-deer-Muscle	Raspberry	
FOSA	Roe-deer-Muscle	Raspberry	
6:2-FTSA	Roe-deer-Muscle	Raspberry	
8:2-FTSA	Roe-deer-Muscle	Raspberry	
PFNS	Roe-deer-Muscle	Raspberry	
4:2-FTSA	Roe-deer-Muscle	Raspberry	
PFBA	Moose-Lung	Raspberry	0.35
PFPeA	Moose-Lung	Raspberry	10.58
PFHxA	Moose-Lung	Raspberry	0.00
PFHpA	Moose-Lung	Raspberry	
PFOA	Moose-Lung	Raspberry	0.00
PFNA	Moose-Lung	Raspberry	
PFDA	Moose-Lung	Raspberry	
PFUnDA	Moose-Lung	Raspberry	
PFDoDA	Moose-Lung	Raspberry	
PFTriDA	Moose-Lung	Raspberry	
PFTeDA	Moose-Lung	Raspberry	
PFBS	Moose-Lung	Raspberry	
PFPeS	Moose-Lung	Raspberry	
LPFHxS	Moose-Lung	Raspberry	
BPFHxS	Moose-Lung	Raspberry	
PFHpS	Moose-Lung	Raspberry	
LPFOS	Moose-Lung	Raspberry	
BPFOS	Moose-Lung	Raspberry	
PFDS	Moose-Lung	Raspberry	
FOSA	Moose-Lung	Raspberry	
6:2-FTSA	Moose-Lung	Raspberry	
8:2-FTSA	Moose-Lung	Raspberry	

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFNS	Moose-Lung	Raspberry	
4:2-FTSA	Moose-Lung	Raspberry	
PFBA	Moose-Liver	Raspberry	5.82
PFPeA	Moose-Liver	Raspberry	23.22
PFHxA	Moose-Liver	Raspberry	0.00
PFHpA	Moose-Liver	Raspberry	
PFOA	Moose-Liver	Raspberry	3.00
PFNA	Moose-Liver	Raspberry	
PFDA	Moose-Liver	Raspberry	
PFUnDA	Moose-Liver	Raspberry	
PFDoDA	Moose-Liver	Raspberry	
PFTriDA	Moose-Liver	Raspberry	
PFTeDA	Moose-Liver	Raspberry	
PFBS	Moose-Liver	Raspberry	
PFPeS	Moose-Liver	Raspberry	
LPFHxS	Moose-Liver	Raspberry	
BPFHxS	Moose-Liver	Raspberry	
PFHpS	Moose-Liver	Raspberry	
LPFOS	Moose-Liver	Raspberry	
BPFOS	Moose-Liver	Raspberry	
PFDS	Moose-Liver	Raspberry	
FOSA	Moose-Liver	Raspberry	
6:2-FTSA	Moose-Liver	Raspberry	
8:2-FTSA	Moose-Liver	Raspberry	
PFNS	Moose-Liver	Raspberry	
4:2-FTSA	Moose-Liver	Raspberry	
PFBA	Moose-Muscle	Raspberry	4.29
PFPeA	Moose-Muscle	Raspberry	15.72
PFHxA	Moose-Muscle	Raspberry	0.00
PFHpA	Moose-Muscle	Raspberry	
PFOA	Moose-Muscle	Raspberry	0.00
PFNA	Moose-Muscle	Raspberry	
PFDA	Moose-Muscle	Raspberry	
PFUnDA	Moose-Muscle	Raspberry	
PFDoDA	Moose-Muscle	Raspberry	
PFTriDA	Moose-Muscle	Raspberry	
PFTeDA	Moose-Muscle	Raspberry	
PFBS	Moose-Muscle	Raspberry	
PFPeS	Moose-Muscle	Raspberry	
LPFHxS	Moose-Muscle	Raspberry	
BPFHxS	Moose-Muscle	Raspberry	
PFHpS	Moose-Muscle	Raspberry	
LPFOS	Moose-Muscle	Raspberry	
BPFOS	Moose-Muscle	Raspberry	
PFDS	Moose-Muscle	Raspberry	
FOSA	Moose-Muscle	Raspberry	
6:2-FTSA	Moose-Muscle	Raspberry	
8:2-FTSA	Moose-Muscle	Raspberry	
PFNS	Moose-Muscle	Raspberry	
4:2-FTSA	Moose-Muscle	Raspberry	

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFBA	BankVole-Heart	Lingonberry	32.56
PFPeA	BankVole-Heart	Lingonberry	
PFHxA	BankVole-Heart	Lingonberry	1.57
PFHpA	BankVole-Heart	Lingonberry	
PFOA	BankVole-Heart	Lingonberry	12.47
PFNA	BankVole-Heart	Lingonberry	
PFDA	BankVole-Heart	Lingonberry	
PFUnDA	BankVole-Heart	Lingonberry	
PFDoDA	BankVole-Heart	Lingonberry	
PFTriDA	BankVole-Heart	Lingonberry	
PFTeDA	BankVole-Heart	Lingonberry	
PFBS	BankVole-Heart	Lingonberry	2.42
PFPeS	BankVole-Heart	Lingonberry	48.86
LPFHxS	BankVole-Heart	Lingonberry	
BPFHxS	BankVole-Heart	Lingonberry	
PFHpS	BankVole-Heart	Lingonberry	
LPFOS	BankVole-Heart	Lingonberry	
BPFOS	BankVole-Heart	Lingonberry	
PFDS	BankVole-Heart	Lingonberry	
FOSA	BankVole-Heart	Lingonberry	
6:2-FTSA	BankVole-Heart	Lingonberry	
8:2-FTSA	BankVole-Heart	Lingonberry	
PFNS	BankVole-Heart	Lingonberry	
4:2-FTSA	BankVole-Heart	Lingonberry	
PFBA	BankVole-Kidney	Lingonberry	67.06
PFPeA	BankVole-Kidney	Lingonberry	
PFHxA	BankVole-Kidney	Lingonberry	2.19
PFHpA	BankVole-Kidney	Lingonberry	
PFOA	BankVole-Kidney	Lingonberry	30.47
PFNA	BankVole-Kidney	Lingonberry	
PFDA	BankVole-Kidney	Lingonberry	
PFUnDA	BankVole-Kidney	Lingonberry	
PFDoDA	BankVole-Kidney	Lingonberry	
PFTriDA	BankVole-Kidney	Lingonberry	
PFTeDA	BankVole-Kidney	Lingonberry	
PFBS	BankVole-Kidney	Lingonberry	3.64
PFPeS	BankVole-Kidney	Lingonberry	82.45
LPFHxS	BankVole-Kidney	Lingonberry	
BPFHxS	BankVole-Kidney	Lingonberry	
PFHpS	BankVole-Kidney	Lingonberry	
LPFOS	BankVole-Kidney	Lingonberry	
BPFOS	BankVole-Kidney	Lingonberry	
PFDS	BankVole-Kidney	Lingonberry	
FOSA	BankVole-Kidney	Lingonberry	
6:2-FTSA	BankVole-Kidney	Lingonberry	
8:2-FTSA	BankVole-Kidney	Lingonberry	
PFNS	BankVole-Kidney	Lingonberry	
4:2-FTSA	BankVole-Kidney	Lingonberry	
PFBA	BankVole-Liver	Lingonberry	49.06
PFPeA	BankVole-Liver	Lingonberry	

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFHxA	BankVole-Liver	Lingonberry	0.64
PFHpA	BankVole-Liver	Lingonberry	
PFOA	BankVole-Liver	Lingonberry	30.52
PFNA	BankVole-Liver	Lingonberry	
PFDA	BankVole-Liver	Lingonberry	
PFUnDA	BankVole-Liver	Lingonberry	
PFDoDA	BankVole-Liver	Lingonberry	
PFTriDA	BankVole-Liver	Lingonberry	
PFTeDA	BankVole-Liver	Lingonberry	
PFBS	BankVole-Liver	Lingonberry	4.60
PFPeS	BankVole-Liver	Lingonberry	114.80
LPFHxS	BankVole-Liver	Lingonberry	
BPFHxS	BankVole-Liver	Lingonberry	
PFHpS	BankVole-Liver	Lingonberry	
LPFOS	BankVole-Liver	Lingonberry	
BPFOS	BankVole-Liver	Lingonberry	
PFDS	BankVole-Liver	Lingonberry	
FOSA	BankVole-Liver	Lingonberry	
6:2-FTSA	BankVole-Liver	Lingonberry	
8:2-FTSA	BankVole-Liver	Lingonberry	
PFNS	BankVole-Liver	Lingonberry	
4:2-FTSA	BankVole-Liver	Lingonberry	
PFBA	BankVole-Muscle	Lingonberry	21.14
PFPeA	BankVole-Muscle	Lingonberry	
PFHxA	BankVole-Muscle	Lingonberry	0.00
PFHpA	BankVole-Muscle	Lingonberry	
PFOA	BankVole-Muscle	Lingonberry	20.30
PFNA	BankVole-Muscle	Lingonberry	
PFDA	BankVole-Muscle	Lingonberry	
PFUnDA	BankVole-Muscle	Lingonberry	
PFDoDA	BankVole-Muscle	Lingonberry	
PFTriDA	BankVole-Muscle	Lingonberry	
PFTeDA	BankVole-Muscle	Lingonberry	
PFBS	BankVole-Muscle	Lingonberry	2.17
PFPeS	BankVole-Muscle	Lingonberry	15.35
LPFHxS	BankVole-Muscle	Lingonberry	
BPFHxS	BankVole-Muscle	Lingonberry	
PFHpS	BankVole-Muscle	Lingonberry	
LPFOS	BankVole-Muscle	Lingonberry	
BPFOS	BankVole-Muscle	Lingonberry	
PFDS	BankVole-Muscle	Lingonberry	
FOSA	BankVole-Muscle	Lingonberry	
6:2-FTSA	BankVole-Muscle	Lingonberry	
8:2-FTSA	BankVole-Muscle	Lingonberry	
PFNS	BankVole-Muscle	Lingonberry	
4:2-FTSA	BankVole-Muscle	Lingonberry	
PFBA	BankVole-Spleen	Lingonberry	30.43
PFPeA	BankVole-Spleen	Lingonberry	
PFHxA	BankVole-Spleen	Lingonberry	3.51
PFHpA	BankVole-Spleen	Lingonberry	

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFOA	BankVole-Spleen	Lingonberry	26.32
PFNA	BankVole-Spleen	Lingonberry	
PFDA	BankVole-Spleen	Lingonberry	
PFUnDA	BankVole-Spleen	Lingonberry	
PFDoDA	BankVole-Spleen	Lingonberry	
PFTriDA	BankVole-Spleen	Lingonberry	
PFTeDA	BankVole-Spleen	Lingonberry	
PFBS	BankVole-Spleen	Lingonberry	5.74
PFPeS	BankVole-Spleen	Lingonberry	13.86
LPFHxS	BankVole-Spleen	Lingonberry	
BPFHxS	BankVole-Spleen	Lingonberry	
PFHpS	BankVole-Spleen	Lingonberry	
LPFOS	BankVole-Spleen	Lingonberry	
BPFOS	BankVole-Spleen	Lingonberry	
PFDS	BankVole-Spleen	Lingonberry	
FOSA	BankVole-Spleen	Lingonberry	
6:2-FTSA	BankVole-Spleen	Lingonberry	
8:2-FTSA	BankVole-Spleen	Lingonberry	
PFNS	BankVole-Spleen	Lingonberry	
4:2-FTSA	BankVole-Spleen	Lingonberry	
PFBA	Roe-deer-Lung	Lingonberry	1.59
PFPeA	Roe-deer-Lung	Lingonberry	
PFHxA	Roe-deer-Lung	Lingonberry	0.00
PFHpA	Roe-deer-Lung	Lingonberry	
PFOA	Roe-deer-Lung	Lingonberry	0.00
PFNA	Roe-deer-Lung	Lingonberry	
PFDA	Roe-deer-Lung	Lingonberry	
PFUnDA	Roe-deer-Lung	Lingonberry	
PFDoDA	Roe-deer-Lung	Lingonberry	
PFTriDA	Roe-deer-Lung	Lingonberry	
PFTeDA	Roe-deer-Lung	Lingonberry	
PFBS	Roe-deer-Lung	Lingonberry	1.68
PFPeS	Roe-deer-Lung	Lingonberry	0.00
LPFHxS	Roe-deer-Lung	Lingonberry	
BPFHxS	Roe-deer-Lung	Lingonberry	
PFHpS	Roe-deer-Lung	Lingonberry	
LPFOS	Roe-deer-Lung	Lingonberry	
BPFOS	Roe-deer-Lung	Lingonberry	
PFDS	Roe-deer-Lung	Lingonberry	
FOSA	Roe-deer-Lung	Lingonberry	
6:2-FTSA	Roe-deer-Lung	Lingonberry	
8:2-FTSA	Roe-deer-Lung	Lingonberry	
PFNS	Roe-deer-Lung	Lingonberry	
4:2-FTSA	Roe-deer-Lung	Lingonberry	
PFBA	Roe-deer-Liver	Lingonberry	27.38
PFPeA	Roe-deer-Liver	Lingonberry	
PFHxA	Roe-deer-Liver	Lingonberry	0.00
PFHpA	Roe-deer-Liver	Lingonberry	
PFOA	Roe-deer-Liver	Lingonberry	6.04
PFNA	Roe-deer-Liver	Lingonberry	

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFDA	Roe-deer-Liver	Lingonberry	
PFUnDA	Roe-deer-Liver	Lingonberry	
PFDoDA	Roe-deer-Liver	Lingonberry	
PFTriDA	Roe-deer-Liver	Lingonberry	
PFTeDA	Roe-deer-Liver	Lingonberry	
PFBS	Roe-deer-Liver	Lingonberry	0.00
PFPeS	Roe-deer-Liver	Lingonberry	11.88
LPFHxS	Roe-deer-Liver	Lingonberry	
BPFHxS	Roe-deer-Liver	Lingonberry	
PFHpS	Roe-deer-Liver	Lingonberry	
LPFOS	Roe-deer-Liver	Lingonberry	
BPFOS	Roe-deer-Liver	Lingonberry	
PFDS	Roe-deer-Liver	Lingonberry	
FOSA	Roe-deer-Liver	Lingonberry	
6:2-FTSA	Roe-deer-Liver	Lingonberry	
8:2-FTSA	Roe-deer-Liver	Lingonberry	
PFNS	Roe-deer-Liver	Lingonberry	
4:2-FTSA	Roe-deer-Liver	Lingonberry	
PFBA	Roe-deer-Muscle	Lingonberry	35.28
PFPeA	Roe-deer-Muscle	Lingonberry	
PFHxA	Roe-deer-Muscle	Lingonberry	0.00
PFHpA	Roe-deer-Muscle	Lingonberry	
PFOA	Roe-deer-Muscle	Lingonberry	0.00
PFNA	Roe-deer-Muscle	Lingonberry	
PFDA	Roe-deer-Muscle	Lingonberry	
PFUnDA	Roe-deer-Muscle	Lingonberry	
PFDoDA	Roe-deer-Muscle	Lingonberry	
PFTriDA	Roe-deer-Muscle	Lingonberry	
PFTeDA	Roe-deer-Muscle	Lingonberry	
PFBS	Roe-deer-Muscle	Lingonberry	0.00
PFPeS	Roe-deer-Muscle	Lingonberry	0.00
LPFHxS	Roe-deer-Muscle	Lingonberry	
BPFHxS	Roe-deer-Muscle	Lingonberry	
PFHpS	Roe-deer-Muscle	Lingonberry	
LPFOS	Roe-deer-Muscle	Lingonberry	
BPFOS	Roe-deer-Muscle	Lingonberry	
PFDS	Roe-deer-Muscle	Lingonberry	
FOSA	Roe-deer-Muscle	Lingonberry	
6:2-FTSA	Roe-deer-Muscle	Lingonberry	
8:2-FTSA	Roe-deer-Muscle	Lingonberry	
PFNS	Roe-deer-Muscle	Lingonberry	
4:2-FTSA	Roe-deer-Muscle	Lingonberry	
PFBA	Moose-Lung	Lingonberry	2.25
PFPeA	Moose-Lung	Lingonberry	
PFHxA	Moose-Lung	Lingonberry	0.00
PFHpA	Moose-Lung	Lingonberry	
PFOA	Moose-Lung	Lingonberry	0.00
PFNA	Moose-Lung	Lingonberry	
PFDA	Moose-Lung	Lingonberry	
PFUnDA	Moose-Lung	Lingonberry	

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFDoDA	Moose-Lung	Lingonberry	
PFTriDA	Moose-Lung	Lingonberry	
PFTeDA	Moose-Lung	Lingonberry	
PFBS	Moose-Lung	Lingonberry	0.00
PFPeS	Moose-Lung	Lingonberry	0.00
LPFHxS	Moose-Lung	Lingonberry	
BPFHxS	Moose-Lung	Lingonberry	
PFHpS	Moose-Lung	Lingonberry	
LPFOS	Moose-Lung	Lingonberry	
BPFOS	Moose-Lung	Lingonberry	
PFDS	Moose-Lung	Lingonberry	
FOSA	Moose-Lung	Lingonberry	
6:2-FTSA	Moose-Lung	Lingonberry	
8:2-FTSA	Moose-Lung	Lingonberry	
PFNS	Moose-Lung	Lingonberry	
4:2-FTSA	Moose-Lung	Lingonberry	
PFBA	Moose-Liver	Lingonberry	37.07
PFPeA	Moose-Liver	Lingonberry	
PFHxA	Moose-Liver	Lingonberry	0.00
PFHpA	Moose-Liver	Lingonberry	
PFOA	Moose-Liver	Lingonberry	3.33
PFNA	Moose-Liver	Lingonberry	
PFDA	Moose-Liver	Lingonberry	
PFUnDA	Moose-Liver	Lingonberry	
PFDoDA	Moose-Liver	Lingonberry	
PFTriDA	Moose-Liver	Lingonberry	
PFTeDA	Moose-Liver	Lingonberry	
PFBS	Moose-Liver	Lingonberry	0.00
PFPeS	Moose-Liver	Lingonberry	4.26
LPFHxS	Moose-Liver	Lingonberry	
BPFHxS	Moose-Liver	Lingonberry	
PFHpS	Moose-Liver	Lingonberry	
LPFOS	Moose-Liver	Lingonberry	
BPFOS	Moose-Liver	Lingonberry	
PFDS	Moose-Liver	Lingonberry	
FOSA	Moose-Liver	Lingonberry	
6:2-FTSA	Moose-Liver	Lingonberry	
8:2-FTSA	Moose-Liver	Lingonberry	
PFNS	Moose-Liver	Lingonberry	
4:2-FTSA	Moose-Liver	Lingonberry	
PFBA	Moose-Muscle	Lingonberry	27.28
PFPeA	Moose-Muscle	Lingonberry	
PFHxA	Moose-Muscle	Lingonberry	0.00
PFHpA	Moose-Muscle	Lingonberry	
PFOA	Moose-Muscle	Lingonberry	0.00
PFNA	Moose-Muscle	Lingonberry	
PFDA	Moose-Muscle	Lingonberry	
PFUnDA	Moose-Muscle	Lingonberry	
PFDoDA	Moose-Muscle	Lingonberry	
PFTriDA	Moose-Muscle	Lingonberry	

Appendix 4. Continued.

PFAS	Species & Tissue	Source of BAF	BAF
PFTeDA	Moose-Muscle	Lingonberry	
PFBS	Moose-Muscle	Lingonberry	0.00
PFPeS	Moose-Muscle	Lingonberry	0.00
LPFHxS	Moose-Muscle	Lingonberry	
BPFHxS	Moose-Muscle	Lingonberry	
PFHpS	Moose-Muscle	Lingonberry	
LPFOS	Moose-Muscle	Lingonberry	
BPFOS	Moose-Muscle	Lingonberry	
PFDS	Moose-Muscle	Lingonberry	
FOSA	Moose-Muscle	Lingonberry	
6:2-FTSA	Moose-Muscle	Lingonberry	
8:2-FTSA	Moose-Muscle	Lingonberry	
PFNS	Moose-Muscle	Lingonberry	
4:2-FTSA	Moose-Muscle	Lingonberry	