

## List of substances measured at NIPH, Department of Food Safety, 2026

| Abbreviation                                       | Name                                   | Matrix/required volume                      |
|----------------------------------------------------|----------------------------------------|---------------------------------------------|
| 1.POPs (Caspersen et al. 2016 with modifications)  |                                        |                                             |
| DDE                                                | 4,4'- Dichlorodiphenyltrichloroethane  | Serum/plasma, appr. 2 g, breast milk 1-5 mL |
| DDT                                                | 4,4'- Dichlorodiphenyldichloroethylene |                                             |
| DDE                                                | 4,4'- Dichlorodiphenyltrichloroethane  |                                             |
| DDT                                                | 4,4'- Dichlorodiphenyldichloroethylene |                                             |
| HCB                                                | Hexachlorobenzene                      |                                             |
| OxyCD                                              | Oxychlordane                           |                                             |
| PCB-105                                            | Polychlorinated biphenyl 105           |                                             |
| PCB-114                                            | Polychlorinated biphenyl 114           |                                             |
| PCB-118                                            | Polychlorinated biphenyl 118           |                                             |
| PCB-123                                            | Polychlorinated biphenyl 123           |                                             |
| PCB-138                                            | Polychlorinated biphenyl 138           |                                             |
| PCB-153                                            | Polychlorinated biphenyl 153           |                                             |
| PCB-156                                            | Polychlorinated biphenyl 156           |                                             |
| PCB-157                                            | Polychlorinated biphenyl 157           |                                             |
| PCB-167                                            | Polychlorinated biphenyl 167           |                                             |
| PCB-170                                            | Polychlorinated biphenyl 170           |                                             |
| PCB-180                                            | Polychlorinated biphenyl 180           |                                             |
| PCB-189                                            | Polychlorinated biphenyl 189           |                                             |
| PCB-194                                            | Polychlorinated biphenyl 194           |                                             |
| PCB-209                                            | Polychlorinated biphenyl 209           |                                             |
| PBB-153                                            | Polybrominated biphenyl 153            |                                             |
| PBDE-28                                            | Polybrominated diphenyl ether 28       |                                             |
| PBDE-47                                            | Polybrominated diphenyl ether 47       |                                             |
| PBDE-99                                            | Polybrominated diphenyl ether 99       |                                             |
| PBDE-100                                           | Polybrominated diphenyl ether 100      |                                             |
| PBDE-153                                           | Polybrominated diphenyl ether 153      |                                             |
| PBDE-154                                           | Polybrominated diphenyl ether 154      |                                             |
| 2. PFAS (Haug et al. 2009 and Thomsen et al. 2010) |                                        |                                             |
| TFMS                                               | Trifluoromethylsulfonate               | Serum/plasma, 150 µL                        |
| PFPrS                                              | Perfluoroproanesulfonate               |                                             |
| PFBS                                               | Perfluorobutanesulfonate               | Breast milk, 400 µL (selected PFASs)        |
| PFPS                                               | Perfluoropentanesulfonate              |                                             |
| PFHxS                                              | Perfluorohexanesulfonate               | Urin, 150 µL (selected PFASs)               |
| PFHpS                                              | Perfluoroheptanesulfonate              |                                             |
| PFOS                                               | Perfluorooctanesulfonate               |                                             |
| PFNS                                               | Perfluorononanesulfonate               |                                             |
| PFDS                                               | Perfluorodecanesulfonate               |                                             |
| PFDoS                                              | Perfluorododecanesulfonate             |                                             |
| TFA                                                | Trifluoroacetic acid                   |                                             |
| PFPrA                                              | Perfluoropropanoate                    |                                             |
| PFBA                                               | Perfluorobutanoate                     |                                             |
| PFPeA                                              | Perfluoropentanoate                    |                                             |

|                                                                          |                                                                        |                                   |
|--------------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------|
| PFHxA                                                                    | Perfluorohexanoate                                                     |                                   |
| PFHpA                                                                    | Perfluoroheptanoate                                                    |                                   |
| PFOA                                                                     | Perfluorooctanoate                                                     |                                   |
| PFNA                                                                     | Perfluorononanoate                                                     |                                   |
| PFDA                                                                     | Perfluorodecanoate                                                     |                                   |
| PFUnDA                                                                   | Perfluoroundecanoate                                                   |                                   |
| PFDoDA                                                                   | Perfluorododecanoate                                                   |                                   |
| PFTTrDA                                                                  | Perfluorotridecanoate                                                  |                                   |
| PFTeDA                                                                   | Perfluorotetradecanoate                                                |                                   |
| PFOSA                                                                    | Perfluorooctanesulfonamide                                             |                                   |
| MeFOSA                                                                   | N-methyl perfluorooctanesulfonamide                                    |                                   |
| EtFOSA                                                                   | N-ethyl perfluorooctanesulfonamide                                     |                                   |
| ADONA                                                                    | 3H-perfluoro-3-[(3-methoxy-propoxy)propanoic acid]                     |                                   |
| HFPO-DA (GenX)                                                           | 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid |                                   |
| 6:2 Cl – PFESA (9cl-PF3ONS)                                              | 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid                       |                                   |
| 8:2 Cl-PFESA (11Cl-PF3OUdS)                                              | 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid                    |                                   |
| 6:2 FTS                                                                  | 6:2 fluorotelomer sulfonate                                            |                                   |
| 8:2 FTS                                                                  | 8:2 fluorotelomer sulfonate                                            |                                   |
| PFECHS                                                                   | Perfluoroethylcyclohexane sulfonate                                    |                                   |
| 3. Additional PFAS (Poonthong et al. 2017) (require a separate analysis) |                                                                        |                                   |
| 6:2 PAP                                                                  | 6:2 polyfluoroalkyl phosphate monoester                                | Serum/plasma/whole blood<br>50 µL |
| 6:2 PAP                                                                  | 6:2 polyfluoroalkyl phosphate monoester                                |                                   |
| 8:2 PAP                                                                  | 8:2 polyfluoroalkyl phosphate monoester                                |                                   |
| 6:2 diPAP                                                                | 6:2 polyfluoroalkyl phosphate diester                                  |                                   |
| 8:2 diPAP                                                                | 8:2 polyfluoroalkyl phosphate diester                                  |                                   |
| PFHxPA                                                                   | Perfluorohexylphosphonate                                              |                                   |
| PFOPA                                                                    | Perfluorooctylphosphonate                                              |                                   |
| PFDDPA                                                                   | Perfluorodecylphosphonate                                              |                                   |
| 4. Phthalates and DiNCH metabolites (Sabaredzovic et al. 2015)           |                                                                        |                                   |
| MEP                                                                      | Monoethyl phthalate                                                    | Urine, 300 µL                     |
| MiBP                                                                     | Mono-iso-butyl phthalate                                               |                                   |
| MnBP                                                                     | Mono-n-butyl phthalate                                                 |                                   |
| MBzP                                                                     | Monobenzyl phthalate                                                   |                                   |
| MnPeP                                                                    | Mono-n-pentyl phthalate                                                |                                   |
| MCHP                                                                     | Monocyclohexyl phthalate                                               |                                   |
| MnOP                                                                     | Mono-n-octyl phthalate                                                 |                                   |
| MEHP                                                                     | Mono-2-ethylhexyl phthalate                                            |                                   |
| MEHHP                                                                    | Mono-2-ethyl-5-hydroxyhexyl phthalate                                  |                                   |
| MEOHP                                                                    | Mono-2-ethyl-5-oxoyhexyl phthalate                                     |                                   |
| MECPP                                                                    | Mono-2-ethyl-5-carboxypentyl phthalate                                 |                                   |
| oxo-MiNP                                                                 | Mono-4-methyl-7oxooctyl phthalate                                      |                                   |
| cx-MiNP                                                                  | Mono-4-methyl-7-carboxyheptyl phthalate                                |                                   |
| OH-MPHP                                                                  | Mono-6-hydroxy-propylheptylphthalate                                   |                                   |
| cx-MiDP                                                                  | Mono-carboxy isononyl phthalate                                        |                                   |
| MHxP                                                                     | Mono-n-hexyl phthalate                                                 |                                   |

|                                                                                  |                                                                   |                                                                          |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------------|
| OH-MiNCH                                                                         | 2-(Hydroxyl-4-methyloctyl)oxy)carbonyl)cyclohexanecarboxylic acid |                                                                          |
| oxo-MiNCH                                                                        | 2-(4-Methyl-7-oxyoctyl)oxy)carbonyl)cyclohexanecarboxylic acid    |                                                                          |
| cx-MINCH                                                                         | Cyclohexane-1,2-dicarboxylic mono carboxyisooctyl ester           |                                                                          |
| MEHTP                                                                            | 1-Mono-(2-ethyl-5-hydroxy-hexyl) benzene-1,4-dicarboxylate        |                                                                          |
| MEPTP                                                                            | 1-Mono-(2-ethyl-5-carboxyl-pentyl) benzene-1,4-dicarboxylate      |                                                                          |
| 5. Phenolic compounds (Sakhi et al. 2018)*                                       |                                                                   |                                                                          |
| MEPA                                                                             | Methyl paraben                                                    | Urine, 2-300 µL                                                          |
| ETPA                                                                             | Ethyl paraben                                                     |                                                                          |
| PRPA                                                                             | Propyl paraben                                                    |                                                                          |
| BUPA                                                                             | Butyl paraben                                                     |                                                                          |
| BPA                                                                              | Bisphenol A                                                       |                                                                          |
| BPS                                                                              | Bisphenol S                                                       |                                                                          |
| BPF                                                                              | Bisphenol F                                                       |                                                                          |
| BPB                                                                              | Bisphenol B                                                       |                                                                          |
| BPAF                                                                             | Bisphenol AF                                                      |                                                                          |
| OXBE                                                                             | Oxybenzone/Benzophenone-3                                         |                                                                          |
| TRCS                                                                             | Triclosan                                                         |                                                                          |
| *PAH and other pesticide metabolites can be analysed with the phenolic compounds |                                                                   |                                                                          |
| PAH metabolites*                                                                 | 2-Hydroxynaphthalene                                              | Urine, 2-300 µL, or can be measured in the same aliquot as phenols.      |
|                                                                                  | Sum of 2-Hydroxyfluorene and 3-Hydroxyfluorene                    |                                                                          |
|                                                                                  | Sum of 2-Hydroxyphenanthrene + 3-Hydroxyphenanthrene              |                                                                          |
|                                                                                  | Sum of 1-Hydroxyphenanthrene + 9-Hydroxyphenanthrene              |                                                                          |
|                                                                                  | 4-Hydroxyphenanthrene                                             |                                                                          |
|                                                                                  | 1-Hydroxypyrene                                                   |                                                                          |
|                                                                                  | 3-Hydroxychrysene                                                 |                                                                          |
| Other pesticide metabolites*                                                     | 3,5,6-Trichloro-2-pyridinol (TCPY)                                | Urine, 2-300 µL, or can be measured in the same aliquot as phenols/PAHs. |
|                                                                                  | 3-Phenoxybenzoic acid (3-PBA)                                     |                                                                          |
|                                                                                  | 2,4-Dichlorophenoxyacid (2,4D)                                    |                                                                          |
| 6. New pesticide metabolites*                                                    |                                                                   |                                                                          |
| Pyrethroids                                                                      | cis-DBCA                                                          | Urine, 2-300 µL, or can be measured in the same aliquot as phenols/PAHs. |
|                                                                                  | cis-DCCA                                                          |                                                                          |
|                                                                                  | trans-DCCA                                                        |                                                                          |
|                                                                                  | 4-F-3-PBA                                                         |                                                                          |
| Neonicotinoids                                                                   | N-desmethyl acetamiprid                                           |                                                                          |

|                                                                                      |                                         |                                                                                   |
|--------------------------------------------------------------------------------------|-----------------------------------------|-----------------------------------------------------------------------------------|
|                                                                                      | Acetamiprid                             |                                                                                   |
|                                                                                      | Imidacloprid                            |                                                                                   |
| 7. Multi method (Granerud, 2022)*                                                    |                                         |                                                                                   |
| Glycolethers                                                                         | Phenoxyacetic acid (PhAA)               | Urine, 2-300 µL, or<br>can be measured in<br>the same aliquot as<br>phenols/PAHs. |
|                                                                                      | 2-butoxyacetic acid (BAA)               |                                                                                   |
| Oxidative<br>stress markers                                                          | 8-iso-Prostaglandin F2-alpha (8-iso PG) |                                                                                   |
| Cotinine                                                                             | Total Cotinine                          |                                                                                   |
| 8. OP pesticides (Cequier et al. 2016) and OP flame retardants (Cequier et al. 2014) |                                         |                                                                                   |
| BDCIPP or<br>BDCPP                                                                   | bis(1,3-dichloro-2-propyl) phosphate    | Urine, 300 uL                                                                     |
| DPHP or DPP                                                                          | diphenyl phosphate                      |                                                                                   |
| DNBP or DBP                                                                          | di-n-butyl phosphate                    |                                                                                   |
| BBOEP or<br>BBEP                                                                     | bis(2-butoxyethyl) phosphate            |                                                                                   |
| DMP                                                                                  | O,O-dimethyl phosphate                  |                                                                                   |
| DEP                                                                                  | O,O-diethyl phosphate                   |                                                                                   |
| DMTP                                                                                 | O,O-dimethyl thiophosphate              |                                                                                   |
| DETP                                                                                 | O,O-diethyl thiophosphate               |                                                                                   |
| DMDTP                                                                                | O,O-dimethyl dithiophosphate            |                                                                                   |
| DEDTP                                                                                | O,O-diethyl dithiophosphate             |                                                                                   |
| 9. Others                                                                            |                                         |                                                                                   |
| SG                                                                                   | Specific gravity                        | Urine, 150 µL                                                                     |
| Creatinine                                                                           | Creatinine                              | Urine, 30 µL, or can<br>be measured in the<br>same aliquot as<br>phenols/PAHs.    |
| Cotinine                                                                             | Free Cotinine                           | Urine, 30 µL                                                                      |

**\*Assay 5, 6, 7 and creatinine (assay 9) can be measured in the same aliquot.**

Feel free to contact [Cathrine.Thomsen@fhi.no](mailto:Cathrine.Thomsen@fhi.no) if you have questions or want to involve the biomonitoring platform in a research collaboration.

## References

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