Institut
"Jožef Stefan"
Ljubljana, Slovenija

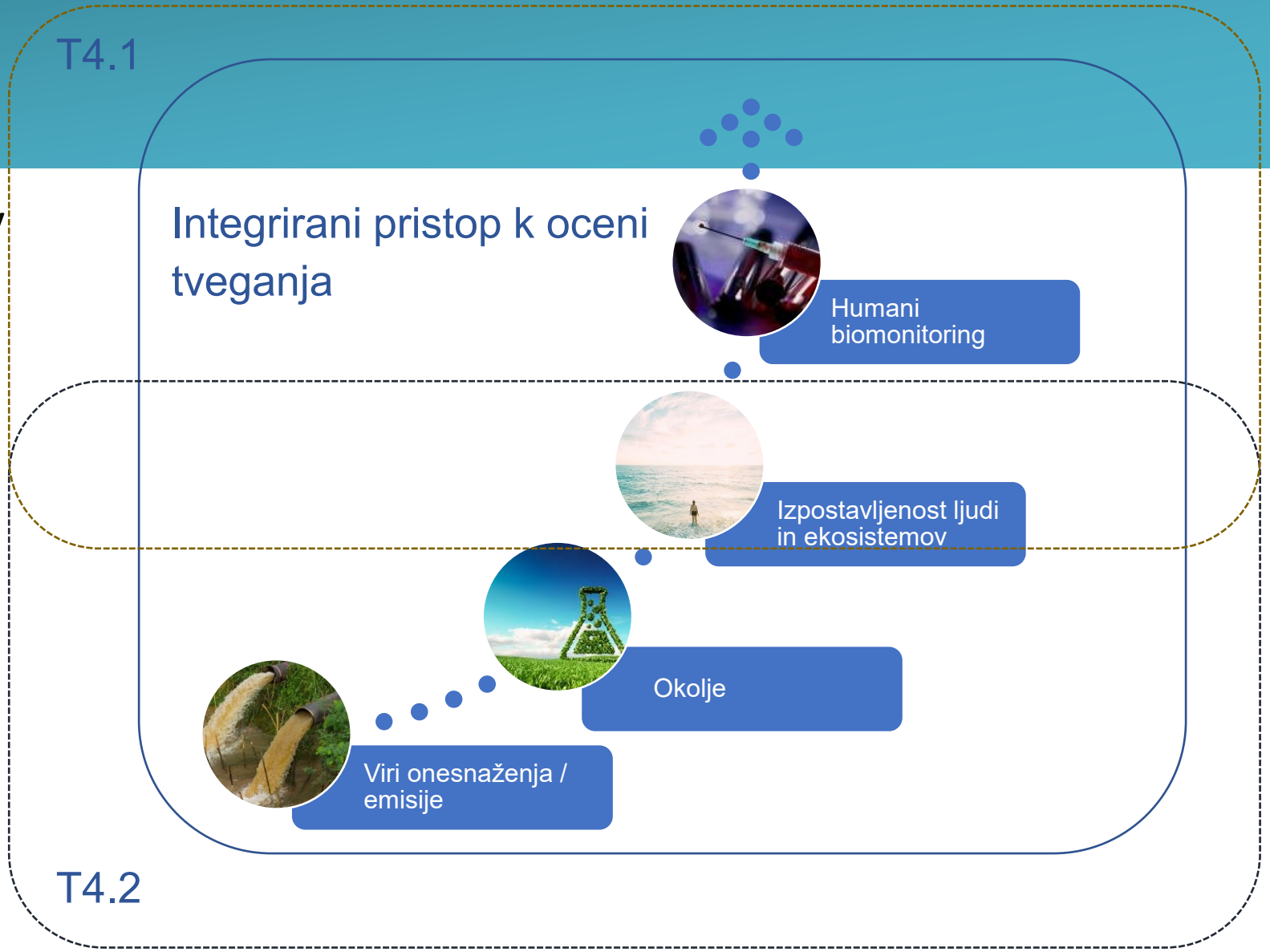
Aktivnosti v DP4: nalogi 4.2 in 4.3

T4.2: Environmental and multi-source monitoring

T4.3: Innovative Tools and Methods

Cilj T4.2

- Boljše razumevanje kemikalij v okolju, različnih izvorov onesnaženja, izpostavljenosti človeka in ekosistemov



Prvi projekt (2022-2025)

Pilotna študija o **PFAS** in **motilcih endokrinega sistema (EDCs)**

IJS: 4.2.1: razvoj orodja za prioritizacijo (pregled literature, razvoj koncepta, seznam indikatorjev, seznam raziskovalnih vprašanj, itd.)

IJS: seznam metod, karakteristike

IJS: 4.2.3: načrtovanje vzorčenja, koordinacija ekstrakcij za biološke teste in kemijske analize (presejalne)

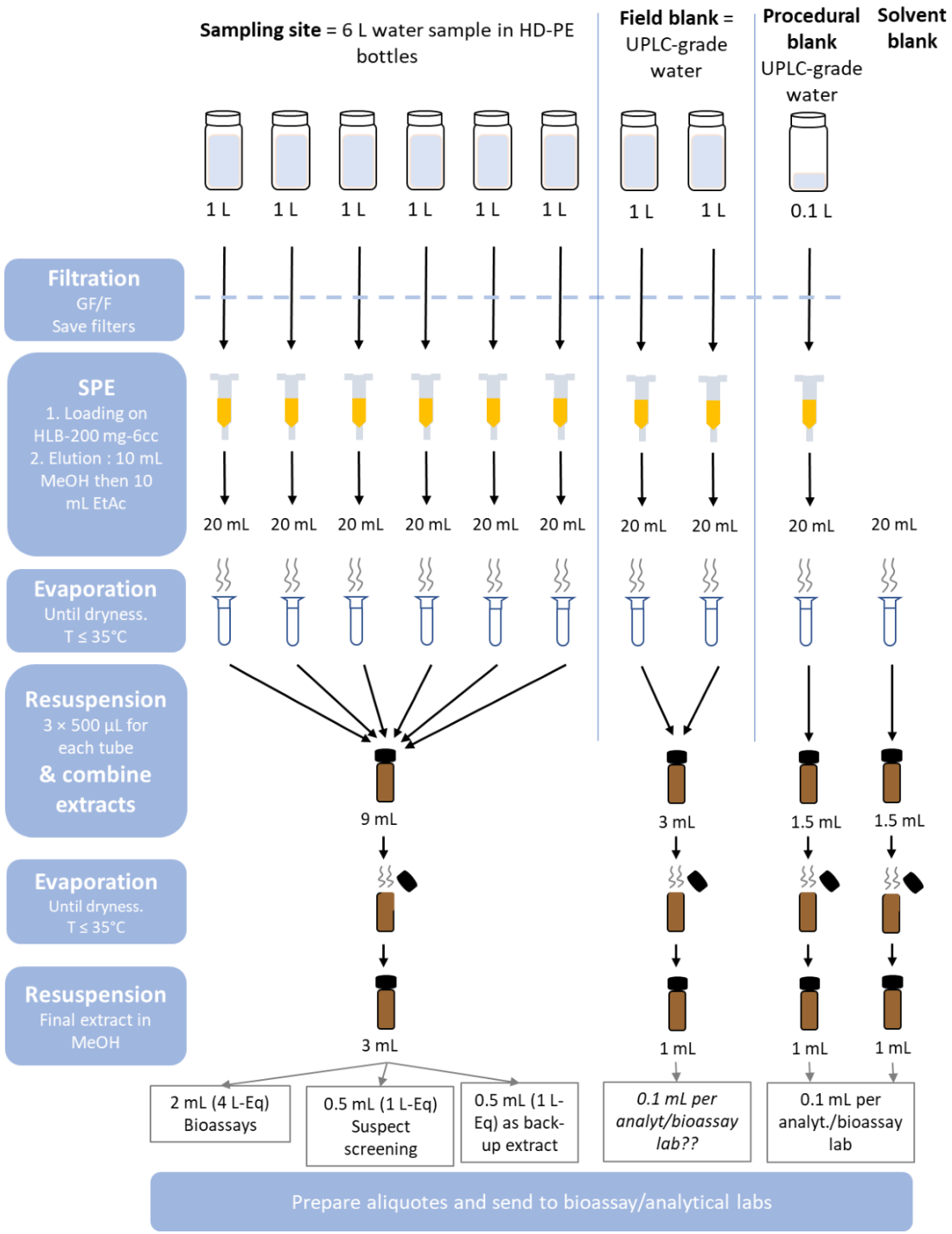
IJS: 4.2.3: vzorčenje Kamniška Bistica (9 vzorcev) je predvideno med januarjem in aprilom 2024.
Ekstrakcije (prva, za vzorce iz Španije, ravnokar poteka)

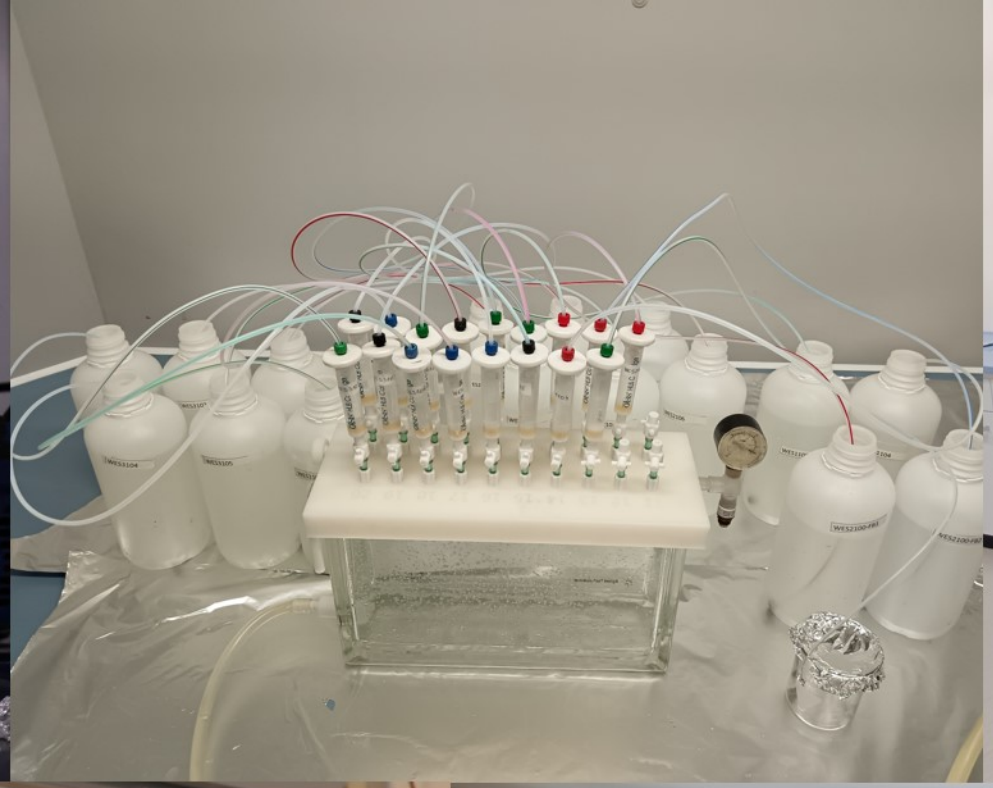
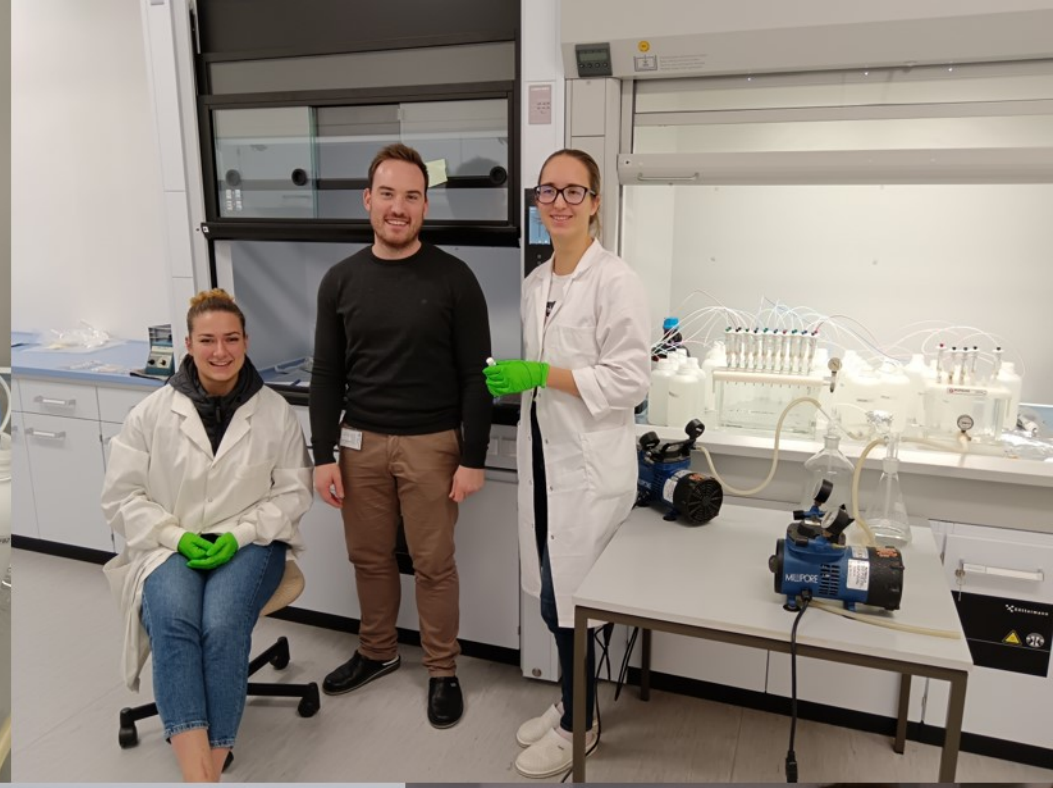
IJS: koordinacijski laboratorij za J Evropo: Španija, Grčija, Slovenija (+ Belgija)

Vzorčenje → **ekstrakcija** → analiza (biološki testi in presejalna kemijska analiza)

→ kemijska analiza izbranih EDC

Region	Country	Organisation	Contact	Urban runoff		WWTP		Industry*1		Agriculture		Reference	Total per country	Total per region	Coordinating lab?	Most likly sampling start/time (within Dec 2023-April 2024)
				Upstream	Downstrea	Upstream	Downstrea	Upstream	Downstrea	Grazing lan	Cropland					
E	Poland	UG-PL	anna.bialk-bielinska@ug.edu.pl;	2	2	2	2	1	1	2	2	1	15	15	UG-PL Coordinating E	start January/February
N	Latvia	UL	agnese.araja@lu.lv;	0	0	1	1	1	1	1	1	0	6	15		likely earliest mid Feb until March
N	Sweden	IVL	kerstin.putz@ivl.se; gunnar.thorsen@ivl.se;	1	1	2	2	1	1	0	0	1	9		IVL Coordinating N	likely March until April
S	Spain	IDAEA-CSIC	spsqam@idaea.csic.es; nmoqam@idaea.csic	1	1	1	1	1	1	0	2	0	8	22		11th-13th of Dec
S	Greece	NKUA	nalygizakis@chem.uoa.gr	0	0	0	0	1	1	1	1	1	5			JSI let us know what suits you
S	**Slovenia**	**JSI**	tina.kosjek@ijs.si;	1	1	1	1	1	1	0	2	1	9		**JSI Coordinating S**	Separate campaign: March-April 2023
W	Germany	BfG	schluesener@bafg.de;	0	0	1	1	1	1	0	2	0	6	65		Feb-April 2024
W	France	INERIS	nina.huynh@ineris.fr;	2	2	1	1	4	4	3	8	1	26		INERIS Coordinating W	Spring 2024
W	Belgium	OVAM (from VMM)	laetitia.six@ovam.be; m.dejonge@vmm.be	1	1	2	2	2	2	2	2	0	14			
W	Belgium	ISSeP	c.kech@issep.be; st.bemelmans@issep.be	3	4	3	3	(1)?	(1)?	2	2	2	**19**			January to April 2024


Sampling site = 6 L water sample in HD-PE bottles
Field blank = UPLC-grade water
Procedural blank UPLC-grade water
Solvent blank
1 L
1 L
1 L
1 L
1 L
1 L
1 L
1 L
0.1 L
Filtration
GF/F
Save filters
SPE
1. Loading on HLB-200 mg-6cc
2. Elution : 10 mL MeOH then 10 mL EtAc
20 mL
20 mL
20 mL
20 mL
20 mL
20 mL
20 mL
20 mL
20 mL
20 mL
Evaporation
Until dryness.
T ≤ 35°C
Resuspension
3 × 500 µL for each tube
& combine extracts
9 mL
3 mL
1.5 mL
1.5 mL
Evaporation
Until dryness.
T ≤ 35°C
Resuspension
Final extract in MeOH
3 mL
1 mL
1 mL
1 mL
2 mL (4 L-Eq) Bioassays
0.5 mL (1 L-Eq) Suspect screening
0.5 mL (1 L-Eq) as back-up extract
0.1 mL per analyt/bioassay lab??
0.1 mL per analyt./bioassay lab
Prepare aliquotes and send to bioassay/analytical labs

WES1104
MILLIPORE



MILLIPORE

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Naloga 4.3: Inovativna orodja in metode - struktura

Humani vzorci

Hrana

Okoljski vzorci

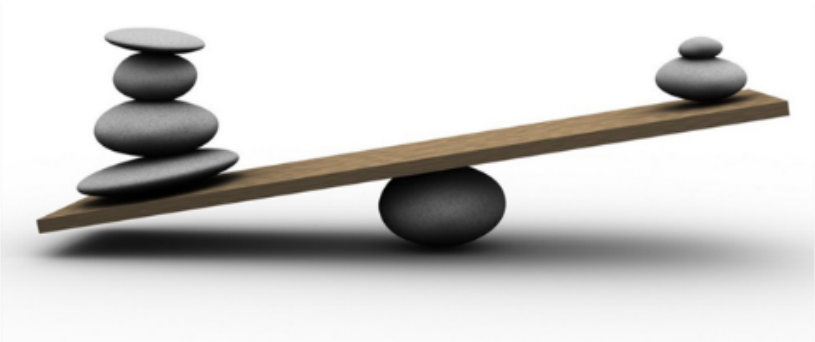
Povezave

Trenutno stanje in kapacitete

Ambicije

SS/NTS/EDA

2022



2030

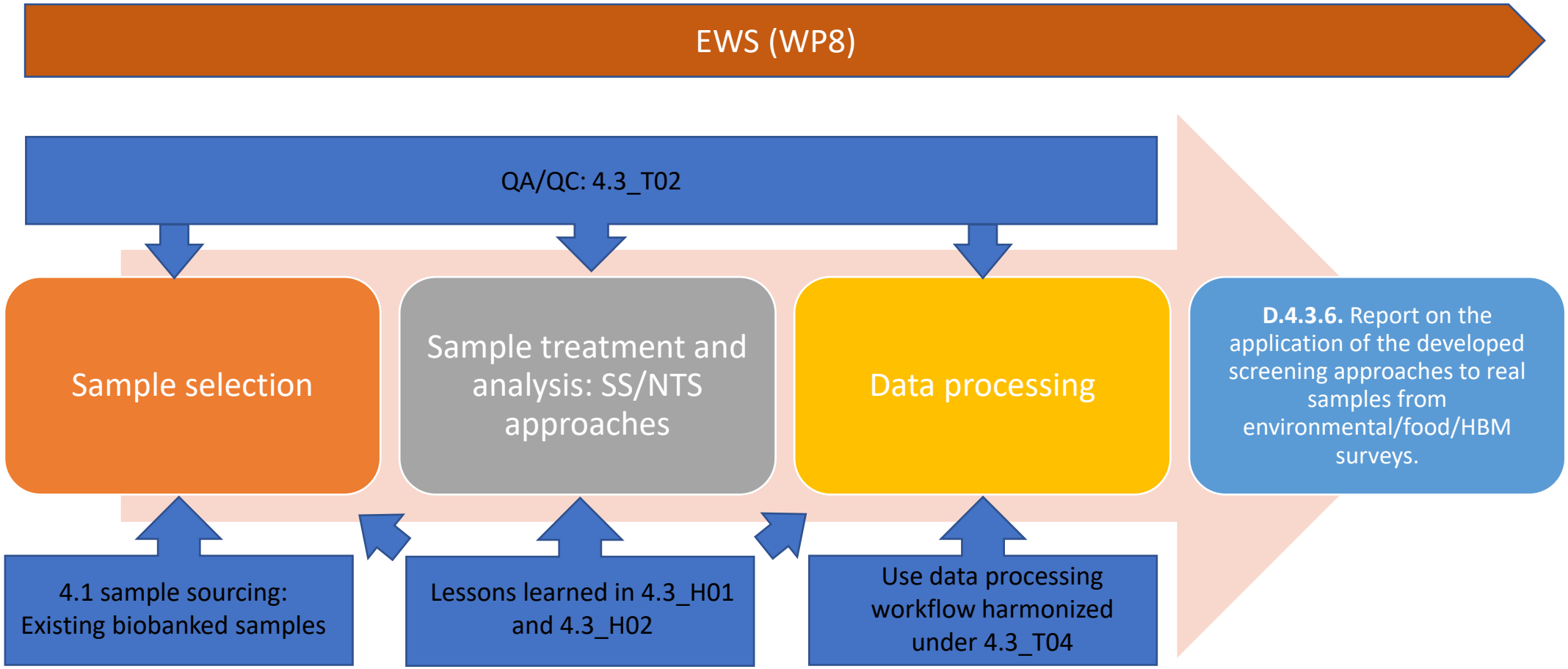
Povečanje občutljivosti, sposobnosti identifikacije, kvantifikacije, primerljivosti rezultatov, prenos in primernost metod za večji obseg vzorcev

Projekti na nalogi 4.3

- P4.3.2.a_Y1_H01: Perinatal exposure
- P4.3.2.b_Y2_H02: Occupational exposure
- **P4.3.2.c_Y3_H03: Complementary developments**
- P4.3.1.a_Y1_T01_Concept Paper
- P4.3.1.b_Y1_T02_QA/QC Issues
- P4.3.1.c_Y1_T03_Early Warning System
- P4.3.1.d_Y1_T04_Data Processing Worflow
- 4.3.3.a_Y1_E01_Wastewater based epidemiology
- P4.3.3.b_Y2_E02_Sentinel animals
- P4.3.4.b_Y2_F02_Other complementary studies

P4.3.2.c_Y3_H03: Complementary developments

Concept development - cobuilding, start operational part in Y4



Raziskovalno vprašanje:

Kakšen je doprinos uporabe komplementarnih metod in matriksov (podpora razvoju sistemov zgodnjega opozarjanja)**?**

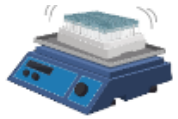
FLEKSIBILNOST → SKUPNO NAČRTOVANJE PROJEKTA!

Komplementarni razvoj

- Alternativni matriksi (odvisno od razpoložljivih vzorcev (4.1))
- Alternativni načini priprave vzorca
- Instrumentalna analiza (ortogonalna LC ločba)

Slina

Lasje



Priprava vzorca

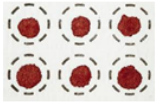
HILIC kromatografija

Drugo…

P4.3.2.a_Y1_H01: Perinatal exposure

Maternal blood, urine

Breast milk

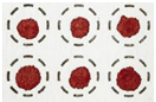


Maternal dried blood spots

Maternal silicone wristband

Mother - new-born / child cohort(s)

New-born/child dried blood spots



New-born/child silicone wristband

Cord blood/meconium/placenta if possible

Implementation (phase 1)

Sample sourcing

Implementation (phase 2)

Main concern since our last meeting

Task 4.3

Targeted measurements (for selected substances)

SS / NTS / EDA measurements (LC-HRMS and GC-HRMS)

Methological assessment

Qualitative coverage / sensitivity / quantitative performances / QA/QC consolidation

Development / Improvement