EPHOR Exposome tools for a healthy working life

Exposome project for health and occupational research

Protocols for collection, pre-processing and storage of biological samples (WP3, Task 3.1)

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WP (number and title)	WP3- Internal exposure and effect assessment using biomonitoring, omics and minimally invasive biomarker development
Deliverable Number	D3.1
Deliverable Title	Protocol for the collection, pre-processing and storage of biological samples in WP6, WP7
Due date	Month 6
Actual date	
Dissemination Level	PU: Public

Lead beneficiary	6 - KUL
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Co-authors	WP3, WP6 and WP7 partners

Collection, pre-processing and storage of urine

Introduction

Urine can serve as a non-invasive matrix for the assessment of internal exposure to metals and polycyclic aromatic hydrocarbons (PAHs). Cadmium, arsenic and PAHs are known to be carcinogenic to humans. Therefore, it is important to measure the internal exposure. Metal as well as PAH analysis will be performed on samples from the asthma/COPD study (WP6) and the working-life exposome study in shift workers (WP7).

Materials needed

Collection:	-Urine collection containers polypropylene -Labels: participant ID – sample ID (including date and time of collection) -Pipettes and tips -10% nitric acid solution for washing -Posters with instructions for hand washing
Pre-processing:	-Polypropylene tubes (1.5 mL and 5 mL) -Labels: participant ID – sample ID (including date and time of collection) -Disposable gloves -Biological waste container
Storage:	-Storage box -Freezer -80 °C

Collection of urine

Pre-treatment of urine collection containers:

Ten percent nitric acid solution is put in a tank.
The urine collection containers are opened and together with the screw caps, completely immersed for at least 3h in the solution (preferably overnight).
Next, the containers and caps are rinsed three times with purified water.
The containers and caps are put face down in a clean filter paper to dry (preferably in an oven at 60 °C).
After drying, the containers are closed by us of their screw cap.

Pre-treatment of the containers is not necessary in case the research team has already checked for contamination beforehand and in case they are stored appropriately. This is done by performing blank measurements with purified water in the containers to ensure satisfying levels of metals.

Urine collection:

Participants are asked to refrain from eating and drinking for 12 hours prior to urine collection.
A pre-treated, labeled container and hermetic bag are distributed to the participant.
Work clothes (e.g. overalls) are removed before urine collection.
Hands are washed according to the instructions).
Next, the cap is removed from the container, urine is collected, the container is closed and put inside the hermetic bag.
After collection, the bag with container is handed over to the research team.

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Pre-processing and storage of urine at site of collection

Aliquots of at least 2 mL are made in polypropylene tubes of 5 mL. Half of them are labeled for metal analysis, the other half for PAH analysis.
Empty urine containers are disposed in a biological waste container.
The urine samples are stored at -80 °C until shipment to CUT and KUL.

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