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## Settled dust in preschools: characterization and genotoxicity of trace metals and polycyclic aromatic hydrocarbons

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# SETTLED DUST IN PRESCHOOLS: CHARACTERIZATION AND GENOTOXICITY OF TRACE METALS AND POLYCYCLIC AROMATIC HYDROCARBONS

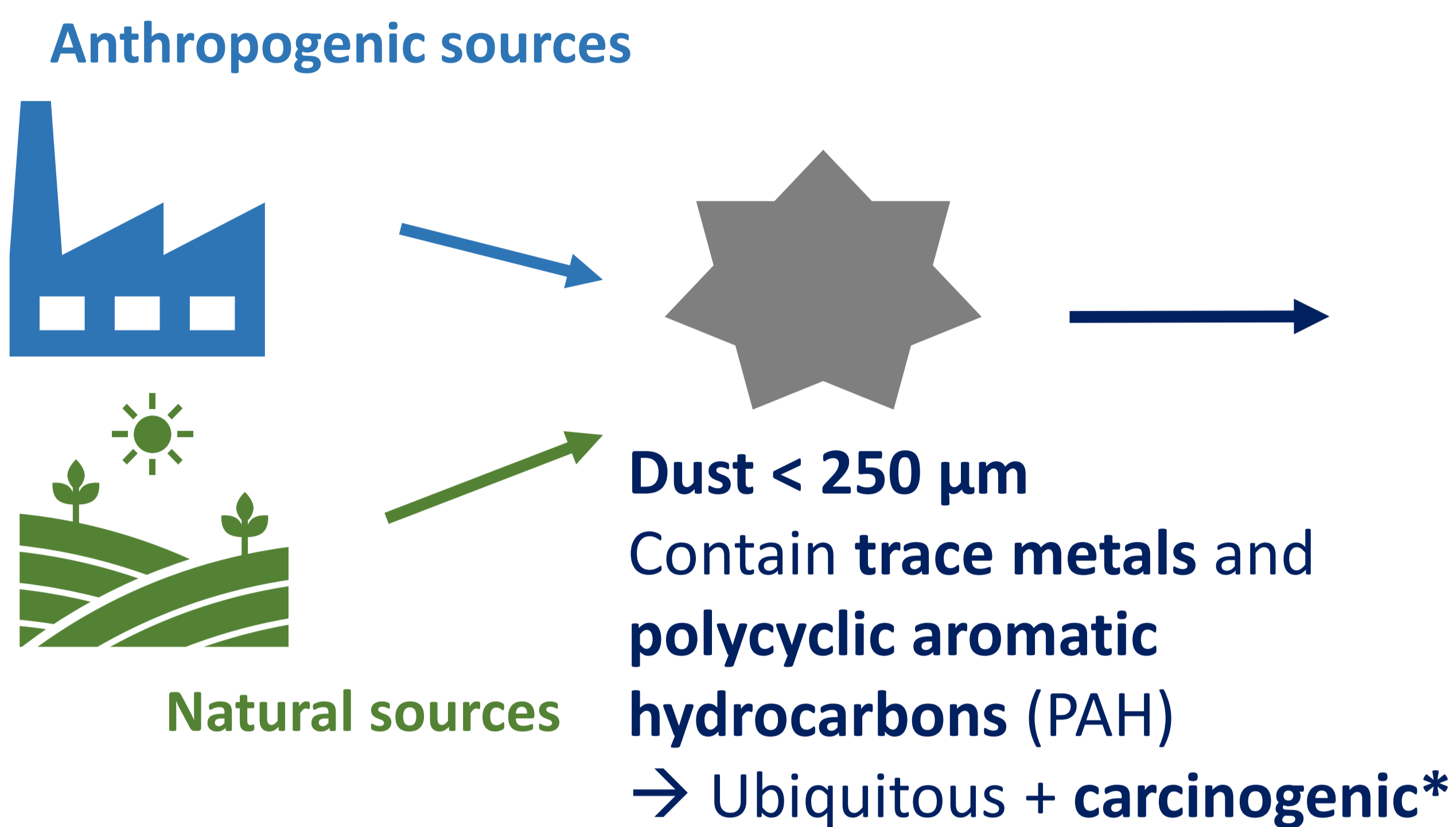


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## CONTEXT



**Involuntary ingestion:**  
**20 - 100 mg of dust per day**  
→ Early biological events

## HYPOTHESIS

Children below 6 years old could be exposed to trace metals and PAH *via* ingestion of settled dust.

## AIMS

1. **Characterize** settled dust in preschools located in different environmental contexts
2. **Evaluate DNA and chromosomal damage** induced by **pollutants' mixtures** and **settled dust** in gastric cells

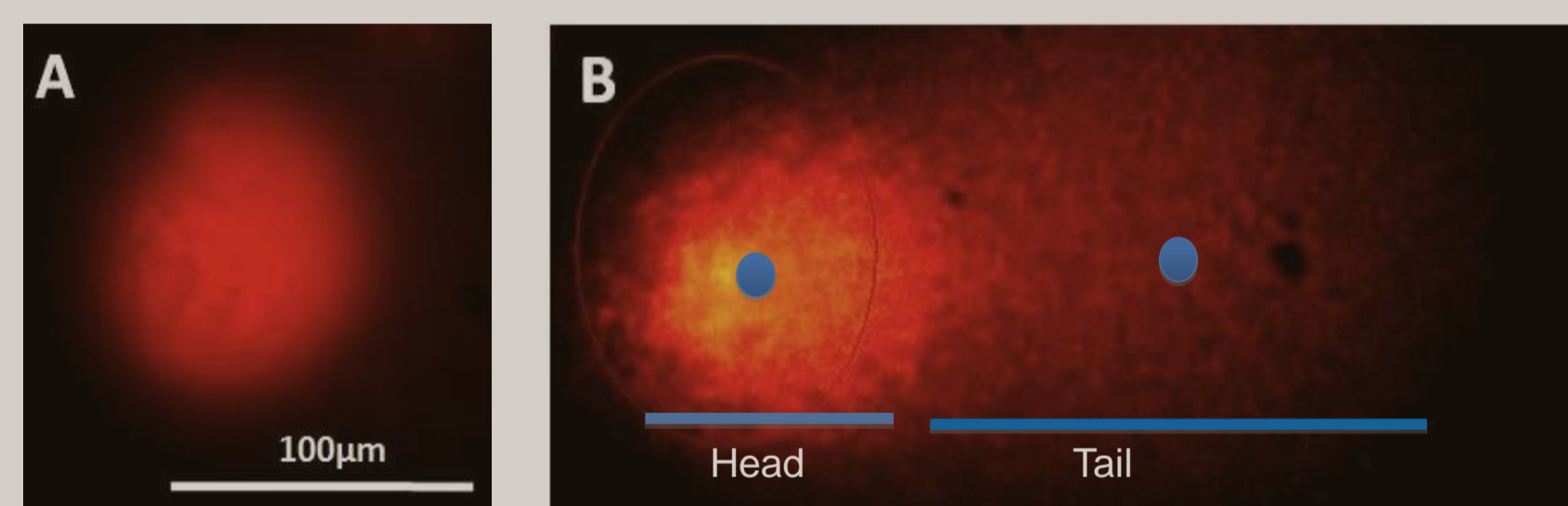
## MATERIALS & METHODS

**Samplings of settled dust in schools of Bouches-du-Rhône (France) 2015 -2016 / 2020-2021**

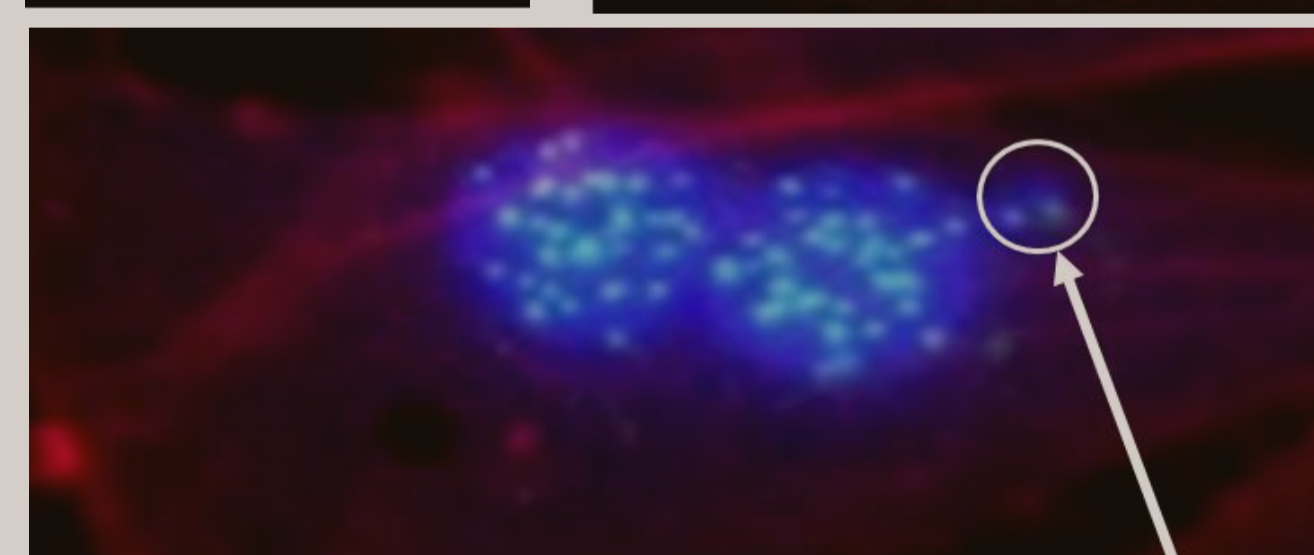
**Physical and chemical characterization of settled dust**  
PAH: HPLC-PFD / Trace metals: ICP-MS



**In vitro toxicity on gastric cells of settled dust extracts and pollutants mixtures**  
**Cytotoxicity & Genotoxicity assays**



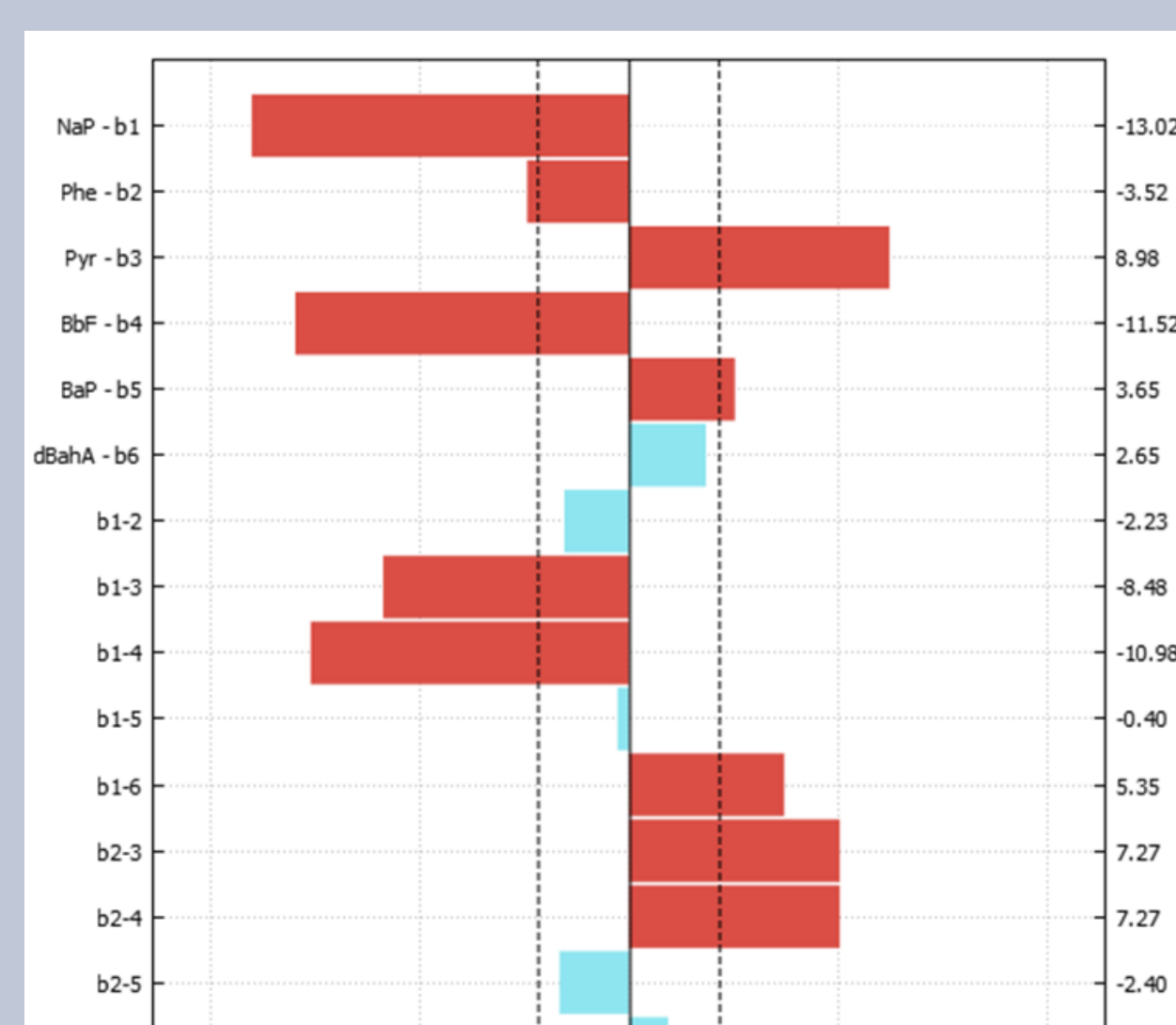
**Comet assay:**  
DNA damage



**Cytokinesis Block Micronucleus assay:** chromosomal damage

**Mixture genotoxicity of 6 PAH and 6 metals of interest by using experimental designs**

Exp.	NaP	Phe	Pyr	BbF	BaP	dBahA
1	-	-	-	-	-	-
2	-	+	-	+	-	+
...						
21	+	-	+	-	+	+
22	+	+	+	+	+	+



Type of graph to be obtained

## PRELIMINARY RESULTS

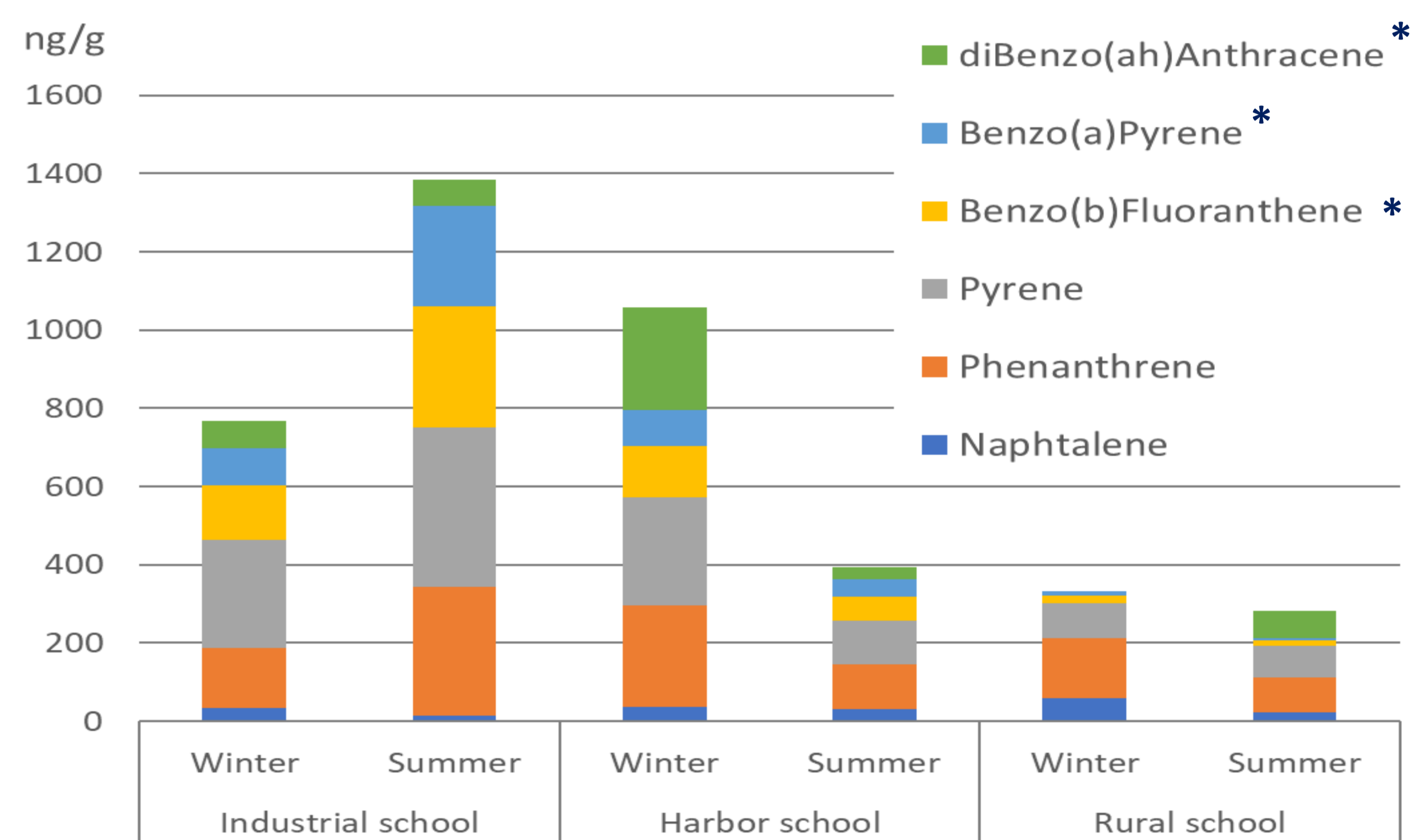


Figure 1: concentrations of the 6 PAHs of interest in the different preschools, in winter and summer

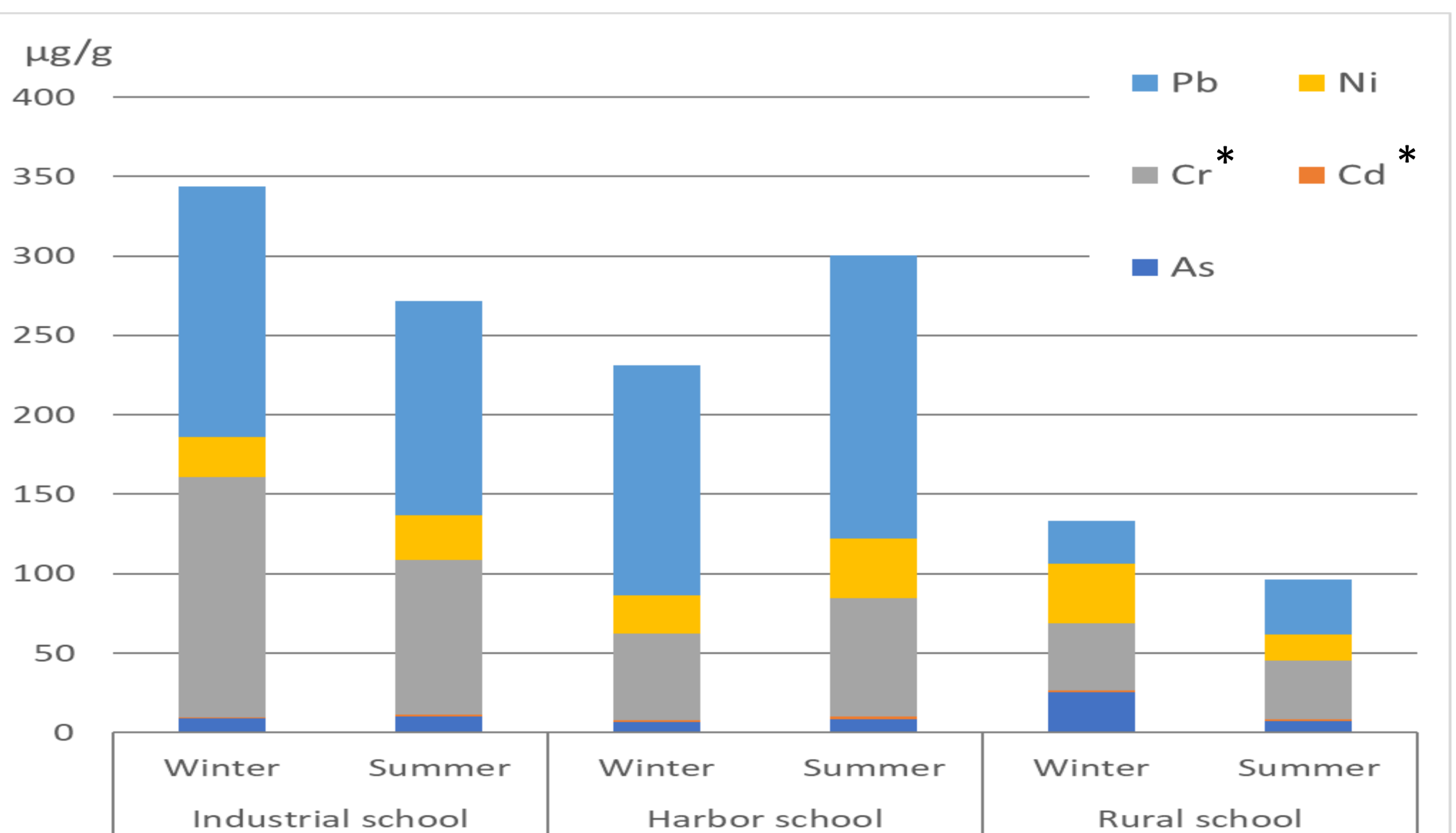


Figure 2: concentrations of the 5 trace metals of interest in the different preschools, in winter and summer

## PERSPECTIVES

Contribution to the understanding of the:

- input from soil and aerial deposition of trace metals and PAH on settled dust,
- interactions between compounds in the occurrence of genotoxic hazard,
- hazards due to soil or settled dust ingestion.

Proposition of alternative *in vitro* tools for human health risk assessment due to mixtures of micropollutants in contaminated soils.