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

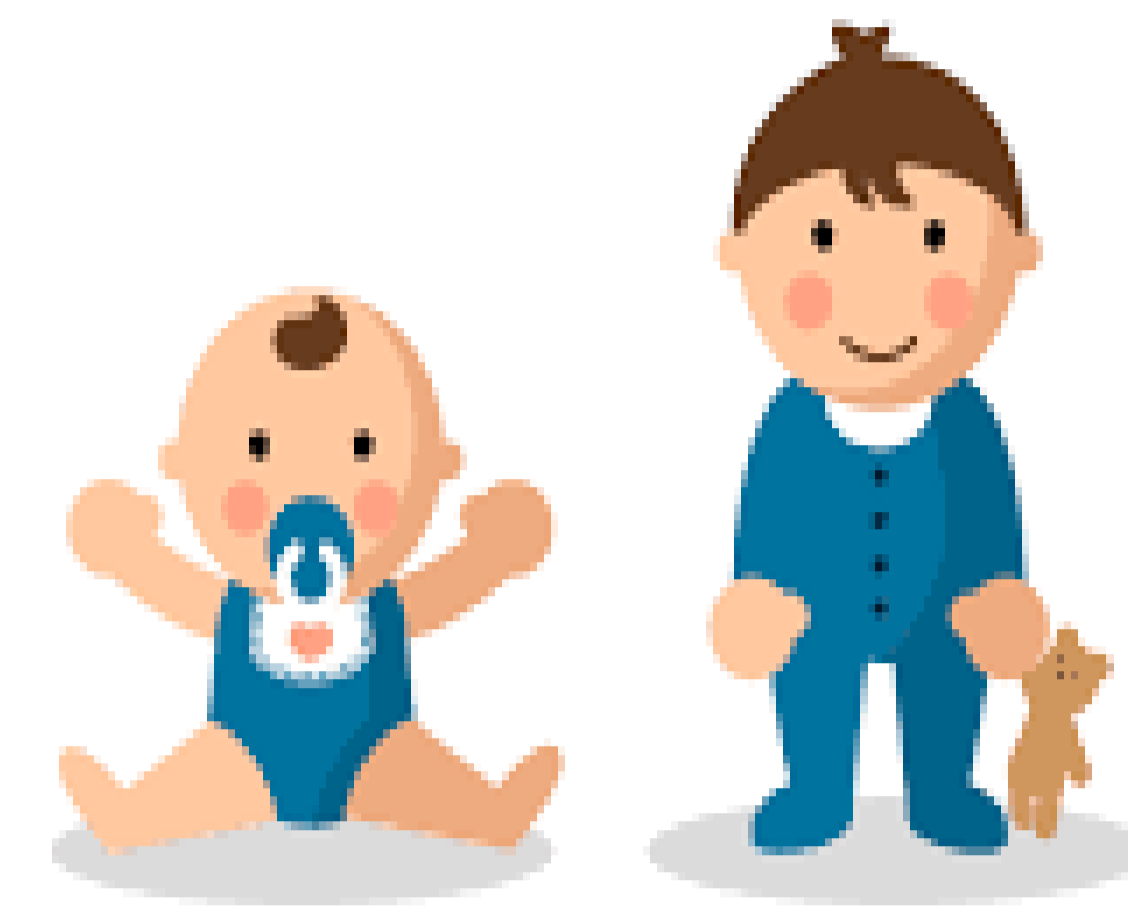
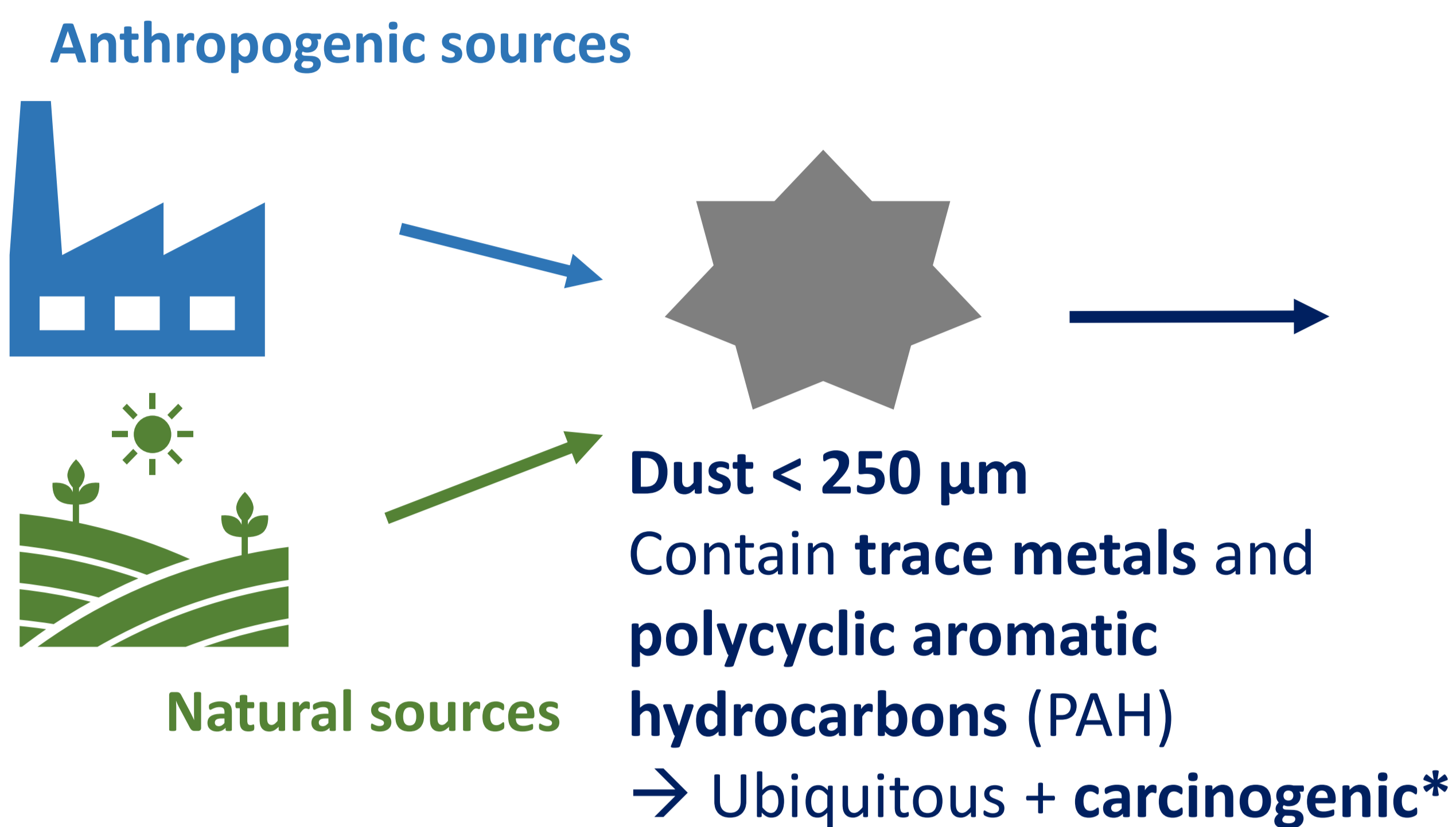


GOLDSCHMIDT*
VIRTUAL 2021
4-9 JULY

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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

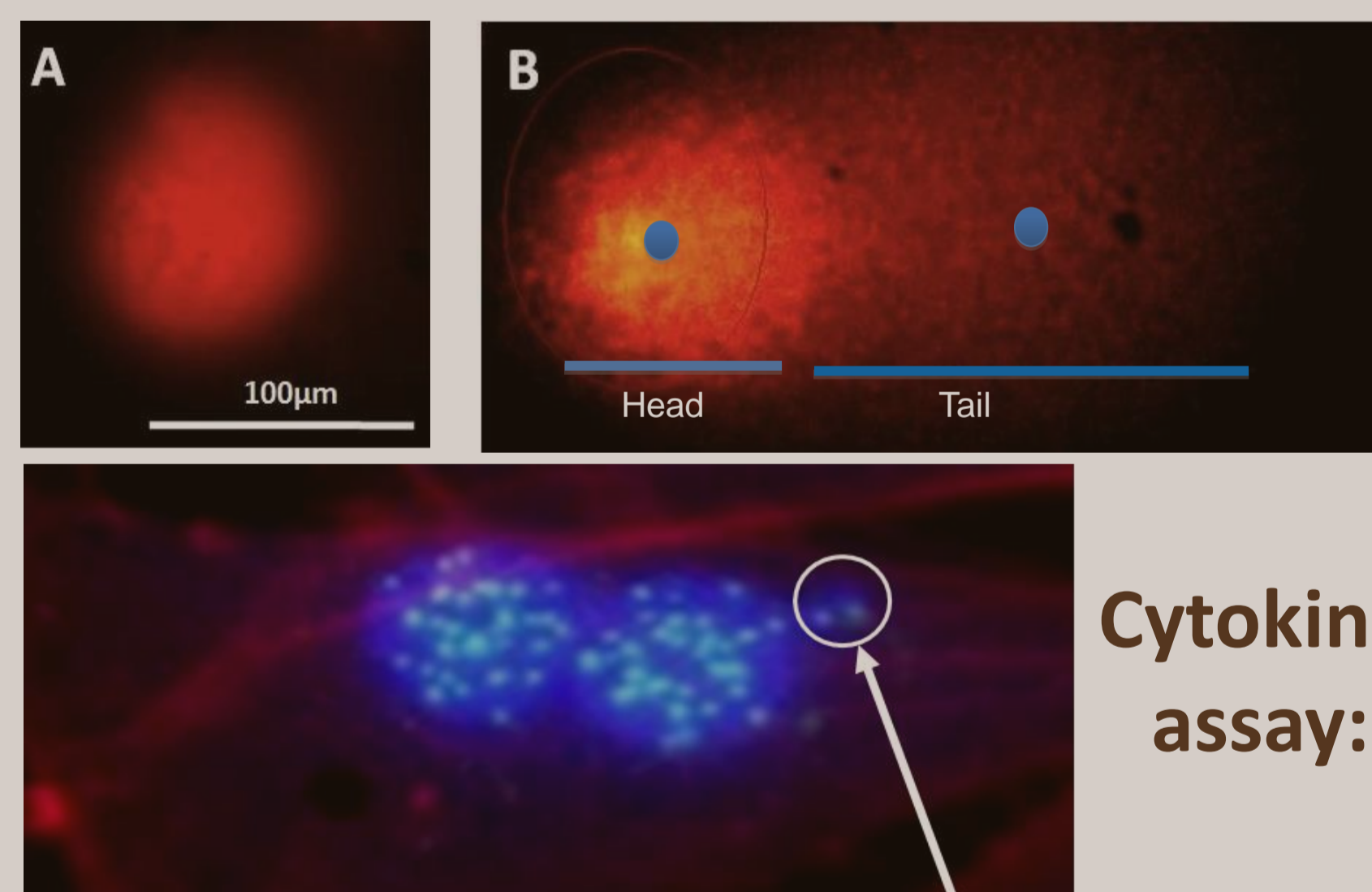
MATERIALS & METHODS

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

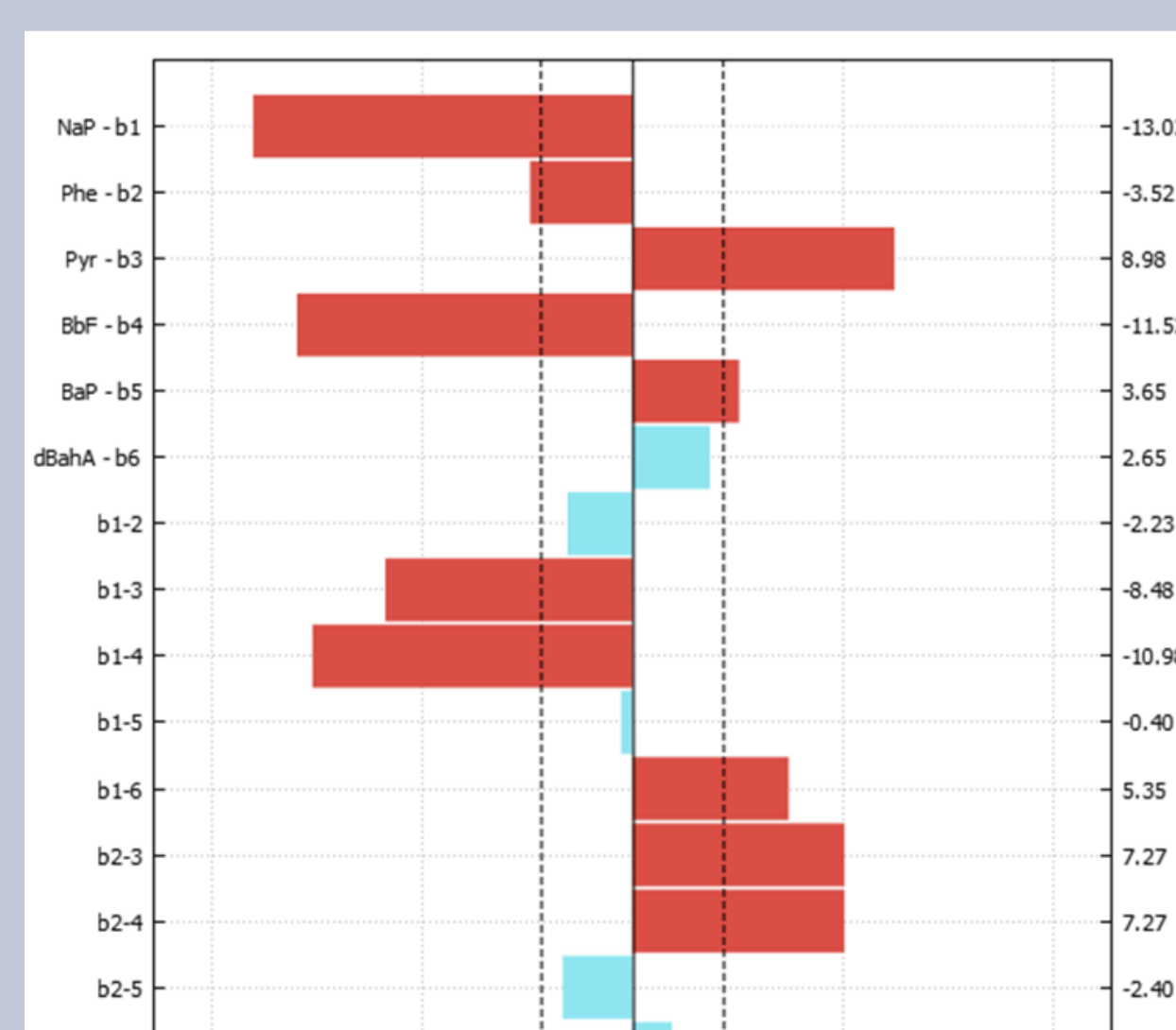


Comet assay:
DNA damage

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

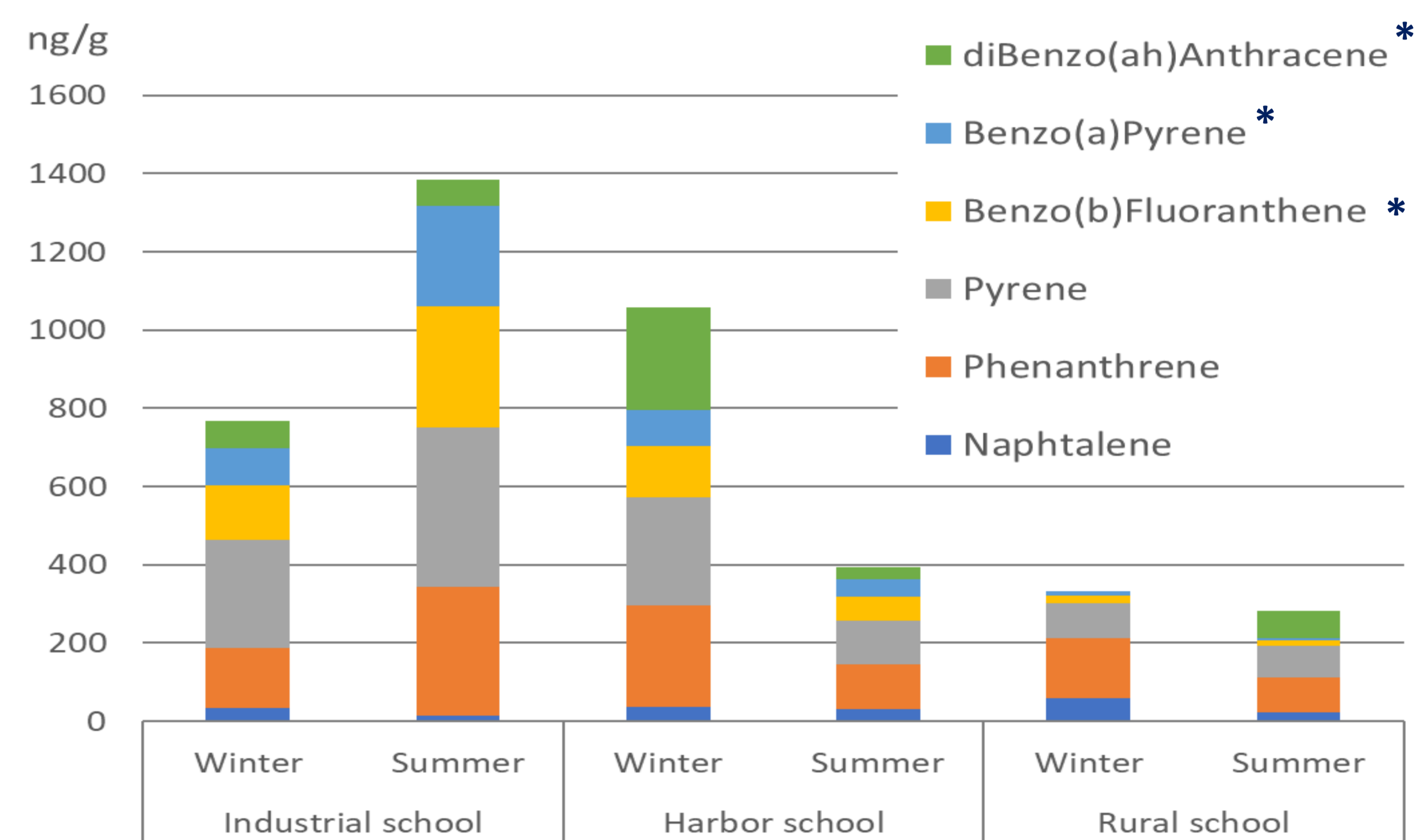


Figure 1: concentrations of the 6 PAHs of interest in the different preschools, in winter and summer

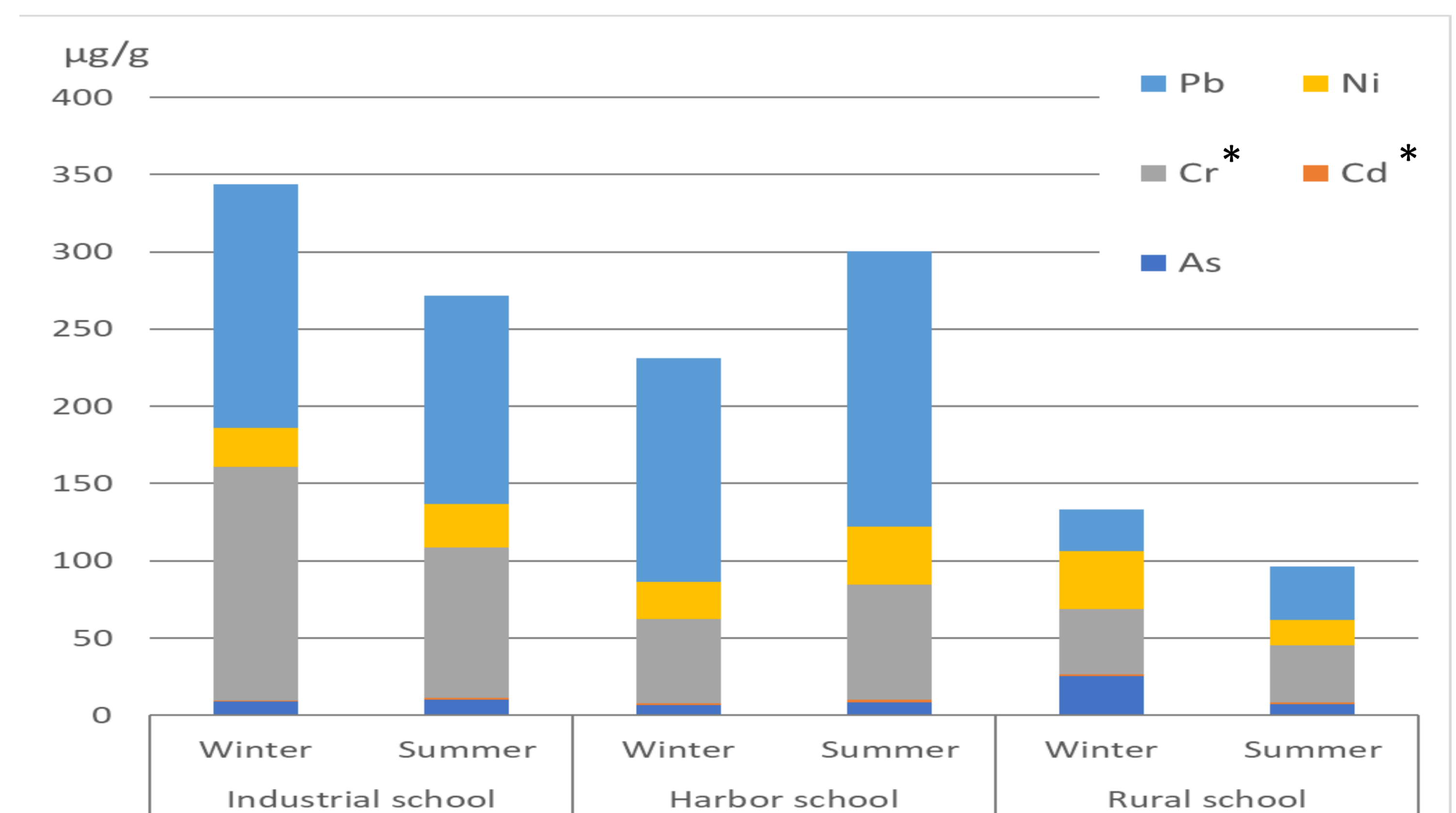


Figure 2: concentrations of the 5 trace metals of interest in the different preschools, in winter and summer

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.