



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

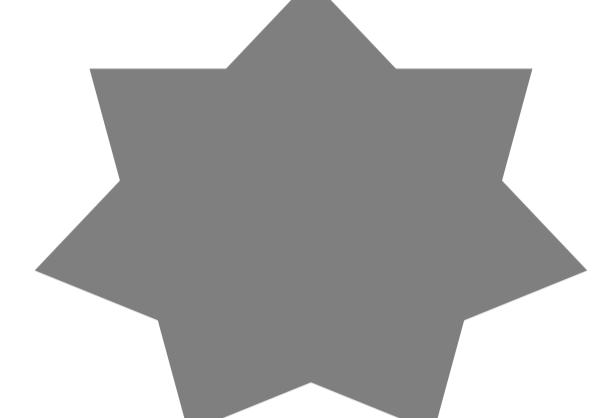
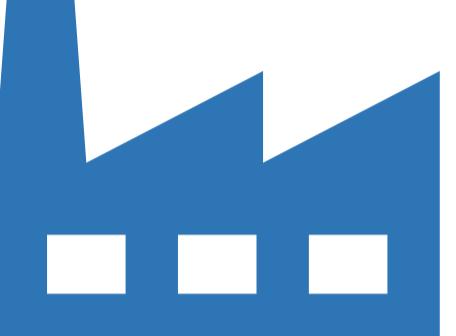
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CONTEXT

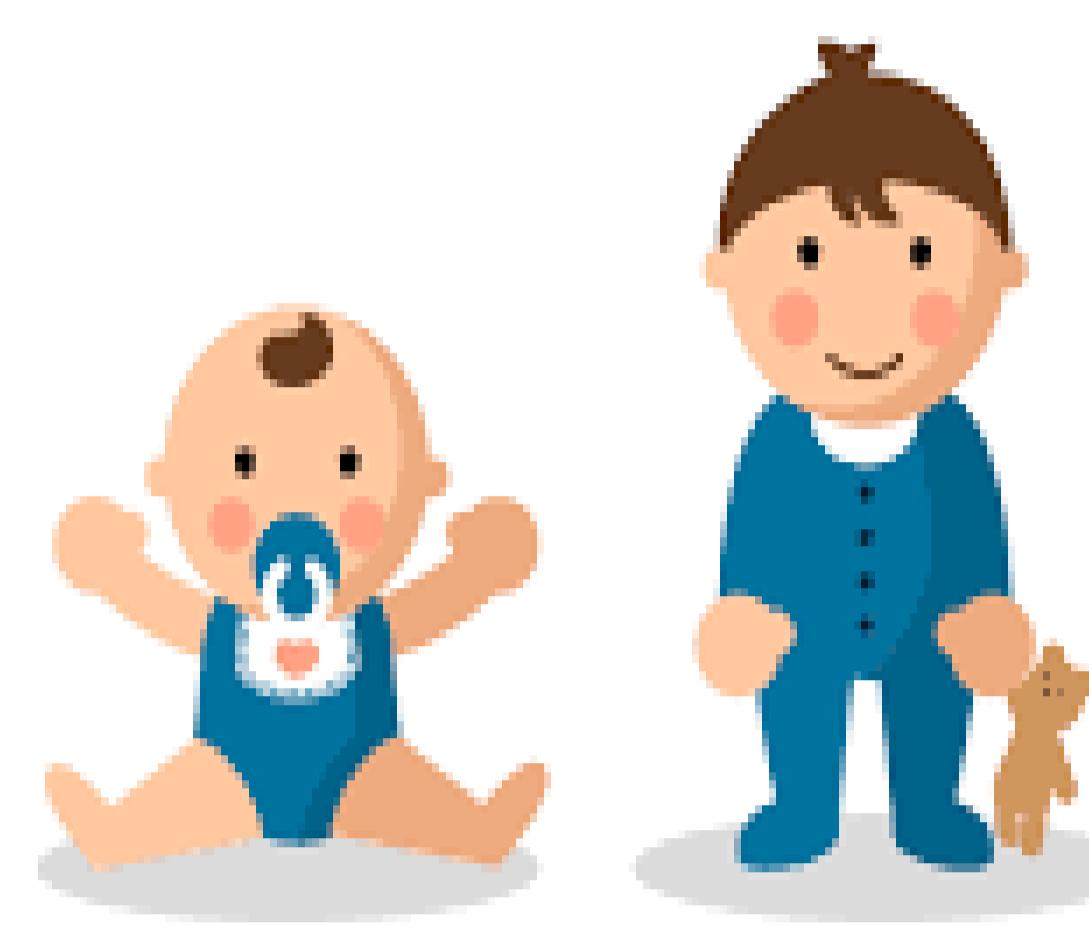
Anthropogenic sources



Dust < 250 µm
Contain trace metals and polycyclic aromatic hydrocarbons (PAH)
→ Ubiquitous + carcinogenic*



Natural sources



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.

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

PRELIMINARY RESULTS

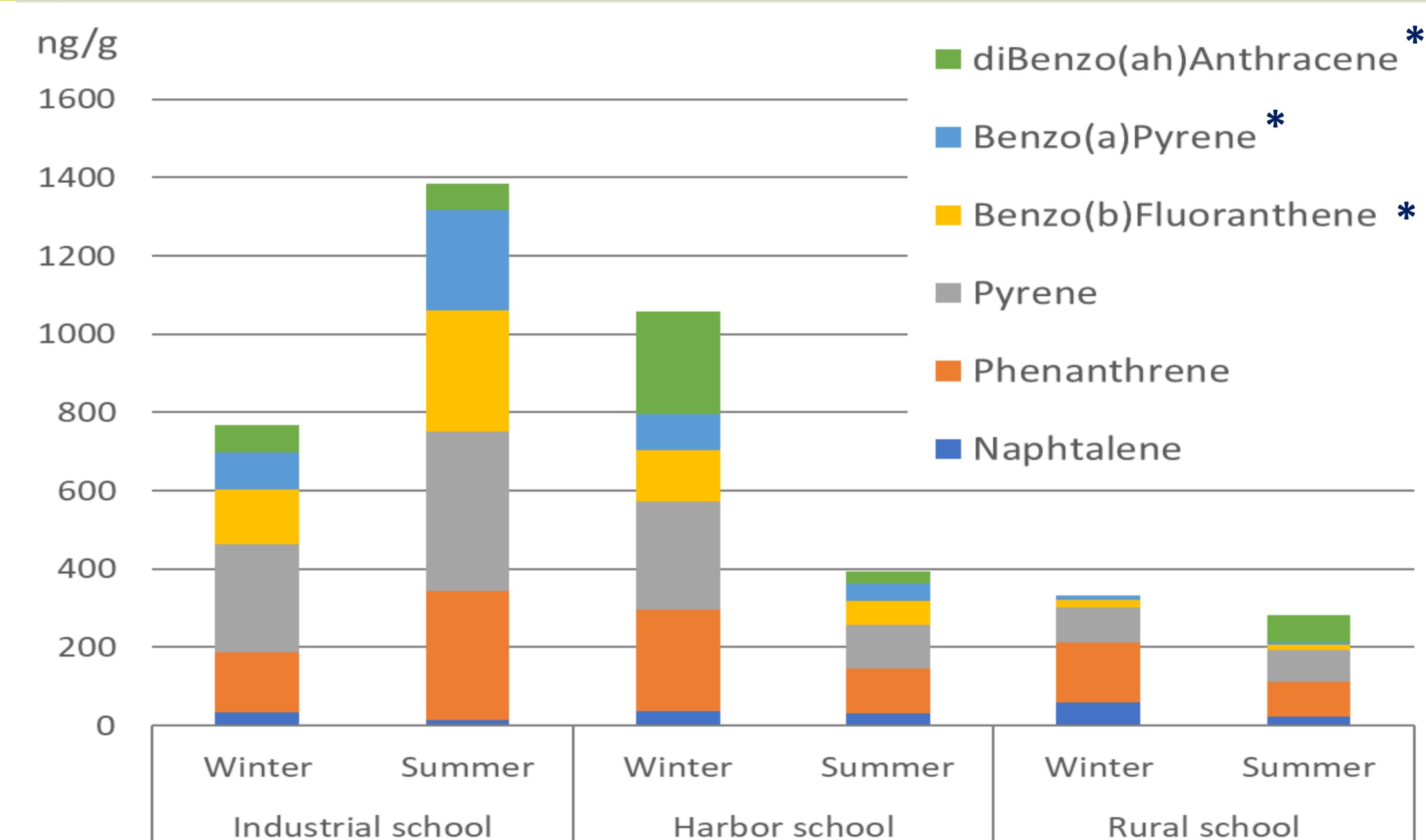
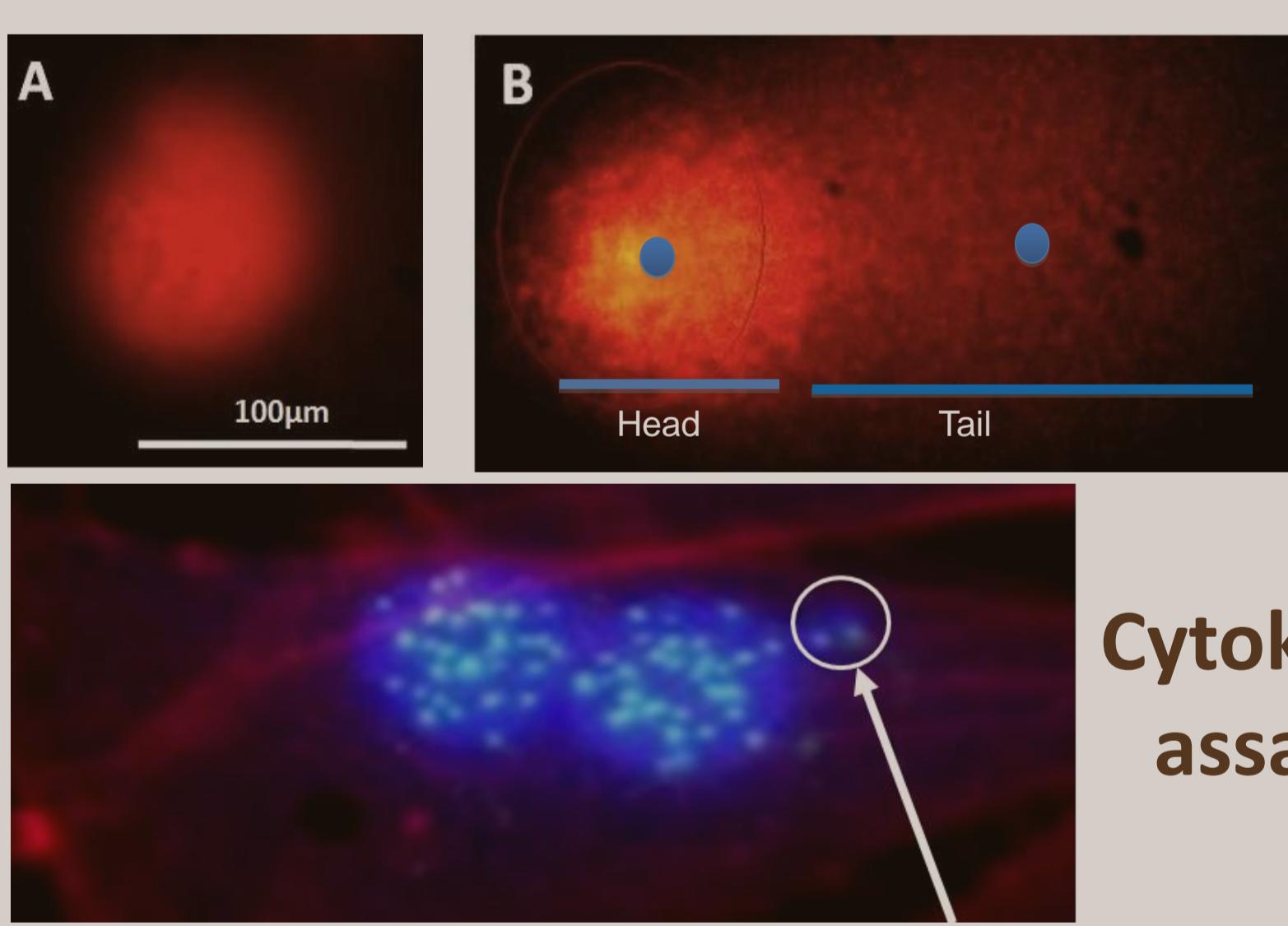


Figure 1: concentrations of the 6 PAHs of interest in the different preschools, in winter and summer

IN PROGRESS



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

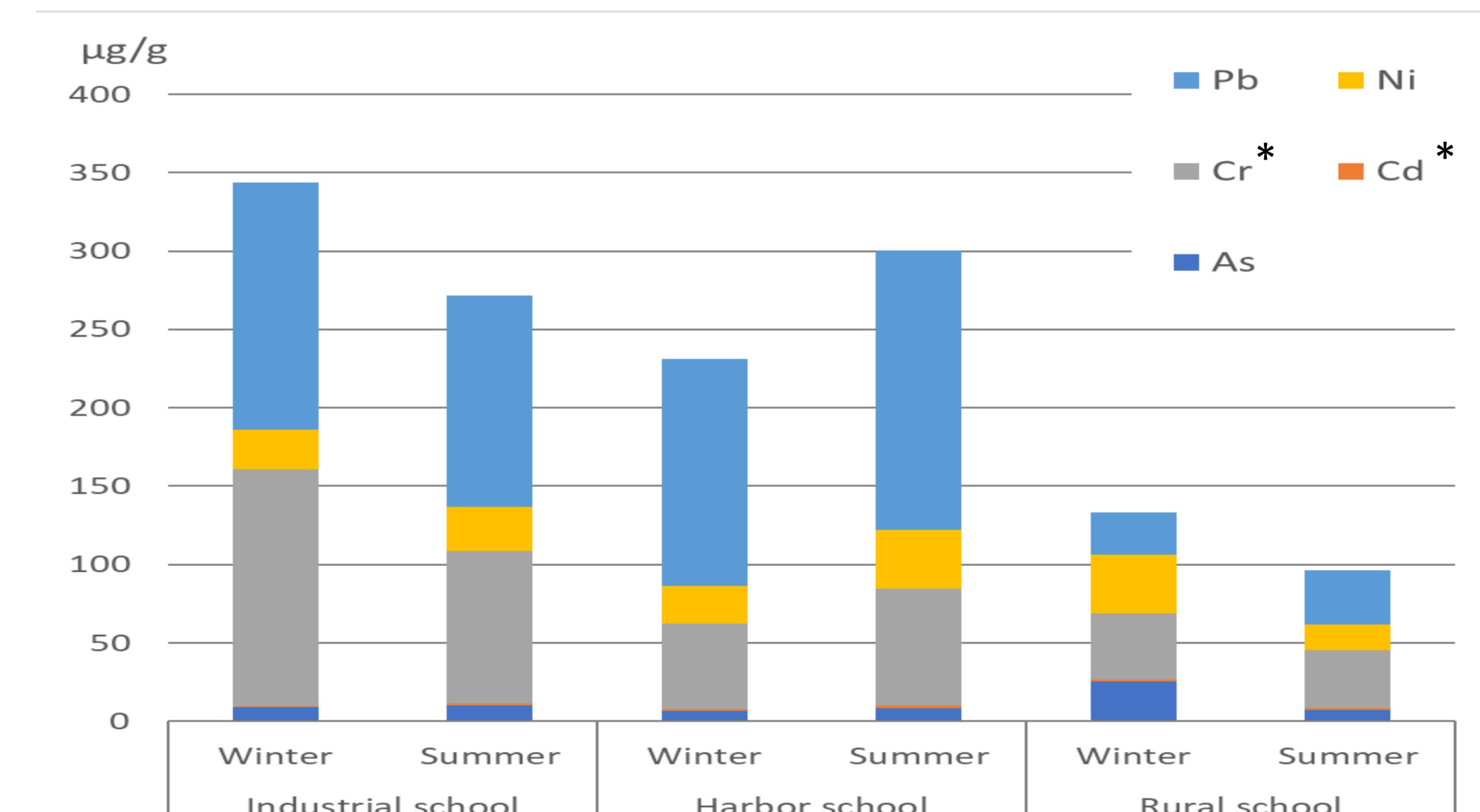
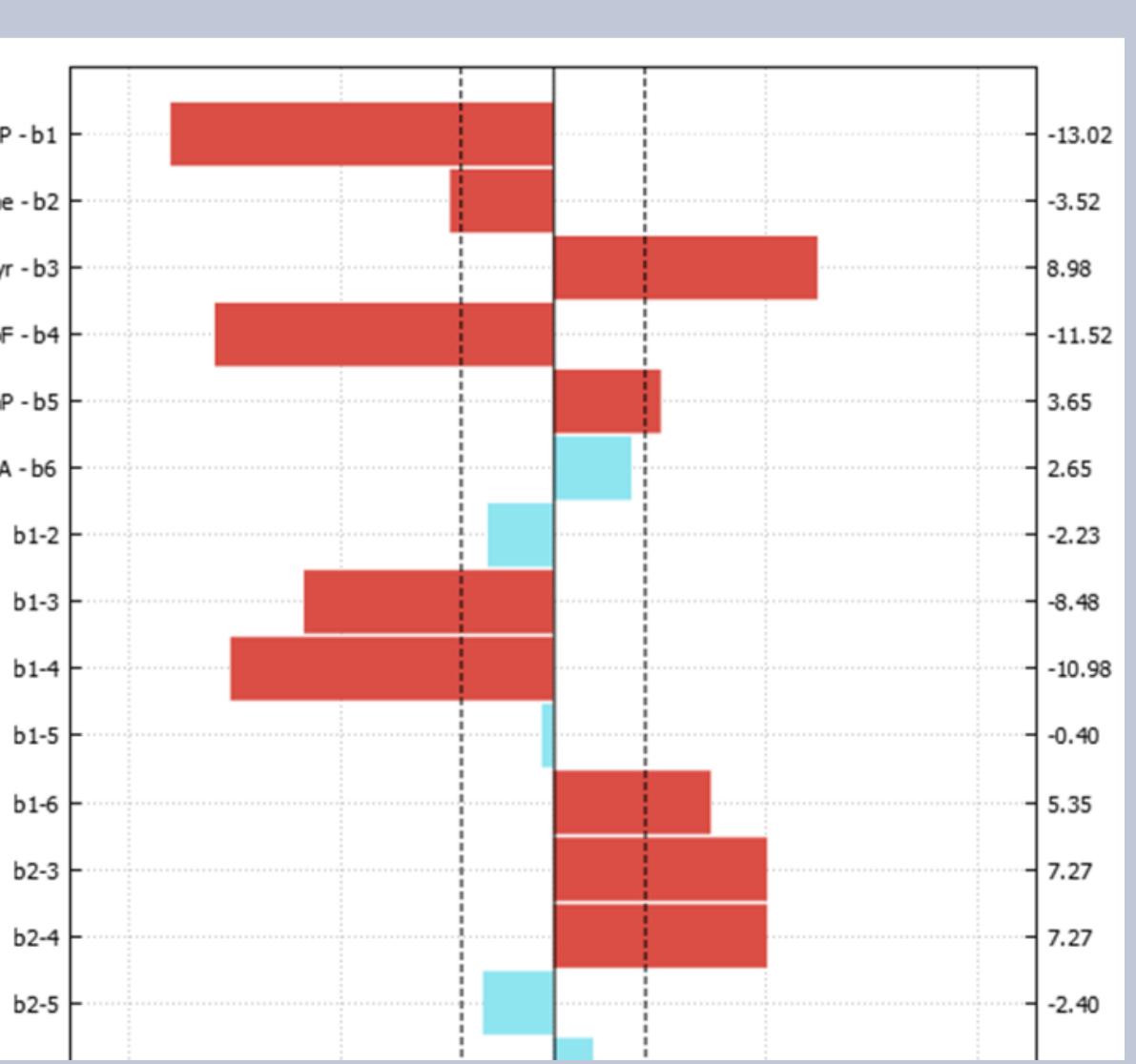


Figure 2: concentrations of the 5 trace metals of interest in the different preschools, in winter and summer

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.