

Population-based metals concentrations in tap water consumed by young children in France

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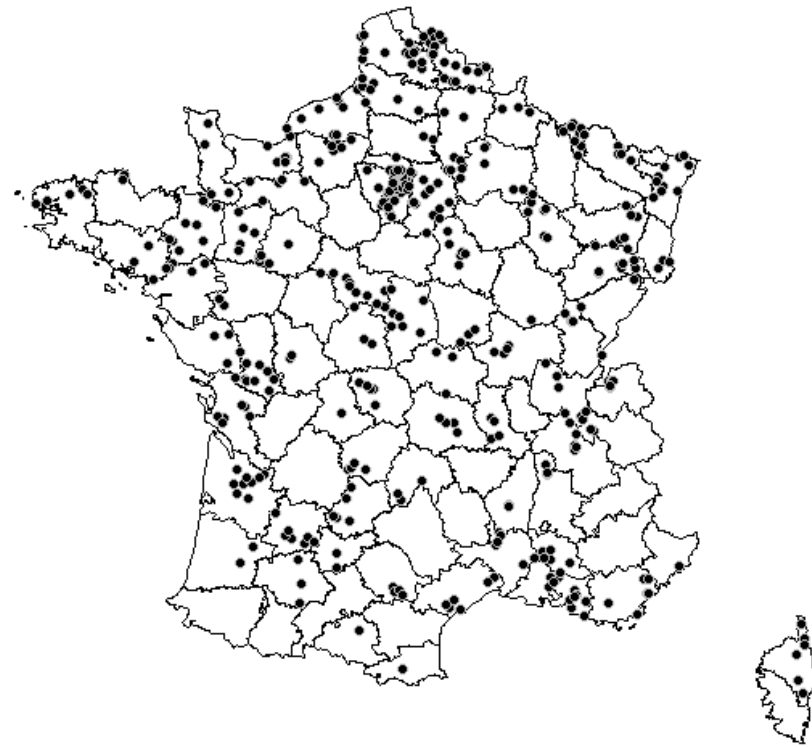
Background & Objective

- Toxicity of metals
- Exposure: air, diet, water, soil & dust ingestion
- Tap water ingestion: drinking, milk preparation
- Metal sources in tap water
 - Raw water, Treatment, distribution
- Objective: In a perspective of total exposure assessment for children 6 months to 6 years
 - To assess As, B, Ba, Cd, Cr, Cu, Ni, Pb, Sb, Se, U concentrations in tap water consumed by children aged 6 months to 6 years in France

Method: survey design

**A subsample of 484 children of a
blood lead level survey, France
2007-2009** (Etchevers IJHEH 2013)

**→ 484 children's homes, France 2008-
2009.** (Lucas Env. Res 2012)





- Tap water **consumption** ?



- **Sampling** of 2L of cold tap water in the kitchen, after flushing and 30 min stagnation time



- **Analysis:** inductively-coupled plasma mass spectrometer (ICP-MS)



- **Statistics:** sampling design and sampling weights

Discussion

- 2,977,123 children out of 4,923,058 drank tap water
- Some of them with concentrations in water above the 2011 WHO drinking water guidelines
 - 2000 (CI_{95%}: 0- 6100) over 70 µg/L for Ni
 - 78,500 (17,200-140,000) over 10 µg/L for Pb
- Strength: representativeness
- Limit: precision of estimates at the tail of distribution

Conclusion

- Tap water concentrations estimated for the population of young children drinking tap water in France
 - Whole dataset: 29 inorganic compounds: Al, As, B, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cu, Fe, Gd, K, Mg, Mn, Mo, Na, Nd, Ni, Pb, Sb, Se, Sr, Tl, U, V and Zn
- Next step: integrated exposure assessment (tap water + diet + soil & dust)
 - As, Cd, Cr, Cu, Mn, Pb, Sb, Sr, V

Aknowledgments

- Partners



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