Levels of organochlorinated pesticide residues and other persistent organic pollutants in breast milk: the Belgian results from the 6th WHO-coordinated survey

Van Overmeire Ilse [1], Joly Laure [1], Malarvannan Govindan [2], Poma Giulia [2], Covaci Adrian [2], Colles Ann [3], Koppen Gudrun [3], Den Hond Elly [4], Van de Mieroop Els[4], De Wolf Marie-Christine [5], Charlet François [5], Malysheva Svetlana V.[1], Vanhouche Martine [1], Dussart Aurélie [6], Van Loco Joris [1], Van Nieuwenhuyse An [1] Andjelkovic Mirjana [1]

1. Sciensano, Chemical and physical health risks, Brussels, Belgium • 2Toxicological Center, University of Antwerp, Wilrijk, Belgium • 3. Flemish Institute for Technological Research , Mol, Belgium • 4 Provincial Institute for Hygiene, Antwerpen, Belgium • 5. Hainaut Vigilance Sanitaire, Mons, Belgium• 6. Federal Public Service Health, Food Chain Safety and Environnement, DG5 Environnement, Brussels, Belgium

Background

- ✓ POPs monitoring in breast milk is important to follow up time trends in levels and to verify the occurrence of new POPs
- ✓ Belgium participated in the 6th WHO coordinated survey on POPs in breast milk in 2014
- ✓ 206 individual samples (collected in all regions) were included
- ✓ 1 pooled sample (national level)
- ✓ 11 pooled samples at province level
- ✓ several POPs were analysed
- ✓ This study presents the found levels

Conclusions &perspectives

- ✓ Belgium participated in the 6th WHO coordinated survey on POPs in breast milk
- ✓ **POPs levels in Belgian breast milk samples still decrease over time**
- ✓ **breast milk advised as first choice for nursing babies**
- ✓ **The results support further monitoring and reduction of exposure**

Methods

- POPs measured in individual breast milk samples (n = 206): hexabromobiphenyl (BB153), HCH group, pentacholorobenzene, sum DDTs, HCB, chlordane, PBDEs (by GCMS)
- POPs measured in pooled samples (n = 11) at provincial level: hexachlorbutadiene, chlordecone, heptachlor, dieldrin by GC-MS and HBCD (by LC MS/MS)
- Pooled Belgian sample (n = 1): all POPs analysed (at EU reference laboratory)

Results

- **Individual samples**

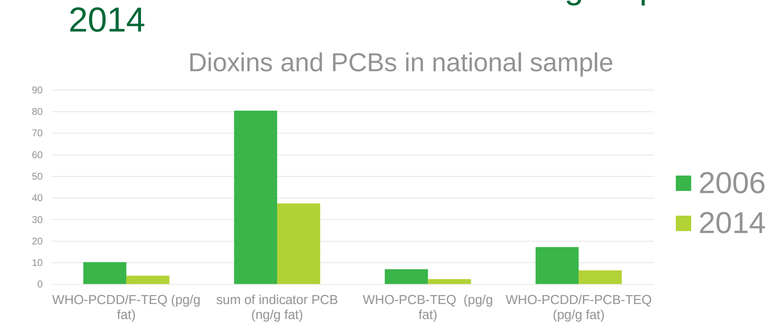
not quantified		in ≤ 50% of samples		In > 50% of samples		
		Mean conc*	Quantif. frequency (%)		Mean conc *	Quantif. frequency (%)
Cis-chlordane	PBDE-28	<0.1	5.8	p,p'-DDE	52.2	100
trans-chlordane	PBDE-99	0.1	25.7	HCB	5.6	97.5
Trans nonachlor	PBDE-100	<0.1	24.8	PBDE-153	0.5	92.7
α-HCH	PBDE-154	0.13	38.4	p,p'-DDT	4.4	70.4
o,p'-DDD	PeCB	<0.5	14.6	β-HCH	2.9	61.2
o,p'-DDT	BB153	<0.1	0.5	PBDE-47	0.2	53.4
o,p'-DDE						
PBDE-183						

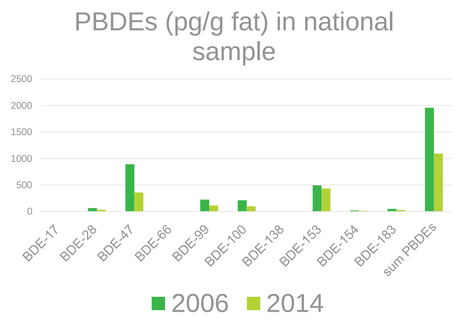
*(medium bound) (ng/g fat)

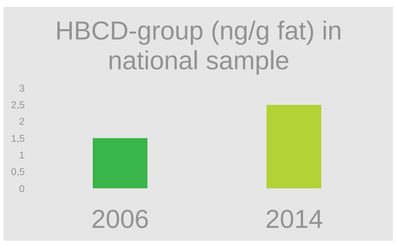
Table 1 Quantification frequency and levels of POPs in 206 individual Belgian breast milk samples from the year 2014

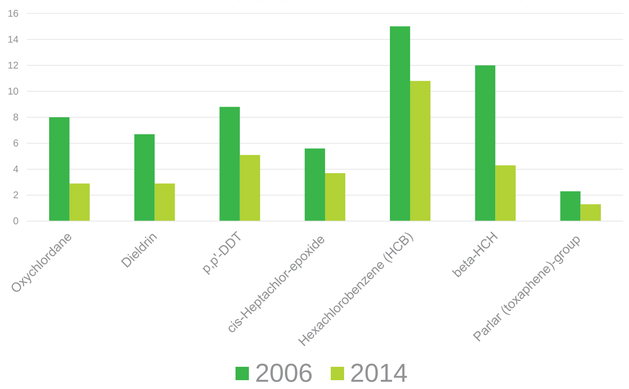
- In **pooled samples** at **provincial level**: only α-HBCD quantified (mean: 2.5 ng/g fat; range 0.9-5.0 ng/g fat)

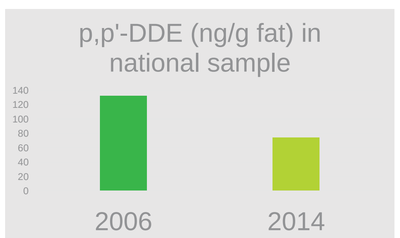
Time trend of POPs levels in Belgian pooled sample from 2006 and 2014











POPs in the Belgian pooled milk sample from the present study (2014) in comparison with results for the sample from 2006

ACKNOWLEDGEMENTS

This work was supported by the National Environment and Health Action Plan coordinated by the National Cell Environment and Health (contract DG5/AMSZ/DA/14002).

Sciensano • Contact: <Joris Van Loco> • T + 32 2 642 53 53 • <horis.vanloco>@sciensano.be • **www.sciensano.be**