

# Biomonitoring of Breastmilk

## Some thoughts on communication & experiences

### Is Breastmilk really easily available?

- ✓ Yes, for the scientist, to whom it is delivered without invasive procedures
- ✓ No, for the mother, pumping and expressing breastmilk may be difficult
- ✓ No, for the baby, breastmilk not available in large quantities

### Advantages of collaboration with NGO working in breastfeeding protection, promotion and support

- ✓ Contact to mothers outside of hospital
- ✓ Skills in lactation management
- ✓ Skills in sensitive communication about breastfeeding
- ✓ Advising mothers how to express or pump

## Breastmilk is an indicator for fat soluble substances accumulating in the body, which are difficult to break down and have a long half life

### The following substances can be identified in breastmilk

- ✓ Pesticides for ex.: DDT, Lindan, HCH
- ✓ Chemicals for ex.: Biphenyl A, synthetic perfumes, phthalates, PCB, flame retardants, sunscreen
- ✓ By products for ex.: Dioxins

Breastmilk is not mainly a tool for biomonitoring but the most optimal way to feed newborns, infants and young children

### Some beneficial substances in breastmilk

- |                  |                           |
|------------------|---------------------------|
| ✓ Lysozymes      | ✓ Macrophages             |
| ✓ Secretory IgA  | ✓ Epidermal growth factor |
| ✓ Lactoferrin    | ✓ Adiponectin and Leptin  |
| ✓ Lipase         | ✓ Relaxin                 |
| ✓ Prostaglandins | ✓ Interferon              |

### Frightening communication damaging breastfeeding

In media breastmilk used as biomonitoring tool for analysing the bodyburden of mankind is often portrayed as being severely contaminated with persistent chemicals. Sensational messages about contaminants in breastmilk undermine the value of breastfeeding

#### NEWSPAPER HEADLINES ON BREASTMILK

- ✓ «Many poisons in mothers milk»
- ✓ «Poisons threat to breastfed babies»
- ✓ «Babies in poison peril from breastfeeding»
- ✓ «Scientists find deadly toxins in mothers' milk»
- ✓ «Dioxins in breastmilk reach alarming high»



Because levels of chemicals can be detected in women's breastmilk, the whole focus is on the breastfeeding mother, which is blamed. Attention is deviated from the industries that produce the chemicals

## Formula-fed babies are less healthy in the short and long term compared to breastfed infants

### Properties of breastmilk

- Immune system ↑
- Neurodevelopment ↑
- Cognitive functions ↑

### Effect of background exposure

- Immune system ↓
- Neurodevelopment ↓
- Cognitive functions ↓



### Health effects of breastmilk

- ✓ Respiratory disease reduced 2,3 x
- ✓ Ear infections reduced 10 x
- ✓ Diabetes I reduced 2-4x
- ✓ Allergy to cow milk reduced 1,5 x
- ✓ Crohn's disease reduced 4x
- ✓ Malignant lymphomas reduced 1,5 x
- ✓ Urinary infections reduced 5 x

## WHAT research says, some quotes:

Breast-feeding is recommended despite the presence of chemical residues... in the vast majority of women, the benefits of breast-feeding appear to outweigh the risks and those who advise women about infant nutrition should continue to support breast-feeding". *Rogan W. Pollutants in Breastmilk, 1996*

"Prenatal exposure with p,p'DE was associated with a delay in mental and psychomotor development at 13 months. Long-term breastfeeding was found to be beneficial to neurodevelopment, potentially counterbalancing the impact of exposure to these chemicals through breastmilk"  
*Breastfeeding, Exposure to Organochlorine Compounds, and Neurodevelopment in Infants. Nuria-Ribas-Fito et al., Pediatrics 2003*

In utero exposure to "background" PCB concentrations is associated with poorer cognitive functioning in preschool children. Children of mothers at the upper end of exposure are especially at risk. Therefore maternal PCB body burden should be reduced, and breast-feeding should not be discouraged.

*Effects of environmental exposure to polychlorinated biphenyls and dioxins on cognitive abilities in Dutch children at 42 months of age. Patandin S et al JPediatr. 1999 Jan;134(1):7-9.*

These data give evidence that prenatal exposure to PCBs do have subtle negative effects on neurological and cognitive development of the child up to school-age. Our studies showed evidence that breast feeding counteracts the adverse developmental effects of PCBs and dioxins.

*Environmental exposure to polychlorinated biphenyls (PCBs) and dioxins. Consequences for longterm neurological and cognitive development of the child. Boersma ER et al Adv Exp Med Biol. 2000;478:271-87*

## WHAT policy makers say:

It is however recognised that breastfed infants are still exposed to high intakes of these compounds (on a body weight basis higher than adults), although for a small proportion of their lifespan. However, taking into account the well-proven and accepted benefits of breastfeeding for developing infants, WHO repeatedly and strongly recommended that breastfeeding be encouraged and promoted, particularly in view of the declining trend in levels of these compounds in human milk. The results of the current study support that recommendation.

*Results of the 3rd round of the WHO coordinated exposure study on the levels of PCBs, PCDDs and PCDFs in human level (2002)*

## Conclusions:

### Well weighted communication not to damage perception of breastfeeding:

- ✓ for mothers
- ✓ for pmuarents
- ✓ for general public
- ✓ for medical doctors
- ✓ for health workers
- ✓ for policy makers



## Legal action to reduce production and release of bioaccumulating substances.