



Ontario Public Health Association
 l'Association pour la santé publique de l'Ontario
Established/Établi 1949

Ontario Public Health Association
 700 Lawrence Ave. W., Suite 310
 Toronto ON M6A 3B4
 Tel: (416) 367-3313 / 1-800-267-6817 (Ontario)
 Fax: (416) 367-2844
 Email: info@opha.on.ca
 Website: www.opha.on.ca

Balancing and Communicating Issues Related to Environmental Contaminants in Breastmilk

Position paper and resolution adopted by the Ontario Public Health Association (OPHA)

Code: 2004-01 (PP) *Status:* Active
 2004-01 (RES)

Submitted by: the OPHA Breastfeeding Promotion and Environmental Health Workgroups

CONTENTS

A Statement by the Breastfeeding Promotion and Environmental Health Workgroups of the OPHA.....	2
Executive Summary	2
Background	3
Position Paper: Breastmilk and Breastfeeding.....	4
OPHA Resolution on Balancing and Communicating Issues Related to Environmental Contaminants in Breastmilk	9
Implementation Strategy	10
References	11
APPENDIX I: A joint statement by participating organisations of the World Alliance for Breastfeeding Action (WABA) & International POPs Elimination Network (IPEN)	16

A Statement by the Breastfeeding Promotion and Environmental Health Workgroups of the OPHA

This paper advocates that, while research has shown that a woman's breastmilk may contain contaminants, women should in most cases continue to breastfeed, as in the vast majority of cases the benefits of breastfeeding outweigh the associated risks. The purpose of this paper is to weigh the benefits of breastfeeding against the level of known risk associated with reported contaminants in breastmilk. This information is important, as it will inform women about what is known and unknown about environmental contaminants that can be transmitted to their children during pregnancy and breastfeeding. This will empower them to make choices, which in some cases may influence their level of risk.

At the same time, this paper recognizes that the presence of contaminants in breastmilk is an indicator of the health of our environment and emphasizes the need to take action towards its protection.

Executive Summary

Breastfeeding confers substantial health benefits to both the infant and mother. The potential of environmental contamination is present with both the use of infant formula products and breastmilk. However the risk posed by the low level of contaminants present in most women's breastmilk is unclear. The fact that contaminants have been documented in human breastmilk is not necessarily indicative of harm to health. Scientists have difficulty differentiating between exposures that occurred in utero and those that occurred through breastfeeding, and few reliable studies of the effects of contaminants in breastmilk among the general population have been conducted. In light of this uncertainty and the documented benefits of breastfeeding it is concluded that **except for in extreme cases, the benefits of breastfeeding by far outweigh the potential hazards posed by environmental contaminants in breastmilk.** Breastfeeding should be actively promoted among the general population. At the same time solutions are required, on both political and societal fronts, to reduce exposures to environmental pollutants in order to reduce levels of contaminants present in breastmilk. These solutions need to recognize the fundamental right of children to breastmilk free of the presence of harmful contaminants, which requires an environment free of potentially harmful levels of contaminants.

Background

The Issue:

Reports of the presence of contaminants in breastmilk can create a sense of concern and confusion over the safety of breastfeeding. Women are in need of better, more complete information about the benefits of breastfeeding and the level of risk posed by contaminants in breastmilk in order to make an informed decision that is right for them.

The Purpose:

The purpose of this paper is to create a context for a discussion about the current problems surrounding the communication of information and risk relating to environmental contaminants in breastmilk. It is intended as a step towards creating a social environment in which women receive objective, meaningful and useful information that allows them to achieve a level of comfort and confidence about the level of risk associated with breastfeeding and environmental contaminants based on what is known to date.

The need for this paper:

- ❑ The presence of contaminants in breastmilk is often communicated as an alarming message that contains incomplete information, and fails to appropriately balance the associated benefits and risks. Media reports, books on pregnancy and childrearing, and varying knowledge among service providers contribute to this problem.
- ❑ Such communications can create the inaccurate impression that breast-feeding is not safe and beneficial for the baby, and may discourage its practice [Hatcher 1982](#).
- ❑ The uncertainty of the risk associated with the presence of contaminants and the documented benefits of breastfeeding create a dilemma for parents breastfeeding their infants.
- ❑ Thus there is an overwhelming need to provide women with sufficient information so that they have an understanding of both the benefits and risks and are empowered to make informed decisions.
- ❑ There is also a need to promote environmental policies that would reduce the level of contaminants in breast-milk for future generations.

Outline:

This paper, through a review of the literature, will discuss the benefits of breastfeeding, potential contamination issues associated with infant formula, and the exposure and risk associated with the presence of contaminants in breastmilk. While this is the focus of what follows, it must be noted that the presence of contaminants in breastmilk is a symptom of a much larger problem; it is an indicator of the extent to which we have contaminated the environment upon which we are dependant. It is a “sign” that things must change -- of the need for public policies that prevent the release of persistent toxicants into the environment. The importance of creating an environment in which breastmilk is as free from contamination as possible cannot be overstated.

Position Paper: Breastmilk and Breastfeeding

Refined over hundreds of thousands of years to ensure survival of human infants, breastmilk is a unique food specifically suited to human infants. Breastmilk composition varies with the age of the baby, time of day and point in the feeding thus adapting to the needs of the particular infant. Research continues to confirm the fact that breastmilk is the optimal food source for developing babies.

Benefits of breastfeeding

Breastmilk contains numerous factors that help infants to fight infection and illness and to be healthier in general [Wagner et al 1996](#). Breastfeeding completes the infant immune system. Breastfed infants have lower rates of insulin dependant diabetes, respiratory illness, otitis media, allergies, gastrointestinal illness, diarrhea and necrotizing enterocolitis which can be fatal in premature infants [Gerstein 1994](#), [Wilson et al 1998](#), [Saarinen 1982](#), [Saarinen 1995](#), [Koletzko et al 1989](#), [Duffy et al 1986](#), [Lucas and Cole 1990](#). Breastfed infants are also less likely than their formula fed counterparts to die of SIDS [Mitchell et al 1991](#). Studies indicate that breastfeeding may offer some protection against multiple sclerosis [Pisacane et al 1994](#). As well breastfeeding appears to confer some protection against certain childhood cancers [Davis et al 1988](#). Studies have also suggested that breastfed infants have better cognitive development. [Greene et al 1995](#), [Drane 2000](#), [Horwood 2002](#), [Mortensen 2002](#). This is most profound in the case of preterm infants. [Rao et al 2002](#).

Breastfeeding also provides many benefits for the mother. Benefits include lower risk of ovarian cancer and osteoporosis and pre-menopausal breast cancer [Newcomb et al 1994](#), [Hartge et al 1989](#), [Cumming et al 1993](#). High frequency breastfeeding can serve also as a simple and free method of child spacing; one long used by traditional subsistence populations, although used alone (without adhering to several qualifying conditions), breastfeeding is not a birth control method [Walker 2002](#). It can also help to prevent iron loss in women as menstrual periods are suppressed for a least some portion of the breastfeeding period [Kennedy et al 1989](#). In addition to these physical benefits, breastfeeding brings with it a range of emotional benefits for both mother and child. The hormonal effects of breastfeeding enhance the desire for infant - mother proximity and lower anxiety levels in mothers. [Lawrence 1989](#), [Sobrinho 1003](#), [Insel and Shapiro 1992](#), [Urnäs-Moberg et al 1990](#).

Contamination risks related to infant feeding products

Consideration of the presence of environmental contaminants in breastmilk must be balanced with consideration of environmental risks associated with commercial infant feeding products.

The process involved in the manufacture, shipping, preparation and use of infant feeding products creates potential for the introduction of contaminants. Since the commercial development of infant feeding products began early in the 20th century, they have been subject to errors and contamination [Minchin 1985](#), [Palmer 1988](#), [US FDA 2002](#).

In North America, many infant feeding products are usually made or reconstituted with tap water. Despite the many regulations in place to ensure the safety of drinking water, there is the possibility that it could contain varying levels of environmental contaminants as is evidenced by recent events in Walkerton and numerous studies documenting the

presence of pesticide residues in drinking water. In North America the potential risk from tap water as a source of contamination is small. In developing countries however, where water contamination is more probable, the risk is greatly magnified.

Nevertheless the presence of contaminants in infant feeding products in developed countries in recent years has been documented, despite increasingly stringent regulatory measures [codex 2003](#), [codex 2001](#), [WHO 2004](#). Periodic recalls of infant feeding products have occurred due to product contamination with bacteria such as *enterobacter agglomerans*, *enterobacter sakazakii* [US FDA 2002](#), [Van Acker 2001](#). For a young infant, an infant feeding product constitutes 100% of their diet so the risk of harm from biological contaminants is multiplied.

Infant feeding products using cow's milk as a base, may also raise concerns regarding pesticide residues from the plants used to feed cows, antibiotic residues and Bovine Growth Hormone (rBGH), which is used in some countries not including Canada. Also, soy-based infant products may use genetically modified soybeans. Currently insufficient evidence is present within the peer-reviewed literature to adequately assess this concern, thus the long term impacts of the genetic modification of food consumed by infants remain unknown [OPHA 2001](#).

Small amounts of heavy metals such as lead, aluminum and cadmium have been found in infant feeding products, [UK Food Standards Agency 2003](#), [Health Canada 2003](#). Though present at levels considered unlikely to pose any risk to infants, their presence is of concern because even at very low levels of exposure these metals have the potential to be harmful to developing brains and nervous tissue, the complexity of brain development is not fully understood and because levels of exposure considered "safe" have been steadily dropping over time for many metals.

Surveys conducted by the United Kingdom Food Standards Agency in 1998, 2001 and 2003 detected low and falling concentrations of dioxins and PCBs in many brands of infant formula [UK Food Standards Agency 2004](#). Also, small quantities of phthalates, used in the production of plastics, have been found in infant formula and baby food [Petersen & Breindahl 2000](#). In 1996 the United Kingdom Ministry of Agriculture, Fisheries and Food reported that all brands of infant formula in Great Britain contained phthalates [MAFF Ministry of Agriculture Fisheries and Food 1996](#). This group of chemicals may have the potential to mimic female hormones, some (e.g. DEHP) are classified as probable carcinogens, and their long-term effects are not known [Sharpe et al 1995](#). The potentially endocrine disrupting chemicals bisphenol-A and nonylphenols, have also been found to leach from some plastic baby bottles [see reference re. Bisphenol A in Howdeshell et al 2003, Soto et al 1991](#). A general lack of awareness about the fact that heating of plastic increases the leaching of these fat-soluble chemicals into milk and infant feeding products results in even higher levels of daily exposure for many infants. Disruption of the endocrine system during critical points of an infant's development is suggested to play a role in adverse, irreversible reproductive, immune and developmental effects [IPCS 2002](#).

Environmental Contaminants in Breastmilk:

Over the last 50 to 60 years, coinciding with the rise of industrialization, various industrial chemicals, pesticides, fungicides and insecticides have been measured in human breastmilk. These contaminants have been found at varying concentrations in breastmilk studies conducted in different countries around the world. The chemicals measured are mainly persistent organic pollutants. Many of them are chlorinated compounds including, but not limited to, DDT (and its breakdown products), PCBs, and dioxins.

Exposure

Infant exposure to contaminants through breastmilk (or in utero) varies depending on where a mother has lived and worked in her lifetime, frequency, volume and duration of breastfeeding, age of the mother, the number of previous children a mother has breastfed, pre and post-natal weight gain and loss and to some extent diet of the mother before and during lactation [Steingraber 2001](#).

It can be very difficult to separate the health effects associated with exposure to environmental contaminants in breast milk from those associated with exposures that occur in the womb. The evidence suggests that smaller doses in utero, when the fetus is undergoing extremely rapid development and shares the maternal blood supply poses a greater hazard than larger doses that occur postnatally through breastmilk. [Patantinet al 1999](#), [Huismanet al 1995](#), [Jacobson et al 1996](#), [Grandjean 1995](#).

Contaminants found in breastmilk

As is the case with many substances found in the environment, some contaminants linked to breastmilk have been well researched, and others have not. The research that does exist is subject to a number of limitations including but not limited to difficulties in measuring true exposure, a lack of consideration of long-term, multigenerational effects, the uncertainties inherent in extrapolating animal data to humans and the difficulty of determining synergistic and cumulative effects.

Many of the studies of human breastmilk have been conducted following an accidental exposure to very to high levels of contaminants and as such do not reflect the day-to-day exposure that applies to most women. As might be expected, breastmilk contaminant levels following accidental exposures often show much higher levels than samples taken following ambient exposure. However, in some studies the sample size is simply too small to draw such conclusions. For example, a chemical plant explosion in Seveso Italy (1975) resulted in limited breastmilk monitoring that found dioxin levels 200 to 600 times the background level in 3 samples.

In other cases, surveys of breastmilk in the general population or in specific subgroups have tried to assess exposure to environmental contaminants, in the absence of an accidental exposure. However such studies are limited in their lack of a standardized protocol for monitoring human breastmilk [Solomon & Weiss 2002](#). At issue are donor selection, analytical methods, and timing of the collection, among other things. This makes it difficult to compare concentrations of contaminants between nations and over time.

Surveys conducted over many years are more useful in illustrating trends in the contaminant levels in breastmilk. These studies have illustrated that some contaminants, such as those subject to regulatory control [Solomon & Weiss 2002](#), [Craan & Haines 1998](#) are decreasing in concentration, while others are increasing. In still other cases, measurements have only recently been taken and an assessment of trends cannot yet be made. For example, national surveys of chlorinated hydrocarbons in breastmilk have shown a downward trend for 1967 to 1992 for organochlorine pesticides and PCBs [Craan & Haines 1998](#). In the European Union, dioxin levels have declined by approximately a third in rural, urban and industrial settings between 1988 to 1993 [Solomon & Weiss 2002](#). However, levels of other contaminants, such as polybrominated diphenyl ether (PBDE), a flame retardant, are on the rise [Solomon & Weiss 2002](#).

Effects associated with exposure:

There are few long-term studies assessing the health consequences of breastmilk exposure to contaminants. A cohort of 750 children in North Carolina found that those with the highest 5% of prenatal PCB exposure had slightly diminished tone and reflexes. Prenatal exposure was associated with poor performance on the Bayley Scales of Infant Development from 6 to 24 months but there was no association between transplacental or breastmilk PCB exposure and the McCarthy Scale of Children's Ability scores [Rogan et al. 1986 cited in Rogan 1996](#).

Similarly a Michigan cohort of 250 children involving some mothers that had eaten fish contaminated with PCBs (during their pregnancies) found that maternal fish consumption was associated with minor abnormalities of tone in newborns [Jacobson et al 1984 as cited in Rogan, 1996](#). Poorer visual recognition in 7 month olds was associated with higher cord blood PCB levels but not breastmilk exposure in newborns [Jacobson et al 1984 as cited in Rogan 1996](#). Four year old children with higher serum PCB levels were rated as less active and when children's PCB levels were related to their breastfeeding history, the effect on activity was seen only in children whose mothers had above-average PCB levels and who breast-fed longer than 1 year [Jacobson et al 1990 as cited in Rogan 1996](#). This cohort of children had higher PCB exposure as a whole that would be expected in the general population (i.e. people not consuming Great Lakes sport fish).

Note that both these latter two studies it is not clear whether the effects were attributable to exposure through breastmilk, in utero, or both.

Putting exposure to contamination into perspective:

Today's children are exposed to environmental contaminants throughout their development. Rather than being singled out, exposure to contaminants present in breastmilk must be recognized as only one point on the continuum, in which children are exposed to a variety of contaminants while undergoing numerous changes in their development. Development in utero is of critical importance. These facts need to be interpreted by researchers and health professionals for the general public and communicated.

Summary points/Risk Communication:

This review of the literature clearly indicates that breastfeeding confers substantial health benefits to both the infant and mother. The potential of environmental contamination is present with both the use of infant formula products and breastmilk. However the risk posed by the low level of contaminants present in most women's breastmilk is unclear. The fact that contaminants have been documented in human breastmilk is not necessarily indicative of harm to health. Scientists have difficulty differentiating between exposures that occurred in utero and those that occurred through breastfeeding, and few reliable studies of the effects of contaminants in breastmilk among the general population have been conducted. In light of this uncertainty and the documented benefits of breastfeeding it is concluded that **except for in extreme cases, the benefits of breastfeeding by far outweigh the potential hazards posed by environmental contaminants in breastmilk.** Breastfeeding should be actively promoted among the general population. Emphasis should be placed on the relative value and benefits of breastfeeding as opposed to the contaminants issue. At the same time the existence of the concern should not be ignored as this may have the effect of amplifying anxieties and public trust [Powell 1997](#).

Clearly solutions are required on both political and societal fronts to reduce exposures to environmental pollutants in order to reduce levels of contaminants present in breastmilk. These solutions need to recognize the fundamental right of children to breastmilk free of the presence of harmful contaminants, which requires an environment free of potentially harmful levels of contaminants.

Recommendations:

Listed below are some broad recommendations for addressing this issue:

1. Improved access to meaningful, contextual, up-to-date and useful information regarding the benefits and risks (environmental and other), associated with breastmilk and its alternatives.
2. Improved access to information, on how women and families can reduce the risk of exposure of their children to environmental contaminants at different points in their development, whether they are breastfeeding or using infant feeding products.
3. Ongoing, public monitoring of and research into environmental contamination and its impacts on children.
4. A commitment to reducing environmental contamination, particularly with respect to Persistent Organic Pollutants (POPs).

OPHA Resolution on Balancing and Communicating Issues Related to Environmental Contaminants in Breastmilk

WHEREAS breastmilk is a unique food specifically suited to human infants;

WHEREAS provincial, national and international health authorities have clearly and publicly stated that breastmilk is the best exclusive food for infants for the first 6 months of life, and an optimal food source after that point;

WHEREAS breastmilk and breastfeeding are associated with significant physical, social and emotional benefits;

WHEREAS the OPHA has, in a 1993 position paper on breastfeeding, taken the position that breastfeeding should be promoted, supported and protected;

WHEREAS it is clear that all humans are involuntarily exposed to environmental contaminants;

WHEREAS the presence of environmental contaminants in breastmilk is documented in the scientific literature;

WHEREAS there are indications that the environmental contaminants to which children are exposed throughout their development (pre-natal, post-natal, early childhood, childhood and adolescence) have the potential to cause adverse health effects;

WHEREAS the communication of information and risk relating to the presence of environmental contaminants in breastmilk is often sensationalized, ambiguous, unduly emphasizes the negative, inspires fear, and can promote ambivalence towards breastfeeding; and

WHEREAS women and families are in need of objective, meaningful and useful information that allows them to make informed personal decisions in high risk situations where known contaminants are present and breastfeeding is taking place. (for example when there is consumption of Great Lakes sport fish);

THEREFORE BE IT RESOLVED,

THAT the OPHA advocate for collaboration on this issue between the federal Ministers of Health, Environment, other Ministers or Departments as appropriate, with respect to those populations that are specifically and/or severely impacted (e.g. First Nations);

THAT the OPHA assist with the advocacy efforts of other non-governmental organizations that are actively working to eliminate the contamination of the environment with persistent organic pollutants;

THAT the OPHA support the collaboration of the Breastfeeding Promotion and Environmental Health Workgroups with respect to additional investigation of the evidence on this issue and the subsequent production and dissemination of educational resources to educate public health, breastfeeding and other health professionals;

THAT the OPHA endorse the joint statement made by participating organizations of the World Alliance for Breastfeeding Action (WABA) and the International Persistent Organic Pollutants (POPs) Elimination Network, as well as actively consider the endorsement of other such documents as they are brought to the attention of the organization;

THAT the OPHA forward this resolution to the Ontario and Federal Ministers of Health, the Ontario Minister of the Environment, Ontario public health departments and Boards of Health and other interested stakeholders as identified by the OPHA membership.

Implementation Strategy

This resolution will be jointly implemented by the OPHA's Breastfeeding Promotion and Environmental Health Workgroups, with the cooperation of the OPHA Board of Directors and Executive where appropriate and required.

Copies of the background paper and the resolution, and an accompanying letter will be sent to the parties mentioned by name in the resolution itself and to other stakeholders and interested parties as identified by OPHA members.

The Breastfeeding Promotion and Environmental Health Workgroups will network and collaborate with other breastfeeding, health and environmental organizations that are working to address the issue of the rights of women and children with respect to an environment free of harmful contaminants.

The Breastfeeding Promotion and Environmental Health Workgroups will continue their collaboration in the development and dissemination of the educational resource referred to in the resolution.

The Breastfeeding Promotion and Environmental Health Workgroups will report on the future development of their work on this topic to OPHA members through the OPHA website, newsletters and other means of communication. Where appropriate, communications to other stakeholders will be undertaken also.

References

1. Chance G.W., (2001) Environmental Contaminants and Children's Health: Cause for Concern, Time for Action. *Paediatric Child Health* 6(10): 731-743.
2. Codex Alimentarius Commission (2003) Report of the 23rd session of the codex committee on nutrition and foods for special dietary uses. Berlin Germany November 26-30 , 2001
3. Codex Alimentarius Commission. (2001) Complete list of standards adopted by the codex alimentarius commission up to 2001. Available at http://www.codexalimentarius.net/web/standard_list.jsp
4. Cumming RG, Klineberg RJ. (1993) Breastfeeding and other reproductive factors and the risk of hip fractures in elderly women. *International J Epidemiol* 22:684-91.
5. Craan, A.G. Haines, D.A. (1998) Twenty-Five Years of Surveillance for Contaminants in Human Breastmilk. *Archives of Environmental Contamination and Toxicology*. 35:702-710.
6. Davis MK, Savitz DA, Graubard BI. (1988) Infant feeding and childhood cancer. *Lancet* 2:365-8.
7. Drane D, Logemann J. (2000) A critical evaluation of the evidence on the association between type of infant feeding and cognitive development. *Pediatric & Perinatal Epidemiology* 14(4):349-56.
8. Duffy LC, Byers TE, Riepenhoff-Taffy M, La Scolea L, Zielezny M, Ogra PL. (1986) The effects of infant feeding on rotavirus-induced gastroenteritis. A prospective study. *Am J Pub Health* 76:259-63
9. Frank J.W., Newman J. (1993) Breastfeeding in a polluted world: uncertain risks, clear benefits, *Canadian Medical Association Journal* 149(1):33-37.
10. Gerstein HC, (1994) Cow's milk exposure and type 1 diabetes mellitus. *Diabetes Care* 17:13-9.
11. Grandjean P. (1997) Milestone development in infants exposed to methylmercury from human milk. *Neurotoxicology* 16(1):27-33.
12. Greater Boston Physicians for Social Responsibility (2001) Fact Sheet Series for Patients - Out of Harm's Way: Preventing toxic threats to child development. Why Breast-Feeding is Still Best for Baby.

13. Greene LC, Lucas A, Livingstone BE, Harland PSEG, Baker BA. (1995) Relationship between early diet and subsequent cognitive performance during adolescence. *Biochem Soc Trans* 23: 376s.
14. Hartge P, Schffman MH, Hoover R, McGowan L, Leshner L, Norris HJ. (1989) A case control study of epithelial ovarian cancer. *Am J Obstet Gynecol* 161:10-6.
15. Hatcher S-L., (1982) The psychological experience of nursing mothers on learning of a toxic substance in their breastmilk. *Psychiatry* Vol. 45:172-181.
16. Health Canada, Health Products and Food Branch, Food Directorate, Bureau of Chemical Safety, Trace Metal Analysis – Infant Formula available at http://www.hc-sc.gc.ca/food-aliment/cs-ipc/chha-edpcs/e_infant_survey.html
17. Horwood LJ, Darlow BA, Mogridge N. (2002) Breast milk feeding and cognitive ability at 7-8 years. *Archives of Disease in Childhood Fetal & Neonatal Edition* 84(1):F23-7.
18. Howdeshell et al 2003 at <http://ehpnet1.niehs.nih.gov/docs/2003/5993/abstract.pdf>
19. Insel T, Shapiro S.(1992) Oxytocin receptors and maternal behaviour. *Annals of the New York Academy of Sciences* 652:122-141.
20. International Programme on Chemical Safety (IPCS), Report on Global Assessment of the-State-of-the-Science of Endocrine Disruptors, August 2002. http://www.who.int/pcs/emerg_site/edc/edc.html
21. Kennedy KJ, River R, McNeilly AS. (1989) Consensus Statement on the use of breastfeeding as a family planning method. *Contraception* 39:477-96.
22. Koletzko S, Sherman P, Corey M, Griffiths A, Smith C. (1989) Role of infant feeding practices in the development of Crohn's disease in childhood. *Br. Med J* 298:1617-8.
23. Lawrence, R. A. (1989) *Breastfeeding: A Guide for the Medical profession*. St Louis; C.V. Mosby.
24. Lucas A, Cole TJ. (1990) Breastmilk and neonatal necrotizing enterocolitis. *Lancet* 3336:1519-23.
25. MAFF (1996) Food surveillance information sheet number 83. Phthalates in infant formula. UK Ministry of Agriculture Fisheries and Food.
26. Minchin M. (1985) *Breastfeeding Matters*. Alma Publications and George Allen and Unwin. Australia. Forward.

27. Mitchell EA, Scragg R, Stewart AW, Becroft DMO, Taylor BJ. (1991) Results from the first year of the New Zealand cot death study. *NZ Med J* 104:71-6.
28. Mortensen E, Michaelsen K, Sanders S, and Reinisch J. (2002) The association between duration of breastfeeding and adult intelligence. *JAMA* 287(18):2356-71.
29. Mytjens HL, Roelofs-Willemse H, Jasper GHJ.(1988) Quality of powdered substitutes for breastmilk with regard to the family Enterobacteriaceae. *J Clin Microbiol* 26:743-6
30. Newcomb PA, Storer BE, Longnecker MP, Mittendorf R, Greeberg ER, Clapp RW et al. (1994) Lactation and a reduced risk of premenopausal breastcancer. *Eng J Med* 339:81-7.
31. Ontario Public Health Association. (2001) Protecting our food supply: Public Health Implications of Food Biotechnology. A position paper for the Ontario Public Health Association. Available at http://www.opha.on.ca/ppres/2001-01_pp.pdf
32. Palmer G. (1998) *The Politics of Breastfeeding*. Pandora, London. Appendix 1.
33. Petersen JH, Breindahl T. (2000) Plasticizers in total diet samples, baby food and infant formulae. *Food Additives Vol* 17:133-141.
34. Pisacane A, Impagliazzo N, Russo M, Valani R, Mandarini A, Florio C, Vivo P. (1994) Breastfeeding and multiple sclerosis. *Br Med J* 308:1411-2.
35. Powell D, Leiss W. (1997) *Mad Cows and Mothers Milk: the perils of poor risk communication*. McGill-Queen's University Press. Montreal and Kingston. Pp 11
36. Rao H, Hediger M, Levine R, Naficy A, Vik T. (2002) Effect of breastfeeding on cognitive development of infants born small for gestational age. *SGA babies* 91(3):267-74.
37. Rogan, Walter (1996) Pollutants in Breastmilk. *Archives of Pediatrics & Adolescent Medicine*. Volume 150(9): 981-990.
38. Saarinen UM, (1982) Prolonged breastfeeding as prophylaxis for recurrent otitis media. *Acta Pediatr Scand* 71:567-71.
39. Saarinen UM, Kajosaari M. (1995) Breastfeeding as prophylaxis against atopic disease: prospective follow-up study until 17 years old. *Lancet* 346:1065-69.

40. Sharpe RM et al. (1995) Gestational and lactational exposure of rats to xenoestrogens results in reduced testicular size and sperm production. *Environ Health Pers.*103:1136-1143.
41. Sobrinho L. (1993) The Psychogenic effects of Prolactin. *Acta Endocrinologica*129(1): 38-40.
42. Solomon G., Weiss P., (2002) Chemical Contaminants in Breastmilk: Time Trends and Regional Variability. *EHP Vol 110 (6): A339-347.*
43. Soto A. et al, (1991) p-Nonylphenol: An estrogenic xenobiotic released from 'modified' polystyrene. *EHP Vol 92:167-173.*
44. Steingraber S., (2001) *Having Faith: An Ecologist's Journey to Motherhood.* Perseus Publishing, Cambridge MA.
45. The National Children's Study of Environmental Effects on Child Health and Development. (April 2003) The National Children's Study Interagency Coordinating Committee. *EHP 111(4): 642 – 646.*
46. U.S. Food and Drug Administration. (2002). FDA alerts public regarding recall of powdered infant formula. available at <http://www.fda.gov/bbs/topics/NEWS/2002/NEW00849.html>
47. United Kingdom Food Standards Agency Food Surveillance Information Sheet Number 49, (2004). Dioxins and dioxin-like PCBs in infant formulae available at <http://www.food.gov.uk/multimedia/pdfs/fsis4904dioxinsinfantformula.pdf>
48. United Kingdom Food Standards Agency Multi-element survey of infant foods (42/03) available at <http://www.food.gov.uk/science/surveillance/fsis-2003/fsis422003>
49. Urnäs-Moberg, K., A.- M. Widstrom, E. Nissen and H. Björvell. (1990) Personality traits in women 4 days post partum and their correlation with plasma levels of oxytocin and prolactin.
50. Vanderlinden, L. (Winter 2002) Starting Off: Breastmilk is still nature's best infant food, but it is vulnerable to persistent contaminants. *Alternatives Journal* 28 (1):22-23.
51. Van Acker J., de Smet F., Muyldermans G., Bougatef A., Naessens A., Lauwers S.(2001) Outbreak of necrotizing enterocolitis associated with *Enterobacter sakazakii* in powdered milk formula. *Journal of Clinical Microbiology* 39(1):293-297.

52. Van Esterik P., (2001) Risks, Rights and Regulation: Communicating about Risks and Infant Feeding(discussion paper), Dept. of Anthropology, York University, Canada; WABA Women & Work Task Force.
53. Vestergaard M, Obel C, Henrikson T, Sorenson E. Skaaja E, Ostergaard J. (1999) Acta Paediatr 88:1327-32.
54. Wagner CL, Anderson DM, Pittard WB. (1996) Special properties of human milk. Clinical Ped :283-293.
55. Walker M (ed) (2002). Core Curriculum for Lactations Consultant Practice. Jones and Bartlett pub. Sudbury MA pp 410.
56. Wilson AC, Forsyth JS, Greene SA, Irvine L, Hau C, Howie P., (1998) Relation of infant diet to childhood health: seven year follow up of cohort of children in Dundee infant feeding study. Br Med J 316:21-25.
57. World Health Organization (2004). Joint FAO/WHO Workshop on *Enterobacter Sakazakii* and Other Microorganisms in Powdered Infant Formula, Geneva, 2-5 February 2004, Geneva, 2-5 February 2004. Available at <http://www.who.int/foodsafety/micro/meetings/feb2004/en/>

Regarding resolutions, position papers and motions:

Status: Policy statements (resolutions, position papers and motions) are categorized as:

Active, if:

1. The activities outlined in the policy statement's implementation plan have not yet been completed; or
2. The policy statement addresses an issue that is currently relevant to public health in Ontario.

Archived, if:

1. The activities outlined in the policy statement's implementation plan have been completed; or
2. The policy statement addresses an issue that is not currently relevant to public health in Ontario or is not based upon the most current evidence. The statement remains the position of the OPHA until a new statement is adopted that effectively reverses or essentially negates all or major elements of an earlier statement. In this instance, the former supersedes the latter

Reproduction: This document is the property of the OPHA. It may be freely referenced with full acknowledgement of the OPHA, and may not be used for commercial purposes.

APPENDIX I

A joint statement by participating organisations of the World Alliance for Breastfeeding Action (WABA) & International POPs Elimination Network (IPEN)

a
b
c
d
e
f
g
h
i
j
k
l
m
n
o
p
q
r
s
t
v
w
x
y
z
A
C
D
E
G
H
J
K
L
M
N
E

Call for Endorsement . . .

a joint statement by participating organisations of the World Alliance for Breastfeeding Action (WABA) & International POPs Elimination Network (IPEN)

Working Together for a Toxic-Free Future

We share a common concern: Toxic chemicals are contaminating our children

If we tested every infant born today, anywhere in the world, we would find that s/he has a body burden of toxic industrial chemicals. Dioxins, PCBs, mercury, phthalates, pesticides and other dangerous substances are being passed from parent to child as early as the prenatal period.

Tiny doses of these chemicals can have a dramatic effect on the developing child. Levels of mercury that would have no impact on an adult can harm the developing brain of a foetus. A few trillionths of a gram of dioxin and PCBs can damage the developing immune and nervous systems. DDT, PCBs, dioxins and other persistent organic pollutants not only cross the placenta, they also enter into breastmilk.

We recognise the need to promote breastfeeding while we work towards ending the contamination of our communities

The contamination of breastmilk is one symptom of the environmental contamination in our communities. Responsibility for this problem belongs to the industrial sources of contamination, not to breastfeeding women. The individual decision to breastfeed must be promoted and protected while we work collectively towards eliminating the chemicals that contaminate the food we eat, the water we drink, the air we breathe, and the products we use.

Studies have shown that breastfeeding, even in a contaminated environment, has a positive impact on the development of children as compared to those who are artificially fed. Breastfeeding supports infant growth and health as well as maternal health in ways that breastmilk substitutes cannot. Indeed, breastmilk contains substances that help the child develop a stronger immune system and other protections against environmental pollutants and pathogens.

Therefore, educational and advocacy efforts to promote a toxic-free future for our children should recognise, encourage and support collective actions aimed at promoting breastfeeding, reducing chemical contamination and developing the strongest possible pollution prevention laws.

We share a vision of a toxic-free future and generations of healthy children

In Sweden, strong governmental programmes to eliminate persistent organic pollutants like DDT, dieldrin, PCBs and dioxin have resulted in dramatic decreases in contaminants in breastmilk. In the United States, bans on lead in gasoline and smoking in public places have resulted in dramatic decreases in the levels of dangerous chemicals in the blood of young children. These public health achievements show that reductions in the production, use and disposal of toxic chemicals, along with the destruction of toxic chemical stockpiles and reservoirs, can decrease the body burden in our children and in all of us. The United Nations Stockholm Convention on Persistent Organic Pollutants (POPs), the development of sustainable alternatives to dioxin-producing incineration, local and national efforts to restrict the use of pesticides or to phase out the uses and emissions of mercury, all deserve our energetic and sustained support.

a
b
c
d
e
f
g
h
i
j
k
l
m
n
o
p
q
r
s
t
v
w
x
y
z
A
C
D
E
G
H
J
K
L
M
N
E

We pledge to work together towards the day when our infants are born toxin free, and can grow and develop in a toxic-free world. y

Updated list of Endorsers, March 2004

Agenda for Environment and Responsible Development, Tanzania • Alaska Community Action on Toxics, USA • Alianza por Una Mejor Calidad de Vida, Chile • Altruistic Leadership Institute (ALI), Malaysia • Aminingshjälpen (The Swedish Nursing Mothers' Support Group) • Aquamedia, Republic of Georgia • Armenian Centre of Hygiene & Epidemiological Surveillance • Armenian Women for Health and a Healthy Environment • ARNIKA Association, Czech Republic • Arugaan, Philippines • Asociación Argentina de Medivos por el Medio Ambiente (AAMMA), Argentina • Associação de Combate aos Pops (ACPO), Brazil • Associação de Consciência à Prevenção Ocupacional, Brazil • Baby Friendly Hospital Initiative Hong Kong Association (BFHIHKA) • Bahai Faith, Malaysia, Malaysia • Bangladesh Breastfeeding Foundation (BBF) • Basel Action Network (BAN), Washington, USA • Brahma Kumaris Ipoh, Malaysia • Breastfeeding Information Bureau, Malaysia • Breastfeeding Mothers Support Group (BSMG), Singapore • Breastfeeding Network (BfN), UK • Breastfeeding Promotion Network of India (BPNI) • Breastfeeding Support Group of Thailand • California Nurses-Midwives Association, USA • Campaign for Alternative Industry Network (CAIN), Thailand • Camtas Manila, Philippines • Canadian Association of Physicians for the Environment (CAPE) • Cancer Action New York, USA • Chemicals Weapons Working Group, Kentucky, USA • Chintan, India • Chris Mulford, IBCLC, USA • Chomchonchai Foundation, Thailand • Collectif de lutte contre les organochlorés (Joint Action Group against POPs), Quebec, Canada • Common Ground, Kentucky, USA • Commonweal, USA • Community Against Toxics, Cheshire, UK • Consumers Association of Penang (CAP), Malaysia • Consumers International Regional Office for Asia and the Pacific (CI-ROAP) • Coordination Française pour l'Allaitement Maternel (CoFAM), France • Cynthia Pang, IBCLC, Singapore • Department of the Planet Earth, USA • Development Indian Ocean Network (DION), Mauritius • ECO-Accord, Russia • Ecosphere, Belarus • Egyptian Medical Students for Social Responsibility Students, Egypt • Environmental Health Fund, USA • For Civil Society, Kyrgyzstan • Foundation for Realization of Ideas, Belarus • Great Lakes United, New York, USA • Green Formosa Front, Taiwan • Greenpeace International • Greenpeace International Toxics Campaign, Canada • Greenpeace Southeast Asia, Thailand • GroundWork, South Africa • HealthCare Without Harm, Washington DC, USA • Help Organisation for People, Environment & Society (HOPES), India • Indigeneous Environmental Council, Alaska, USA • Information Pour l'Allaitement (IPA), France • INSAF, Malaysia • Institute for Children's Environmental Health, Washington, USA • International Baby Food Action Network (IBFAN) Penang, Malaysia • International Campaign for Responsible Technology • International Lactation Consultation Association (ILCA) • International Physicians for Prevention of Nuclear War, Egypt • Irish Doctors Environmental Association (IDEA) • Kentucky Environmental Foundation, USA • KL Prondos, Malaysia • La Leche League International (LLL), USA • Malaysia Hindu Sangam, Malaysia • Marcia Annandale, IBCLC, New Zealand • Movement pour les Droits et le Respect des Générations Futures (MDRGF), France • National Resource Defence Council, USA • National Toxics Network Inc., Australia • New Zealand College of Midwives (NZCOM) • Non-Incineration Citizens, Japan • Non-Stockpile Chemical Weapons Citizen Coalition, Kentucky, USA • Pesticide Action Network Asia-Pacific (PANAP) • Pesticide Action Network Central Asia (PANCA) • Pesticide Action Network Germany • Pesticide Action Network North America (PANNA) • Pesticide Action Network UK (PANUK) • Pesticide Action Network, Philippines • Peter Orris, University of Illinois, USA • Public Interest Consultants, UK • Pusat Penasihah Penjualan Ibu Malaysia (PPPIM) • Queensland Lactation College, Australia • Red de Acción en Plaguicidas y sus Alternativas de América Latina (RAP-AL), Chile • Red de Acción sobre Plaguicidas y Alternativas en México (RAPAM) • Sahabat Alam Malaysia (SAM) • Sai Baba, Malaysia • Sandra Steingraber, Teacher, Ecologist, Author of "Living Downstream" & "Having Faith", USA • Sarvodaya Women's Movement, Sri Lanka • Sharyle Patton, International POPs Elimination Network (IPEN), Co-Chair for Working Group on Community Monitoring, USA • Soka Gakkai Malaysia, Malaysia • Srishti, India • Surakshit, India • Sustainable Development Policy Institute (SDPI), Pakistan • Taiping Tourist Association, Malaysia • Taiwan Watch Institute • Tchala Songolo, CADIC, Congo • Ted Greiner, International Maternal & Child Health (IMCH), Uppsala University, Sweden • Thanal Conservation Action & Information Network (TCAIN), India • Theosophical Society, Malaysia, Malaysia • The Nordic Workgroup for International Breastfeeding Issues, Sweden • Toxics Link, India • Virginia Thorley, WABA International Advisory Council member, Australia • WABA Steering Committee • Wesley Methodist Church, Taiping, Malaysia • Women in Europe for a Common Future (WECF), Netherlands • Women's Environmental Network, UK • World Information Transfer, USA • Worldwide Fund for Nature/World Wildlife Fund (WWF).

We will update the endorsers list regularly. We welcome your endorsement and also request you to share it with others. This Statement with the latest list of endorsers is available at the WABA & IPEN websites. To endorse, please send your NAME, ORGANISATION and COUNTRY to the World Alliance for Breastfeeding Action, WABA, PO.Box 1200, Penang 10850, Malaysia. Fax: 604-6572 655 Email: waba@streamyx.com Website: www.waba.org.my

This joint statement emerged out of the combined efforts of the participating organisations of WABA & IPEN, in addressing the issue on the contamination of breastmilk and the environment. This collaboration seeks to understand the issue from both the environmental health and justice and breastfeeding perspectives, share experiences and develop communication strategies to educate the general public, health workers, policy makers and the media. It is based on the recognition that breastfeeding promotion should take place alongside efforts to eliminate toxic chemicals from the environment. This statement went through a series of consultations via email discussions and at some key meetings.



The World Alliance for Breastfeeding Action (WABA) is a global network of individuals and organisations concerned with the protection, support and promotion of breastfeeding. WABA action is based on the Innocenti Declaration, the Ten Links for Nurturing the Future and the Global Strategy for Infant & Young Child Feeding. Its core partners are International Baby Food Action Network (IBFAN), La Leche League International (LLL), International Lactation Consultant Association (ILCA), Wellstart International, Academy of Breastfeeding Medicine (ABM) and LINKAGES. WABA is in consultative status with UNICEF and an NGO in Special Consultative Status with the Economic and Social Council of the United Nations (ECOSOC).

The International POPs Elimination Network (IPEN) is a global network of public interest non-governmental organizations united to work for the global elimination of persistent organic pollutants on an expedited yet socially equitable basis. Website: <www.ipen.org>

