



Breastfeeding Update

“Good health begins with breastfeeding.”

BREASTFEEDING AND ECOLOGY

NOT JUST A LIFESTYLE CHOICE

Martha Lee, RN, MPH, IBCLC

Human kind has been privileged to inhabit this beautiful earth for thousands of years. At the same time we are altering earth's amazing balance: slowly at first, but now more rapidly, as technology and waste increase. Unfortunately today, our deteriorated environment seriously affects human life on the planet (1).

But what is the relationship between breastfeeding and the environment? Indeed a very close one that we have divided into 2 consequences (1):

- Consequence of the presence of chemical contaminants in human milk and how to avoid them or reduce them to a minimum, (see Research Corner, page 8).
- Ecological consequences of not breastfeeding, namely the use of breastmilk substitutes.

Although artificial baby milk (ABM) may have a high risk of contaminants like pesticides, fertilizers, and antibiotics, other contaminants have been found as well. High levels of phytoestrogen hormones, aluminum and lead, bacteria, and even glass particles mixed in with the powder have been found (2).

Some effects of the use of mother's milk substitutes on the environment are:

- Producing ABM contributes to inefficient use of land, deforestation and soil erosion. Each cow that produces milk to produce ABM needs about 2 1/2 acres of land.
- The livestock population in the United States consumes enough grain and soybeans to feed more than five times the entire human population of the country. We feed these animals more than 85% of the corn we grow and more than 95% of the oats grown. By cycling our grain through livestock, we end up with only 10% as many calories available to feed

human mouths as would be available if we ate the grain directly (3).

- The manufacturing of the packaging for ABM creates toxins and utilizes paper, plastic and tin. For every 3 million bottle-fed babies, 450 million tins of formula are consumed which equals 86,000 tons of tin and 1,230 tons of paper labels (4). Dioxin contamination is a byproduct of the paper making process.
- Making ABM contaminates water. Sewage from dairy cows as well as the fertilizers used to grow feed for them pollute rivers and ground waters, affecting many ecosystems. Vast amounts of precious water is used in making ABM (6).
- Producing ABM contributes to air pollution. Methane gas is second behind carbon dioxide in contributing to the “greenhouse effect” and global warming (7). In third-world countries, the wood that is burned for fuel to heat the artificial milk creates further pollution. Incineration is a common method of disposal, and the burning of the packaging, plastic bottles, nipples, and other related paraphernalia contributes further to air pollution.
- Processing ABM uses vast amounts of electrical energy worldwide, not only for the making of the milk, but the manufacturing of bottles, nipples, and other supplies for bottle feeding.
- ABM costs a lot of money that could be better spent to clean up our land, air, and water. It has been estimated that at least \$429 million dollars could be saved annually if U.S. mothers in the Women, Infants and Children's (WIC) Supplementary Nutrition Program would breastfeed for just one month (8).

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ASK THE EXPERT

Question: I have silicone breast implants. Is it safe to breastfeed my new baby?

Answer: The Institute of Medicine estimates that somewhere between 1.5 and 1.8 million women had silicone breast implants as of 1997, the majority for cosmetic reasons. About ten years ago, concerns were raised that leakage of silicone from implants over time could harm women's health by triggering autoimmune illnesses. Although this observation apparently represented coincidence and not causation, in 1992 the FDA moved to dramatically restrict the use of silicone implants.

In 1994 and 1995 two papers suggested that infants of mothers with silicone implants might have an increased incidence of esophageal disease. Subsequent research has not confirmed these findings. After reviewing all available research, the Institute of Medicine came to the conclusion: **"The committee finds no evidence of elevated silicone in breastmilk or any other substance that would be deleterious to infants; the committee strongly concludes that all mothers with implants should attempt breastfeeding"** (1).

Silicon is the second most common element in the Earth's crust. Silicone is a derivative of silicon. When silicon is used as a proxy measurement for silicone it is clear that there is much more silicon in formula than in breastmilk. (See box).

The type of silicone polymer used in implants has extremely large molecules, which would be highly unlikely to pass into mother's milk or be absorbed in an infant's gastrointestinal tract. Analyses of breastmilk samples from mothers whose implants have ruptured have found no silicone in the milk. We ingest silicone compounds through cosmetics such as lipstick, over the counter drugs such as antacids, and the coating of fresh fruits and vegetables. Silicone is also used to lubricate syringes and to make silicone nipples for baby bottles and pacifiers. Mylicon

ARRIVING THIS SPRING, THE SDCBC RESOURCE GUIDE 2002!

The Resource Guide is a tool to link community members to breastfeeding support services. In the guide there are listings for information, support, and technical assistance, both before and after the baby is born.

We often assume that breastfeeding is such a natural process that anyone should be able to do it. The truth is, breastfeeding is a learning process for both mother and baby. Problems that arise can often be managed with help.

For copies of our 2002 Resource Guide, please contact Meredith Kennedy or Angela Tenenini in the Coalition Office at (858) 966-5981.

Mean Silicon Levels		
	Implants (n=15)	Control (n=34)
Breast milk silicon (ug/ml)	55.45	51.05
Blood silicon (ug/ml)	79.29	103.76
Duration of lactation (wks)	23.85	14.88
Cows Milk Samples (ug/ml)	708.94 (n=5)	(665.5-778.3)
Infant Formulas (ug/ml)	4402.5 (n=26)	(746.0-13,796.0)

Sample JL, Lugowski SJ et al. Breast Milk Contamination and Silicone Implants: Preliminary Results Using Silicon as a Proxy Measurement for Silicone. *Plast Reconstr Surg* 1998; 102: 528-533.

drops, which contain the same polymer as silicone breast implants, are given to colicky babies as a gas reducer and work by coating the digestive system. In short, breastfeeding with silicone implants should be encouraged.

Reference:

1. Committee on the Safety of Silicone Breast Implants, Institute of Medicine. Safety of Silicone Breast Implants. National Academy Press, Washington, DC 1999, p. 8.



Nancy E. Wight MD, FAAP, IBCLC

Dr. Wight is an attending Neonatologist at Children's Hospital and Sharp Mary Birch Hospital for Women, San Diego, and Medical Director, Sharp HealthCare Lactation Services. (IBCLC=International Board Certified Lactation Consultant) She can be reached at www.breastfeeding.org.

COUNTY/DHS UPDATE

Elaine Hiel, MPH

The Coalition on Children and Weight continues to meet and develop priorities and recommendations. Members of the Breastfeeding Subcommittee of the Coalition concurred with the Strategic Plan developed by the San Diego County Breastfeeding Coalition. They agreed that education of health care professionals and the public on the significance of breastfeeding would be a major step in ensuring early prevention of childhood obesity. SDCBC members interested in this aspect of child health are invited to attend the next meeting of the Coalition on Children and Weight which will be held on June 11, 2002 from 5 to 7 pm at the Health Services Complex (Coronado Room), 3851 Rosecrans Street, San Diego 92110.

NOT JUST A LIFESTYLE CHOICE

Continued from page 1

- Transportation of raw materials for the production of ABM, packaging and all of the components of bottle feeding consumes precious fuel. Once processed, ABM has to be transported, sometimes thousands of miles to reach the consumer.
- Manufacturing of bottles, nipples, and other feeding equipment uses large amounts of plastic, rubber, silicone, and glass. Plastic feeding bottles, nipples, and pacifiers take 200 to 450 years to break down when disposed of in landfills which are becoming increasingly scarce (8). Manufacturing these items also uses finite natural resources.
- For mothers who breastfeed exclusively menstruation is delayed for an average of 14 months, saving vast amounts of paper used in sanitary hygiene products (9).
- Breastfeeding is a natural birth control/child spacer. The chance of getting pregnant while breastfeeding exclusively is less than 1 % during the first six months as long as menstruation has not yet returned (10).

Breastfeeding is not just a lifestyle choice. It is a health issue for mother and infant, a social issue, and also an environmental issue (12). What an oxymoron! We sacrifice natural resources that could feed many people in order to raise cattle, then we sacrifice the cattle to feed fewer humans plus we feed our babies with the milk product of these same animals that, as we know, is not the best for them (11).

Because of the far-reaching positive impact breastfeeding can

make on our planet, it is imperative for anyone interested in protecting our children and our environment to do whatever possible to support, protect, and promote breastfeeding (12).

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1. M. Lee. *Lactancia Materna*, McGraw-Hill Interamericana, Mexico D.F., 1998: 141.
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11. W. Correa. ECO-MAMA, *Mothering Magazine*: July 1999.
12. M. Lee. *Lactancia Materna*, McGraw-Hill Interamericana, Mexico D.F., 1998: 152

Extracted from: W. Correa, ECO-MAMA in *Mothering Magazine* July 1999 and M. Lee, *Lactancia Materna* (McGraw Hill Interamericana, Mexico D.F. 1998), Chapter 14 *Lactancia Materna y Ecologia*, 141 and 152.

JOB CENTER

Volunteer Opportunities: If you have experience with coordinating membership and fundraising activities, the SDCBC needs you!

Paid Opportunities: Are you IBCLC certified? Have experience teaching? We need presenters for our in-office lactation education program. (\$50 honorarium/presentation)

Please contact the SDCBC office at (858) 966-5981 or email mmkennedy@chsd.org for more info.

Interested in what we do? Attend one of our meetings!

General Coalition Meetings are held the second Thursday of each odd month at Sharp Mary Birch Hospital for Women, 3003 Health Center Drive, San Diego in the Grace Benbough Room, located on the 2nd floor, 3:00 – 5:00 pm. Please call (858) 541-4185 for directions. 2002 meeting dates are as follows: July 11, September 12, and November 14.

Lead Lactation Specialist Position

Sharp Mary Birch Hospital for Women

Job Summary: Coordinates, assesses, and communicates to ensure the delivery of quality patient care in a defined clinical area. Scope of role includes: shift operational coordination, quality control and improvement, regulatory compliance, policies and procedures.

Key roles and responsibilities: Coordinates and supervises quality through direct patient care and process improvement activities; manages resource utilization; manages unit shift daily operations; manages human resources; ensures customer service; manages self/professional responsibility/ safety.

This is a .6 position working 8 hr shifts. IBCLC required. CPR Certification. Minimum of 2 years recent clinical experience. Current California Registered Nurse License. Please contact Bridget Fisher, Lactation Manager, at bridget.fisher@sharp.com or (858) 541-4957.

Interested in having your jobs posted here? All lactation related jobs can be posted here for free! For more information, please call us at (858) 966-5981 or email us at mmkennedy@chsd.org.

ABOUT THE SDCBC

Breastfeeding Friendly Workplace Award

The San Diego County Breastfeeding Coalition is presently accepting applications for the Breastfeeding Friendly Workplace Award. This annual award is presented in celebration of World Breastfeeding Week (August 1-7) to the businesses that show the greatest commitment to supporting breastfeeding employees. Past recipients include: The City of Escondido, Kyocera, The San Diego Spirit (2001), Aetna US Healthcare (2000), Qualcomm, People's Organic Foods Market (1999), SeaWorld (1998), Naval Medical Center San Diego (1997), and Hewlett-Packard (1996).

If your company is contributing to the health of San Diego County by providing employees with time and facilities to express milk at work, we would like to acknowledge your accomplishments. **Please complete our on-line application at www.breastfeeding.org by June 21, 2002 to nominate your employer for the Breastfeeding Friendly Workplace Award.** We will gladly provide a mail-in application at your request. For further information, please contact Teresa Echegaray, Community Outreach Chair, at (858) 505-3066.

- Receive our newsletter, "Breastfeeding Updates".
- Have a home page or link, as appropriate, on the SDCBC website: www.breastfeeding.org
- With a sponsor membership*, be listed, as appropriate, in the "Breastfeeding Resource Guide" (printed annually) without a fee.

You can show your support of the SDCBC by:

- Making a monetary contribution to support Coalition activities.
- Donating your time by serving on a committee:

Advocacy/Political Action	Community Outreach
Fundraising	Grant Research
Membership	Professional Outreach
Research and Evaluation	Volunteer Coordination
- Attending Coalition meetings and providing your expertise and experience.

We offer the following types of membership with the SDCBC:

- *Sponsor - \$100 (Business/Organization /Professional)
- Contributing Member - \$50 (Individuals)
- Friends of the Coalition - any amount under \$50

The SDCBC and the Children and Families "Prop 10" Commission

The SDCBC has promoted and supported breastfeeding through education and outreach in San Diego County since May 1994. With an entirely volunteer work force, minimal annual dues, small grants and significant contributions from many San Diego institutions, we have managed to address many of the County's needs in a limited, but effective, manner. In October 2000, \$100,000 in grant funding was received from the San Diego County Children and Families "Prop 10" Commission to expand the SDCBC's activities and to establish a formal office and organizational structure.

The California Children and Families Commission was established by the California Children and Families Act (Proposition 10), passed by voters in November 1998. This statewide ballot initiative increased the tax on cigarettes and tobacco products. The revenue is used to provide health, child development, and parent support programs to promote the well-being of children from the prenatal period to age five.

The San Diego County Children and Families Commission was established to implement Prop 10 on a local level. The Commission's vision is that all children in San Diego County will enter school physically, mentally, emotionally and developmentally ready to learn.

We would like to thank the San Diego County Children and Families Commission for their continued support of our efforts. Visit the San Diego County Children and Families Commission website at www.cfcf.ca.gov/sandiego.

Have you renewed your SDCBC membership for 2002?

Your continued support is needed! If you are interested in becoming a member or renewing your membership, visit our website at www.breastfeeding.org or contact our office for more information; (858) 966-5981 or email: mmkennedy@chsd.org.

Become a member of the San Diego County Breastfeeding Coalition!

What is the San Diego County Breastfeeding Coalition?

The San Diego County Breastfeeding Coalition (SDCBC) is a non-profit association whose mission is to promote and support breastfeeding through education and outreach in our community.

What are the benefits of being a SDCBC member?

As a member of the SDCBC you will:

- Network with a growing body of people dedicated to the promotion and support of breastfeeding.
- Have access to lactation professionals and the most up-to-date breastfeeding resources.
- Receive a free supply of Breastfeeding Resource Guides in English and Spanish.
- Receive a discount for Coalition sponsored education programs.

SAVE THE DATE

Use of Motivational Interviewing in Pediatric Nutrition Counseling: An Overview--San Diego Health Services Complex, San Diego, CA, June 5, 2002.

Featured presenter: Ken Resnicow, PhD, Professor School of Public Health, Emory University. Other speakers TBA. Sponsored by The University of Alabama at Birmingham-Dept of Pediatrics and Maternal and Child Health Bureau, Washington DC. Contact Elaine Hiel for more information at (619) 692-8390 or ehielxhe@co.san-diego.ca.us.

DONA approved Doula Trainings: Labor Support Course--San Diego, CA, July 12-14 and October 4-6, 2002.

In-depth labor support strategies, the role of the doula within the medical framework, guidelines for pre and postnatal contact with the client, how to deal with problem labors and setting up practice as a doula. The course uses texts, videos, supplementary literature, slides and role-play to build theoretical knowledge and teach practical skills. For further information please phone Gerri Ryan (619-472-0583) or email DoulaGLR@aol.com.

La Leche League International 30th Annual Seminar for Physicians on Breastfeeding--Hilton Sedona, Sedona, AZ, July 18-20, 2002.

"Breastfeeding: Where Art and Science Meet." This conference will be co-sponsored by LLLI, AAP, ACOG. For more information visit: www.lalecheleague.org/ed/PhysSem02.html.

2002 Conference and Annual Meeting of the International Lactation Consultant Association--Boca Raton, FL, July 25-28, 2002.

"Blueprint for Clinical Excellence." This four day conference features keynote speaker Peter Hartmann, PhD, noted lactation physiologist from Australia. Other speakers addressing clinical issues for both novices and experts include: Barbara Wilson Clay, Marsha Walker, Jan Barger, Linda Kutner, Jan Riordan, Kerstin Hedburg-Nyqvist, Audrey Naylor, Tom Hale, Lisa Marasco, Diane Wiessinger, Mary Rose Tully, Karen Querna, Roberta Graham, and Elizabeth Brooks. For more information, visit: www.ilca.org.

Doulas of North America (DONA) International Conference & 10th Anniversary--Clearwater Beach, FL, August 1-4, 2002.

General Sessions include: Dr. Charles Mahan - Should Everyone Have a Caesarean; Dr. Carl Burak - The Cradle Will Fall: Postpartum Perspicacity; Dr. John Kennell - The Father in the Perinatal Period; Penny Simkin - How Doulas Support Women With an Epidural; and Kathy McGrath - Finding the Path. For more information, visit: www.DONA.org.

Children's Hospital & Health Center Pediatric Grand Rounds--Children's Hospital and Health Center, San Diego, CA, August 2, 2002, 8:15-9 AM.

"New Issues in Breastfeeding" by Lawrence M. Gartner MD, Professor Emeritus, Departments of Pediatrics & OB-Gyn, University of

Chicago, Chair, AAP Provisional Section on Breastfeeding, Past President, Academy of Breastfeeding Medicine.

A Mini-Seminar for Physicians-- Children's Hospital and Health Center, San Diego, CA, August 3, 2002.

"Who SAID Breastfeeding Was EASY?: Supporting Breastfeeding in the First Few Weeks." 8:00AM-12:45PM. Speakers: Shea O'Neill MD, MPH, IBCLC, Lawrence Gartner MD, Nancy Wight MD, IBCLC. 4 Category I CME. \$60 / \$50 for SDCBC members, residents & medical students. Full brochure available shortly at www.breastfeeding.org.

BREASTFEEDING IN THE "REAL" WORLD

August 23 - 24, 2002
Holiday Inn on the Bay
San Diego, California

Speakers include: Katherine A. Dettwyler PhD, Lawrence M. Gartner MD, Alexis Martin Neely Esq., and Linda J. Smith BSE, FACCE, IBCLC. A look at social, political and clinical issues in supporting the breastfeeding family in a bottle-feeding culture. Also, the latest information on yeast, Vit D, AAP breastfeeding initiatives and legal issues with time to network with peers and experts in a beautiful setting on San Diego bay.

Sponsored by Children's Hospital and Health Center in cooperation with San Diego County Breastfeeding Coalition, Sharp Mary Birch Hospital for Women and San Diego County Children and Families Commission.

Category I CME & CERPs.

Check the SDCBC website at www.breastfeeding.org for full brochure (available shortly).

Academy of Breastfeeding Medicine 7th International Meeting--Vancouver, BC, Canada, November 14-18, 2002.

"International Breastfeeding: From Evidence to Action." Basic Breastfeeding Course for Physicians. Main meeting with plenary sessions, research abstracts, posters and platform presentations (physicians only). Follow-up meeting for other healthcare/lactation professionals. More information TBA.

2003 California Childhood Obesity Conference--Marriott Hotel & Marina, San Diego, CA, January 6-8, 2003.

"Making an Impact Now: Environmental, Family & Clinical Approaches." Hosted by the California Department of Health Services and the Center for Weight and Health, University of California, Berkeley. For more information, visit www.CNR.Berkeley.EDU/cwh/news/announcements.shtml#save.

LEGISLATIVE UPDATE: ASSEMBLY BILL #2447, GOLDBERG

Nancy Wight MD, FAAP, IBCLC

The preamble of this bill includes a statement on the failure of the United States to abide by the WHO Code of Marketing of Breastmilk Substitutes that it signed in 1994. The aggressive marketing by formula companies designed to promote the premature weaning of infants is clearly outlined.

This bill in its original form would have done two things: 1) prohibited manufacturers of infant formula from sending, or a hospital or healthcare provider from distributing, unsolicited samples of infant formula to a mother without obtaining her written consent on a form that contained information about the drawbacks of feeding infant formula and the benefits of breastfeeding; 2) the bill also would prohibit a hospital or healthcare professional from providing information about a mother to a manufacturer of infant formula without obtaining her written consent. A civil penalty of \$500 was assigned for violation of the article.

Although well written, proactive, and a dream come true for every

COMMUNITY SPOTLIGHT

County of San Diego Childhood Lead Poisoning Prevention Program

Cindy Tso, MPH

Childhood lead poisoning remains a major preventable environmental health problem. An estimated one million children 6 years of age and younger in the United States have elevated blood lead levels. Lead can be potentially dangerous for children and adults if lead is inhaled or ingested: it can cause lead poisoning. In many cases, there are no obvious symptoms of lead poisoning and lead poisoning can be especially dangerous to pregnant and breast-feeding women.

The County of San Diego's Childhood Lead Poisoning Prevention Program (CLPPP) encourages prevention of lead poisoning by:

- washing a child's hands before and after play and especially before bedtime.
- not storing, cooking, heating, serving food in pottery with possible lead paint or lead glazes.
- watching out for old toys, such as lead soldiers, or old or imported toys painted with lead paint. Use them for decoration, not play objects.
- using only cold water from the faucet for drinking and cooking. Run the water for one or two minutes before use. This is especially important when faucet water is given to a baby.

Having your child tested for lead is the only way to know if your child is lead poisoned. Children should be tested at one and two years of age and later if necessary. Call your child's doctor or clinic to find out about blood tests for lead. For more information, call the Childhood Lead Poisoning Prevention Information Line at (619) 515-6694.

breastfeeding supporter in California, the bill has run up against several challenges. First, the requirement for written informed consent has been deemed both by hospitals and physicians as a burdensome, impossible task. Even if an appropriate consent form was designed by the Department of Health Services, one can envision formula company representatives being only too happy to go room-to-room to obtain informed consent every day for every mother. In addition, the American Academy of Pediatrics had concerns about including physicians' offices in the give-away ban, feeling they would be harming their low-income patients if they could not provide immediate access to needed supplementary formulas.

The originators of this bill, Assembly member Jackie Goldberg and the Breastfeeding Task Force of Los Angeles are to be commended for their ambitious undertaking. Unfortunately, the bill was defeated in the Health Committee April 21, 2002 by a vote of 8-2 and so is dead for this legislative session. Several legislators didn't seem to grasp the healthcare and ethical implications of formula gift bags, choosing instead to concentrate on the cost (to hospitals). I find it ironic that legislators who accept donations (freebies) from contributors with agendas don't acknowledge the same influences in the healthcare industry.

Environmental Contaminants and Breastfeeding

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recognition at 6 and 12 months of age. Again, there was no adverse effect associated with PCB breastmilk levels.

In conclusion, despite concerns about the adverse biologic effects of environmental contaminants, thus far there is no evidence that, under ordinary circumstances, the low level of exposure to these contaminants in breastmilk adds to potential risks incurred from antenatal or subsequent postnatal exposure. The many benefits of breastfeeding far outweigh the theoretical risks of exposure to environmental contaminants.

Abbreviations:

DDT: organochlorine pesticide banned in the US since 1970's
DDE: dichlorodiphenyl dichloroethane (primary metabolite of pesticide DDT)
Dioxin: contaminant in defoliant, Agent Orange
PCB: polychlorinated biphenyls (organochlorine industrial chemical; used in electrical equipment)

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BOOK REVIEW

An Ecologist Recognizes and Speaks Out for the Top Link of the Food Chain: the Breastfeeding Infant or Child **By Martha Lantz, RN, MSN, FNP**

HAVING FAITH: An Ecologist's Journey to Motherhood
By Sandra Steingraber, (PERSEUS, 342 pages, \$26.00)

Most representations of the food chain are highly predictable pyramidal structures. At the bottom link of the chain, one finds sunshine and vast quantities of primitive organisms. Moving up the chain, each link feeds on nutrients produced by the link below, and each successive link is comprised of a smaller number of increasingly complex organisms than the link below. As energy is converted from one form to another, some energy is lost in the conversion process. Thus the decreasing number of calories available as one ascends the food chain can support a lesser number of organisms in the link above.

Usually, one sees an adult person as the top link, because many biologists fail to ask, "Who feeds on nutrients produced by the adult female?" The breastfeeding infant or child does, and thus he or she is the topmost link in the food chain, one full link above the adults. The principle of biomagnification underlies the danger to these boys and girls at the top of the food chain. Matter can neither be created nor destroyed, so as persistent pollutants, chemicals and toxins enter and ascend the food chain, they become more concentrated with each ascending (and less populous) link, usually by a factor of 10-100 per link.

Having Faith gracefully weaves two important stories together: the experiences of an ecologist who is a first time mother, from her first knowledge that she is pregnant with her daughter, Faith, until the beginning of weaning, and the challenges presented by environmental contaminants that cross the placenta and/or pollute human milk. In part one, a chapter is devoted to each month of her pregnancy and information about fetal toxicants. In part two, which begins when Faith is born, subsequent months and postpartum topics and hazardous contaminants are addressed. Each fascinating narrative is rich with anecdotes, interesting research findings and beautifully poetic and detailed descriptions of biological processes. Humorous experiences, like briefly getting half naked at a dinner with a university president and other dignitaries, balance the seriousness of the toxicology content.

Dr. Steingraber emphasizes the need to establish a monitoring system to track trends in breastmilk contamination in the U.S. The Stockholm Mothers' Milk Centre has been systematically monitoring Swedish data for thirty years, and has set the highest monitoring standards for human milk. In countries monitoring breastmilk contamination trends, contamination declines are associated with restrictions on manufacture and use of pesticides and polychlorinated biphenyls (PCBs). But some data is ominous. Some declines seem to be plateauing, and some persistent organic pollutants (POPs) levels, notably polybrominated biphenyl ethers (PBDEs), a class of fire retardants found in home electronic equipment and home furnishings, are dou-

bling every five years in Sweden.

Dr. Steingraber details and demystifies the alphabet soup of acronyms and abbreviations for threatening environmental contaminants, creating a readable and user-friendly introduction to some fundamentals of fetal and pediatric toxicology. The detailed index makes it easy to review information about specific toxicants. Steingraber's comments on recent research and the many gaps in current knowledge suggest countless research ideas. Each pregnant mother is a habitat who is capable of being proactive. Protecting unborn children from contaminants that cross the placenta and later, when the breast takes over the placenta's nurturing job, protecting the children from contaminants in breastmilk are worthy goals. With words meant to inspire courage rather than fear, and action rather than denial, Steingraber's call to action will touch the heart and inform the mind of anyone who is a health professional, is anticipating or experiencing pregnancy or who has ever fallen in love with a baby.

Environmental Contaminants and Breastfeeding

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DDT) interfere with normal hormonal balance. Effects are variable and conflicting, depending upon the species, gender, age and immaturity of the animal studied. Nevertheless, estrogenic, androgenic and anti-estrogenic effects have all been associated with exposure to DDT and PCB compounds. These effects include acceleration or delay of puberty, decreased birthweight, and increased weight at puberty. There are few studies in human infants and children relating to low, background level exposure to environmental contaminants. Recently, Gladen, et al reported the effects of transplacental and lactational exposure to DDE, a DDT metabolite, and PCB on growth at puberty in a large cohort of normal, healthy children born in North Carolina in 1978-1982 and followed longitudinally from birth to puberty. In this study the authors calculated the theoretical transplacental and lactational exposure of the fetus and infant based upon maternal serum and breastmilk levels of DDE and PCB and the duration of breastfeeding. No effects of either antenatal or postnatal DDE or PCB exposure were seen in the first year on either birthweight or growth. At puberty, however, transplacental DDE exposure was associated with significantly increased height and weight of boys. This effect was dose-related. No effect of DDE exposure was seen on growth in girls. The age of puberty was not affected in either sex. **Although the calculated amount of PCB and DDE ingested via breastmilk was much higher than the amount acquired antenatally across the placenta, no effect of lactational exposure was found in either sex on growth or puberty.**

The authors concluded that body size at puberty *may* be affected by prenatal, but not lactational, exposure to background levels of these environmental contaminants. Additional studies (Darvill, et al) have shown a dose-related, adverse effect of prenatal PCB exposure, as determined by umbilical blood levels, on infant performance on the Fagan test of visual

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Breastfeeding Update

"Breastfeeding and the Environment"

SDCBC's Newsletter for June 2002

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"Good health begins with breastfeeding."

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RESEARCH CORNER

Environmental Contaminants and Breastfeeding

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Environmental contaminants, including pesticides, industrial chemicals, and heavy metals are ubiquitous. Their long lasting, background presence in foods, soil, and dust results in ongoing consumption and exposure of virtually everyone, even long after use of a particular contaminant (e.g. DDT) has been discontinued. Concerns have been raised about the possible effects of these environmental contaminants on growth, sexual maturation, behavior and development, immunologic competence, and carcinogenic potential in the developing fetus, infant and child.

Little is known about levels and trends of environmental contaminants in breastmilk in the US. Studies available from the US are geographically limited, based on small groups, and thus are not representative of the general population. Based upon studies from other countries, it appears that the concentration of some contaminants in breastmilk such as dioxin have declined worldwide since the 1970's. Fortunately, maternal exposure to environmental contaminants in the US is low except in women at specific occupational risk (pesticides in farm workers), women living in contaminated housing (lead in northeastern cities), accidental massive contamination of the food chain (PCB exposure via cow's milk and beef in Michigan in 1970's) or chronic ingestion of fish taken from waters with high levels of industrial contaminants (mercury

or PCB in Lake Ontario, Hudson River).

Lipophilic, organochlorine contaminants, such as DDT compounds and PCB, are stored in body fat and accumulate over time. Exposure of the breastfeeding infant begins before birth by transfer of maternal contaminants present in maternal blood across the placenta. These contaminants, especially those stored in maternal fat (DDT, PCB), continue to be released into human milk throughout lactation. Maternal stores of these compounds are depleted as maternal fat is mobilized and the compounds are released into milk, thus transferring the contaminants from mother to the breastfeeding infant. Breastmilk levels of environmental contaminants decline substantially over the duration of breastfeeding and decrease with subsequent pregnancies, presumably reflecting the gradual depletion of maternal stores via breastfeeding. In general, larger amounts of contaminants are transferred postnatally via breastmilk than are transferred antenatally via the placenta. Despite this, the adverse physiologic effects of various contaminants appear to be greater with transplacental compared to lactational exposure in both humans and experimental animals. This greater susceptibility of the fetus may relate to the immaturity of affected systems at the time of antenatal exposure.

In experimental animals, organochlorine compounds (e.g., PCB,

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