

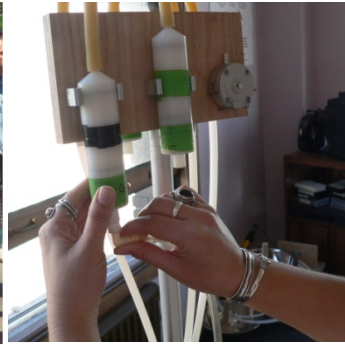
RESEARCHING THE ENVIRONMENT AND WOMEN'S HEALTH

# Fresh Foods Diet Reduces BPA and Phthalate Exposures in Adults and Children

Ruthann Rudel

Silent Spring Institute

Healthy Legacy Webinar, June 30, 2011



## *Research on the environment and women's health*

**Multi-disciplinary scientific staff** working with colleagues at Brown, Harvard, UC Berkeley and community partners

**Funders:** National Institutes of Health, National Science Foundation, Avon Foundation, private donors, foundations ...

**Science publications:** *Cancer, Environmental Health Perspectives, Environmental Science & Technology, American Journal of Public Health . . .*

People want to know: How can I reduce my exposure while science and regulations are being worked out?



And policy-makers need to understand exposure to develop controls

# Growing interest in chemical safety led to good media coverage of the study

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## Study: Eating Fresh Food Reduces Exposure to BPA



Time for a Food Makeover

AUTO START: ON OFF

abc WORLD NEWS WITH DIANE SAWYER

By BEN FORER  
March 30, 2011

Exposure to hormone disrupting chemicals such as BPA, or bisphenol A, can be reduced significantly by eating fewer foods packaged in metal cans or plastic, according to a new report from the [Breast Cancer Fund](#) and the [Silent Spring Institute](#).

Recommend 602

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# Why are we worried about these chemicals?

*BPA, some phthalates are endocrine disruptors*

- BPA
  - Complex mix of activity including estrogenic
  - Effects in animal studies raise concerns about breast and prostate cancer, brain development
  - General population exposure primarily from food packaging, but medical exposure can be higher
- DEHP and other phthalates
  - Anti-androgenic, act cumulatively
  - Disrupt development of male reproductive tract, maybe neurological effects
  - Recent study: 25% kids exceed health guideline (Koch et al. 2011)
  - Exposure from diet, building materials, consumer products, medicines and medical equipment

EDITORIAL

# Testing Chemicals for Effects on Lactation, and Cancer

Article

Julia Green Brody<sup>1</sup>, Ruthann A. Rudel<sup>1</sup>, Mhel Kavanaugh Lynch<sup>2</sup>

<sup>1</sup> Silent Spring Institute, Newton, MA, <sup>2</sup> California Breast Cancer Research Program, University of California Office of the President, Oakland, CA

REVIEW

# Environmental Exposures and Mamm Development: State of the Science, Public Implications, and Research Recommendations

Article

Ruthann A. Rudel, Suzanne E. Fenton, Janet M. Ackerman, Susan Y. Euling, Susan L. Makris

COMMENTARY

# Current Assessment of the Effects of Environmental Chemicals on the Mammary Gland in Guinea Pigs, OECD, and NTP Rodent Studies

Article

Susan L. Makris

# Slate

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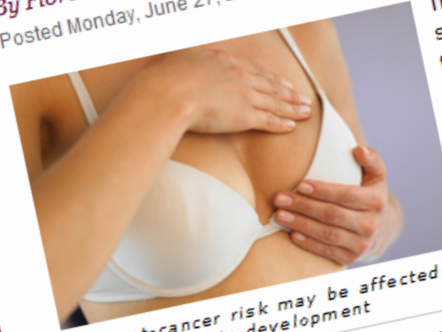
HOME / DOUBLEX: WHAT WOMEN REALLY THINK ABOUT NEWS, POLITICS, AND CULTURE.

# Scientists to Chemical Regulators: Stop Ignoring Boobs

A new set of reports shows that federal policy on chemicals testing neglects breast health.

By Florence Williams

Posted Monday, June 27, 2011, at 2:45 PM ET



Breast-cancer risk may be affected early in development

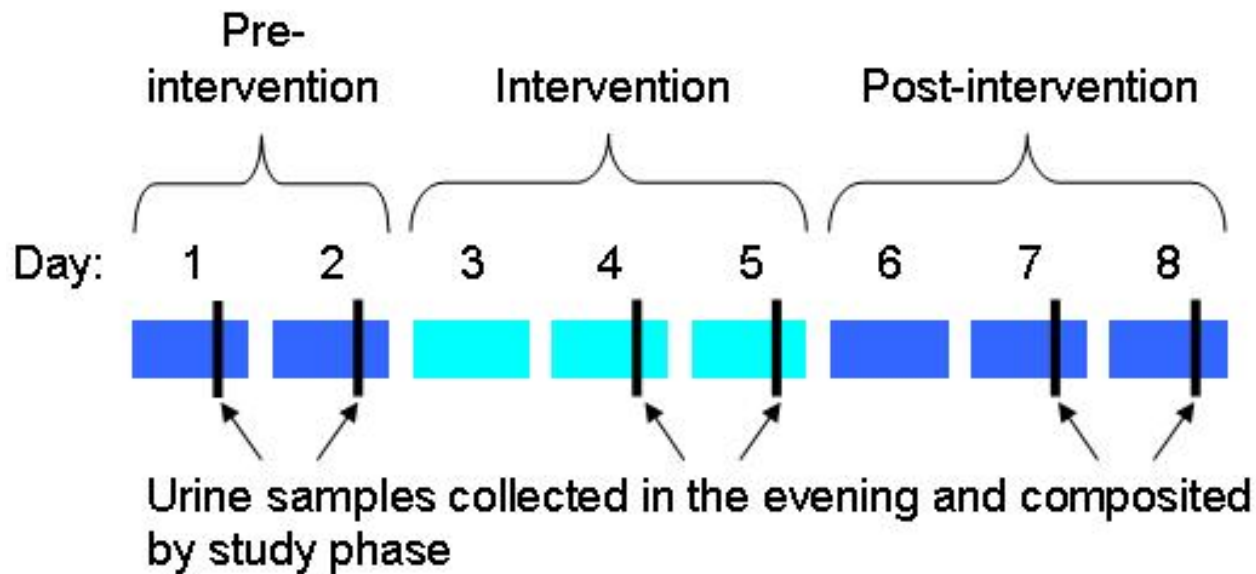
It was adolescents—not grown women—near the explosions who were most likely to develop breast cancer in later years. Since then, there's been similar data for girls who were exposed to medical X-rays or radiation therapy, as well as research showing that the pesticide DDT, now banned but pervasive in the 1950s and 1960s, is associated with a higher risk of breast cancer in women exposed as girls.

The last quarter of a century has taught science some newfangled things about breasts. For one thing, they appear to be showing up earlier in young girls, with possible consequences for breast cancer later on. For another, the way they grow and develop varies from woman to woman, and—if lab animals are any indication—normal exposures to commercial chemicals can alter that process. The growing human breast is also more vulnerable than we thought. Data from atomic-bomb survivors in Japan show that

# Who was in the study?

- 20 individuals in 5 families
- San Francisco Bay Area
- 10 adults
- 10 children ages 3-12
- Reported eating canned foods, microwaving in plastic, drinking from plastic water bottles, eating meals not prepared at home
- Selected from 63 volunteer families

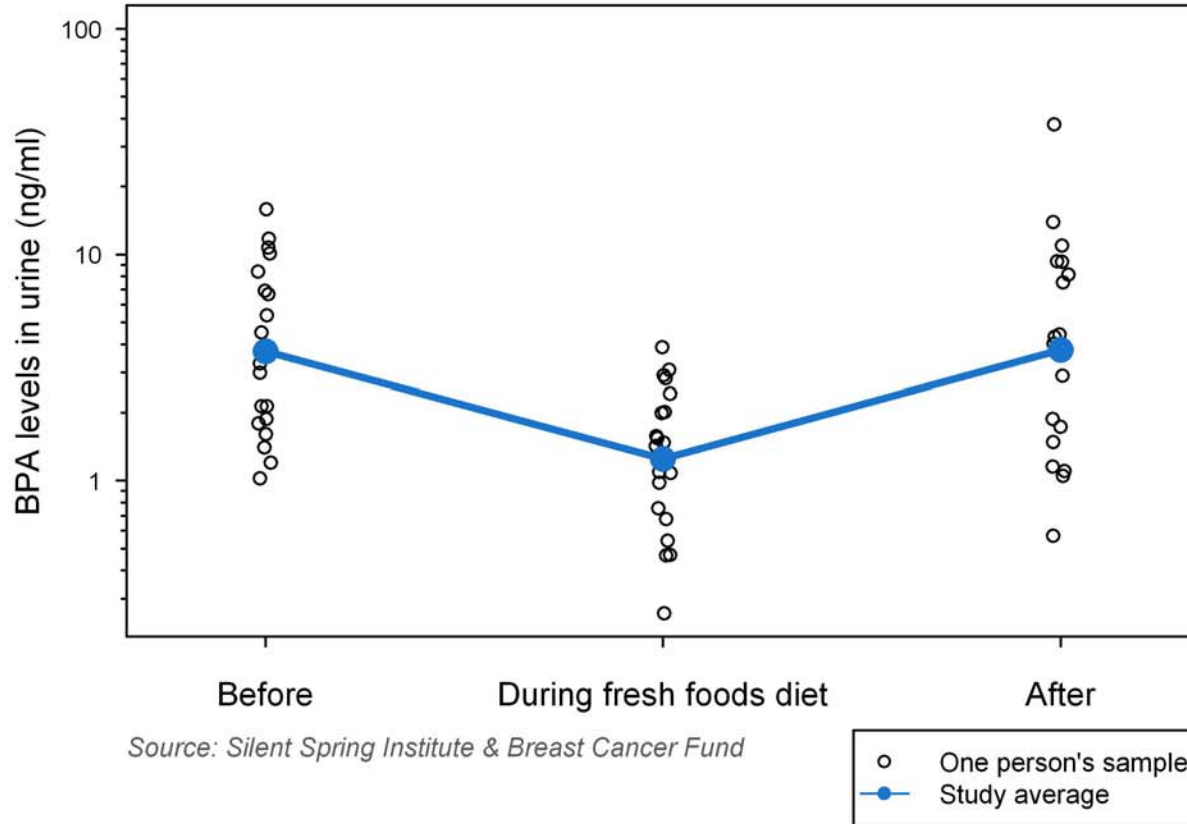
# Study design



# Dietary Intervention

- 3 days all food catered
  - Prepared from fresh, organic fruits, vegetables, grains, and meats
  - Avoided contact with plastic utensils or non-stick cookware
  - Stored food in glass with space between food and plastic lid
- No microwaving or storing in plastic
- Stainless steel water bottles and lunch containers
- Milk, OJ, etc. in glass if possible, or LDPE
- Coffee from french press or ceramic drip
- Avoid meals, coffee, drinks prepared outside the home

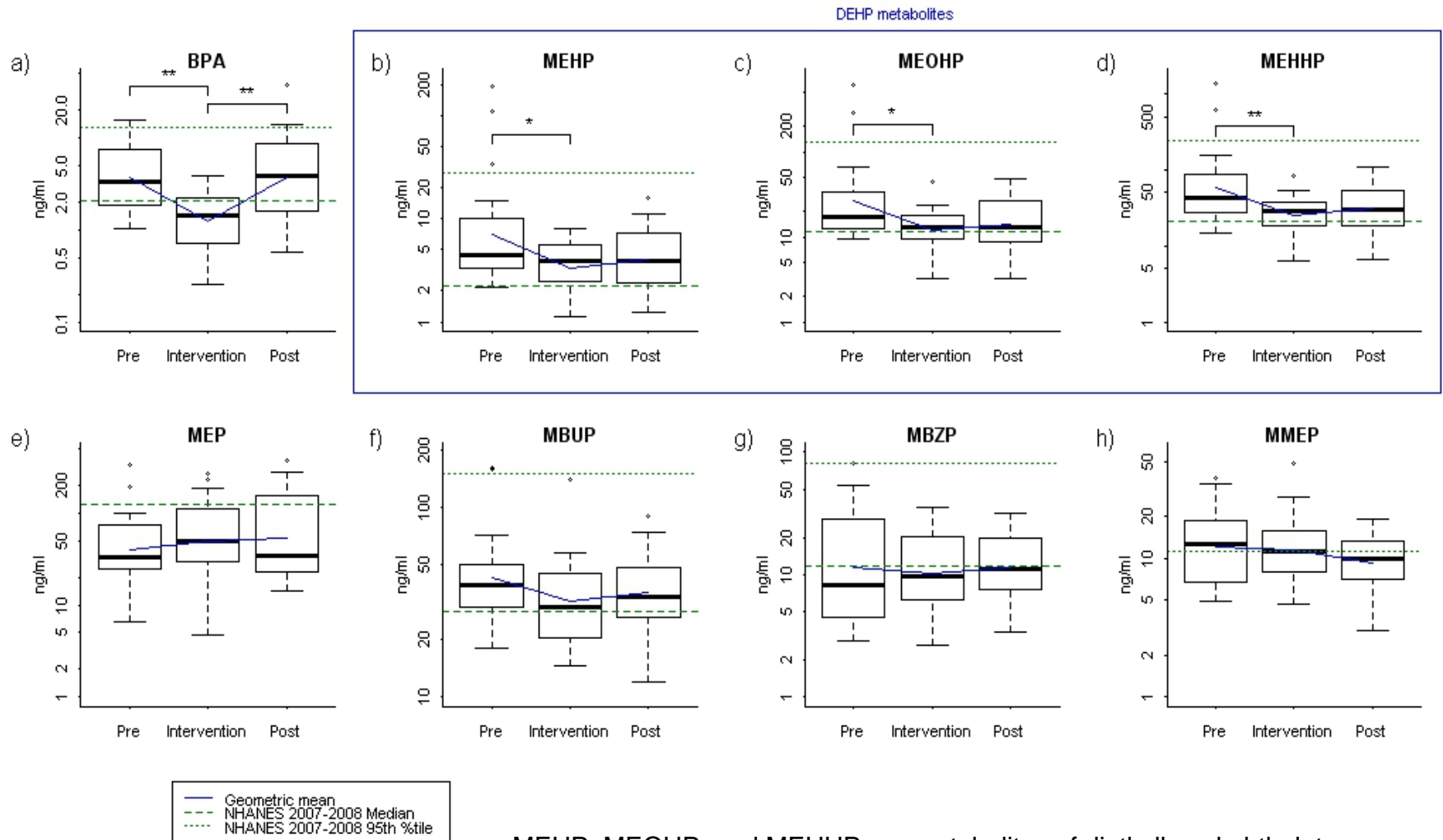
## BPA levels decline during 3-day fresh food diet



## Phthalate (DEHP) levels decline during 3-day fresh food diet



# Not all chemicals decreased



MEHP, MEOHP, and MEHHP are metabolites of diethylhexyl phthalate  
MEP is a metabolite of diethyl phthalate  
MBUP is a metabolite of dibutyl phthalate and butylbenzyl phthalate  
MBZP is a metabolite of butylbenzyl phthalate  
MMEP is a metabolite of dimethyl phthalate

# Changes were most pronounced among participants with high initial exposure

Chemical	Statistic	Before		Change
		Intervention	Intervention	
		(ng/L)	(ng/L)	
BPA	Average (GM)	3.7	1.2	-66%
	90th percentile	11	2.9	-73%
	Maximum	16	3.9	-76%
MEHHP (A metabolite of the phthalate DEHP)	Average (GM)	57	25	-56%
	90th percentile	200	46	-77%
	Maximum	1400	84	-94%

# Summary of findings

- 3 days of a fresh food diet . . . .
  - reduces BPA by 66%
  - reduces phthalate DEHP by 53-56%
- Larger reductions at higher exposures
- Food packaging is the major source of exposure to these chemicals
- Other common phthalates not reduced

*Of interest: Manufacturers believe DEHP has been removed from food packaging*



# Thanks



## The workers:

**Breast Cancer Fund** – Janet Gray, Connie Engel, Jeanne Rizzo, J. Nudelman

**Silent Spring Institute** - Ruthann Rudel, Janet Ackerman, Julia Green Brody

**Axys Laboratories** - Teresa Rawsthorne

**The funders:** This research was supported by the Passport Foundation (Charlotte, NC, USA) and the Susan S. Bailis Breast Cancer Research Fund at Silent Spring Institute. The Vassar IRB reviewed the study plan.

**Article citations:** Rudel, R.A, J.M. Gray, C.L. Engel, T.W. Rawsthorne, R.E. Dodson, J.M. Ackerman, J. Rizzo, J.L. Nudelman, J.G. Brody. 2011. Food packaging and bisphenol A and bis(2-ethyhexyl) phthalate exposure: Findings from a dietary intervention. Environmental Health Perspectives, July 1, 2011; doi:[10.1289/ehp.1003170](https://doi.org/10.1289/ehp.1003170).

*Letter exchange with phthalate manufacturers also in July 2011 EHP!*

Tip sheets etc. at [www.silentspring.org](http://www.silentspring.org) and [www.breastcancerfund.org](http://www.breastcancerfund.org)



## 6 Simple Steps to Avoid BPA and Phthalates in Food

Plastics commonly used to make food storage containers can inadvertently leach hormone disrupting chemicals into food and drinks.



**Bisphenol A (BPA)** is a chemical often used in hard plastic bottles and the epoxy resin lining of food and beverage cans. It has been associated with effects on the developing brain, and breast and prostate cancer in laboratory studies.



**Phthalates**, such as DEHP, are chemicals used to make plastic soft, including plastic food wrap. DEHP has been shown to affect male reproductive development, sperm quality, and male hormone levels in laboratory and human studies.

While scientists continue to study the health effects of these chemicals, here are **6 simple steps to play it safe** and reduce your exposure:

### ✓ Fresh is best

BPA and phthalates can migrate from the linings of cans and plastic packaging into food and drinks. While it's not practical to avoid food packaging altogether, opt for fresh or frozen instead of canned food as much as possible.

### ✓ Eat in

Studies have shown that people who eat more meals prepared outside the home have higher levels of BPA. To reduce your exposure, consider cooking more meals at home with fresh ingredients. When you do eat out, choose restaurants that use fresh ingredients.

### ✓ Store it safe

Food and drinks stored in plastic can collect chemicals from the containers, especially if the foods are fatty or acidic. Next time, try storing your leftovers in glass or stainless steel instead of plastic.

### ✓ Don't microwave in plastic

Warmer temperatures increase the rate of chemicals leaching into food and drinks. So use heat-resistant glass or ceramic containers when you microwave, or heat your food on the stove. The label "microwave safe" means safety for the container, not your health.

### ✓ Brew the old-fashioned way

Automatic coffee makers may have BPA and phthalates in their plastic containers and tubing. When you brew your coffee, consider using a French press to get your buzz without the BPA.

### ✓ Take action

While we can each take steps to reduce our own exposure, it's important to join with others to call for healthier food packaging for everyone. Breast Cancer Fund ([www.breastcancerfund.org](http://www.breastcancerfund.org)) and Safer Chemicals, Health Families ([www.saferchemicals.org](http://www.saferchemicals.org)) are leading national efforts to get chemicals of concern out of food packaging and other products.

