

# Generations at Risk: Exposure to Toxic Environmental Agents and Reproductive Health

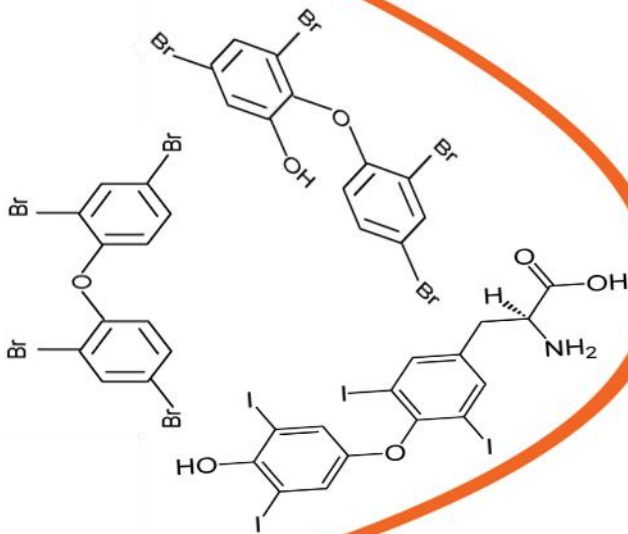
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President  
American Society for Reproductive Medicine  
October 2, 2013  
Washington, DC

Congressional Briefing

**Exposed: The Environment and The Health of Our Most Vulnerable.**

**A panel discussion with the nation's leading physicians  
dedicated to the health of women, infants and children**



# American Society for Reproductive Medicine



ASRM is a multidisciplinary organization dedicated to the advancement of the art, science, and practice of reproductive medicine.

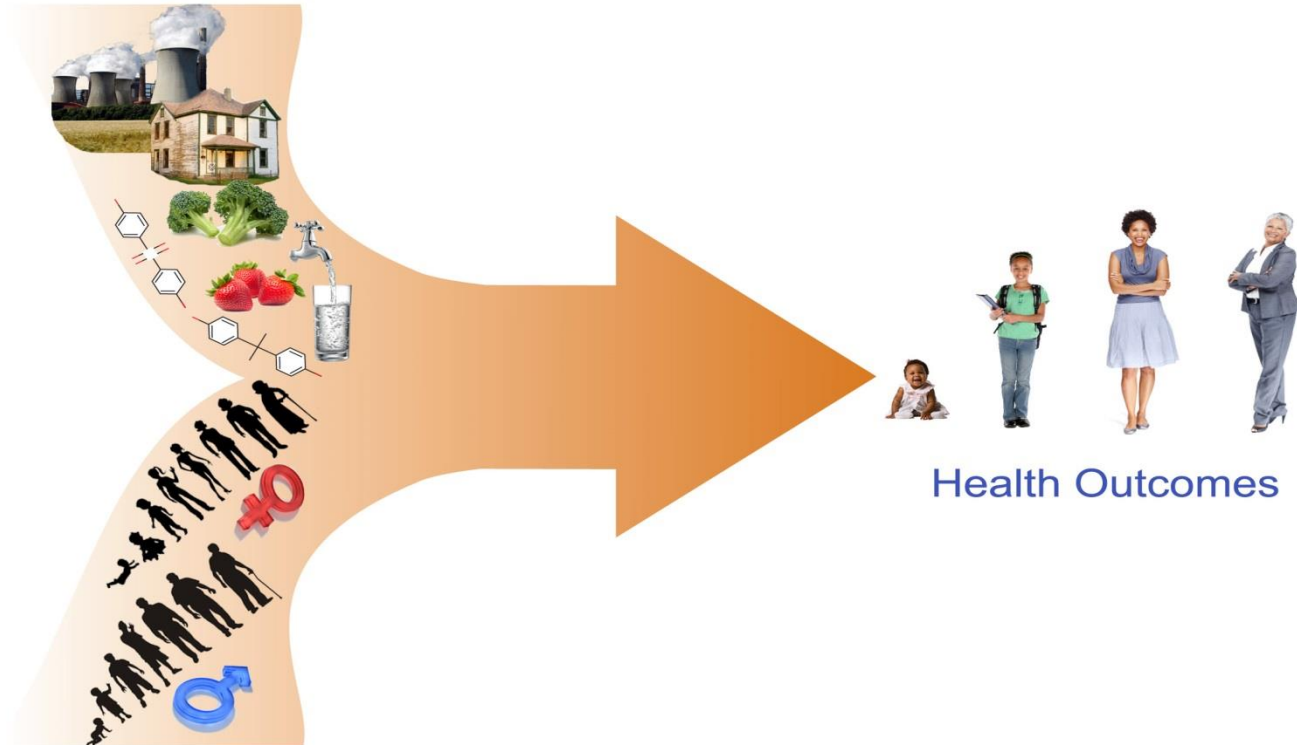
The Society accomplishes its mission through the pursuit of excellence in education and research and through advocacy on behalf of patients, physicians, and affiliated health care providers.

The Society is committed to facilitating and sponsoring educational activities for the lay public and continuing medical education activities for professionals who are engaged in the practice of and research in reproductive medicine.

# ACOG/ASRM Committee Opinion

**“Environmental exposures can have a profound and lasting impact on the health of our patients and future generations”**

Extrinsic Environmental Factors



Intrinsic Biological Factors

Health Outcomes



Trends in  
reproductive  
function,  
cancers, and  
developmental  
disorders

# TIME

## Health & Family

### In a Rush to Mature: Study Finds Boys Hitting Puberty Earlier than Ever

By Laura Blue | Oct. 22, 2012 | 0

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Puberty usually hits boys later than girls, at an average age of 11. But according to new research published in the journal *Pediatrics*, U.S. boys are now experiencing the first signs of sexual maturation — genital growth, testicular enlargement, and the appearance of pubic hair — roughly 6 months to 2 years earlier than boys at similar ages just a few decades ago.

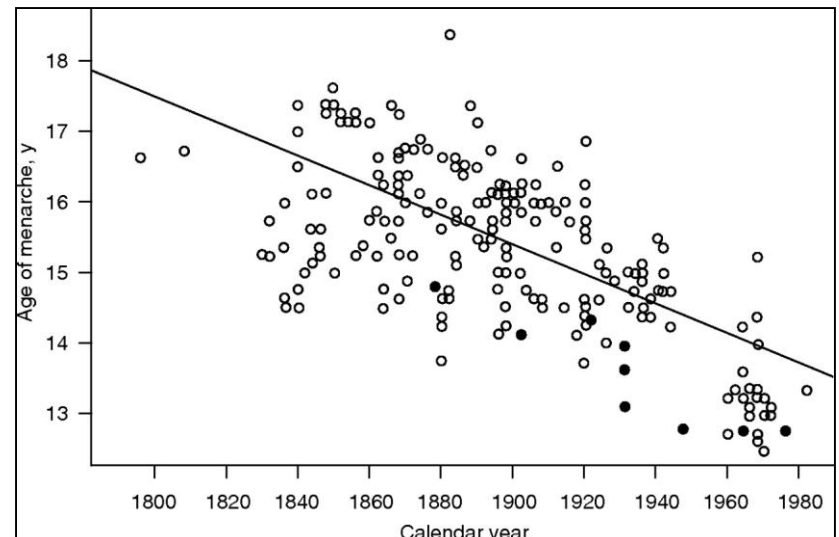


TAYLOR HINTON / GETTY IMAGES

Pediatricians now find that the earliest stage of male puberty occurs, on average, at age of 10.14 years among non-Hispanic whites, at 10.4 years among Hispanics, and at just 9.14 years among African Americans.

### Age of menarche in Europe and the US from 1790 to 1980

Euling, S. Y. et al. *Pediatrics* 2008;121:S167-S171





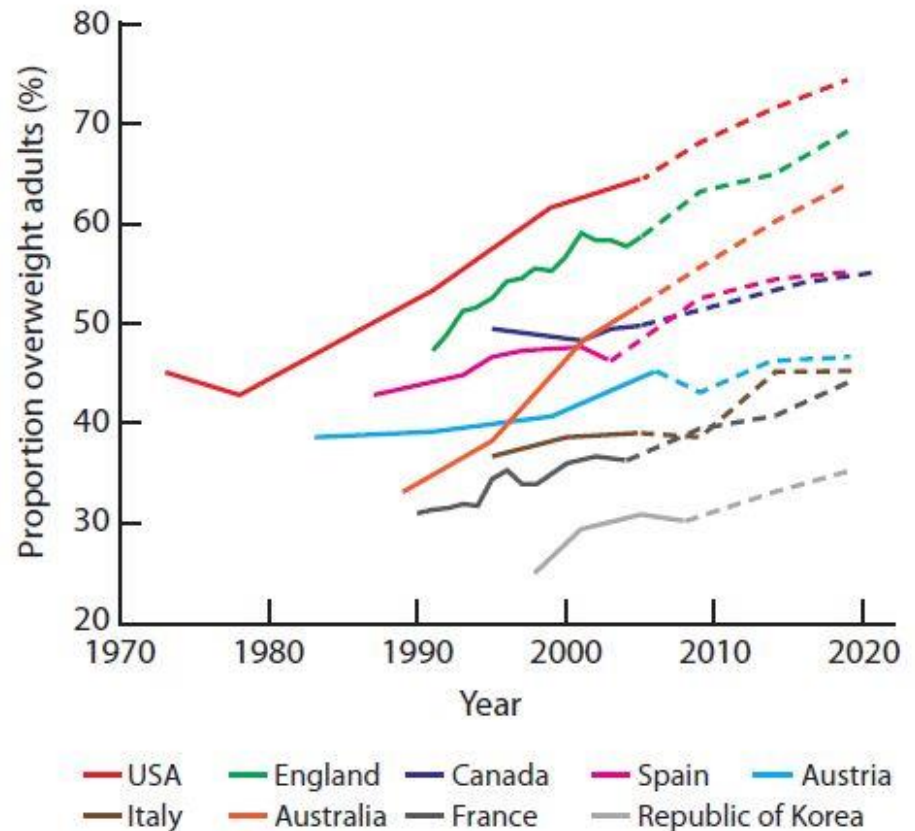


**Aggressive  
Breast Cancer in  
Young Women  
2013**

an increase in Aggressive breast cancer in young women - <http://jama.jamanetwork.com/article.aspx?articleid=1656255>

# Human Disease Trends

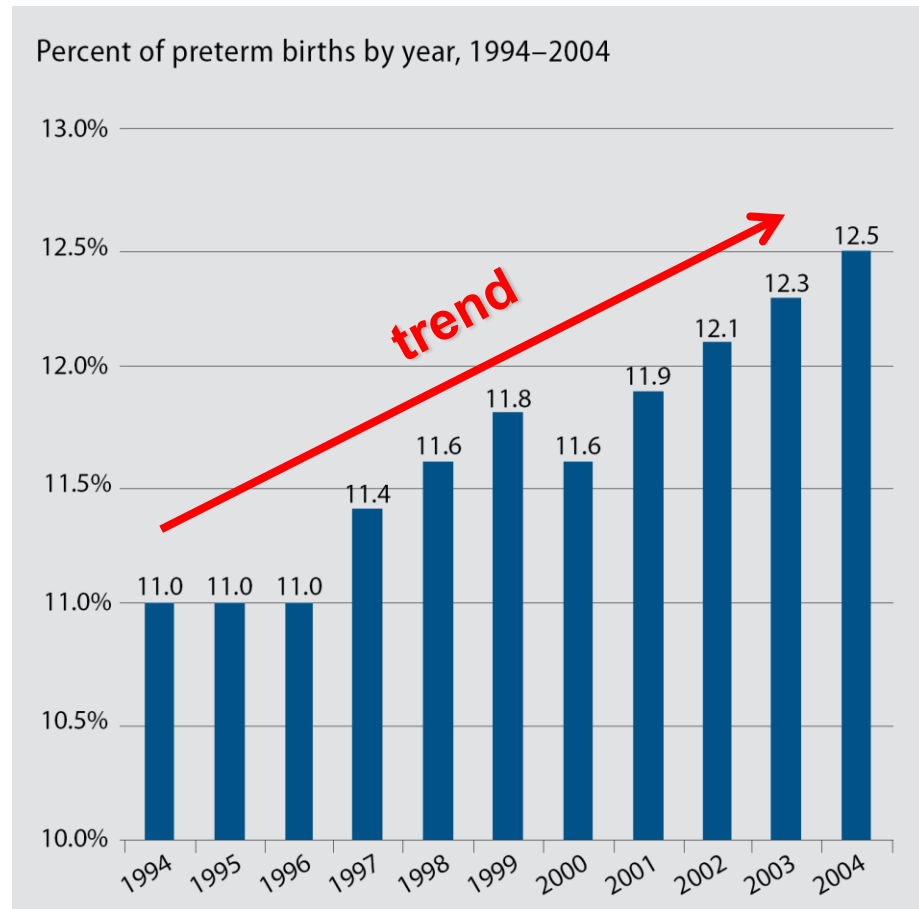
- Obesity
- Cardiovascular disease
- Diabetes
- Metabolic syndrome
- Many of these diseases are increasing in incidence, some globally.



Past (solid lines) and projected (dashed lines) overweight rates in selected Organization for Economic Co-operation and Developing countries 2012.

# Rates of Preterm Delivery

- 1 out of 8 babies is born prematurely.
- Rate has increased 36% since the early 1980s.



Graph from Reproductive Roulette, [http://www.americanprogress.org/issues/2009/07/reproductive\\_roulette.html](http://www.americanprogress.org/issues/2009/07/reproductive_roulette.html). Source: Stephanie J. Ventura et al, "Estimated Pregnancy Rates by Outcome for the United States, 1990–2004," National Center for Health Statistics, *National Vital Statistics Reports* 56 (15) (April 14, 2008); Stephanie J. Ventura et al., "Trends in Pregnancies and Pregnancy Rates by Outcome: Estimates for the United States, 1976–96," National Center for Health Statistics, *Vital and Health Statistics* 21 (56) (January 2000).



## Childhood Cancer

2007

**From 129 to 167 cases per million children**

1975



# Autism

2008

From 6.4 to 11.4 cases per 1000



2002

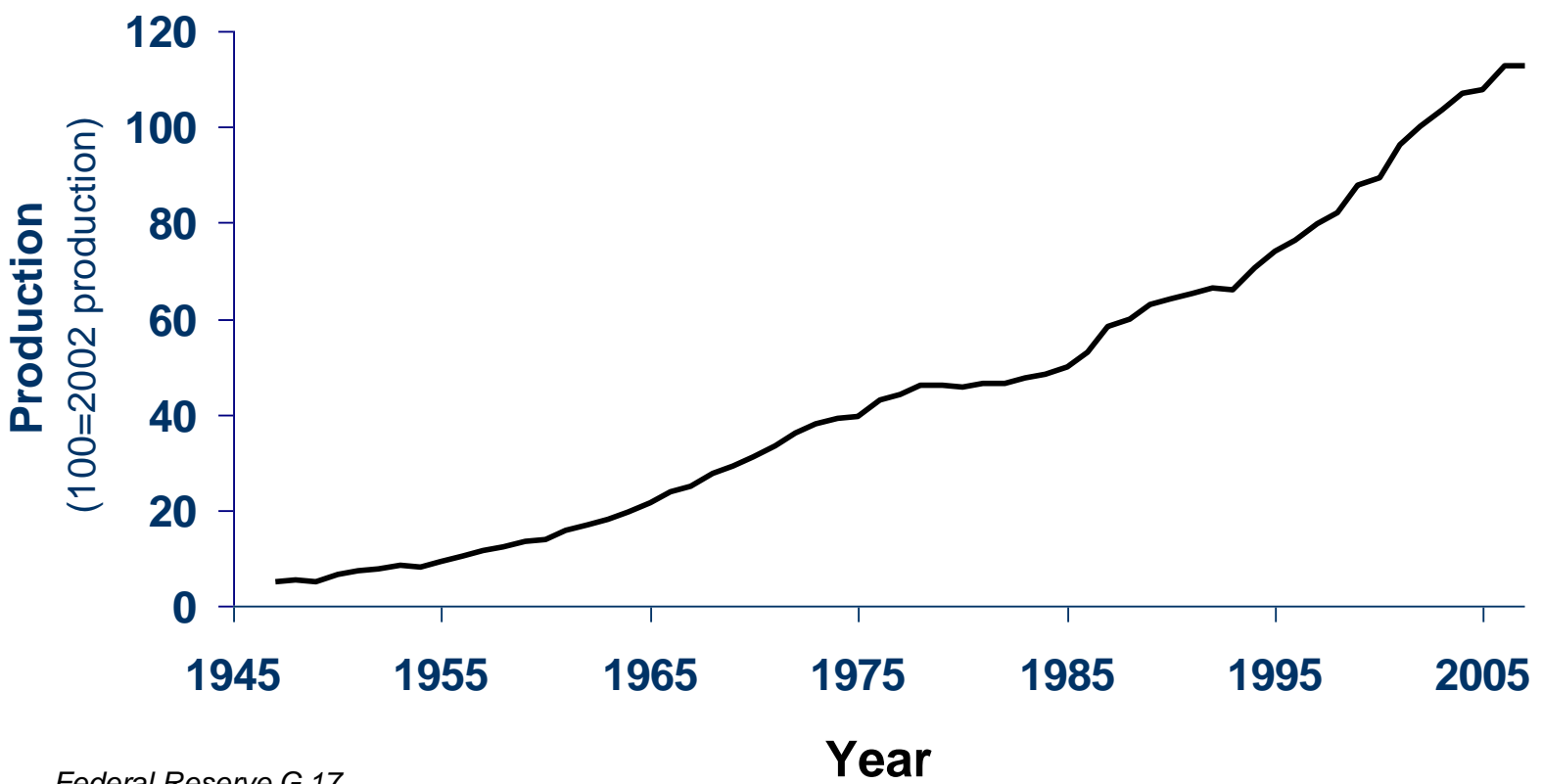


**What has  
changed?**

**Exposure to environmental chemicals  
is implicated in adverse trends in  
reproductive and developmental  
health**

# U.S. Chemical Production

Chemical production has increased **15-fold** over 70 years



Federal Reserve G.17



# *Today*

**84,000 chemical substances registered for use in U.S. commerce**  
**3,000 chemicals used or imported in excess of 1 million pounds**  
**700 new industrial chemicals introduced into commerce each year**



**“Most environmental chemicals in commerce have entered the marketplace without comprehensive and standardized research into their reproductive or other long-term toxic effects”**

**Evidence that connects exposure to toxic  
environmental chemicals is robust**

# Endocrine-Disrupting Chemicals

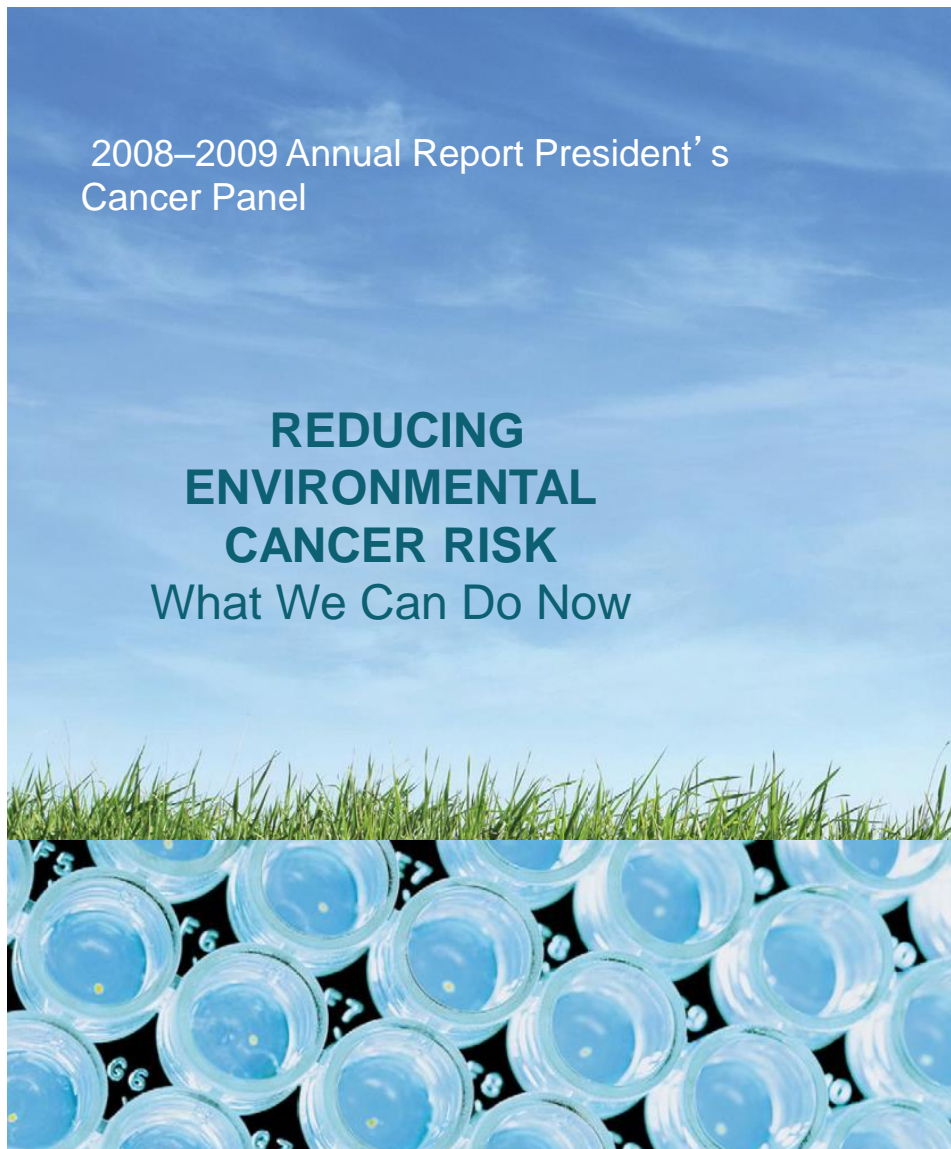
An Endocrine Society Scientific Statement

Evidence for adverse reproductive outcomes (infertility, cancers, malformations) from exposure to endocrine disrupting chemicals **is strong**, and there is **mounting evidence** for effects on ... thyroid, neuroendocrine, obesity and metabolism, and insulin and glucose homeostasis.



*Diamanti-Kandarakis E et al. 2009  
Endocrine-Disrupting Chemicals: An  
Endocrine Society Scientific Statement.  
Endo Rev 30(4):293-342*

# President's Cancer Panel



- **“... to a disturbing extent babies are born ‘pre-polluted’ ”**

**The human reproductive system is  
vulnerable to harm from chemicals in  
the environment**





***Timing Matters***

# Timing Matters



No increased risk of breast cancer



5 fold increased risk of breast cancer



## ACOG/ASRM Opinion:

“An important outcome of pregnancy is no longer just a healthy newborn but a human being optimally programmed for health from infancy through old age.”



# Recommendations



“... encourage women in the preconception period and women who are pregnant and lactating to eat fruit, vegetables, beans, legumes ... and avoid these [high in mercury] fish”

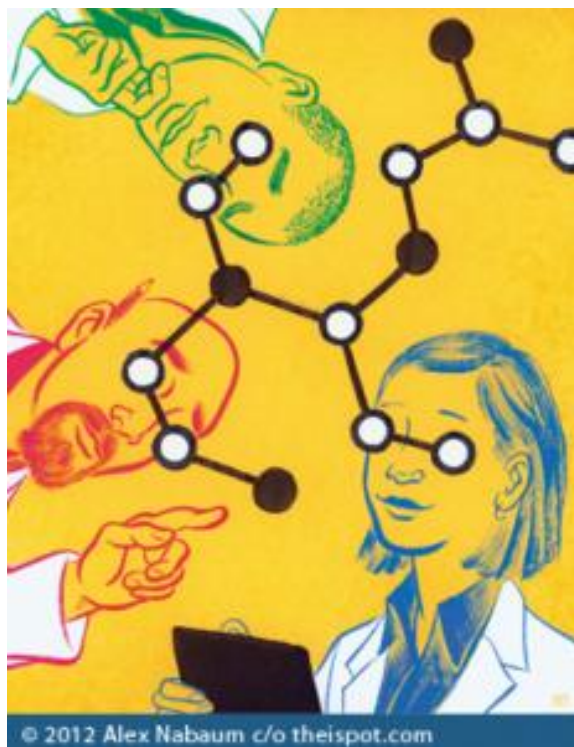
# Recommendations



“Advancing policies and practices in support of a healthy food system should be pursued as a primary prevention strategy to ensure healthy pregnancies, healthy children and healthy future generations.”



# Recommendations



“A chemical should never be released if a concern exists regarding its effect on health.”

Safer alternatives to toxic chemicals protect workers, communities and individuals at home and abroad