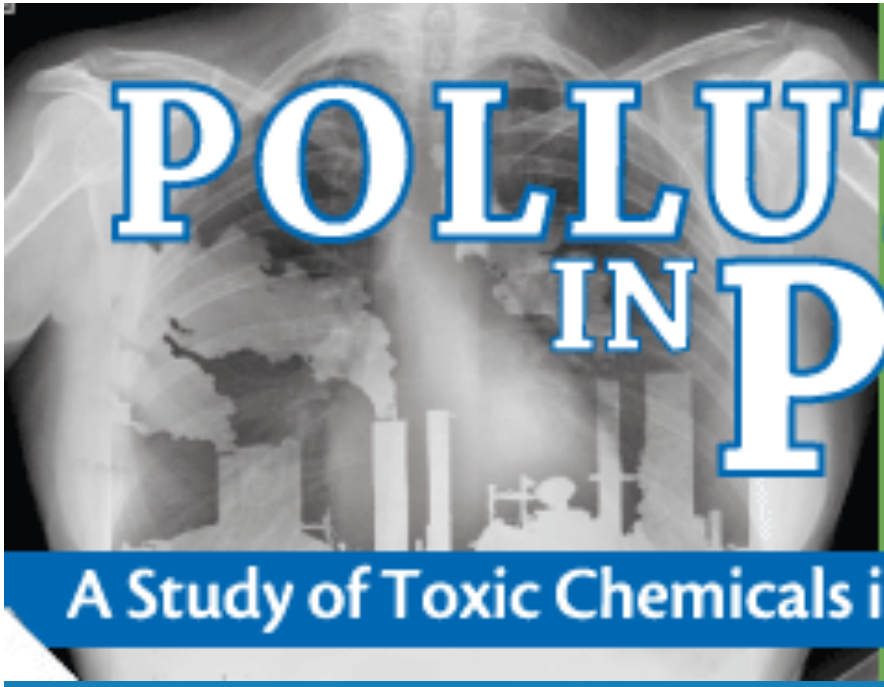

POLLUTION IN PEOPLE

A Study of Toxic Chemicals in Oregonians

Renee Hackenmiller-Paradis, MPH, PhD
Environmental Health Program Director

March 19, 2012

Oregon Environmental Council

OEC advances innovative, collaborative solutions to Oregon's environmental challenges for today and future generations.

Our vision for Oregon includes:

- Solving global warming
- Protecting Oregonians from exposure to toxic substances
- Cleaning up our Rivers
- Building sustainable economies
- Ensuring healthy food and local farms
- Passing strong environmental policies

www.oeconline.org

Today's Presentation

- What is the problem?
- Summarize Oregon Pollution in People Study
- Details on 3 chemicals
  - Organophosphate Pesticides
  - Mercury
  - Bisphenol A
- Other Awareness Raising Projects
  - Solutions

What is the Problem?

- The incidence of chronic disease is rising:
  - –asthma, reproductive impacts, learning & developmental disabilities, birth defects, diabetes, Parkinson's disease, and some cancers.

- Scientific evidence show that toxic chemicals are contributing to this epidemic.

- These chemicals are in our air, water, food, schools, workplaces, everyday products and, ultimately, in our bodies.

How Are We Exposed?

- Ingestion: what we eat and drink
  - Food
  - Soil
- Inhalation: what we breathe
- Skin absorption

Sources of exposure

- Consumer Products
  - 5000 chemicals in cosmetics
  - 3200 chemicals added to food
  - 500 pesticides

Federal Toxic Substances Control Act (TSCA)

Federal laws fail to control most chemicals

Number of Chemicals

62,000 Existing Chemicals as of 1979
200 Evaluated by EPA since 1976
5 Banned since 1976
0 Banned since 1990

25,000+ New Chemicals Added Since 1979.

U.S. Government Accountability Office, 2005

The EPA:

- Does not fully consider health effects.
- Uses data supplied by manufacturers with "trade secrets."
- Must *prove* risk before can get more data to demonstrate risk.
- One chemical at a time is too slow.

Asbestos: Ten years of rulemaking and a 45,000 page record were inadequate to support a ban on asbestos

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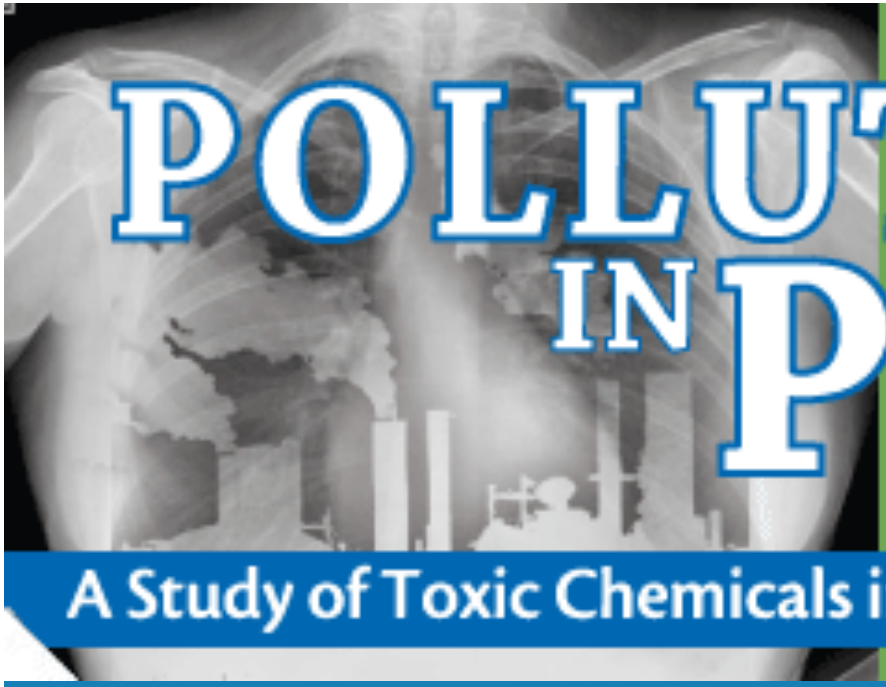

POLLUTION IN PEOPLE

A Study of Toxic Chemicals in Oregonians

Tested 10 Oregonians for the presence of 6 classes of toxic chemicals in their bodies.

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POLLUTION IN PEOPLE

A Study of Toxic Chemicals in Oregonians

BIOMONITORING

Directly measuring for chemicals in people's bodies.

GOAL: Determine how much of a chemical in the environment ends up in our bodies.

6 classes of toxic chemicals tested:

- Phthalates
- Mercury
- Perfluorinated compounds (PFCs)
- Organophosphate Pesticides
- Bisphenol-A
- PCBs

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POLLUTION IN PEOPLE

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6 classes of toxic chemicals tested:

- Phthalates
- **Mercury**
- Perfluorinated compounds (PFCs)
- **Organophosphate Pesticides**
- **Bisphenol-A**
- PCBs

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Oregon Pollution in People Participants

- Alan Bates, MD
  - Ashland/Medford Physician, Democratic State Senator
- Vicki Berger
  - Salem, Republican State Representative
- Doug Stamm
  - Portland, Meyer Memorial Trust
- Don Sampson
  - Pendleton, Confederated Tribes Umatilla Indian Reservation
- Cathy Bloome
  - Portland mother of two young children
- Danya Rumore
  - 2006-07 Oregon State Cross Country & Track Team
- Linda Hornbuckle
  - Portland area Gospel singer
- Jeff VonAllman
  - Portland area firefighter
- Doug Phillips
  - Central Oregon Business Owner
- Donalda Dodson
  - Salem, Public Health professional, Environmental Quality Commission

Key Findings

- At least 9 and as many as 16 chemicals detected
- Of the 29 total chemicals tested, we found:
  6 perfluorinated chemicals (PFCs);
  6 phthalates;
  Mercury;
  4 OP metabolites;
  bisphenol A; and
  PCBs
- All contaminated with PCBs, mercury, PFCs, and phthalates.

Organophosphate Pesticides: exposure sources

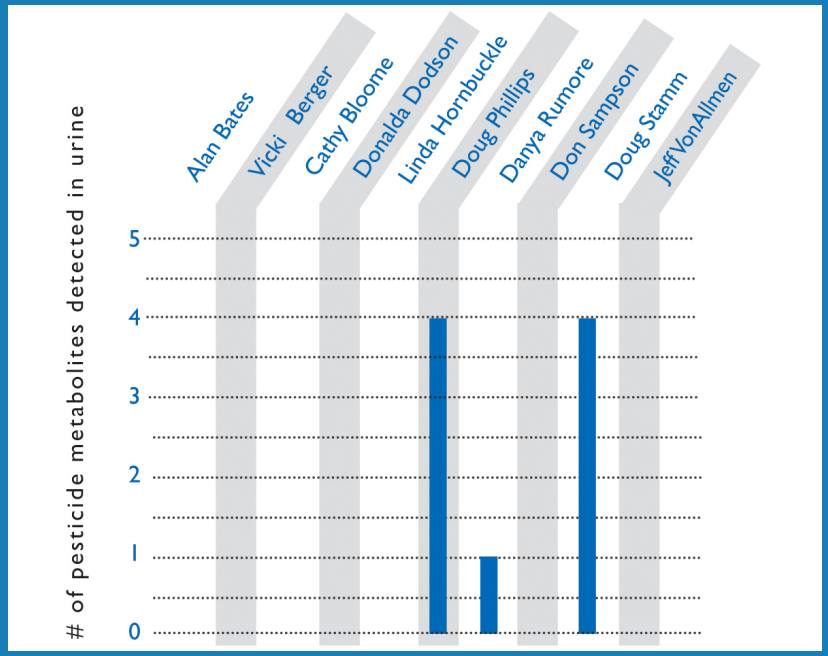
- Fruit and Vegetable consumption
- Contacting pesticide-contaminated surfaces and dust
- Breathing air near pesticide applications (both indoors and outdoors).

Organophosphate Pesticides: Health Impacts

- Acute exposure impacts the nervous system
  - Weakness
  - cramps
  - breathing trouble
  - nausea, and vomiting
- Impairs children's brain development.
- Studies on farmworkers in Hood River find that people with greater exposure have poorer motor function and shorter attention spans.

Organophosphate Pesticides in Oregonians

- Only 3 participants had detectable levels of pesticides in their bodies.
- Exposures likely from pesticide contaminated fresh fruits and vegetables.
- These contaminants do not stay in body long—detectable levels indicates recent (<24 hour) exposures.



Pesticides : Reducing Exposure

- Buy organic.
- Grow your own fruits and vegetables.
- Use alternatives to pesticides in your home and garden.
- Advocate for pesticide reduction in your school, park, and community.

EWG's 2011 Shopper's Guide to Pesticides in Produce™

Instructions:
1. Cut along outside line
2. Fold along middle line.

Cut along line

Fold together

foodnews.org

Dirty Dozen™
buy these organic.

I Imported
D Domestic

WORST
1. Apples
2. Celery
3. Strawberries
4. Peaches
5. Spinach
6. Nectarines I
7. Grapes I
8. Sweet bell peppers
9. Potatoes
10. Blueberries D
11. Lettuce
12. Kale/collard greens

EWG's 2011 Shopper's Guide to Pesticides in Produce™

foodnews.org

Clean15™
Lowest in Pesticides.

BEST
1. Onions
2. Corn
3. Pineapples
4. Avocado
5. Asparagus
6. Sweet peas
7. Mangoes
8. Eggplant
9. Cantaloupe D
10. Kiwi
11. Cabbage
12. Watermelon
13. Sweet potatoes
14. Grapefruit
15. Mushrooms

Scan to see more!
Get a QR app from www.i-nigma.mobi

http://www.ewg.org/foodnews/guide/

Mercury:
Exposure Sources and Health Impacts

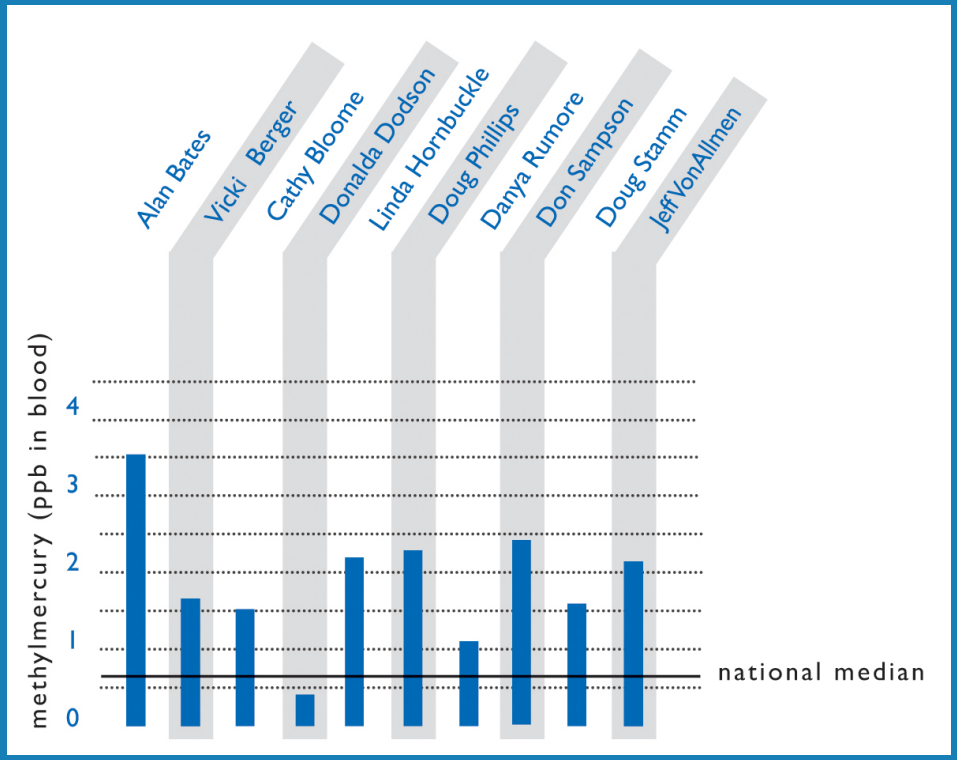
- *Most common exposure:* Consumption of mercury contaminated fish.

- Mercury is a PBT and a potent neurotoxin
  - slows fetal and child development
  - causes irreversible deficits in brain function.

- In Oregon, mercury fish advisories for 11 water bodies, including entire main stem of the Willamette.

Mercury in Oregonians

- Methylmercury was detected in the blood of all ten Oregonians we tested.
- Mercury levels for all but one Oregonian tested were higher than the national median.



Mercury: Reducing Exposure

- Avoid fish high in mercury. Fish species high in mercury are long-lived, large predators.
  - In a 2011 consumer reports study, 100% of tested canned tuna contained mercury.
    - from 0.018 to 0.774 ppm
  - white (albacore) tuna contains more mercury than light tuna.

- Avoid purchasing/using products with mercury: thermostats, barometers, manometers and thermometers.

- Dispose of mercury-containing products responsibly.
  - recycle batteries, mercury-containing wall-mounted thermostats.
  - Exchange mercury-containing thermometers.
  - Recycle compact fluorescent lightbulbs (CFLs) appropriately.
    - PROGRESS: 2012 legislation limiting amount of mercury content in CFLs for sale in Oregon

Bisphenol A (BPA)

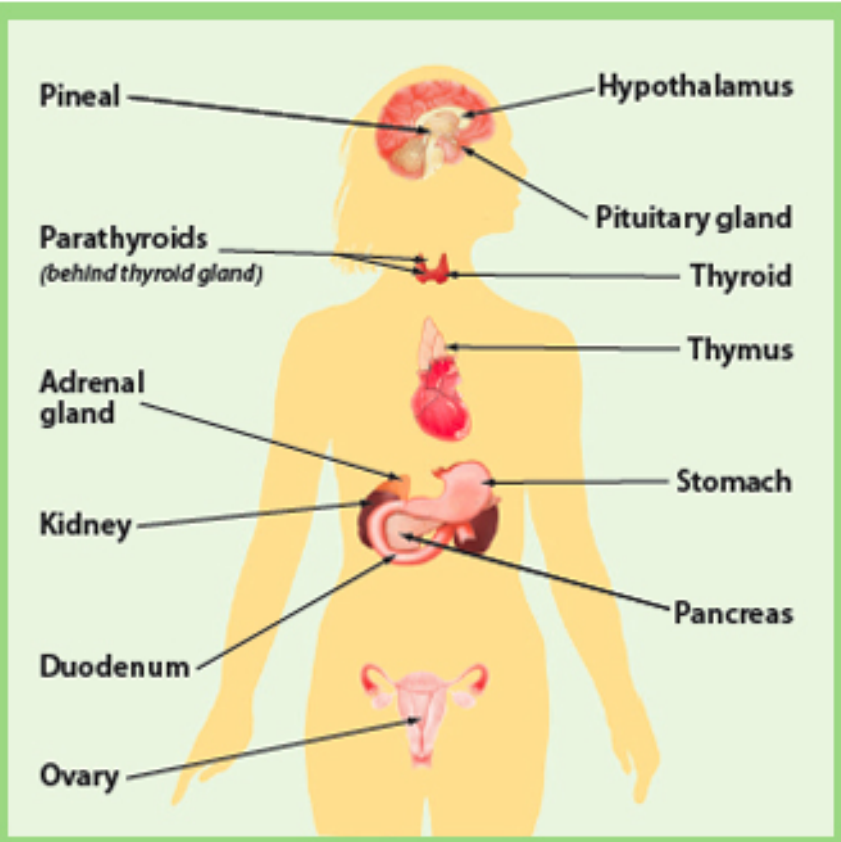
- Building block of polycarbonate plastic
- Billions lbs a year produced in the U.S.
  - top 50 production chemical
- Main ingredient in hard polycarbonate plastics
  - Drinking water bottles
  - Food containers
  - Baby bottles
  - Food can liners
  - Bike helmets
  - Car bumpers

Bisphenol A (BPA)

- 90% + people have detectable levels.
- Biggest Concern: Low-Dose Hormone Disruptor
  - Endocrine Disruptor, interferes with estrogen signaling
- BPA exposure linked to:
  - Developmental & reproductive harm
    - earlier onset puberty
    - Breast & prostate cancer
    - erectile dysfunction
    - altered brain development
  - diabetes
  - heart disease

Hormone disruptors send the wrong message at the wrong time

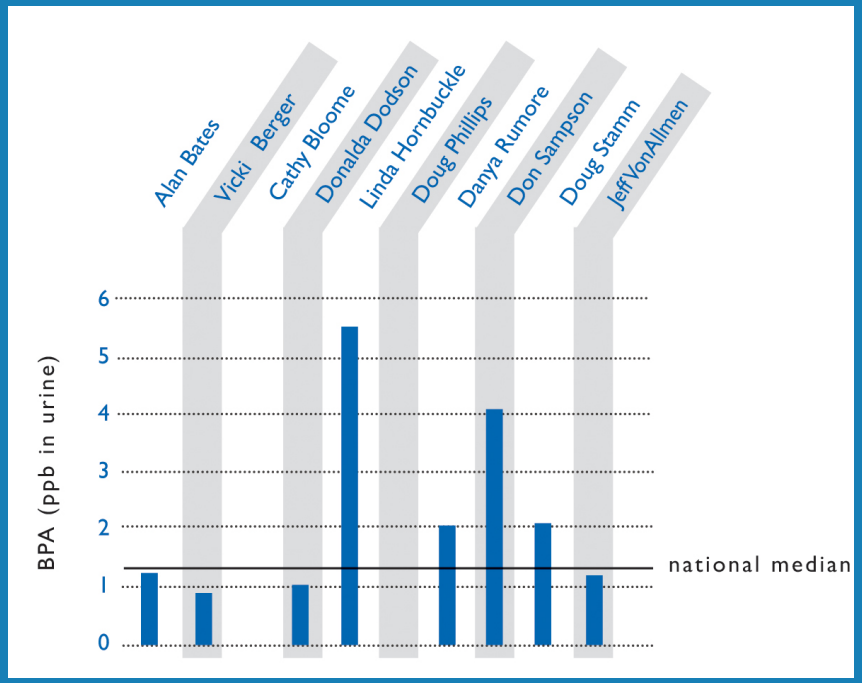
Hormones
Clear Messages



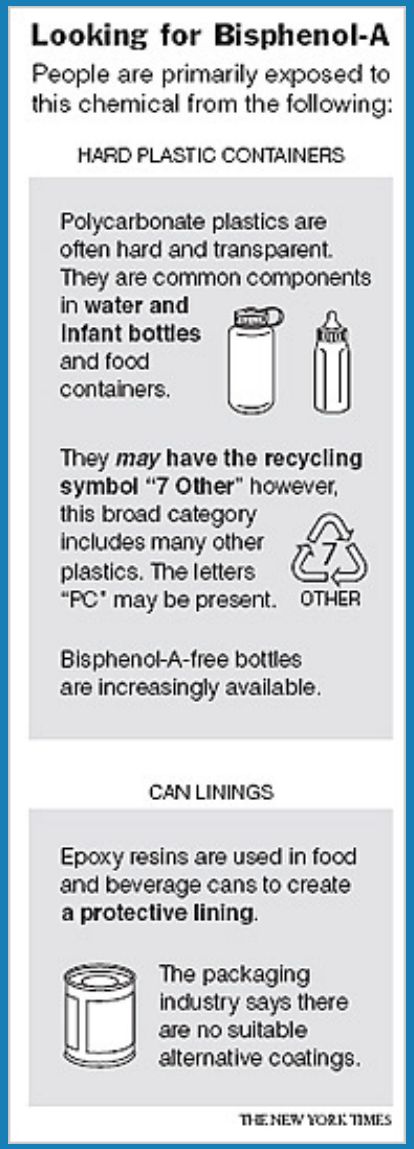
Hormone Disruptors
Mixed Messages

Bisphenol A in Oregonians

- BPA levels similar to national data.
- 2 participants had higher levels than 90% of people tested in national studies.
- BPA does not stay in the body long—detection is from recent exposures



Bisphenol A: Reducing Exposure



Looking for Bisphenol-A

People are primarily exposed to this chemical from the following:

HARD PLASTIC CONTAINERS

Polycarbonate plastics are often hard and transparent. They are common components in **water and infant bottles** and food containers.

They *may* **have the recycling symbol "7 Other"** however, this broad category includes many other plastics. The letters "PC" may be present.

7 OTHER

Bisphenol-A-free bottles are increasingly available.

CAN LININGS

Epoxy resins are used in food and beverage cans to create **a protective lining**.

The packaging industry says there are no suitable alternative coatings.

THE NEW YORK TIMES

- *Avoid reusable polycarbonate plastic water and baby bottles*. Avoid #7 plastics.
  - Choose polyethylene, metal, or glass bottles instead.
- *Ask your dentist for BPA-free sealants and composite fillings*.
- *Avoid the use of canned foods and drinks*. Until industry reformulates the lacquer lining of metal cans, choose fresh or frozen foods or glass containers or bottles.

Bisphenol A:

Social disparities in exposures

2011 testing of children's soup found BPA in all products tested.

- PFCs were positively associated with family income, whereas BPA was inversely associated with family income.
- BPA concentrations were higher in people who reported very low food security and received emergency food assistance than in those who did not.

Social disparities in exposures to bisphenol A and polyfluoroalkyl chemicals: a cross-sectional study within NHANES 2003. *Environmental Health* 2012, **11**:10

Critical Windows of Vulnerability

- Timing of exposure
  - Development in the womb
  - Childhood and Adolescence
    - Puberty

Pollutant “cocktail effect”

- We are exposed to chemicals in isolation
  - Additive (2 + 2 = 4)
  - Synergistic (2 +3 = 9)
- Dose does not make the poison.
  - "clearly indicates that low doses cannot be ignored.” Endocrine Review 2012 Mar 14

Cost Estimates of Environmentally-Related Disease in Oregon

Oregon spends at least **$1.57 billion** per year on preventable disease caused by pollution.

The Price of Pollution study estimated how much money is spent in Oregon annually to pay for environmentally attributable diseases and disabilities, which are largely preventable.

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Economic Costs of Environmental Diseases and Disabilities

Typically only the upfront costs of implementing environmental health protection measures are considered -financial impacts of inaction ignored.

Health and related costs are born by all society

These costs are largely ***preventable***, by eliminating and reducing exposures to environmental exposures

Eliminating and reducing exposures to toxic chemicals makes good economic sense, as well as good sense from a public health perspective.

What's in My Makeup Bag?!

A Survey of Knowledge & Attitudes of Oregon College Women

http://www.oeconline.org/our-work/healthier-lives/whats-in-my-makeup-bag

Why study personal products?

- Personal care products are a source of exposure
- Ingredients and contaminants associated with health effects
  - Dermatitis, allergies, asthma
  - Infertility, organ damage, cancer
  - Pregnant women: learning & memory problems, behavior changes
- FDA *does not*:
  - Review safety of ingredients used in products
  - Require safety assessments
  - require manufacturers to list ingredients
  - issue recalls for products on the shelves

What did we find?

- 1,008 responses
- 8,015 products, 765 unique brands
- Average of 10 products used daily
- 13.4% use 15 or more products daily
- 20% of the products from the top 10 brands are considered “high hazard” in the Cosmetics Database

What did we find (beliefs)?

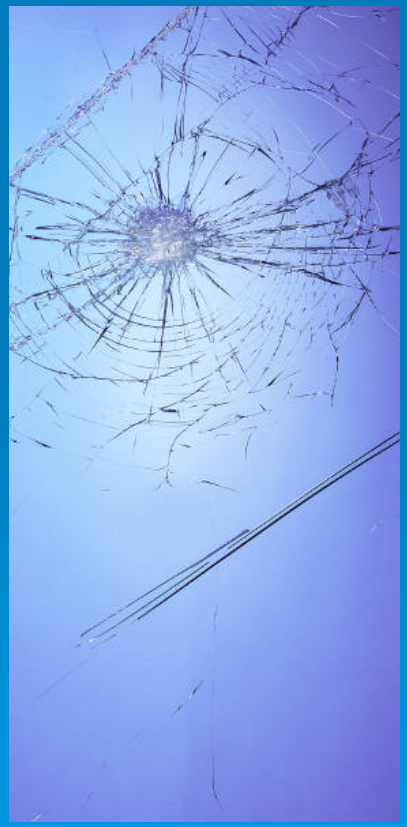
- Products should be safe & transparent

  87.6% Agree
  Manufacturers should be responsible for testing all ingredients for health impacts

  92.5% Agree
  Product labels should be required to list *all* ingredients

  91.1% Agree
  Ingredients in the products are important when making purchasing decisions

The regulatory system is REALLY complicated.



- Clean Air Act
- Clean Water Act
- Safe Drinking Water Act
- Food Quality Protection Act
- Resource Conservation and Recovery Act (RCRA)
- Comprehensive Environmental Response, Compensation and Liability Act (Superfund)
- Toxic Substances Control Act
- Federal insecticide, Fungicide and Rodenticide Act (FIFRA)
- Federal Food Drug and Cosmetic Act
- Hazard Communications Standard (in OSHA regs)

SOLUTION

***Take immediate action on the most dangerous chemicals**

***Hold industry responsible for the safety of their chemicals & products**

***Use the best science to protect all people and vulnerable groups**

Recommendations

Personal Action

- Details in Pollution in People report
- Eco Healthy Homes Check up
- Healthy Homes Tips & Healthy Kids Network
    - www.oeconline.org

Local Community Action

- Anti-Idling Campaign
- Integrated Pest Management on grounds
- Green Cleaning Supplies
- Environmental Preferable Purchasing and Contracting
- Environmental Health as Primary Prevention

STATE BASED ACTION

- Many states are taking the lead in the absence of Federal leadership.
  - 11 states have taken action on BPA
  - Many other states working on legislation to identify chemicals of concern, focused on children and women of reproductive age.

- In Oregon
  - BPA out of children's products
  - Identifying other chemicals of concern, asking for manufacturer disclosure of those chemicals in product
  - Purchasing policies that limit the use certain chemicals
    - State agencies, hospitals, daycares, WIC: BPA free bottles, formula
    - Environmental Health as Primary Prevention

- Health-affected Groups
- Health Professionals
- National and State Environmental Groups
- Environmental Justice Groups
- Concerned Parents
- Businesses

S. 847: Safe Chemicals Act of 2011.

www.saferchemicals.org

SOLUTION

*Take immediate action on the most dangerous chemicals

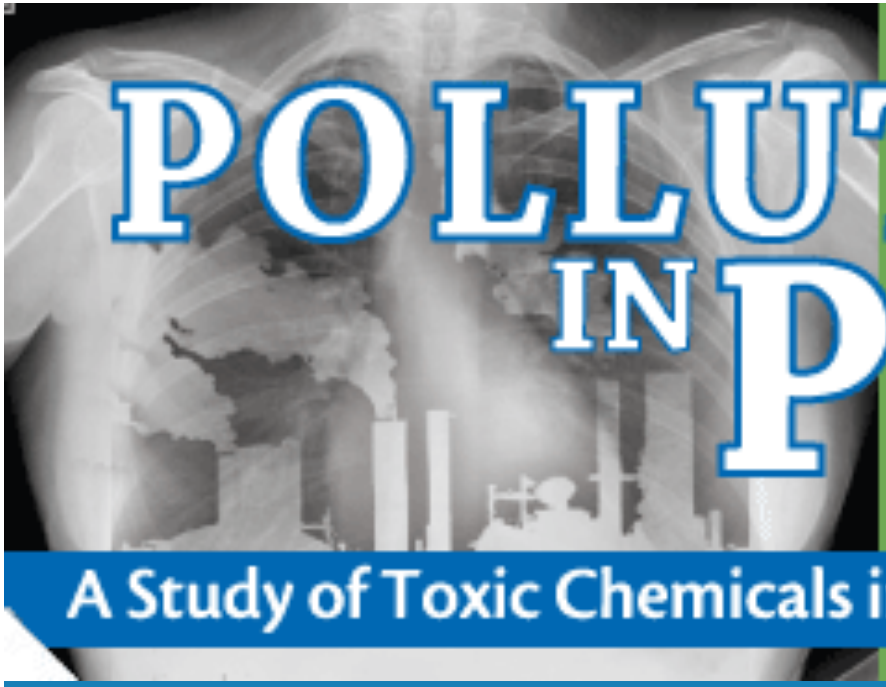
Current laws aren't protecting us from chemicals that are threatening our health. Persistent, bioaccumulative toxic chemicals should be phased out of commerce.

*Hold industry responsible for the safety of their chemicals & products

Companies should be required to provide full information on the impact of all their chemicals on health and the environment. The public, workers, and businesses should have access to information about the safety of chemicals.

*Use the best science to protect all people and vulnerable groups

Chemicals should meet a standard of safety for all people, including children, pregnant women, and workers. The extra burden of toxic chemical exposure on people of color, low-income, and indigenous communities must be reduced.



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Thank You!

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