



BodyBurden the pollution in people.

**How body burden data
is driving a revolution
in public health
protection**

Sources of our “body burden”

- Drinking water
- Food
- Air
- Consumer products



EWG & Mt. Sinai body burden study:

- Study scope: 9 people, 210 chemicals
- Samples donated: 13 vials of blood, 24-hour urine sample
- Samples tested at 2 major national laboratories
 - 210 chemicals tested, 167 found

BodyBurden

the pollution in people.



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[>> | TEST RESULTS: BODYBURDEN PROFILES](#)

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Please click on a person to see what we found

What we found:

- 167 industrial compounds, pollutants, and other chemicals
- Average of 91 chemicals in each person
- In each person, many chemicals linked to common health harms



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Health Trends:

- Breast cancer
- Testicular cancer
- Prostate cancer
- Sperm count
- Hypospadias
- Undescended testicles
- Childhood cancer



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Cancer:

- 1 in 2 men • 1 in 3 women
- 1992-1999, incidence increased for breast, thyroid, kidney, liver, skin, some forms of leukemia
- 1975-1999 childhood cancer increased by 26% (brain & other nervous system cancers; acute lymphocytic leukemia)



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Nervous system

- Autism
- ADD, ADHD
- Parkinsons

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Reproductive effects

- Sperm count
- Hypospadias
- Undescended testicles
- Testicular cancer
- Early puberty

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Toxic effects do not require high doses: Evidence from population-based studies

- PCBs, DDT, dioxin, lead, mercury, urban air pollution, and many other chemicals are linked to health harms in large studies of human population

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Toxic effects do not require high doses: Evidence from low dose studies

- Bisphenol A
Lowest “effects” dose, EPA: 5 mg/kg/d
Reproduction effects: 2500 times lower
- Atrazine
Allowable level in drinking water: 3 ppb
Amphibian deformities: 30 times lower
- Methoxychlor
“No effects” dose, EPA: 5 mg/kg/d
Prostate damage: 100 times lower

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Sources of exposure

- 75,000 chemicals approved for use
- 7 new chemicals approved every day



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Sources of exposure: consumer products

- 5000 chemicals in cosmetics
- 3200 chemicals added to food
- 1010 chemicals in 11700 consumer products
- 500 pesticides



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Sources of exposure: pollution

- 1998 - US industries reported manufacturing 6.5 trillion pounds of 9000 different chemicals
- 2000 industries released 7.1 billion pounds of 650 industrial chemicals to air and water

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Sources of exposure: wastewater

- 1999-2000 USGS survey, 139 rivers and streams in 30 states found...
- 95 components of treated human sewage, including steroids, DEET insect repellent, antibiotics, and persistent breakdown products of cigarettes and detergents
- 85% are not regulated in drinking water

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Sources of exposure for cohort of nine

- 183 types of consumer products, including brake fluid, paint, pesticides, flame retardants
- 164 past or current manufacturers, including Shell, Union Carbide, Exxon, Dow, and Monsanto
- 64 chemical functions, including plasticizers, froth flotation agents, and defoaming agents

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Regulatory Failures: Risk

- We are exposed to one chemical at a time
- We are all healthy adult males
- In utero exposures don't matter
- High dose studies capture all potential effects



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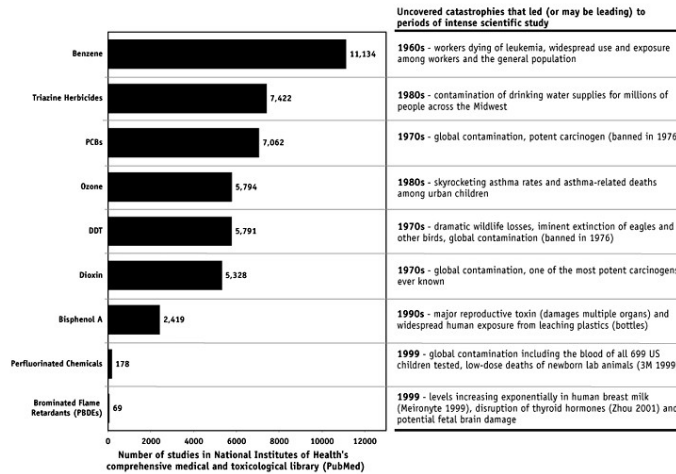
Regulatory Failures: Testing

- Companies submit data with fewer than half of all applications to manufacture new chemicals.
- The government approves 80 percent of these with no restrictions and no requests for tests.
- Eight of 10 new chemicals win approval in less than three weeks.



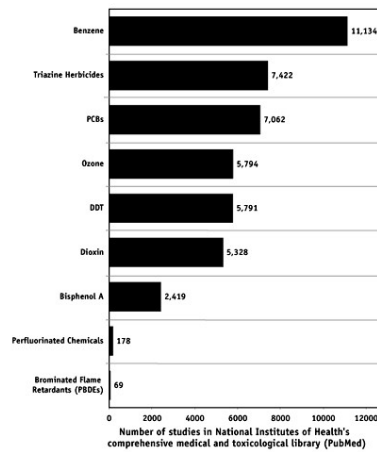
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Chemicals are intensively studied only after they harm human health or contaminate the biosphere



PBDEs. Last year scientists published 70% as many studies as over the past 20 years combined.

- **1980-2002: 69 studies**
- **2003: 49 studies**
- **In past year alone, studies published from 14 countries, 5 states, 36 research institutions**



Progress: Mercury in seafood

- High mercury levels in women's blood leads to...
- Requirement in California for seafood warning labeling
- Body burden data driving new federal advisory



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Mercury body burdens. Canned tuna is a top contributor.

“...for me it was what was most convenient. What was most convenient was taking a can of tuna fish, my two things of mayonnaise and my half an apple to work **every day for lunch**. That was what was convenient for me. ...”

— FDA Focus groups, 2000.

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Progress: Mercury in seafood

- Emphasis shifting to exposures in the womb
- Babies accumulate up to 6 times more mercury than their mothers
- Government estimate of babies born each year exposed to mercury above safe levels doubled
- 1 in 6 babies at potential risk, says EPA



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Progress: Phthalates in cosmetics

- Found in women of childbearing age: high levels of chemicals linked to birth defects
- E.U. ban of these chemicals in cosmetics, phase-outs in the U.S.



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Progress: Teflon

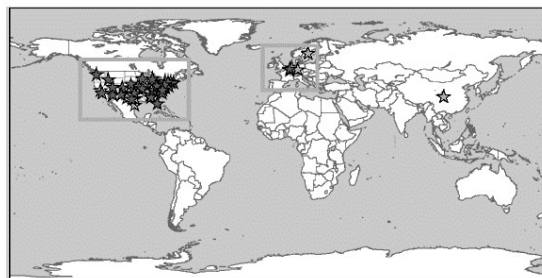
- Measurements of Teflon-related chemicals in blood of U.S. children leads to...
- Current federal safety review of Teflon and first-ever government safety assessment using body burden data

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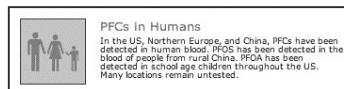
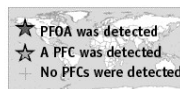
PFCAtlas

GLOBAL POLLUTANTS

PFCs in : Wildlife | People | Water, Air, and Food | All Types



This map depicts PFC detections in children and adults over the past 25 years. Click on stars for details.

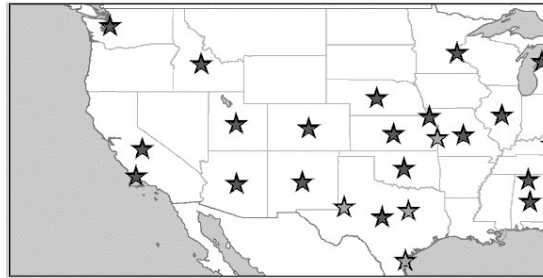


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PFCAtlas

GLOBAL POLLUTANTS

PFCs in : Wildlife | People | Water, Air, and Food | All Types



This map depicts PFC detections in children and adults over the past 25 years. Click on stars for details.

- ★ PFOA was detected
- ☆ A PFC was detected
- + No PFCs were detected

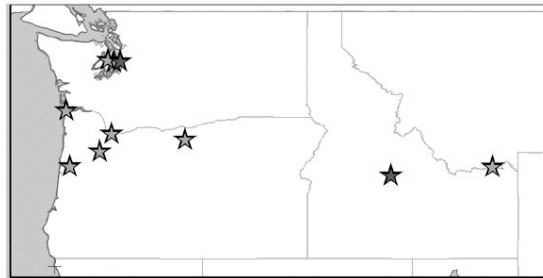
PFCs in American Children's Blood

DuPont has detected PFOA in its pregnant plant employees (two of the seven employees monitored bore children with eye and hair duct or nostril defects), and the blood of newborns born to those employees. In a study of 599 children ages 2-12 and a study of 600 adults ages 20-69 PFOA was found at an average blood concentration of 5.6 ppb.

PFCAtlas

GLOBAL POLLUTANTS

PFCs in : Wildlife | People | Water, Air, and Food | All Types



EWG has mapped more than 2,300 PFC detections from scientific studies of wildlife, people, water, air, and food over the past 25 years. Click on stars for details.

- ★ PFOA was detected
- ☆ A PFC was detected
- + No PFCs were detected

PFCs in Northwestern US

PFCs have been detected in the blood of all senior citizens (ages 65-96) and children (ages 2-12) tested in northwestern United States. PFCs have also been detected in all three of the northwestern wildlife species tested.

Environmental Working Group | ... troubled class of chemicals

ENVIRONMENTAL WORKING GROUP

PFCAtlas

GLOBAL POLLUTANTS

GLOBAL POLLUTANTS

All Types

the past 25 years.

What was Tested	People
Age	65-96
Gender	Male
Testing Location	Seattle, Washington, US
M570	
Number Tested	118
PFC Detected	M570
Geometric Mean Detected	1.3 ppb
Median Detected	1.4 ppb
95 Percent Confidence Interval	1.1-1.5 ppb
Maximum Value	6.6 ppb
Other Information	29% of samples below LOQ
Medium Tested	serum
Level of Quantification (LOQ)	1.0 ppb
Year Samples Collected	1999

Children's Blood

... pregnant plant employees (three employees) monitored bore children with eye and tear duct or nostril defects), and the blood of newborns born to those employees. In a study of 599 children ages 2-12 and a study of 600 adults ages 20-69 PFOA was found at an average blood concentration of 5.6 ppb.

☆ A PFC was detected
+ No PFCs were detected

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PFOA levels in human blood overlap with levels in rat blood that cause harmful effects³

Decreased growth; damage to pituitary, liver, kidneys, testes, epididymis, brain, seminal vesicles, spleen, and thymus^c

370 ppb

Decreased growth; decreased breast feeding; damage to pituitary, liver, kidneys, testes, seminal vesicles, and spleen^c

120 ppb, estimated

40 ppb, estimated

Decreased growth; damage to liver, kidneys, seminal vesicles, and spleen^c

PFOA blood levels in children
Average: 5.6
50% have blood levels > 5.1
Range: <1.9 - 56.1

PFOA — Blood dose (ppb)^b

PFOA — Oral dose (mg/kg/day)

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Progress: PBDEs in European Breast milk

- Measurements of fire-retardants in breast milk leads to...
- E.U. ban

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Progress: PBDEs in U.S. Breast milk

New EWG study of breast milk from 20 U.S. women finds...

- Highest levels ever in U.S.
- 30 times the levels in Europe

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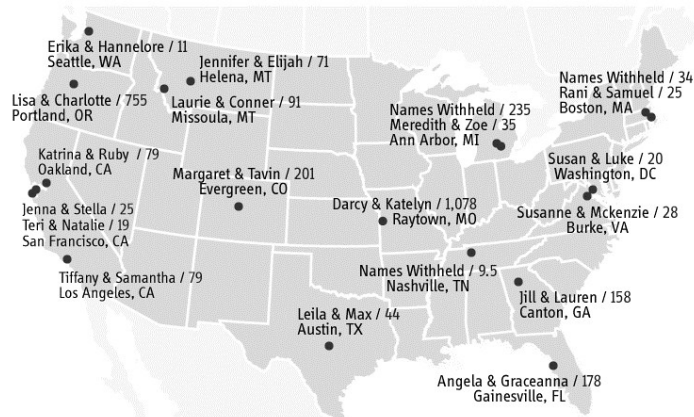
Mothers' Milk

Record levels of toxic fire retardants found in American mothers' breast milk

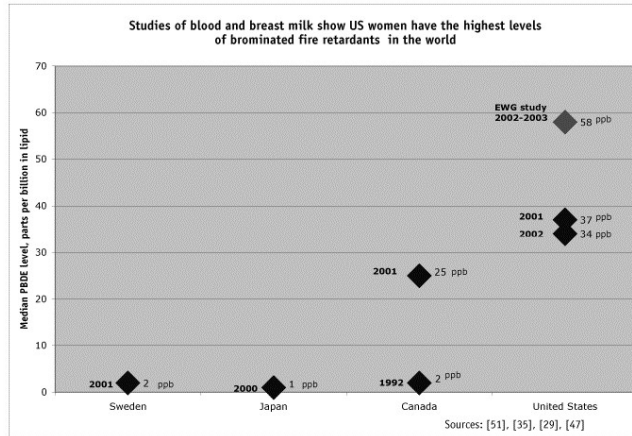


Next Page: [Executive Summary](#)

EWG BREAST MILK STUDY PARTICIPANTS & THEIR BABIES



Numbers indicate total PBDEs found in participant's breast milk. Units are parts per billion, lipid.



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What are PBDEs? A University of Texas-Houston study by Polybrominated diphenyl ethers are among

Flame retardant found in breast milk

By Elizabeth Weise, USA TODAY

A toxic chemical used to make furniture, foam and electronics fire resistant is turning up in high amounts in the breast milk of women in the USA.

Two studies, one out Tuesday, found that all of the women tested were contaminated with polybrominated diphenyl ethers. Their PBDE levels were the highest in the world: 10 to 20 times higher than those in Europe, where the chemicals are being phased out. (Related story: Breast milk can protect baby)

The Environmental Working Group, a non-profit environmental research organization, tested the milk of 20 women. It found levels ranging from 9.5 to 1,078 parts per billion. The women were recruited via EWG's Web site.

It is not yet known how this chemical affects people; no studies have been done on what a safe level would be. But "this is another wake-up call," says Linda Birnbaum, director of the Environmental Protection Agency's experimental toxicology lab. Levels of PBDEs in humans are doubling every two to five years, she says.

When should you start thinking about his joint health?

Today's Top News Stories

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- Iraq issue tops agenda but still no offers of troops or cash - 1:12 PM
- OPEC agrees to surprise output cut, Kuwait says - 12:33 PM
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Flame retardant found in breast milk

Levels of common toxin on the rise, study says

A study by the Environmental Working Group found the average level of fire retardant in American women's breast milk was 75 times higher than the average in European women.

By Jane Weaver MSNBC

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Progress: PBDEs

- Measurements of fire retardants in breast milk leads to...
- Top manufacturer stops production of the most harmful PBDE mixtures

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Emerging: Autism

- New evidence from body burden studies points to genetic and environmental links for autism
- Autistic children vs. controls
 - lower mercury levels in hair (8X)
 - higher mercury levels in urine after chelation (3-6X)

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What the future holds:

- Public health protections increasingly grounded in body burden science
- Body burden studies increasingly used as tools for local activists
- Exploding science on confluence of pollution, genetics, and disease

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