

Executive Summary

Toxic chemicals from consumer products, food, and industrial pollution contaminate our bodies. Every person tested had at least 26 and as many as 39 toxic chemicals in his or her body.



Study participant Deb Abrahamson has her blood drawn for testing.

Pollution in People

Last year, ten Washington residents agreed to testing of their hair, blood, and urine for the presence of toxic chemicals as part of an investigative study by the Toxic-Free Legacy Coalition. The Coalition was seeking to determine which chemicals were getting into our bodies, and at what levels, to better understand the potential harm posed by poor regulation of chemicals, and to develop better solutions.

For decades, toxic chemicals in soil, water, air, and sediment have made front-page news. These chemicals range from pesticides like DDT, banned more than thirty years ago but still polluting our soil, to the flame-retarding PCBs and PBDEs building up in salmon and orca whales.

Scientists are now finding these same chemicals in people. The computers we use every day, the cars we drive, and the pans we cook on are leaching toxic chemicals into our homes and into our bodies.

We tested ten Washington residents for six groups of chemicals: phthalates; PBDEs; the heavy metals arsenic, lead, and mercury; perfluorinated chemicals such as those used to make Teflon; pesticides; and the banned but persistent chemicals PCBs and DDT. Our findings reveal that under the current regulatory system, toxic chemicals from consumer products and industrial pollution contaminate each of us and threaten our health.

Key Findings

1. Toxic chemicals from consumer products, food, and industrial pollution contaminate our bodies. Every person tested had at least 26 and as many as 39 toxic chemicals in his or her body. This pollution came from food; everyday household dust; direct contact with products such as personal care items, consumer electronics, and stain-resistant furniture; and from

contaminated soil, air, and water. Many of the chemicals do not break down or do so slowly, and therefore build up in human bodies and breastmilk.

2. The toxic chemicals in our bodies are cause for concern because they can lead to health problems. For some chemicals, the levels we found are at or near those believed to be capable of causing serious problems, such as infertility and learning deficits. Many of these problems can result from being exposed to chemicals at critical points of child development, which can cause permanent damage.

- ❖ Every participant was contaminated with phthalates, found in myriad everyday products. The same is true for perfluorinated chemicals, used to make Teflon and stain-protection treatments for paper and textiles.
- ❖ Every participant had PCBs in his or her blood, despite a decades-old ban on the chemicals. PCBs from everyday exposures have been shown to cause learning deficits.
- ❖ Every participant had PBDEs in his or her blood. Dr. Patricia Dawson had PBDEs in her body at levels close to those that cause reproductive problems in laboratory animals.
- ❖ We found a marker for the pesticide carbaryl, considered a carcinogen by the EPA, in five of ten participants: Rev. Ann Holmes Redding, Sen. Lisa Brown, Sen. Bill Finkbeiner, Deb Abrahamson, and Allyson Schrier.
- ❖ Three of our ten participants — Denis Hayes, Sen. Bill Finkbeiner, and Karen Bowman — had mercury exposures above the Environmental Protection Agency’s “safe” levels.
- ❖ Even Laurie Valeriano, toxic chemical expert and regular organic shopper, tested positive for more than two dozen chemicals.

3. State and federal government have failed

to prevent the use of harmful chemicals in consumer products, manufacturing processes, and food production. Most chemicals are virtually unregulated, because federal law does not require testing for harmful effects before chemicals are allowed for use in products or manufacturing. Once chemicals are in use, it is extremely difficult for the Environmental Protection Agency (EPA) to restrict them. The law does require pesticide testing, but at the same time it permits the ongoing use of pesticides that can cause cancer, nervous system harm, and other health problems. At the state level, Washington lacks the regulatory structure needed to prevent harmful chemicals from turning up in consumer products, air, water, and people.

Recommendations

Washington state, already a leader in phasing out some dangerous chemicals such as mercury, should take immediate steps to protect the health of its residents by developing a common-sense chemicals policy that ensures only the safest chemicals are used in consumer products, manufacturing, and food production.

Governor Gregoire, the legislature, and agencies should take the following steps:

Come clean with the facts. Require companies to provide data on the health effects caused by the chemicals they produce or use in production. Companies must also be required to make this information available to the public.

Take out the toxics. Develop immediate plans to phase out of products and manufacturing chemicals that can damage children’s intellectual

development, harm reproduction, cause cancer, or build up in our bodies.

Switch to safer substitutes. Assist companies in replacing hazardous chemicals with safer substances and practices, using requirements, incentives, and technical assistance.

A Real Solution Is Emerging

A growing number of companies are already switching to safer chemicals and practices in response to mounting scientific evidence and growing consumer demand. Microsoft has switched to safer packaging plastics, the health care community has taken strides to reduce its use of mercury and phthalates, and food companies like Campbell's Soup Company are marketing organic alternatives, produced without harmful pesticides. In the regulatory arena, the European Union has led the way by establishing a forward-thinking chemicals policy that requires testing and moves companies toward safer materials and processes.

This study's findings show that toxic chemicals which can cause cancer, learning problems, and infertility are likely already in all Washingtonians. The Toxic-Free Legacy Coalition calls on Gov. Gregoire, the state Legislature, and state agencies to lead our state into a healthy future with real reform to ensure that our consumer products and food are made in the safest ways possible.

About This Study

In 2005, the Toxic-Free Legacy Coalition and the Washington Toxics Coalition invited ten

Washingtonians on an unusual journey: to submit their hair, blood, and urine for toxic chemicals testing. We and our participants sought to uncover the chemical secrets in their bodies—to find out whether the computers, cars, and cosmetics they use could in fact be the source of hidden dangers. We submitted their samples to accredited laboratories to test for heavy metals; pesticides; toxic flame retardants; the plasticizers known as phthalates; the "Teflon chemicals" (perfluorinated compounds); and the banned but persistent DDT and PCBs.

Our participants:

Rev. Dr. Ann Holmes Redding, Episcopal priest, St. Mark's Cathedral

Dr. Patricia Dawson, breast cancer surgeon, Swedish Providence Medical Center

Pam Tazioli, breast cancer survivor and Washington State Coordinator, Breast Cancer Fund

Denis Hayes, Earth Day founder and president, Bullitt Foundation

Senator Lisa Brown, Washington State Senate Majority Leader

Senator Bill Finkbeiner, Washington State Senate

Laurie Valeriano, toxics policy expert, Washington Toxics Coalition

Deb Abrahamson, member, Spokane Tribe and director, Society for Sovereignty, Health, Air, Water, and Land

Allyson Schrier, children's book author

Karen Bowman, registered nurse; consultant, Washington State Nurses Association; and faculty member, University of Washington Nursing Department

We submitted blood, urine, and hair samples to three laboratories that specialize in highly sensitive chemical analysis. For some chemicals,

the laboratories analyzed the samples for the parent compound; for others, such as phthalates and some pesticides, the analysis was for metabolites, or breakdown products. The laboratories reported the results to us in varying units of measurement. For ease of understanding, we have converted the results in most cases to parts per billion (ppb).

We used several methods to determine the implications of the chemical levels found in our participants. Statistician Abbe Rubin analyzed the resulting data. For chemicals that were detected in most or all participants' samples, medians were calculated.¹ Where possible, we compared levels in our participants with values for the U.S. population at large obtained by the Centers for Disease Control and Prevention (CDC). For chemicals not studied by the CDC, we used values from independent scientific studies for comparison purposes.

In addition to determining whether levels in our participants were above or below national averages, we examined studies on the chemicals' toxicity to assess health hazards posed by the levels we found. In some cases, such as with lead, scientists have extensively researched and documented the chemicals' health effects in humans. As a result, we were able to compare levels found in our study directly to levels known to have caused harm in people. In other cases, such as with toxic flame retardants, most available health effects information comes from laboratory animal experiments, not human studies. In these cases, we used animal testing levels to assess potential impacts in people.

Animals and people can vary significantly in their response to toxic chemicals, and either group can be much more sensitive than the other, depending on the chemical. People can also differ

from each other in their ability to detoxify harmful chemicals in the body. For these reasons, regulatory agencies typically apply a safety factor when using data from laboratory animals to set regulatory limits. For example, EPA typically applies a safety factor of ten to account for differences between animals and humans, and an additional factor of ten for differences among people. The agency may also apply a safety factor of up to ten to account for other uncertainties.

For both people and other animals, the most sensitive time of life is generally during development: before birth and in early childhood. In this study, we compared our participants' results to the lowest levels in human or animal studies where health effects have been seen. In some cases, such levels are those that result in harm to the offspring when the mother is exposed during pregnancy. None of our participants was pregnant at the time of sampling. To protect public health, however, it is necessary to maintain levels in all individuals that are below levels that would harm a developing child. Therefore, we use the levels we detected in our ten participants as a barometer of the degree of danger faced by the rest of the residents of Washington.

Report reviewers included David Cosman, Ph.D., Nancy Dickeman, Philip Dickey, Ph.D., Steve Gilbert, Ph.D., Kim Hooper, Ph.D., Kristin Hyde, Jen Lamson, Sharyle Patton, Abbe Rubin, Ph.D., Ivy Sager-Rosenthal, Dr. Ted Schettler, Margaret Shield, Kristin Schafer, Gregg Small, Pam Tazioli, Heather Trim, and Laurie Valeriano. Elena Conis edited the manuscript.

¹ *In order to be consistent with methods used by the CDC, to calculate medians, values for samples in which the chemical was not detected were set at the detection limit divided by the square root of two.*