STATEMENT OF HANNAH PINGREE TO THE
U.S. SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
AND THE SUBCOMMITTEE ON SUPERFUND, TOXICS AND
ENVIRONMENTAL HEALTH

HEARING: "OVERSIGHT OF THE EPA AUTHORITIES AND ACTIONS TO CONTROL EXPOSURES TO TOXIC CHEMICALS."

July 24, 2012

Chairwoman Boxer, Chairman Lautenberg, Ranking Members Inhofe and Crapo, and members of the committee, my name is Hannah Pingree, and I am honored to be here to testify on the issue of toxic chemical regulation—especially flame retardants—and our health.

I thank the leadership of this committee for bringing this important issue to light. I am here as the former Speaker of the Maine House, term limited as a state representative in 2010 after eight years of service. I am also here as the mother of a 16 month-old daughter and, as you might have noted, I am also 6 months pregnant with our second child. Lastly, while I am here on my own behalf, I also work part-time as a consultant for Safer Chemicals, Healthy Families, the national coalition working to improve our chemical safety laws and protect our kids and families from the health impacts of toxic chemicals.

I have been involved in toxic chemical regulation issues for nearly ten years as a legislator and advocate, but today—as a parent—I am more passionate and concerned than ever about the current state of chemical safety for my kids and millions of other kids across the country.

When I started working on this issue in 2004 as a young legislator, it took some complicated explanation of the issues to relay what I was working on to friends and family. Today, people I talk to understand this issue immediately, and they are outraged that nothing has been done to fix this problem. Moms hear about chemicals in their babies' products, in our food supply, and in our environment from television, magazines, and from friends. Public polls indicate that huge majorities of Americans agree that better regulation of toxic chemicals, especially for the sake of kids' health, is just common sense.

Today I want to bring you three messages—two from the perspective of a legislator, and one from my immediate vantage point as a new parent.

First, because of the failure of the federal Toxic Substance Control Act and the EPA to regulate chemicals in consumer products, states across the country have been forced to try to pick up the pieces of this complicated regulatory issue. As states, we have taken action in response to what we believe is an urgent threat to the health of children and families in our states.

Since 2003, 95 policies in 30 states have been enacted to limit the public's exposure to toxic chemicals. The vast majority of these policies were enacted with the support of significant majorities of both Democratic and Republican legislators and governors. The

states began with action to limit mercury and lead, and have since passed successful limits on brominated flame-retardants, phthalates, BPA, and cadmium. Bans on the chemical chlorinated-tris have also been proposed in several states, and a ban of chlorinated-tris in children's products was recently enacted in the New York Assembly. In the 2012 legislative sessions, 28 new state-level policies were introduced across the country in an attempt to limit toxic chemicals in consumer products.

California, Maine, Washington, and Minnesota have each passed more comprehensive bills that create broad state-level regulatory regimes or public-disclosure and listing requirements for those chemicals of highest concern for public health. Washington State's program issued a final rule in 2011 that listed 66 chemicals of concern and required children's product manufacturers to report on whether their products contain these chemicals by August 31, 2012. Once the product data is available, the Washington state legislature may consider bans or phase-outs of some of those chemicals of concern, in order to protect kids and vulnerable populations. Three weeks ago, my home state of Maine adopted a list of 49 Chemicals of High Concern. For two priority chemicals, Maine has already adopted regulations to require reporting, evaluate safer alternatives, or prohibit the sale of consumer products containing those chemicals.

The states have been important laboratories for democracy on this issue. The states have also worked to spur innovation, with green chemical incentives and research and development. The policies implemented across the states have attempted to fill the void left by the inaction of the federal government and the EPA. In the absence of federal protection from chemicals we know to be dangerous for human health, states have been forced to act.

The states will continue to work to innovate on this front, but—especially in this dire fiscal climate—state governments lack both the resources and the staff to do the kind of scientific work that is needed to fully regulate the vast inventory of chemicals used in commerce. That is why this hearing today is important, and real reform of the toxic substance control act—as outlined in the Safe Chemicals Act sponsored by Chairman Lautenberg—is so crucial.

Second, as a former state legislator, I am here to provide a first hand account of the actions of the chemical industry and its political allies. In Maine and in states across the country, legislators have observed and been the subject of repeated negative and deceptive campaigns to thwart common sense regulation of chemicals.

The *Chicago Tribune* series "Playing with Fire"[1] did an excellent job uncovering the over-the-top tactics of both the flame retardant industry and its front group, "Citizens for Fire Safety."

The striking facts and details uncovered by the *Chicago Tribune* investigation four-part investigation include:

- A decades long pattern by the chemical industry of denying basic health impacts of flame retardants, including their negative health consequences and the fact that they can build up in our bodies, despite clear scientific evidence to the contrary. The *Tribune* states: "A typical American baby is born with the highest recorded concentrations of flame retardants among infants in the world," and that, "blood

levels of widely used flame retardants doubled in adults every two to five years between 1970 and 2004."

- Chemical industry lobbyists, front groups, and paid witnesses who distorted and inflated information about the ability of certain flame retardants to prevent the spread of fires.
- Paid medical testimony to legislative committees about anecdotes involving fires and burn victims, including the testimony in numerous state legislatures of Dr. David Heimbach, who gave several varying graphic descriptions of babies who died after being burned in their cribs due to a lack of flame retardants. All of his medical testimony proved later to be fabricated, but at the time his testimony had enormous impacts on legislative committees. His appearances were paid for by "Citizens for Fire Safety".
- The chemical industry front group, "Citizens for Fire Safety" falsely claimed in California that the ban on fire retardants was a racial issue and that minority children in particular would "burn to death if flame retardants were removed from household products."
- The chemical industry recruited a tobacco industry lobbyist to engage the National Association of State Fire Marshals to hatch a successful plan to increase the required use of flame retardants to assist the US tobacco industry. At the time the tobacco industry was making an all out effort to avoid pending regulations requiring the tobacco industry to produce "fire-safety" cigarettes and they saw increasing the use of flame retardants as a potential solution, rather than changing their cigarettes.
- The *Tribune* writes about the increase in the use of flame retardants, largely due to government regulations (and lobbying efforts on the part of folks like the National Fire Marshals)*:* "In the last quarter-century, worldwide demand for flame retardants has skyrocketed to 3.4 billion pounds in 2009 from 526 million pounds in 1983." In the typical American home, that translates into pounds of these chemicals in our furniture, mattresses, and electronics.

Legislators' experiences across the country echo those detailed in the *Chicago Tribune*. They have been misled and even lied to by the chemical industry about the health impacts of flame retardants and their ability to prevent fires. The chemical industry has repeatedly used false, misleading and over-the-top tactics to attempt to win. Today, I bring you a few more stories of the outrageous tactics of the chemical industry, their front group "Citizens for Fire Safety", and the American Chemistry Council, from Maine, Minnesota, and Alaska.

In Maine, we dealt first hand with denial of the basic science and health impacts of flame retardant chemicals, we encountered a front group that was the precursor to "Citizens for Fire Safety", and we heard from a burn victim who was paid by the chemical industry to appear before our legislature. And we faced a barrage of negative pressure on television, in full-page newspaper ads, and in our legislature from chemical industry lobbyists.

In Minnesota, the "Citizens for Fire Safety" group and its battery of lobbyists went so far as to distribute a false letter—purporting to be from a local county hospital burn center—opposing a flame-retardant ban on the floor of the House.

And in Alaska, the same Dr. Heimbach exposed in the *Chicago Tribune* series for his

paid testimony and lies in other states, convinced key legislators to oppose flame-retardant legislation. Dr. Heimbach's fabricated story, paid for by the chemical industry, ultimately thwarted Alaska's attempts at regulating this toxic flame retardant.

I am also submitting for the record several letters from state legislators around the country, firefighters, and health groups that echo this same message: We're tired of the misleading lobbying campaigns in the face of this dire threat to public health, and we're looking to you, our leaders, for federal reform of our current broken system of regulation.

MAINE:
Maine and Washington were among the first states to take aggressive action to limit the use of PBDE-flame retardants (polybrominated-diphenyl ethers), from 2003 through 2007. It was in these early years that we first saw the tactics of the flame retardant industry and its trade association, tactics that would later be repeated and intensified in other states. In Maine and Washington, the chemical industry started using paid front groups, spent aggressively on media to defeat state chemical regulation, honed its denial arguments, and—shortly after losing votes on flame retardant bans of Deca-BDE, in Washington and then Maine—changed the name of its industry front group and officially launched "Citizens for Fire Safety."

Specifically in Maine, I sponsored three different successful measures to limit brominated flame retardants known as PBDEs, and another more comprehensive chemical reform law called the "Kid Safe Products Act". All four measures were successful and signed into law, and each piece of legislation was the target of its own attack from the chemical industry, lobbyists, trade groups, and witnesses paid by the chemical lobby.

In 2004, we passed LD 1790: "An Act To Reduce Contamination of Breast Milk and the Environment from the Release of Brominated Chemicals in Consumer Products." The final law prohibited the sale of products, such as couches and chairs with foam cushions, containing the brominated flame retardants known as "Penta-BDE" and "Octa-BDE", and established a goal to phase out the flame-retardant "Deca-BDE" if safer alternatives were proven available. The bill was passed with an overwhelming bipartisan 125–6 margin in the Maine House, unanimously passed in the Senate, and signed by the Governor.

The second bill, in 2007, was LD 1658, "An Act To Protect Pregnant Women and Children from Toxic Chemicals Released into the Home", which phased out the use of the flame retardant Deca-BDE in consumer products, including televisions, computers, mattress pads, and residential upholstery. The legislation required a finding that safer alternatives or other means of preventing fire be available for the chemical to be phased out. The legislation was supported by a unanimous, 129–0 roll call in the House, a 32–2 vote in the Senate, and signed by the Governor.

Lastly, in 2010, we enacted LD 1568, "An Act to Clarify Maine's Phaseout of Polybrominated Diphenyl Ethers," which phased out new uses of Deca-BDE in plastic shipping pallets and established a presumption that other brominated or chlorinated flame retardants should be avoided as replacements. This law passed unanimously before being signed by the Governor.

In our first interactions with the flame retardant chemical industry, in 2004, a trade group

funded by the major flame retardant manufacturers called the Bromine and Science and Environmental Forum brought in paid consultants, scientists, and the head of the bromine chemical group from Belgium. They spent weeks before our Joint House and Senate Natural Resources Committee arguing that brominated flame retardant chemicals were safe and that those of us raising health concerns were simply alarmists. By that time, Europe was already starting to take action, restricting those same chemicals. In 2004, numerous studies had already shown negative health impacts, especially in children and developing fetuses.

In 2007, with support from the Maine Department of Environmental Protection, and after several years of study, we brought forward a phase-out of Deca-BDE in consumer products in the home. That bill attracted more out-of-state lobbying money and deceptive tactics than any other piece of pending legislation I worked on or observed during my entire eight years in the Maine House.

While Maine doesn't have disclosure laws that would allow us to understand the full magnitude of the spending against the bill, we know that the chemical industry hired many of the state's top paid lobbyists and public relations groups. They proceeded to pay for several weeks of high-saturation television and newspaper advertising across the state, urging the defeat of the chemical ban. They ran 27 full-page ads in the state's largest newspapers.[2] And in addition to weeks of television ads, they purchased radio spots, direct mail to voters, and paid robo-calls. The chemical industry front group at the time was called "Keep America Fire-Safe" (since renamed "Citizens for Fire Safety"). Despite their name, during their time before the Maine legislature, the chemical industry and its allies had no support from state fire safety groups or fire professionals.

"Keep America Fire-Safe" paid for an ad that claimed Maine legislators were seeking to weaken fire safety, accompanied by video of a burning house. The ad urged the public to call their legislators and tell them to vote against these proposed changes for the sake of fire safety. Despite the relentless ad campaign, very few members of the public called the State House, and the front group failed to convince the public of its argument. A nearly identical ad aired in Washington State, and then later in California, paid for by "Citizens for Fire Safety".

Maine's campaign was orchestrated by John Kyte, managing director at the time of Burson-Marsteller, the public relations firm, on behalf of the three major bromine chemical manufacturers (Albermarle, Chemtura, and ICL Industrial Products). Burson-Marsteller, on behalf of the bromine chemical companies, also did pro bono work for the National Association of State Fire Marshals, an organization that received significant financial support from chemical companies. That same fire marshals association then lobbied for more stringent state flammability standards—which would require more flame retardant chemicals.

Despite the conflict with the National Association of State Fire Marshals, our Maine flame retardant bans were strongly supported by Maine's fire professionals, including the State Fire Chiefs Association and the major state firefighter's union, the International Association of Fire Fighters. Both groups worked aggressively for the bills' passage, and the firefighters spoke passionately about the negative impacts of these chemicals on firefighter health. The men and women who are at greatest risk and most experienced

with house fires argued that safer alternatives should be used to protect both public health and public safety.

The chemical industry flew in paid scientific experts and a burn victim for the legislative hearing. The burn victim, who had obviously been seriously burned, claimed to have been burned as a child in his crib. When questioned by legislative committee members after his testimony, he admitted to being a paid witness for the chemical industry and he also admitted that his childhood burns weren't caused by a lack of flame retardant chemicals. Clearly the industry was going for shock value and not an accurate representation of one man's devastating injuries.

In 2010, we took on the issue of Deca-BDE in plastic pallets. The industry once again claimed that deca does not leach out of plastic, even with testing evidence to the contrary. We learned in Maine that each plastic pallet being used for a variety of uses, including the shipping of fresh and packaged foods, contained a few pounds of the Deca-BDE chemical, and that millions of plastic pallets were already un use. We realized that Maine's efforts in 2007 to reduce the amount of Deca-BDE in the environment through phase out of major home consumer uses could quickly be replaced by putting even larger amounts of the same chemical in shipping pallets and other uses. At no point did anyone credibly counter that Deca-BDE breaks down in the environment into far more dangerous toxic byproducts that can be easily absorbed by the human body.

In Maine, what we heard repeatedly from industry was that these chemicals were safe, and that there were no proven health impacts related to these chemicals, including the flame retardant Deca-BDE. Yet, after aggressively denying the health impacts before the Maine legislature in 2007, in 2009 the industry agreed to a U.S. phase out of Deca-BDE for virtually all consumer uses.

We learned early on in Maine, and again and again over the years, that the chemical industry's primary tactic is to deny, hide health information, and then agree to "voluntarily" stop producing the chemical—but still refuse to admit harm. After fierce lobbying and overwhelming media spending, Maine's results were likely disappointing to the chemical industry, but they were a win for Maine consumers and public health.

MINNESOTA:
In 2008, the flame retardant industry and "Citizens for Fire Safety" had already faced losses in several states, and they went all-out to defeat a ban on Deca-BDE and phthalates in the Minnesota legislature. "Citizens for Fire Safety", specific chemical companies, and the American Chemistry Council (ACC) hired sixteen paid lobbyists to work against the bans. At least four paid lobbyists, including the lead lobbyist against the ban, were being paid by the ACC during the 2008 session. At the time, the ACC employed eight state lobbyists working in the Minnesota legislature. Between the ACC and "Citizens for Fire Safety", the industry spent $335,000 on paid lobbyists alone, according to state ethics filings.

During one of the legislative hearings on the bill, paid industry expert Laura Ruiz testified on behalf of the Bromine Science and Environmental Forum that Deca didn't de-brominate, or break down into smaller toxic byproducts, the way other brominated flame retardant chemicals did. Numerous scientific studies in the US and Europe confirmed that

Deca-BDE did break down into more dangerous components that were more likely to cause negative health impacts, and yet the industry-paid "expert" was still denying this important information before a legislative panel. At certain points in her advocacy career, Ms. Ruiz held the title of Director of Consumer Advocacy for Albermarle Corporation, one of the three major brominated flame retardant manufacturers. On various occasions she also represented the Bromine Science and Environmental Forum. She once signed a letter as the chair of the "American Fire Safety Council", and also appeared as a representative of "Citizens for Fire Safety."

While promoting faulty science was disturbing, "Citizens for Fire Safety" took unethical lobbying to another level during the debate on the floor of the Minnesota House. During a heated debate on the bill, when they knew chances of losing were high, "Citizens for Fire Safety" distributed a misleading and unauthorized letter from the Hennepin County Hospital Burn Unit, claiming that more children would be burned and injured in Minnesota if the ban on Deca-BDE was successful. A legislator who also worked with Hennepin County recognized the letter as not authentic and approved by the hospital. Minnesota Speaker of the House Margaret Kelliher was so angered by the false letter that she had House pages collect and destroy every copy of the letter that had been printed and distributed.

Following that incident, the Minnesota House passed the ban. A similar measure passed the Senate, and, as in the House, did so with broad bi-partisan support. Unfortunately, the bill did not become law, as Governor Pawlenty caved to industry pressure and vetoed the legislation.

ALASKA:
Senator Wielechowksi, the sponsor of recent flame retardant proposals in Alaska, recently recalled the events of the past several years and their dealings with the infamous Dr. Heimbach as the Alaska Legislature debated flame retardant legislation. The *Chicago Tribune* exposé recently revealed that Dr. Heimbach's testimony and paid advocacy that helped defeat the flame-retardant ban in Alaska was based on misleading and false facts.

Dr. David Heimbach recounted the following story to the Senate Health and Social Services Committee on March 17, 2010[3]:

2:12:33 PM
DR. DAVID HEIMBACH, Professor of Surgery, University of Washington, said he takes care of all of the Alaskan burn patients and there were about 35 last year. He said that he has very strong feelings that sort of flame retardant should be used in sleepwear and mattresses because people who don't have this protection are at significant risk in the event of fire. He related a story of a six-week-old baby whose crib mattress did not have flame retardant. A dog knocked a candle into the crib and the baby sustained a devastating 75 percent burn, but a pillow in the bed had flame retardant and did not catch fire.

Though Alaska's flame retardant ban bill did pass the full Senate (14–6) in 2010, "Citizens for Fire Safety" and industry groups successfully influenced the vote of several Senators. It was held up in the House Labor and Commerce Committee.

The bill was brought back to the Senate floor in April of 2012, and one Senator stated

that he was changing his vote from a "yes" to a "no" the floor of the Senate because of a paper that was handed to him as he walked onto the floor. The Senator stated in his floor speech that he came to the floor prepared to support the bill, but a statement from Dr. Heimbach changed his mind.

Senator Wielechowski recently requested a memo from Alaska legislative legal council concerning Dr. Heimbach's false testimony before the legislature. Unfortunately, though Dr. Heimbach deliberately misled Alaska state legislators, he likely did not do anything illegal, because he was not under oath when he gave those statements. So, in Alaska, as is the case in many other states, there is no recourse against the chemical industry for paying doctors to deliberately mislead legislators.

The expose in the *Chicago Tribune* and the stories from these three states—and many more like them—reveal a deceptive and dangerous industry that has only its financial interests in mind. They illustrate the extreme measures—including lying to legislators and misleading the public—that the chemical industry will employ simply to protect corporate profits.

This is the same industry that demands the public's trust about the safety and health impacts of chemicals in consumer products. But why on earth should any American trust these companies? My experiences as a legislator in Maine have me firmly convinced that the chemical industry cannot be trusted to accurately describe the safety—or lack thereof—of its own products. Our current federal chemical law has essentially put the fox in charge of the henhouse. We need real change.

Lastly, I want to speak to you as both a parent and a pregnant woman. In the last ten years, our understanding of the role chemicals play in the development of children and fetuses has changed dramatically. Though we still have much to learn, we are beginning to identify causal relationships that may explain the health trends we have watched unfold over the last several decades. We know for a fact that exposures to certain toxic chemicals impact the brain development, immune systems, and future reproductive systems of our kids.

We also know that the umbilical cord blood of every American pregnant woman tested shows multiple toxic chemicals. A 2011 study by University of San Francisco researcher Dr. Tracy Woodruff found certain PCBs, pesticides, PFCs, PBDEs, phthalates, and several other chemicals in 99 to 100 percent of the pregnant women tested. BPA was found in 96 percent of the women studied[4]. While the science is continually evolving and advancing, we know that exposure to chemicals in fetal development has been shown to increase a variety of negative health consequences, including impacts on all the major health system developments, from the brain to the immune and reproductive systems of fetuses.

In 2006, at the age of 30, I participated in a study of thirteen Maine people called "Body of Evidence"[5], in which I was tested for a battery of different chemicals in my body. We were tested for 71 different chemicals, including flame retardants, BPA, mercury, and PCBs. I had the second highest level of total phthalates and second highest level of mercury in the Maine study group. My mercury levels were above the safety standard for protection of a developing fetus from subtle but permanent brain damage. And I had

levels of flame retardants, arsenic, PFCs, and BPA that were all cause for concern.

Each of the thirteen Mainers who were tested had unsafe levels of at least one, if not multiple, chemicals that were higher than the national test results for most Americans. For me personally, I have spent most of my life as a resident of a small, offshore island with a beautiful landscape, no major industrial pollution, and few residents. Without a doubt, most of the chemicals in my body came from products and furniture in my home, personal care products, and the food I eat.

My chemical body burden results came in the midst of our legislative battles on flame retardants, in which lobbyists and "experts" from the chemical industry repeated their mantra that the chemicals we were seeking to regulate are unlikely to build up or remain in people's bodies, and that the average person carries chemicals in her body that are beneath the threshold of safety. Our study suggested exactly the opposite.

My chemical body burden results also came just months after my engagement. The idea of having children had just recently started to seem like a more immediate possibility.

The fact that chemicals were found in my body at a level that could impact not only my health but that of a developing baby changed me. Before, I had been simply an advocate for safer chemical reforms. Now, I am a passionate believer that something needs to be done to fix this system—especially for the sake of our kids. Suddenly the realization that this was something real—a threat to my health and the health of my friends, family, and future children—made this issue seem different, and more important than ever before.

As a former policy maker, my own personal information drives me to stay involved. But as a parent and mother, this information just makes me angry. How could we—citizens of one of the most technologically and scientifically advanced democracies in human history—allow ordinary household products to contain chemicals that we know cause negative health impacts for our children? What possible explanation—other than the power of chemical industry lobbying—could there be for such a situation?

We know that certain cancers, including childhood brain cancer and childhood leukemia, have increased over the last few decades. We know that the rates of autism have skyrocketed to the highest levels to date, now impacting 1 in 88 children born in the United States, and 1 in every 54 boys. We also know that women in my generation are far more likely to suffer from problems getting pregnant, compared to our mothers. And we know that American children are experiencing puberty at an earlier and earlier age than ever before—something I am already thinking about for my daughter, who isn't even two years old.

Many scientists tell us—with increasing certainty—that these health conditions are at least partially attributable to chemicals to which we are exposed in our homes, food, and environment. This is simply unacceptable.

Despite assurances from the chemical and consumer product industries that our products are safe, they are not. More importantly, there is no reason to believe that the companies producing the chemicals to which we're exposed are either willing or able to tell us honestly whether their products are safe. Self-regulation of the chemical industry has

been a colossal failure. That's why we need real reform of the TSCA.

Whether it is dangerous flame retardants in our couches, mattresses, and car seats, or BPA in children's toys or bank receipts, there is currently no required disclosure, no available public information, and no warning sign to enable consumers to educate and protect themselves.

And even when there is basic disclosure of chemicals, like in sunscreen or in baby shampoo, a parent would still have to have a consulting toxicologist to understand whether the ingredients in their children's products are safe.

Just this past year, the public found out that a major baby shampoo company contained a byproduct of cancer-causing formaldehyde in their product. To their credit, the company did agree to stop using the formaldehyde chemical in the shampoo, but the chemical wasn't clearly disclosed in the first place.[6] Most parents were outraged to hear that they had long been using a trusted product containing a toxic chemical. Because of the lack of regulation, we know that many chemicals are used in children's products that could have a variety of negative health effects. While parents have gotten good at researching online and looking for advice about what products are safe, this is too much to ask of busy parents. Just as we require that manufacturers of baby products like cribs and car seats establish that those products cannot collapse and suffocate or harm a child, we must require that they prove their products will not poison a child, either. All products that are sold and marketed for kids should be safe for their health.

Before my daughter was born, my husband and I researched crib mattresses, and after reading through a maze of websites and blog entries, we spent several hundred extra dollars on a mattress that was advertised as free of flame retardants. But most parents can't afford this, and don't know the dangers posed by flame retardants in the first place.

And despite our decision to buy a "green" crib mattress, we still have the same old couch, purchased about 10 years ago. My husband and I have a several-year-old mattress on our bed. Both are standard products, likely treated with flame-retardants and other chemicals.

Our home contains new and old electronics, remote controls, and phones—all of which seem to be magnets of interest for young children. At least some of these products likely contain various toxic flame retardants and other industrial chemicals. And, as we have learned, some of these chemical compounds have likely broken down and filled my home—and yours, and millions more across the country—with component chemicals that are more dangerous and more readily absorbed by humans.

Brominated flame retardants have been associated with developmental delays and brain impacts in children and developing fetuses, reproductive problems, cancer risks, and impacts on the immune system. A new study out just this month, for the first time, linked exposure to PBDE flame retardant chemicals during pregnancy with increased autism risk.[7]

Parenthood, especially with little children, is among the most exciting and rewarding life experiences. It can also be one of the most busy, sleep-deprived, financially strapped, and stressful times for a family. With no transparency, so little regulation, and so little

information—parents have little hope of successfully protecting their children from chemical exposure, or even of knowing what chemicals are in their own homes. Though we all do our best, no parent I know has a doctoral student in chemistry handy to check out every sippy cup, rubber duck, and couch cushion to make sure it's safe for her child.

We, the parents of this country, need leadership from the federal government on this complicated issue. We need policy makers who will stand up to an onslaught of propaganda and misinformation from the industries that have resisted this common sense change for so long. We need the Safe Chemicals Act, and we need it now.

In closing, I want to especially thank Senator Lautenberg for his leadership on the Safe Chemicals Act, Senator Boxer for moving this issue along during this crucial time, and I also want to thank my two Senators from Maine, Senators Snowe and Collins, for just this month joining in the bi-partisan call for a congressional overhaul of the chemical safety law.

I understand this committee will consider the Safe Chemicals Act as soon as tomorrow, and for the sake of my daughter and future child, children in Maine and across the country, I ask this committee to end this stalemate and take immediate action to remedy our broken chemical safety system. As we have learned in the states, the chemical industry will stonewall progress and hide health information at all costs. We rely on you, our elected officials, to protect the public health of our citizens. I thank you today for your leadership and I thank you in advance for your work tomorrow to advance this important cause.

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[1] *Chicago Tribune*, "Playing with Fire," May 6 – May 9, 2012
http://media.apps.chicagotribune.com/flames/index.html

[2] Print Ad Run in Maine Newspapers:
http://www.preventharm.org/Images/130/Newspaperscan.pdf (It's a large PDF).

[3] Legislative Hearing Transcript from Alaska:
http://www.legis.state.ak.us/basis/get_single_minute.asp?ch=S&beg_line=00333&end_line=00605&session=26&comm=HSS&date=20100317&time=1336

[4] UCSF Study website: http://www.ucsf.edu/news/2011/01/8371/ucsf-study-identifies-chemicals-pregnant-women

[5] For full results of the "Body of Evidence" report, go to:
http://www.cleanandhealthyme.org/BodyofEvidenceReport/tabid/55/Default.aspx
Individual results at: http://www.cleanandhealthyme.org/tables.htm

[6] *Forbes, "*As Report Reveals Toxic Ingredients in Baby Shampoo, Johnson & Johnson Goes Public with Plans to Clean Up Products," November 11, 2011,
http://www.forbes.com/sites/amywestervelt/2011/11/01/as-report-reveals-toxic-ingredients-in-baby-shampoo-johnson-johnson-goes-public-with-plans-to-clean-up-products/

[7] *Oxford Journal*, Human Molecular Genetics, "Long-lived epigenetic interactions between perinatal PBDE exposure and mecp2308 mutation" http://hmg.oxfordjournals.org/content/21/11/2399

Calvin M. Dooley, President and Chief Executive Officer
American Chemistry Council
700 Second Street, NE
Washington, DC 20002

June 4, 2012

Dear Mr. Dooley,

As current and former state legislators from across the nation, we each have sponsored or worked directly on the regulation of flame retardants out of concern for public health in our respective states.

After reading the recent four-part *Chicago Tribune* investigative series, "Playing With Fire," in which the deeply unethical and longstanding practices of three different chemical companies (Albemarle, Chemtura, and ICL Industries) were revealed, we are writing to urge you to expel these unethical manufacturers from your industry trade group. The deception practiced by these companies—and revealed by the *Chicago Tribune*—is completely unacceptable in our state legislatures. Some of the most egregious practices, like lying about the death of an infant girl, are abhorrent by any measure.

We understand that the ACC has specific tenets as an organization, including "to lead in ethical ways that increasingly benefit society, the economy and the environment." In addition, your principles specifically include "communicating forthrightly with governments and communities about chemical risks."

In each of our states, we have had specific and disturbing dealings with the flame retardant chemical industry that violate basic ethical behaviors and certainly would not be considered honest or "forthright communication with government."

The worst industry tactics outlined in the *Chicago Tribune* series—which we each saw some of firsthand in our states—included: deliberately misrepresenting the science around flame retardant chemicals relating to both their effectiveness and their health risks; employing an expert witness who repeatedly invoked a phony story of a child dying in a fire in order to justify flame retardant mandates; creating a front group called "Citizens for Fire Safety" to counter the opposition to flame retardants among firefighters and health organizations; and using racial profiling to mislead community leaders about the impacts of toxic flame retardant chemicals.

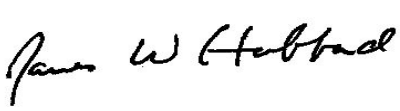
During the legislative debates on the flame retardant bills in our states, many of us as legislators were faced with public attacks from the industry front group "Citizens for Fire Safety," including significant paid television and newspaper ads. The message of those campaigns was that legislators were going to cause fires and threaten children. In some states, specific attacks were sent directly to the constituents of legislators who championed these bills. In nearly all of our debates

on this issue, our efforts to regulate certain fire retardants were supported by the International Association of Fire Fighters, the State Fire Chiefs organization in each state, and other fire safety professionals. And yet the industry continued its sham campaign.

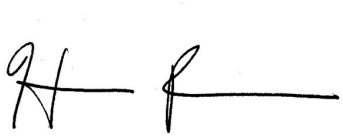
Since we championed these bills, some of these same flame retardant companies have come forth and begun a voluntary phase-out of some of the products we sought to regulate. While we applaud these actions, it only makes the deceptive behavior we saw with our own eyes—and that the *Tribune* series revealed to the world—all the more disturbing. And we are especially concerned that the industry has covered up the hazards of the replacement chemicals rather than investing in truly safer alternatives.

We urge immediate action on the part of the ACC to live up to its own mission and address these behaviors.

Sincerely,



Delegate James Hubbard
Maryland House of Delegates
Assistant Majority Leader



Honorable Hannah Pingree
Former Speaker of the Maine House
& Safer Chemicals, Healthy Families

Senator Jackie Dingfelder, Oregon Senate
Environment & Natural Resources Chair

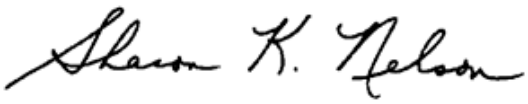
Senator Sandra L. Pappas
Minnesota Senate

Assemblyman Robert Sweeney
Chair, Environmental Conservation
Committee, New York Assembly

Speaker of the House Shap Smith
Vermont House of Representatives

State Representative Ross Hunter
Washington House

Senator John Marty, Minnesota Senate



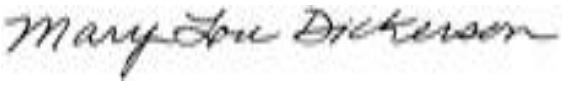
Senator Sharon Nelson
Washington State Senate
Chair, Environment Committee

Representative Diana Urban
Connecticut House

Representative Mark Meadows,
Michigan House

Senator Rebekah Warren,
Michigan Senate

Honorable Deb Kennedy,
Former Michigan State Representative
Former Chair of House Committee on the Great Lakes & the Environment



Representative Mary Lou Dickerson
Washington House

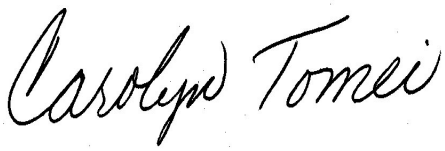
Representative Karen Clark
Minnesota House

Representative Paul Holvey
Oregon House

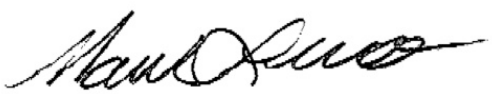
Senator Mark Hass, Oregon Senate

Representative Sharon Treat
Maine House

Senator Phil Bartlett, Maine Senate



Representative Carolyn Tomei
Oregon House



Senator Mark Leno
California Senate
Chair of the Senate Budget & Fiscal Review Committee

June 5, 2012

The Honorable Sharon Treat
House of Representatives of the State of Maine
22 Page Street
Hallowell, ME 04347

Dear Ms. Treat:

I am writing in response to the letter you and other state representatives sent regarding recent news reports about Citizens for Fire Safety and the flame retardant chemistries produced by Albemarle Corporation, Chemtura Corporation and ICL Industrial Products. These three companies are long-time members of the American Chemistry Council (ACC), but ACC does not advocate with state legislatures or state regulatory agencies on their behalf related to flame retardant chemistries. ACC is not affiliated with Citizens for Fire Safety, and neither ACC staff nor resources were used to support activities undertaken by the group.

Albemarle, Chemtura and ICL Industrial Products have great confidence in their chemistries, supported by substantial testing and studies on safety and efficacy. However, they understand that the questions raised in the recent news stories should be addressed in order to dispel misinformation; therefore, each company plans to make available existing scientific information that supports the safety and efficacy of their products in the markets they supply. In addition, each company is committed to pursuing additional testing where warranted and is willing to partner with government authorities, such as the National Institute of Standards or other independent bodies, to undertake such testing.

The recent news reports and efforts to leverage them politically reaffirm ACC's commitment to bipartisan reform of the Toxic Substances Control Act (TSCA), the primary law that governs our nation's chemical regulatory system. For a number of reasons, there is a lack of confidence in EPA's ability to effectively regulate chemicals in commerce, and because of this, even when chemicals have received federal regulatory approval, they are often subjected to attacks at the state level that breed misperceptions.

We continue to support bipartisan reform that will produce a federal chemical regulatory system that protects health and safety, ensures the ability of U.S. manufactures to innovate and compete globally, and instills confidence in the public. To this end, ACC has consistently called for the launch of a bipartisan Congressional process to develop a fresh legislative approach to modernizing TSCA. We also have invited members of the NGO community to work with us to find a legislative path that can achieve common-sense, science-based reform that is in the best interest of public health and our economy. Thank you for writing and please let me know if I can provide additional information.

Sincerely,

Cal Dooley
President and CEO
American Chemistry Council

Professional Fire Fighters of Maine

Affiliated
International Association of Firefighters

John Martell, President
Tel. 207-432-2370

41 Brickyard Cove Rd.
Harpswell, Maine 04079

13 July 2012

Calvin M. Dooley
President and Chief Executive Officer
American Chemistry Council
700 Second Street, NE
Washington, DC 20002

Re: Telling the Truth About Chemical Flame Retardants

Dear Mr. Dooley,

We represent professional firefighters who work in harm's way every day to save lives and protect property from the ravages of fire. We are deeply concerned that the health and safety of our members continues to be jeopardized by exposure to unnecessary toxic flame retardants produced by the chemical industry.

We have been very involved with state legislation to protect public health from flame retardants without compromising fire safety. We have experienced first hand the unethical practices of your member companies that were documented in the recent investigation by the *Chicago Tribune*, "Playing with Fire," that included:

- Creation of a phony front group, Citizens for Fire Safety, which never served the interests of fire service professionals as claimed, but instead acted solely as a lobby arm of the chemical manufacturers that funded it;
- Providing false testimony to state legislatures through a burn doctor and burn victims who fabricated stories about tragedies that had nothing to do with the use of flame retardant chemicals; and
- Distorting the science about the health and safety hazards of flame retardant chemicals, including the polybrominated diphenyl ethers (PBDEs) such as Deca, to delay state action to phase out these dangerous chemicals.

Even we were shocked, however, to learn that chemical manufacturers also covered up data showing that flame retardants added to furniture did not even work as advertised. Yet that didn't stop your industry from deploying a tobacco industry lobbyist to manipulate state fire marshals to promote even greater use of these ineffective, toxic chemicals.

Enough is enough. We strongly urge your trade association to expel from your membership the three corporations that produce flame retardants, Albemarle, Chemtura and ICL Industries, whose unethical behavior rivals the tobacco industry.

Please respond at your earliest convenience, and inform us of the disciplinary actions you intend to take to hold your members accountable.

Sincerely,

John Martell, President
Professional Fire Fighters of Maine

Matt Vinci, President
Professional Fire Fighters of Vermont

Dennis Sweeney, Health and Safety Coordinator
New York State Professional Fire Fighters Association

Kelly Fox, President
Washington State Council of Fire Fighters

July 16, 2012

The Honorable Barbara Boxer, Chair
Senate Environment and Public Works Committee
112 Hart Senate Office Building
Washington DC 20510

The Honorable James M. Inhofe, Ranking Member
Senate Environment and Public Works Committee
205 Russell Senate Office Building
Washington DC 20510

Re: Request for Oversight Hearing on the Toxic Flame Retardants Scandal

Dear Senators Boxer and Inhofe,

As current and former state legislators from across the nation who are concerned about regulation of flame retardants, we are writing to request that you hold an oversight hearing on the unethical chemical industry activities that many of us witnessed firsthand in our legislatures. We want to share our perspective on those tactics and make it clear that the pattern of deception practiced by the chemical industry in state legislatures is unacceptable.

The recent four-part Chicago Tribune investigative series, "Playing With Fire" (May 2012) brought forth evidence that three chemical manufacturers (Albemarle, Chemtura and ICL Industries) engaged in tactics to avoid state regulation of toxic flame retardants. The worst industry tactics included misrepresenting the science related to both the effectiveness and health risks of flame retardant chemicals; employing an expert witness who repeatedly invoked a phony story of a child dying in a fire in order to justify flame retardant mandates; creating a front group called "Citizens for Fire Safety" to counter the opposition to flame retardants among firefighters and health organizations; and using racial profiling to mislead community leaders about the impacts of toxic flame retardant chemicals.

We are also disappointed that the trade group American Chemistry Council (ACC) has failed to enforce its mandatory code of conduct, known as Responsible Care, against these three member companies. When the CEOs of ACC members sign on to Responsible Care, they pledge "to lead in ethical ways" and promote forthright communication with governments. And yet, instead of censuring these companies for violating these principles, ACC just appointed Albemarle's CEO to their board of directors (June 2012). It's unfortunate that these practices seem to reflect business as usual to the chemical industry as a whole.

Clearly, the activities described in the Tribune series go beyond expressing a company's views. They are a misrepresentation of the science around flame retardants and clearly deserve further review.

During legislative debates on flame retardant bills in states around the country, many of us as legislators were faced with public attacks from this same industry front group including barrages of misleading paid television and newspaper ads. We have attached a few examples to illustrate the kinds of deception and intimidation of public officials employed by this industry.

In the absence of federal action, state legislators will sponsor new policies in 2013 that move away from flame retardants that have no added fire safety benefit, especially in products that impact our children and other vulnerable groups. We believe we can and must do better. There are well-documented, safer and more effective methods of deterring fires. The State of California is already taking a step forward with Governor Brown calling for a re-evaluation of fire safety standards. As 2013 legislative sessions start up, we will view the testimony of these companies in our legislatures through a very critical lens.

In the meantime, we urge you to treat this flame retardant scandal as an opportunity to strengthen our broken federal chemical management system. If the Safe Chemicals Act of 2011 (S. 847) were law, chemical manufacturers would not get away with replacing old toxic chemicals with new toxic chemicals, another practice exposed by the Chicago Tribune series. We need federal leadership. You can provide that through a timely markup and Committee vote on S. 847.

Thank you for your leadership and this opportunity to comment.

Sincerely,

Delegate James Hubbard
Maryland House of Delegates
Assistant Majority Leader

Hon. Hannah Pingree, Former Speaker of the Maine House, Safer Chemicals, Healthy Families

Honorable Deb Kennedy
Former Michigan State Representative
Former Chair of House Committee on the Great Lakes & the Environment

Representative Karen Clark
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Representative Beth Kerttula
Alaska House of Representatives
House Minority Leader

Assemblyman Robert Sweeney
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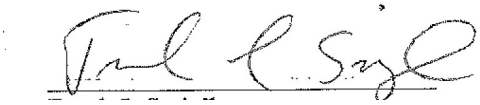
Chair, Environmental Conservation Committee

Representative Carl Sciortino
Massachusetts House

Representative Denise Provost
Massachusetts House

Representative Jay Kaufman
Massachusetts House



Representative Frank Smizik
Massachusetts House

Representative Diana Urban
Connecticut House

Senator Terry Gerratana
Connecticut Senate

Senator Jackie Dingfelder
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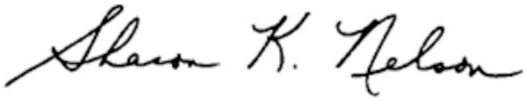
Senator Phil Bartlett
Maine State Senate

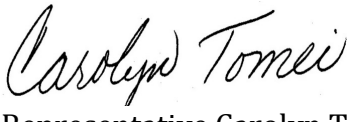
Senator Debbie Regala
Washington State Senate



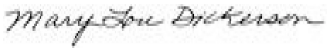
Senator Sharon Nelson
Washington State Senate
Chair, Environment Committee

Representative Ross Hunter
Washington House

Representative Bob Duchesne
Maine House

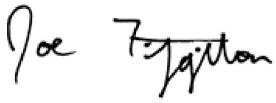


Representative Carolyn Tomei
Oregon House



Representative Mary Lou Dickerson
Washington House

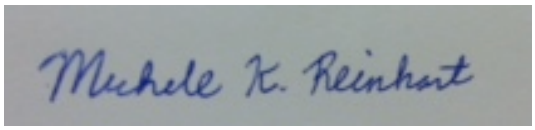
Representative Dave Upthegrove
Washington State



Representative Joe Fitzgibbon
Washington House

Representative Zack Hudgins
Washington House

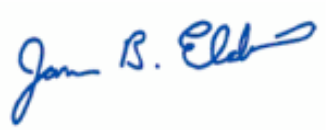
Representative Sue Malek
Montana House



Representative Michele Reinhart
Montana House

Representative Melissa Walsh Innes
Maine House

Representative Ellie Hill
Montana House



Senator Jamie Eldridge
Massachusetts State Senate

Representative Chuck Kruger
Maine House

Representative Tobias Read
Oregon House

Assemblyman Alan Maisel
New York Assembly

Assemblywoman Ellen Jaffee
New York Assembly

Assemblywoman Barbara Lifton
New York Assembly

Assemblyman Brian Kavanagh
New York Assembly

Representative Linda Chapa LaVia
Illinois House

Full list of Signatories to July 16, 2012 letter to Senator Barbara Boxer and Senator James Inhofe

Representative Beth Kerttula, House Minority Leader, Alaska House
Representative Diana Urban, Connecticut House
Senator Terry Gerratana, Connecticut Senate
Representative Linda Chapa LaVia, Illinois House
Representative Jay Kaufman, Massachusetts House
Representative Denise Provost, Massachusetts House
Representative Carl Sciortino, Massachusetts House
Representative Frank Smizik, Massachusetts House
Senator Jamie Eldridge, Massachusetts Senate
Delegate Jim Hubbard, Assistant Majority Leader, Maryland House of Delegates
Honorable Hannah Pingree, Former Speaker Maine House, Maine House and Safer Chemicals, Healthy Families Consultant
Representative Sharon Treat, Maine House
Representative Chuck Kruger, Maine House
Representative Bob Duchesne, Maine House
Representative Joan Welsh, Maine House
Representative Melissa Walsh-Innes, Maine House
Senator Phil Bartlett, Maine Senate
Honorable Deborah Kennedy, Former Representative, Former Chair of House Committee on the Great Lakes & the Environment, Michigan House
Representative Karen Clark, Minnesota House
Senator Cliff Larsen, Montana Senate
Representative Tim Furey, Montana House
Senator Ron Erickson, Montana Senate
Representative Carolyn Squires, Montana House
Honorable Robin Hamilton, Former Representative, Montana House
Representative Ellie Hill, Montana House
Betsy Hands, Montana House
Honorable JP Pomnichowski, Former Representative, Montana House
Honorable Dave McAlpin, Former Representative, Montana House
Representative Michele Reinhart, Montana House
Representative Sue Malek, Montana House
Assemblyman Robert Sweeney, Chair, Environment Conservation Committee New York Assembly
Assemblyman Alan Maisel, New York Assembly
Assemblywoman Ellen Jaffee, New York Assembly
Assemblywoman Barbara Lifton, New York Assembly
Assemblyman Brian Kavanagh, New York Assembly
Senator Jackie Dingfelder, Environment & Natural Resources Chair, Oregon Senate
Representative Carolyn Tomei, Oregon House
Representative Tobias Read, Oregon House
Representative Willem Jewett, Assistant Majority Leader, Vermont House

Representative Mary Lou Dickerson, Washington House
Representative Ross Hunter, Washington House
Senator Debbie Regala, Washington State Senate
Senator Sharon Nelson, Chair, Environment Committee, Washington State Senate
Representative Dave Upthegrove, Washington House
Representative Joe Fitzgibbon, Washington House
Representative Zack Hudgins, Washington House

Alliance for a Clean and Healthy Maine

Body of Evidence

A STUDY OF POLLUTION IN MAINE PEOPLE

Executive Summary

Maine people are polluted with dozens of hazardous industrial chemicals, according to a new study conducted by the Alliance for a Clean and Healthy Maine with help from the University of Southern Maine. In 2006, thirteen Maine men and women volunteered to have their bodies tested in the first-ever study of chemical pollution in Maine people. This study found a total of 46 different chemicals (of 71 tested) in samples of blood, urine, and hair. On average, each participant had measurable levels of 36 toxic chemicals in their bodies.

These findings show that Maine people are routinely exposed to hazardous industrial chemicals including phthalates from cosmetics and vinyl plastic, brominated flame retardants (PBDEs) from televisions and furniture, Teflon chemicals from stain-resistant and non-stick coatings, bisphenol A from reusable water bottles and baby bottles, and toxic metals such as lead, mercury and arsenic.

These chemicals are found in products we use every day: plastic containers, toys, furniture, fabric, automobiles, TVs and stereos, water bottles, medical supplies, and personal products like shampoo, hairspray, and perfume. They are in our homes and offices, food and water, and the air we breathe.

Scientific research shows that these chemicals are hazardous and that even tiny amounts may threaten human health. They are toxic or harmful to life and

many are slow to degrade and also build up to high levels in the food chain. Babies in the womb and young children are especially vulnerable because they are still growing. Animal and human studies have linked these chemicals to learning and developmental disabilities, endocrine system damage, changes in sexual development, reproductive harm (including decreased sperm count in men), low birth weight and some cancers.

Despite proven and suspected dangers to our health, industry is not required to demonstrate the safety of chemicals before adding them to consumer products, nor are they required to use safer alternatives to chemicals known to be hazardous.

What We Found—Pollution in People

Russell Libby, 50, lives in Mount Vernon and is an organic farmer. Along with Bettie Kettell, Russell had the most chemicals detected (41 of the 71 that were tested). He also had the greatest number of PBDEs detected (27 of 46) and relatively high levels of individual PBDEs.

Amy Graham, 35, lives in Farmington and is a children's book author and homemaker. She has two young daughters, Phoebe and Sylvie. Amy had the second-highest level of one of the PBDE's which is a breakdown product of Deca, the toxic fire retardant.

Bettie Kettell, 60, is a nurse who lives in Durham. Bettie had the highest total level of PBDE flame retardants compared to the other Maine participants. Of the 71 chemicals that were tested in this study, 41 were detected in Bettie, a tie with Russell Libby for the most chemicals.

Paulette Dingley, 48, lives in Auburn and works with the American Red Cross as a health and safety instructor. Paulette had the highest level of two types of phthalates. She also had bisphenol-A chemicals in her body several times higher than the national average.

Dana Dow, 56, lives in Waldoboro, is a Republican State Senator and also owns a furniture store. Dana had the highest levels, and most different types, of perfluorinated chemicals which are often added to furniture to provide stain resistance.

Lauralee Raymond, 28, grew up in Aroostook County and attended Bates College. She now lives in Winthrop. She and her mother both participated in this study. Lauralee had higher levels of mercury, arsenic, and each of the flame retardants than her mother. She found this surprising since her mom has had more time to build up chemicals in her body.

Charlie Schmidt, 42, is a freelance science writer from South Portland. Charlie has a Master's degree in public health and has worked as a toxicologist. Charlie brings a professional appreciation to the growing interest in human body burden, and the challenging implications for public health.

Hannah Pingree, 30, is from North Haven and is in the Maine Legislature, where she is the House Majority Leader, Hannah had the second highest level of total phthalates and second highest level of mercury in the Maine study group.

Vi Raymond, 51, moved to Winthrop after spending 40 years in Fort Kent. She is married with five grown children, including fellow participant Lauralee. Vi had the highest phthalate total, and the highest level of BADGE-4OH, of one of the bisphenol-A chemicals tested.

Eric Stirling, 32, owns and operates a sporting camp on First West Branch Pond, near the Appalachian Trail in the unorganized territory TA-R12. Eric had the highest level of mercury found among the study participants and his total arsenic amount was above the normal exposure level.

Denyse Wilson, 39, is a writing instructor. She is married with two children, Cecil and Francine. Denyse had the highest inorganic arsenic and arsenic(III) levels of all study participants.

Elise Roux, 18, is a senior at Cheverus High School in Portland. She lives in Windham. Elise had the highest level of bisphenol-A, about ten times the national average, and the second highest levels of BADGE-4OH.

Regina Creeley, 54, lives in Hudson and is a special education instructor. Regina had the highest total arsenic level of all study participants.

The Chemicals Detected In This Study Are Found In Products Throughout Your Home...

What Does The Body Of Evidence Study Tell Us?

1. *People are routinely exposed to many hazardous chemicals.*
2. *These chemicals pose a potentially serious threat to human health.*
3. *Everyday products and materials are a major source of chemical exposure.*
4. *The safety system for industrial chemicals in broken.*

Most of these chemicals that enter our environment are manufactured by the chemical industry and added to the thousands of items in daily commerce that support our modern lifestyle. Yet industry is not required to prove that a chemical is safe before it is manufactured, sold, or used in consumer products. Nor are product makers required to use the safest alternatives, even when non-toxic substitutes are effective, available and affordable. Under our current system, thousands of toxic chemicals have been "grandfathered" in without adequate health and safety testing. And government is handcuffed with undue burden to prove harm before any precautionary actions can be taken to prevent chemical exposure. If this system was working, we would not find hazardous chemicals in people's bodies.

We can get these chemicals out of our homes—& keep them out of our bodies

The chemicals used in products throughout our homes were never intended to end up in our bodies but we now know that they are. The safety system for industrial chemicals is broken. New laws are needed to ensure that the products on store shelves are safe for our families.

To prevent pollution in Maine people, government should enact comprehensive safer chemicals policy at the state and federal level. Three actions are needed to close the gaps in our broken chemical system;

Close The Safety Gap

- Phase out the most harmful chemicals in favor of safer alternatives, for example Deca-BDE in electronics and furniture, and phthalates and bisphenol A in baby products.
- Search for safer substitutes for all chemicals shown to be hazardous.
- Require that all industrial chemicals be proven safe, especially for children.

Close The Data Gap

- Honor the public's right-to-know which hazardous chemicals are in what products.
- Require manufacturers to provide health and safety data on all industrial chemicals.
- Require that chemical manufacturers test and prove the safety of all industrial chemicals in commerce.

Close The Technology Gap

- Invest in research and development of bio-based plastics from Maine potatoes and other "green chemistry" solutions that will boost the state's economy.
- Establish a research center within the University of Maine System to assess hazards and alternatives for harmful chemicals.

The Body of Evidence study is a project of the Alliance for a Clean and Healthy Maine. The Alliance for a Clean and Healthy Maine is a coalition of Maine-based organizations committed to protecting human health from toxic chemical exposure. Forty-five organizations have endorsed the Alliance, representing health-affected children, workers, doctors, public health professionals, environmentalists and impacted communities.

Alliance for a Clean & Healthy Maine, Steering Committee:

Environmental Health Strategy Center, Learning Disabilities Association of Maine, Maine Labor Group on Health, Maine Organic Farmers and Gardeners Association, Maine People's Alliance, Maine Public Health Association, Natural Resources Council of Maine, Physicians for Social Responsibility - Maine Chapter, and Toxics Action Center Campaigns

For more information about campaigns to improve environmental health in Maine or for a full copy of the Body of Evidence report check out the Alliance for a Clean and Healthy Maine at

www.CleanAndHealthyMe.org

Alliance for a Clean and Healthy Maine | (207) 772-2181 | One Pleasant Street, Fourth Floor, Portland, Maine 04101

Table 1 -- The Chemicals Tested in Thirteen Mainers

Chemical Group Medium Tested Units of Measurement	Chemical Tested		Chemical Description
Phthalates Tested in Urine Results reported as nanograms per milliliter (ng/ml) or parts per billion (ppb)	**MMP**	Mono-methyl phthalate	A metabolite of DMP (dimethyl phthalate)
	MEP	Mono-ethyl phthalate	A metabolite of DEP (diethyl phthalate)
	MBP	Mono-butyl phthalate	A metabolite of DBP (dibutyl phthalate)
	MBzP	Mono-benzyl phthalate	A metabolite of BzBP (benzylbutyl phthalate)
	MEHP	Mono-2-ethylhexyl phthalate	All three are metabolites of DEHP, which is di-(2-ethylhexyl) phthalate
	MEOHP	Mono-(2-ethyl-5-oxohexyl) phthalate	
	MEHHP	Mono-(2-ethyl-5-hydroxyhexyl) phthalate	
PBDEs Tested in blood Results reported as picograms per gram (pg/g) on a lipid weight basis or parts per trillion (ppt)	**Polybrominated diphenyl ethers** 46 different PBDEs were measured of the 209 congeners that exist. See Table 2 for full list.		PBDE congeners are named from BDE-1 to BDE-209. They differ only by the location and number of the bromine atoms, which varies from 1 to 10. Congeners are chemical compounds that share the same basic structure.
PFCs or perfluorinated chemicals Tested in blood Results reported as nanograms per milliliter (ng/mL) or parts per billion	**PFBA**	Perfluorobutanoic acid	PFOA is the most prominent among this group of perfluorinated carboxylic acids. It has eight carbon atoms. The related compounds in this group range from having four to twelve carbon atoms. While PFOA is being phased out of some products, all of these compounds are possible breakdown products or manufacturing intermediates of other commercial PFCs.
	PFPeA	Perfluoro-n-pentanoic acid	
	PFHxA	Perfluorohexanoic acid	
	PFHpA	Perfluoroheptanoic acid	
	PFOA	Perfluorooctanoic acid	
	PFNA	Perfluorononanoic acid	
	PFDA	Perfluorodecanoic acid	
	PFUnA	Perfluoroundecanoic acid	
	PFDoA	Perfluorododecanoic acid	
	PFBS	Perfluorobutanesulfonate	Among these perfluorinated sulfonates, PFOS was phased out of Scotchgard in 2000 and replaced with PFBS. PFHxS is still used.
	PFHxS	Perfluorohexanesulfonate	
	PFOS	Perfluorooctanesulfonate	
	PFOSA	Perfluorooctanesulfonamide	A breakdown product of PFCs, which breaks down itself into PFOS
BPA Tested in blood Results in ng/mL or ppb	**BPA**	Bisphenol A	Monomer for polycarbonate plastic
	BADGE-4OH		A metabolite of BADGE (bisphenol A diglycidyl ether) used in epoxy resins
Metals Lead: tested in blood Results in ug/dL Methylmercury: tested in hair Results in ng/g or ppb Arsenic: tested in urine Results in ug/L or ppb	**Lead**		A soft metal that readily escapes from products with skin contact, as a dust that can be ingested or inhaled, or dissolved in drinking water.
	Methylmercury		A highly toxic form of mercury produced by bacteria in wetland environments from mercury pollution of the air and water, which builds up to high levels in fish and wildlife.
	Arsenic (total, inorganic and As(III)		Total arsenic includes organic arsenic which is relatively low in toxicity as well as highly toxic inorganic arsenic. Arsenic(III) is the most toxic form of inorganic arsenic.

Table 2 -- Complete Results of Chemical Screening of Thirteen Mainers

Chemical Class	Chemical Tested	Regina Creeley	Dana Dow	Paulette Dingley	Amy Graham	Bettie Kettell	Russell Libby	Hannah Pingree	Lauralee Raymond	Vi Raymond	Elise Roux	Charlie Schmidt	Eric Stirling	Denyse Wilson
Phthalates in URINE In each box: The 1st result is in ng/mL or ~ parts per billion (ppb); The 2nd result	**MMP**	< 3.32 < 3.42	< 1.73 < 1.16	**12.1** **46.5**	**5.17** **7.18**	**2.99** **7.29**	**13.1** **8.9**	**26.6** **23.1**	**21.6** **14.2**	**19.6** **22.7**	**15.8** **8.19**	< 6.28 < 5.87	**5.56** **6.78**	< 26.3 < 17.2
	MEP	**10.3** **10.6**	**81.5** **54.7**	**45.9** **177**	**26.7** **37.1**	**24.4** **59.5**	**29** **19.6**	**172** **150**	**105** **69.1**	**121** **140**	**395** **205**	**20.7** **19.3**	**38.1** **46.5**	**73.9** **48.3**
	MBP	**26.2** **27.0**	**32** **21.5**	**22.6** **86.9**	**15.7** **21.8**	**28** **68.3**	**38.7** **26.1**	**75.7** **65.8**	**107** **70.4**	**66.2** **76.5**	**97.4** **50.5**	**48.5** **45.3**	**35.4** **43.2**	**141** **92.2**
	MBzP	**28.2**	**20.8**	**17.9**	**9.12**	**25.1**	**46.8**	**54**	**12.7**	**26.5**	**127**	**6.73**	**22.5**	**30.5**

is in ug/gCr-L (creatinine-corrected) or ~ ppb		29.1	13.6	68.8	12.7	61.2	31.6	47	8.36	30.6	65.8	6.29	27.4	19.9
	MEHP	10.2	2.42	8.18	5.23	13	24.7	45.3	23.3	57.9	7.89	4.52	2.82	10.8
		10.5	1.62	31.5	7.26	31.7	16.7	39.4	15.3	66.9	4.09	4.22	3.44	7.06
	MEOHP	15.4	6.15	8.05	7.47	30.9	27.6	106	52.1	114	29.1	8.56	8.81	22.6
		15.9	4.13	31.0	10.4	75.4	18.6	92.2	34.3	132	15.1	8.00	10.7	14.8
	MEHHP	41.3	12.5	29.5	23.9	66.4	59.5	197	95.8	280	54.5	43.6	20.6	49.6
		42.6	8.39	113	33.2	162	40.2	171	63.0	324	28.2	40.7	25.1	32.4
	Total Phthalates	133	156	144	93.3	191	239	677	418	685	727	136	134	342
		137	105	555	130	465	162	588	275	793	377	127	163	223
Chemical Class	**Chemical Tested**	**Regina Creeley**	**Dana Dow**	**Paulette Dingley**	**Amy Graham**	**Bettie Kettell**	**Russell Libby**	**Hannah Pingree**	**Lauralee Raymond**	**Vi Raymond**	**Elise Roux**	**Charlie Schmidt**	**Eric Stirling**	**Denyse Wilson**
PFCs in blood SERUM results shown in ng/mL or ~ parts per billion (ppb)	PFBA	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576
	PFPeA	< 0.544	< 0.544	< 0.721	< 0.544	< 0.544	< 0.544	< 0.544	< 0.544	< 0.576	< 0.544	< 0.544	< 0.544	< 0.544
	PFHxA	< 0.476	< 0.476	< 0.478	< 0.476	< 9.86	< 0.476	< 0.476	< 0.487	< 0.476	< 0.719	< 0.755	< 0.539	< 0.811
	PFHpA	< 0.556	< 0.556	< 0.556	< 0.556	< 0.556	< 0.556	< 0.556	< 0.556	< 0.556	< 0.556	< 0.556	< 0.556	< 0.556
	PFOA	**1.52**	**18.4**	**3.05**	**1.05**	**4.55**	**4.43**	**5.03**	**3.7**	**7.69**	**3.55**	**4.41**	**5.61**	**1.23**
	PFNA	**0.923**	**3.07**	**1.21**	< 0.468	**1.57**	**1.86**	**1.96**	**0.93**	**1.61**	**1.16**	**1.56**	**1.37**	**0.697**
	PFDA	< 0.504	**1.21**	< 0.504	< 0.504	**0.615**	**0.551**	**0.683**	< 0.504	**1.23**	**0.628**	< 0.504	**0.826**	< 0.504
	PFUnA	< 0.512	**1.39**	< 0.512	< 0.512	< 0.512	< 0.512	**1.19**	**0.595**	**0.744**	**0.69**	**0.633**	**0.932**	< 0.512
	PFDoA	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576	< 0.576
	PFBS	< 1.41	< 1.41	< 1.41	< 1.41	< 1.41	< 1.41	< 1.41	< 1.41	< 1.41	< 1.41	< 1.41	< 1.41	< 1.41
	PFHxS	**3.44**	**9.01**	**1.55**	< 1.29	**2.19**	< 1.29	< 1.29	**2.46**	< 1.29	< 1.29	**2.74**	**1.57**	< 1.29
	PFOS	**13.7**	**38**	**14.4**	**6.11**	**21.4**	**15.4**	**14.2**	**13.4**	**10.9**	**14.9**	**25**	**14.1**	**6.69**
	PFOSA	< 0.48	< 0.48	< 0.48	< 0.48	< 0.48	< 0.48	< 0.48	< 0.48	< 0.48	< 0.48	< 0.48	< 0.48	< 0.48
	Total PFCs	**22.3**	**73.3**	**25.0**	**10.8**	**32.8**	**25.4**	**26.0**	**23.6**	**25.0**	**23.8**	**36.9**	**26.7**	**12.0**
Chemical Class	**Chemical Tested**	**Regina Creeley**	**Dana Dow**	**Paulette Dingley**	**Amy Graham**	**Bettie Kettell**	**Russell Libby**	**Hannah Pingree**	**Lauralee Raymond**	**Vi Raymond**	**Elise Roux**	**Charlie Schmidt**	**Eric Stirling**	**Denyse Wilson**
BPA in blood SERUM	**BPA**	< 0.752	< 0.52	**3.75**	< 0.52	< 0.52	< 0.52	< 1.64	< 0.571	**4.49**	**6.64**	< 3.24	< 0.52	< 0.52
	BADGE-4OH	< 2.6	< 2.6	**6.35**	**2.81**	< 4.06	< 2.6	**6.69**	< 2.6	**119**	**59.7**	< 2.6	< 2.6	< 2.6
	results shown in ng/mL or ~ parts per billion (ppb)													
Chemical Class	**Chemical Tested**	**Regina Creeley**	**Dana Dow**	**Paulette Dingley**	**Amy Graham**	**Bettie Kettell**	**Russell Libby**	**Hannah Pingree**	**Lauralee Raymond**	**Vi Raymond**	**Elise Roux**	**Charlie Schmidt**	**Eric Stirling**	**Denyse Wilson**
PBDEs in blood SERUM results shown in pg/g on a lipid weight basis, which is approximately the same as parts per trillion (ppt)	BDE-7	< 27.4	< 22.1	< 27.2	< 43.6	< 25.7	< 25.7	< 24.6	< 31.3	< 23.4	< 34.1	< 27.7	< 19.1	< 31.9
	BDE-8/11	< 27.4	< 22.1	< 27.2	< 43.6	< 25.7	< 25.7	< 24.6	< 31.3	< 23.4	< 34.1	< 27.7	< 19.1	< 31.9
	BDE-10	< 27.4	< 22.1	< 27.2	< 43.6	< 25.7	< 25.7	< 24.6	< 31.3	< 23.4	< 34.1	< 27.7	< 19.1	< 31.9
	BDE-12/13	< 27.4	< 22.1	< 27.2	< 43.6	< 25.7	< 25.7	< 24.6	< 31.3	< 23.4	< 34.1	< 27.7	< 19.1	< 31.9
	BDE-15	**439**	**86.7**	*** 141**	**80.2**	**200**	**506**	**603**	**225**	**119**	**86.1**	**144**	**60.6**	**480**
	BDE-17/25	**154**	**72.1**	**36.7**	**58.1**	**506**	**212**	**58.7**	**217**	**69.4**	**138**	**202**	**84.4**	*** 58.2**
	BDE-28/33	**900**	**599**	**350**	**518**	**2200**	**1850**	**554**	**1350**	**608**	**694**	**1340**	**483**	**801**
	BDE-30	< 27.4	< 22.1	< 27.2	< 52.1	< 25.7	< 25.7	< 24.6	< 31.3	< 23.4	< 34.1	< 27.7	< 19.1	< 31.9
	BDE-32	< 27.4	< 22.1	< 27.2	< 43.6	< 25.7	< 25.7	< 24.6	< 31.3	< 23.4	< 34.1	< 27.7	< 19.1	< 31.9
	BDE-35	*** 102**	*** 101**	*** 67.1**	**46.3**	*** 69.4**	*** 101**	*** 119**	*** 47.9**	*** 100**	*** 41.4**	< 27.7	*** 68.5**	*** 66.1**
	BDE-37	< 27.4	< 22.1	< 27.2	< 43.6	< 25.7	**37.1**	*** 55.3**	< 31.3	< 23.4	< 34.1	< 27.7	< 19.1	< 31.9
	BDE-47	**8380**	**6490**	**2900**	**8390**	**33500**	**17200**	**5460**	**17500**	**7450**	**13000**	**18200**	**6550**	**6570**
	BDE-49	**136**	**57.5**	**48**	**83.9**	**275**	**140**	**97.6**	**117**	**98.3**	**112**	**156**	**70.5**	**82.6**
	BDE-51	< 27.4	*** 22.6**	< 27.2	< 43.6	**83.8**	**47.5**	< 24.6	*** 76.4**	< 23.4	< 34.1	*** 38**	< 19.1	< 31.9
	BDE-66	**122**	*** 73.4**	*** 55.2**	**128**	**506**	**240**	**87.4**	**215**	*** 101**	**169**	**207**	**93.3**	**93.5**
	BDE-71	*** 31.3**	< 22.1	< 27.2	< 43.6	**70.8**	**30.5**	< 24.6	< 31.3	< 23.4	< 34.1	< 27.7	< 19.1	< 31.9
	BDE-75	< 27.4	< 22.1	< 27.2	< 43.6	**85.1**	**32.9**	< 24.6	*** 38.5**	< 23.4	< 34.1	< 27.7	< 19.1	< 31.9
	BDE-77	< 27.4	< 22.1	< 27.2	< 43.6	< 25.7	< 25.7	< 24.6	< 31.3	< 23.4	< 34.1	< 27.7	< 19.1	< 31.9
	BDE-79	**39**	**23.6**	< 27.2	*** 55.5**	**140**	**103**	**26.6**	**78.1**	**32.8**	*** 38.8**	**48**	**25.5**	**36.3**
	BDE-85	**177**	**103**	**53.2**	**148**	**745**	**254**	**95.3**	**306**	**137**	**229**	**365**	**99.9**	**75.9**
	BDE-99	**2210**	**1210**	**987**	**1870**	**9280**	**3290**	**1400**	**3170**	**1490**	**3310**	**3680**	**1440**	**1130**
	BDE-100	**1550**	**1440**	**454**	**1260**	**6350**	**4780**	**866**	**7230**	**1650**	**2550**	**3380**	**1150**	**922**
	BDE-105	< 32	< 22.1	< 27.2	< 57.8	< 34.3	< 26	< 24.6	< 31.3	< 23.4	< 34.1	< 36	< 19.1	< 31.9
	BDE-116	< 45.4	< 22.1	< 28	< 85.4	< 48.8	< 36.9	< 25.3	< 42.3	*** 51.7**	< 34.3	< 50.5	**23.9**	< 33
	BDE-119/120	< 29	< 22.1	< 27.2	< 53.6	*** 54.8**	*** 48**	< 24.6	*** 56.2**	< 23.4	< 34.1	< 32.8	< 19.1	< 31.9
	BDE-126	< 27.4	< 22.1	< 27.2	< 43.6	< 25.7	< 25.7	< 24.6	< 31.3	< 23.4	< 34.1	< 27.7	< 19.1	< 31.9
	BDE-128	< 27.9	< 134	< 31.4	< 52.6	< 43.2	< 34.6	< 31.5	< 40.8	< 25.2	< 39.4	< 37.3	< 20.8	< 36.5
	BDE-138/166	**47.9**	*** 40.4**	< 27.2	*** 56.8**	**121**	**101**	< 24.6	**84.2**	**32.4**	**59**	**93.8**	**21.2**	< 31.9

	BDE-140	**56.7**	**28**	< 27.2	**49.4**	**77.8**	**68.3**	< 24.6	**113**	**31.1**	**49.6**	**72.6**	**50.5**	< 31.9
	BDE-153	**4840**	**3660**	**1390**	**4520**	**4060**	**5570**	**2780**	**15300**	**3030**	**2840**	**4300**	**9120**	**2150**
	BDE-154	**200**	**145**	**96.8**	**225**	**746**	**505**	**131**	**396**	**166**	**280**	**375**	**150**	**119**
	BDE-155	*** 45.9**	*** 31**	< 27.2	*** 70.5**	*** 78.6**	*** 59.5**	*** 38.4**	*** 57.8**	*** 34.6**	*** 57.6**	*** 62.3**	*** 42.2**	*** 37.3**
	BDE-181	< 28.2	< 26.8	< 27.2	< 43.6	< 25.7	< 25.7	< 24.6	< 31.3	< 23.4	< 34.1	< 27.7	< 19.1	< 31.9
	BDE-183	**297**	**352**	*** 147**	**623**	**531**	**445**	**159**	**417**	**210**	**271**	**1400**	**262**	**328**
	BDE-190	< 40.8	< 39.7	< 27.2	< 45.5	< 30	< 32.5	< 24.6	< 31.3	< 23.4	< 34.1	< 36.3	< 19.1	< 31.9
	BDE-203	**190**	*** 248**	**90.1**	*** 177**	**91.1**	*** 153**	**134**	*** 111**	*** 94.8**	*** 129**	**303**	**104**	*** 191**
	BDE-206	< 328	< 799	< 328	< 526	< 308	< 308	< 441	< 378	< 282	< 408	< 666	< 345	< 768
	BDE-207	< 328	< 799	< 328	< 526	< 308	< 308	< 441	< 378	< 282	< 408	< 666	< 345	< 768
	BDE-208	< 328	< 799	< 328	< 526	308	< 308	< 441	< 378	< 282	< 408	< 666	< 345	< 768
	BDE-209	< 4920	<10700	< 4910	< 3940	< 4620	< 3080	< 8820	< 5660	< 4220	< 6120	< 9990	< 3450	< 11500
	Total PBDEs	**20,088**	**14,751**	**6,918**	**18,579**	**59,869**	**35,955**	**12,782**	**47,343**	**15,518**	**24,229**	**34,594**	**19,971**	**13,410**
Chemical Class	**Chemical Tested**	**Regina Creeley**	**Dana Dow**	**Paulette Dingley**	**Amy Graham**	**Bettie Kettell**	**Russell Libby**	**Hannah Pingree**	**Lauralee Raymond**	**Vi Raymond**	**Elise Roux**	**Charlie Schmidt**	**Eric Stirling**	**Denyse Wilson**
Metals														
Pb in BLOOD in ug/dL	**Lead**	**1.10**	**1.06**	**1.46**	**0.549**	**0.716**	**1.07**	**1.20**	**0.719**	**0.884**	**0.507**	**3.26**	**1.14**	no data
MeHg in HAIR in ng/g or ppb	**Methylmercury**	*** 156**	**497**	**396**	**437**	**333**	*** 215**	**1140**	**759**	**291**	**778**	**** 186**	**1180**	**257**
As in URINE 1st # is in ug/L 2nd is ug/gCr-L (creatinine corrected) – both are ~ ppb	**Arsenic** (Total)	**843** **869**	**98.1** **65.8**	**3.51** **13.5**	**11.2** **15.5**	**21.2** **51.7**	**16.1** **10.9**	**30.7** **26.7**	**59.6** **39.2**	**11.1** **12.8**	**8.18** **4.24**	**40.2** **37.6**	**58.6** **71.5**	**56.7** **37.1**
	Arsenic (Inorganic)	**0.238** **0.245**	**0.496** **0.333**	**0.162** **0.623**	**0.575** **0.799**	**0.173** **0.422**	**1.11** **0.75**	**1.13** **0.98**	**1.07** **0.70**	**0.753** **0.871**	**0.48** **0.25**	**0.508** **0.476**	**0.299** **0.365**	**1.16** **0.76**
	Arsenic(III)	**0.210** **0.216**	**0.420** **0.282**	**0.160** **0.623**	**0.450** **0.625**	**0.150** **0.366**	**0.740** **0.500**	**0.730** **0.635**	**0.83** **0.55**	**0.620** **0.717**	**0.44** **0.52**	**0.140** **0.131**	**0.200** **0.244**	**0.83** **0.54**
Chemical Class	**Chemical Tested**	**Regina Creeley**	**Dana Dow**	**Paulette Dingley**	**Amy Graham**	**Bettie Kettell**	**Russell Libby**	**Hannah Pingree**	**Lauralee Raymond**	**Vi Raymond**	**Elise Roux**	**Charlie Schmidt**	**Eric Stirling**	**Denyse Wilson**
Protein in URINE	**Creatinine** (mg/dL)	97	149	26	72	41	148	115	152	86.5	193	107	82	153
		These normal protein levels are used to adjust the measured chemicals in urine to account for dilution due to varying amounts of fluid intake per person												

NOTES:

Boldface type in a colored box indicates the chemical was detected

< the chemical was not found above the limit of detection indicated; the chemical might be present below this limit

*** the chemical was detected but the quantification criteria were not met, therefore the result represents the estimated maximum possible concentration**

**** estimate**

To calculate the sum total for Phthalates, PFCs and PBDEs, any value reported as non-detected (< #) was assigned a value of ½ the detection limit; For the same purpose, any PBDE value that was flagged (*) as not meeting quantification criteria was assigned a value of ½ the reported value.

Table 3 -- Summary of Results of Maine Body Burden Study

RESULTS FROM 13 MAINE PARTICIPANTS				**RESULTS FROM OTHER STUDIES**			
Phthalates	units = ug/gCr-L (creatinine corrected)			from federal CDC 3rd National Exposure Report [91] n = 2,536 for MEP; n = 2,772 for all other phthalates[1]			
	Minimum	**Maximum**	**Median – or 50th %tile**	**Median – or 50th %tile**	**75th %tile**	**90th %tile**	**95th %tile**
MMP	< 1.16	46.5	8.19	1.33	2.62	5.00	7.97
MEP	10.6	205	54.7	147	388	975	1860
MBP	21.8	92.2	50.5	26.0	51.6	98.6	149
MBzP	6.29	68.8	29.1	13.5	26.6	55.1	90.4
MEHP	1.62	66.9	10.6	3.89	7.94	18.2	32.8
MEOHP	4.13	132	15.9	11.2	21.3	45.1	87.5
MEHHP	8.39	324	40.7	16.6	32.3	70.8	147
Sum TOTAL	105	793	223	219	530	1,268	2,375
PBDEs	units = pg/g on a lipid weight basis			from McDonald 2005 [92] n = 62 women from CA & IN		n = 10	n = 11

	Minimum	Maximum	Median – or 50th %tile	Median – or 50th % tile	95th %tile	Washington Median [93]	California Median [94]
BDE-15	60.6	603	144			275	-
BDE-17/25	36.7	506	84.4			61.7	-
BDE-28/33	350	2200	694			1128	-
BDE-35	< 27.7	119	* 68.5			< 5.64	-
BDE-37	< 19.1	* 55.3	< 27.7			10.0	-
BDE-47	2900	33500	8380	included below	incl. below	19950	14100
BDE-49	48	275	98.3			178	-
BDE-51	< 19.1	83.8	< 31.9			~ 12	-
BDE-66	* 55.2	506	122			170	-
BDE-71	< 19.1	70.8	< 31.3			< 17.4	-
BDE-75	< 19.1	85.1	< 27.7			25.0	-
BDE-79	< 27.2	140	* 38.8			* 61.1	-
BDE-85	53.2	745	148			346	-
BDE-99	987	9280	1870	included below	incl. below	4255	3100
BDE-100	454	7230	1550	included below	incl. below	3115	2100
BDE-116	< 22.1	* 51.7	< 36.9			< 22.4	-
BDE-119/120	< 19.1	* 56.2	< 31.9			22.8	-
BDE-138/166	21.2	121	47.9			73.8	-
BDE-140	< 24.6	77.8	49.6			~ 44	-
BDE-153	1390	15300	4060	included below	incl. below	2725	3400
BDE-154	96.8	746	200	included below	incl. below	368	280
BDE-155	< 27.2	* 78.6	* 45.9			43.4	-
BDE-183	* 147	1400	328			218	-
BDE-203	90.1	303	134			152	-
Sum TOTAL	6,918	59,869	19,971	40,700	305,000	47,500	22,980

PFCs	units = ng/mL in blood serum (wet weight)			n = 476 women & 442 men	n = 10	n = 12
	Minimum	**Maximum**	**Median**	**National Mean (estimated) [95]**	**Washington Median [96]**	**California Median [97]**
PFOA	1.05	18.4	4.41	3.97 to 6.98	3.6	5.3
PFNA	< 0.468	3.07	1.56	0.51 to 1.10	-	1.67
PFDA	< 0.504	1.23	0.551	-	-	0.43
PFUnA	< 0.512	1.39	0.595	-	-	0.40
PFHxS	< 1.29	9.01	1.57	4.33	-	2.44
PFOS	6.11	38	14.2	23.4 to 40.2	21.3	25.6
Sum TOTAL	10.8	73.3	25.0	32.2 – 52.6	24.9	35.8

BPA	units = ng/mL in blood serum (wet weight)			n = 7 for BPA n = 30 for BADGE	n = 11	n = 14 women ♀ n = 11 men ♂
	Minimum	**Maximum**	**Range Detected**	**Geometric Mean - EWG [98]**	**California Median [99]**	**Mean** - Takeuchi and Tsutsumi [100]
BPA	< 0.52	6.64	3.75 – 6.64	1.08	0.46	0.64 ♀ to 1.49 ♂
BADGE-4OH	< 2.6	119	2.81 - 119	9.33	12.8	-

Metals							
Lead	**Minimum**	**Maximum**	**Median - 50%**	**Median – or 50th%tile**	**75th%tile**	**90th%tile**	**95th%tile**
	0.51	3.26	1.08	1.40	2.20	3.40	4.40
Units = micrograms of lead per deciliter of blood (ug/dL)				n = 8945; from federal CDC 3rd National Exposure Report [101]			

Mercury **Methylmercury**	**Minimum**	**Maximum**	**Median - 50%**	**U.S. Women of Childbearing Age**		**U.S. Women of Childbearing Age**	
				Mean	**95th %tile**	**Median**	**90th %tile**
Top row: n = 13 **Mainers**	156 257	1180 1140	396 759	360	2400	200	1400
Bottom row: n = 5 Maine women of childbearing age							
Units = nanograms methylmercury per gram of hair (ng/g) or ppb				Smith (1997) *cited in* National Research Council [102]		n = 702 (CDC, 2001) [103]	
Reference Dose, level above which fetal brain development is at risk = 1000 ppb methylmercury in hair							

Arsenic	**Minimum**	**Maximum**	**Median - 50%**	**Pellizari & Clayton (2006) [104]**	**Washington Median [105]**	
				Median – 50%		
Total As	3.51	843	30.7	10.23	11	

Inorganic As	0.16	1.16	0.51	-	-	
Arsenic(III)	0.14	0.83	0.44	-	-	
Units = micrograms of arsenic per liter of urine (ug/L) or ppb				n = 102	n = 10	

NOTES: Minimum and Maximum are the lowest and highest values reported among the 13 Maine participants. The median is the reported value that falls in the middle of the range of all reported values. The median is the same as the 50th percentile (50th %tile), which means that half or 50% of the reported values are less than this number and half are greater than it; The 75th percentile (75th %tile) is the number that is greater than three-quarters or 75% of all the reported values (and is less than one-quarter or 25% of all the reported values); The 90th percentile (90th %tile) is the number that's greater than nine-tenths or 90% of all the reported values (and less than 10% of all reported values); The 95th percentile (95th %tile) is the number that is greater than 95% of all the reported values (and less than 5 % of all reported values); < means that the chemical was not found above the limit of detection indicated (but the chemical might be present below this level); * means that the chemical was detected but the quantification criteria were not met, therefore the result represents the estimated maximum possible concentration for that sample; n = the number of individuals sampled. For PFCs, the sum total is the median value of the minimum, maximum, and total among all Maine participants. For the comparative results, the sum total is the sum of the reported values. The values reported for the PFC national mean are the least squares means estimates of serum concentrations for non-Hispanic white females (lower value) and non-Hispanic white males (higher value) from pooled samples obtained through the 2001-2002 NHANES. **The lead national mean is b**ased on total results for the U.S. population aged one and older from 2001-2002 NHANES. See note 1, Table 16, p.38.