

TESTIMONY OF THE MAINE MEDICAL ASSOCIATION

IN SUPPORT OF

L.D. 1568, AN ACT TO CLARIFY MAINE'S PHASEOUT OF POLYBROMINATED DIPHENYL ETHERS

Joint Standing Committee on Natural Resources.
Room 214, Cross State Office Building
Friday, January 22, 2010, 9:00 a.m.

Good morning Senator Goodall, Representative Duchesne and Members of the Joint Standing Committee on Natural Resources. My name is Paul Averill Liebow, M.D., F.A.C.E.P. I have worked over thirty years in a high volume emergency room and regional trauma center. Today I speak officially on behalf of the Maine Medical Association (MMA), in support of LD 1568, *An Act to Clarify Maine's Phaseout of Polybrominated Diphenyl Ethers*.

The MMA is a professional association representing more than 3000 physicians, residents and medical students in Maine whose mission is to support Maine physicians, advance the quality of medicine in Maine, and promote the health of all Maine citizens.

We believe, based on the best available science to date, that it will leach out of these pallets in large amounts and further threaten human health. It is toxic at levels much lower than previously thought, specifically to the rapidly developing brains of embryos, babies, and children. We bio-concentrate it our bodies as we age. Animal evidence convincingly suggests we are all at risk for abnormal behavior, hyperactivity, and learning disorders persisting into adulthood. Adults, and now even children, are at increased risk for diabetes, heart disease, obesity, hypothyroidism and multiple types of cancer.

PBDEs are quite well absorbed by toddlers who breathe faster than adults and have far larger lung surface areas compared to their body weight. They stir up huge amounts of dust as they roll and flail around in the ubiquitous house and yard dust they play in. Humans absorb them from foods, particularly of animal origin, even human breast milk. Mothers, fetuses, and infants are also "top predators". DECA is present in huge and increasingly accelerating amounts in sewage sludge from waste water treatment plants, landfills, and even in lake sediments. Deca is metabolized into much more toxic compounds as the bromines are stripped off by the enzymes in cells, and by exposure to full outdoor sunlight.

One process particularly concerning is rinsing toxic pesticides off of fresh produce, piled unwrapped, one palate above another, in tall stacks. The cure may be worse than the disease!! We have to use "The Precautionary Principle", "primum non nocere"- "Above all do no Harm", as stated by the ancient Greeks. We must all eliminate known dangers while we use our magnificent brains and computers to find cost effective substitutes.

DECA levels are 10-100 times greater in Americans than Europeans, especially in workers exposed to them even in dry conditions. Even our computers, right here in this room, are leaking this ugly stuff as I speak! They are also much higher in bird's eggs, top natural predators such as the red fox, and even in trees. They are well absorbed and bio-accumulated, even if not particularly bio-magnified, by living things. Levels in the many studies of various living organisms and environments are doubling every 4-10 years in the US. We know it leaches out of broken, photo-degraded, or discarded pallets in our land fills, factories, shipping yards, and by our roadsides. It is rare in the blood of people in emerging and pre-industrial nations.

In experimental animals, PDBEs delay brain development and causes adult behavioral and learning disorders. But nature is so perverse that a guinea pig may be 5,000 times less--or more--sensitive than a human fetus. Often chemicals have worse effects at lower levels than higher levels, because there are so many cellular function receptors controlling and balancing every metabolic pathway, as well as f positive and negative feedback loops up and down the chains of command. These chemical conversations also jump over one or several levels, "reporting to each other" en masse. They may have opposite actions to ensure overall cell metabolic balance. The problem is that they become saturated at concentration levels as much as one hundred times lower than found in the very limited studies done for the EPA. That is because the Toxic Substances Control Act, known informally as "Tosca", was essentially written by industry. Evidence was "admissablr" only for acute poisonings. No comment was allowed on neuro-developmental, metabolic, or tumorigenic effects that often occur years or even decades after exposure. "Deca" PDBE quickly degrades into house dust, sewage sludge used on crops, and into the air around us. Dust is disproportionately incorporated by the rapidly breathing, relatively large surfaced lungs of toddling and crawling kids. Much of our exposure is indoors, and worse in inner cities and for minority groups.

You passed LD 2048 because you know that our fetuses and our kids are far more vulnerable to very subtle and focused, but crippling, learning disorders that can cause a lifetime of family pain. Some of the better known of these are ADHD, Oppositional Defiant Disorder, Asperger's Syndrome, and Autism. Other effects such as "endocrine disruption" and immunological effects are rarely covered. The medical, family, emotional, and societal burdens of these are in the many billions of dollars.

Last year Maine rightly joined the EU, and some progressive states, in banning "penta" and "octa" PBDEs, ignoring deca's primary role as a chief source of the much more toxic "lower" polybrominated offenders. The initially "safe" deca PBDE [10 bromines] has been proven to change in the environment into far more dangerous octa-[8 bromines] and penta-[5 bromines], in multiple ways. We must now ban deca!!

The chemistry involved is remarkably simple, visualizing atoms a Tinker Toys. Atoms are the little round wheels with holes in them. The chemical “bonds” holding them together are the tiny dowels. Six carbons arranged in a circle can form a benzene or phenyl ring depending on how many hydrogens are attached- “a flaming snake eating its’ own tail” as Kekule dreamed one night. Join two of these rings together with two parallel sticks and a round piece of oxygen and you have a di[two]-benzyl ester. Bromine atoms can be stuck into the 6 round carbons in the ring in many hundreds of different ways to make to make Poly Brominated Di- phenyl Esters-- PBDEs. Use chlorine and you get dangerous, now banned, PCBs. Fiddle a little with the basic ring structures and you get DDTs, and Dioxins---close cousins initially felt to be good, until proven otherwise.

First of all, industry usually remains silent about any known negative effects of their powerful products on people or experimental animals, particularly if the research is privately funded by corporations. Even testing done on humans is very short term, on healthy adult males, and often privately “funded”, so unflattering studies can be quickly called “trade secrets”, then ignored, misfiled, and ultimately buried. This is because Industry is not required to disclose all test results, or use peer reviewed, appropriately designed, and statistically significant studies that would demonstrate effects.

Thank you very much! I would be happy to answer any questions.

If I don’t know the answer I will find it for you, just as I did in the Emergency Room for thirty years came when people with rare or new diseases would arrive, fresh off a plane from Europe, with no records in on a Saturday night. Unfortunately we are just beginning to understand the intricacies of the molecular pathways s at which chemicals can disrupt our neuro-endocrine systems. If you like, I have a DVD with me that is the best visual and factual summary of that complex and beautiful system I have ever seen. I’d love to share it with you in a work session, or later.

I also have textbooks beautifully illustrating these concepts on line, and free access to them by the editors, as an “instructor”. Anyone an easily take it in visually and long remember it. I have also included a statement on endocrine disruptors in general, of which DECA is one of the worst remaining. It is not yet banned outright by World treaties, but is in the process of evaluation by numerous organizations.