

New York Times

August 25, 2012

Big Chem, Big Harm?

By [NICHOLAS D. KRISTOF](#)

NEW research is demonstrating that some common chemicals all around us may be even more harmful than previously thought. It seems that they may damage us in ways that are transmitted generation after generation, imperiling not only us but also our descendants.

Yet following the script of Big Tobacco a generation ago, Big Chem has, so far, blocked any serious regulation of these endocrine disruptors, so called because they [play havoc with hormones in the body's endocrine system](#).

One of the most common and alarming is bisphenol-A, [better known as BPA](#). The failure to regulate it means that it is unavoidable. BPA is found in everything from plastics to canned food to A.T.M. receipts. More than [90 percent of Americans have it in their urine](#).

Even before the latest research showing multigeneration effects, studies had linked BPA to breast cancer and diabetes, as well as to hyperactivity, aggression and depression in children.

Maybe it seems surprising to read a newspaper column about chemical safety because this isn't an issue in the presidential campaign or even firmly on the national agenda. It's not the kind of thing that we in the news media cover much.

Yet the evidence is growing that these are significant threats of a kind that Washington continually fails to protect Americans from. The challenge is that they involve complex science and considerable uncertainty, and the chemical

companies — like the tobacco companies before them — create financial incentives to encourage politicians to sit on the fence. So nothing happens.

Yet although industry has, so far, been able to block broad national curbs on BPA, new findings on transgenerational effects may finally put a dent in Big Chem's lobbying efforts.

One good sign: In late July, a Senate committee, for the first, time [passed the Safe Chemicals Act](#), landmark legislation sponsored by Senator Frank Lautenberg, a New Jersey Democrat, that would begin to regulate the safety of chemicals.

Evidence of transgenerational effects of endocrine disruptors has been growing for a half-dozen years, but it mostly involved higher doses than humans would typically encounter.

Now *Endocrinology*, a peer-reviewed journal, [has published a study measuring the impact of low doses of BPA](#). The study is devastating for the chemical industry.

Pregnant mice were exposed to BPA at dosages analogous to those humans typically receive. The offspring were less sociable than control mice (using metrics often used to assess an aspect of autism in humans), and various effects were also evident for the next three generations of mice.

The BPA seemed to interfere with the way the animals processed hormones like oxytocin and vasopressin, which affect trust and warm feelings. And while mice are not humans, research on mouse behavior is a standard way to evaluate new drugs or to measure the impact of chemicals.

“It’s scary,” said [Jennifer T. Wolstenholme](#), a postdoctoral fellow at the University of Virginia and the lead author of the report. She said that the researchers found behaviors in BPA-exposed mice and their descendants that may parallel autism spectrum disorder or attention deficit disorder in humans.

Emilie Rissman, a co-author who is professor of biochemistry and molecular genetics at University of Virginia Medical School, noted that BPA doesn’t cause mutations in DNA. Rather, the impact is “[epigenetic](#)” — one of the hot concepts in biology these days — meaning that changes are transmitted not in DNA but by affecting the way genes are turned on and off.

In effect, this is a bit like evolution through transmission of acquired characteristics — the theory of Jean-Baptiste Lamarck, the 19th-century scientist whom high school science classes make fun of as a foil to Charles Darwin. In epigenetics, Lamarck lives.

“These results at low doses add profoundly to concerns about endocrine disruptors,” said John Peterson Myers, chief scientist at Environmental Health Sciences. “It’s going to be harder than just eliminating exposure to one generation.”

[The National Institutes of Health](#) is concerned enough that it expects to make transgenerational impacts of endocrine disruptors a priority for research funding, according to a spokeswoman, Robin Macker.

Like a lot of Americans, I used to be skeptical of risks from chemicals like endocrine disruptors that are all around us. What could be safer than canned food? I figured that opposition came from tree-hugging Luddites prone to

conspiracy theories.

Yet, a few years ago, I began to read the peer-reviewed journal articles, and it became obvious that the opposition to endocrine disruptors is led by toxicologists, endocrinologists, urologists and pediatricians. These are serious scientists, yet they don't often have the ear of politicians or journalists.

I'm hoping these new studies can help vault the issue onto the national stage. Threats to us need to be addressed, even if they come not from Iranian nuclear weapons, but from things as banal as canned soup and A.T.M. receipts.