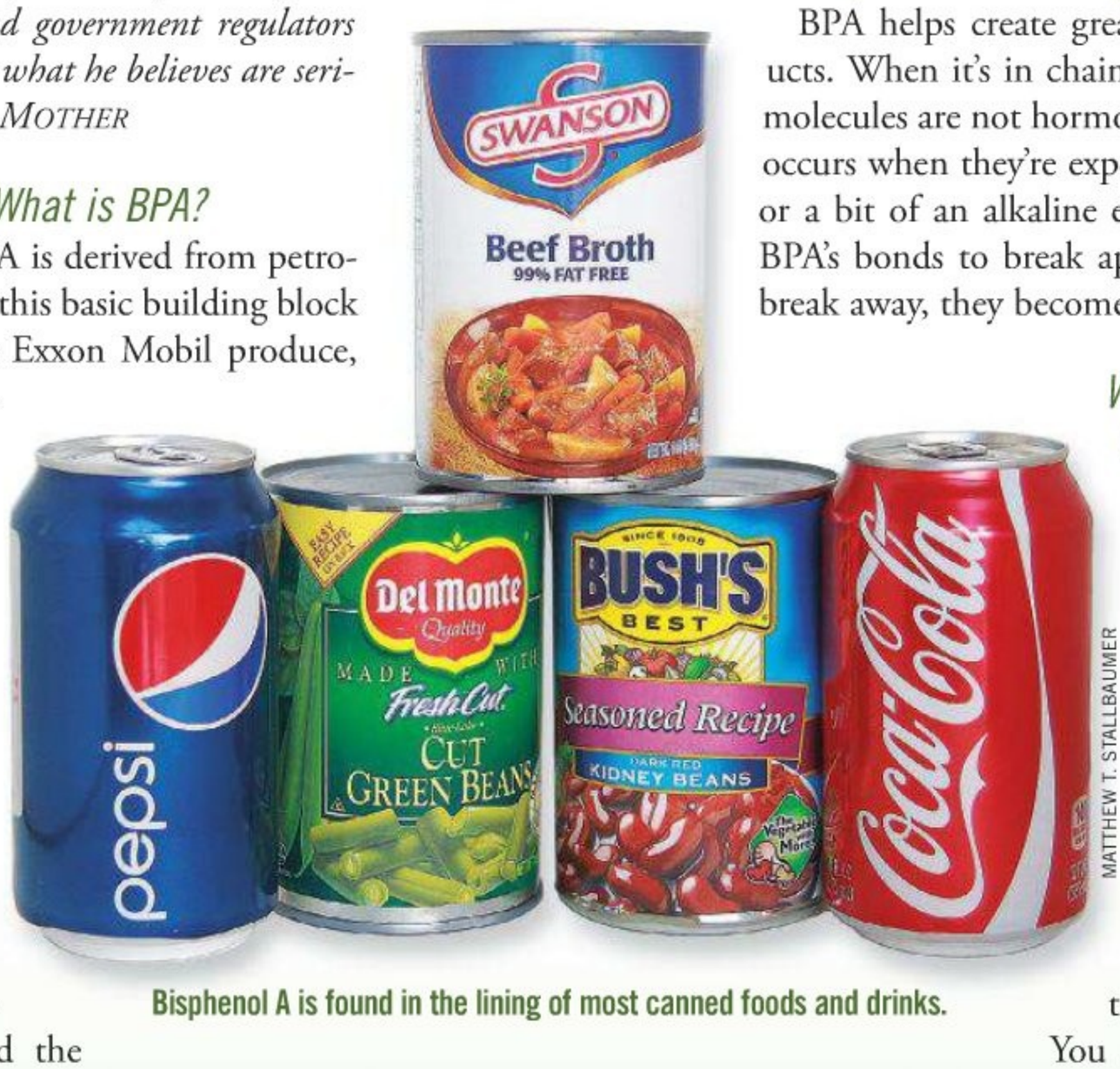
Is There Poison in Our Food?
Concerns About BPA

The synthetic chemical bisphenol A (BPA)—often found in plastic containers and the linings of metal cans—is a potent, estrogen-mimicking compound that can leach from containers into food and water.

In this interview, published by Yale Environment 360, *an online magazine from the Yale School of Forestry and Environmental Studies, BPA researcher Frederick vom Saal of the University of Missouri's Endocrine Disruptor Group harshly criticizes U.S. corporations and government regulators for covering up or ignoring what he believes are serious health risks of BPA.* —MOTHER

Yale Environment 360: What is BPA?

Frederick vom Saal: BPA is derived from petroleum. They take benzene, this basic building block that corporations such as Exxon Mobil produce, and they sell it to corporations such as The Dow Chemical Company. They turn this, through a man-made chemical reaction, into a chemical called bisphenol A. BPA is the building block for polycarbonate plastic—the sort of hard, clear plastic often used for water bottles. It's also present in the epoxy resins used to line aluminum soda cans and the steel cans that contain your soups, beans and vegetables. BPA was approved by the Environmental Protection Agency for use as a food contact material in 1963, but had been used in other products since about 1910.



MATTHEW T. STALLBAUMER

Bisphenol A is found in the lining of most canned foods and drinks.

What's so bad about BPA?

Since the late 1990s, I believe research has shown that this chemical contributes to many of the epidemics in the world—cancer, obesity, diabetes, heart disease, and immune dysfunctions including asthma and allergies. It causes early puberty and damage to every part of the reproductive system, including uterine fibroids and ovarian and breast cancer. In male animals, BPA causes low sperm counts, prostate cancer, and abnormalities of the urethra as they age. From a neurobiological point of view, BPA has been linked to attention deficit hyperactivity disorder, some learning disabilities and social behavior disruption. It causes the brain of a young animal to look like a senile, aged adult, and it's a cause of impaired memory.

But why is it in so many products?

BPA helps create great-looking, versatile products. When it's in chain-linked polymer form, its molecules are not hormonally active. The problem occurs when they're exposed to high temperatures or a bit of an alkaline environment, which cause BPA's bonds to break apart. When the molecules break away, they become a hormone.

When did you identify BPA as something of concern?

In 1996, we were studying estrogens and their effects on mouse fetuses, because we knew that the human body's natural hormone, estradiol, is a carcinogen. Your risk of breast cancer, for instance, is best described by your lifetime exposure to estradiol. You need estradiol to reproduce. But humans didn't used to live as long as they do today, so now you're exposed to it longer, and it's causing cancers in your body. All estrogens—synthetic or biological—contribute to your overall estrogen load, because your body doesn't know the difference. Bisphenol A is on a list of chemicals that have been clearly shown to mimic estradiol.

We started off using a dose 25,000 times lower than anybody had ever studied, and we found abnormal development of the prostate and the male mouse reproductive system.

We published our findings, and the chemical industry came after us. All the manufacturers called us up, threatened us. Dow sent someone down who said, "Can we arrive at a mutually beneficial outcome, where you don't publish this paper?" But the paper had already been accepted.

No one had really done a detailed examination of exposure during fetal and neonatal stages and childhood, when development's occurring, and when estrogens really damage the programming of how your body's going to function for the rest of life. This is what happened to the babies whose mothers took diethylstilbestrol (DES), another estrogen-mimicking chemical, in the 1940s and '50s. At age 20, they showed cancers nobody had ever seen before. Their uteruses were shaped like an hourglass; the fallopian tubes were all damaged. And at age 50, they had more than a threefold increase in breast cancer. It took 50 years to see that. This is the signature of endocrine disruption. DES is, both structurally and functionally, similar to BPA. There are lots of other, much more sophisticated, 21st-century molecular assays that show BPA is actually as potent, and in some cases more potent, than DES.

The rationalization for BPA was, "Even if it is an estrogen, it's so weak you don't need to worry about it." But using human breast cancer cells, we studied estrogen chemicals for their potency, and BPA lit up like a Christmas tree. We said, "Holy mackerel! What is it that would ever make anybody think this is weak?"

> We published our findings, and the chemical industry came after us.

But now it's 14 years and how many studies later?

Now there are more than 1,000 studies, from both independent and industry-funded sources. Of the industry-funded studies, 100 percent conclude that BPA is perfectly safe. When I reviewed the entire body of literature seven years ago, more than 90 percent of non-industry studies had reported that BPA harms our endocrine system, and the ratio of studies "showing harm" to "not showing harm" has increased dramatically in recent years.

The regulatory agencies—all of which are heavily dominated by chemical industry interests—just didn't know what to do with this research. There are 100,000 chemicals in commerce, but the U.S. government only has regulatory authority over a small number of them because, in the 1970s, it grandfathered in 62,000 chemicals, including BPA, through the Toxic Substances Control Act. This means these "generally recognized as safe" chemicals are completely outside of the regulatory system, so there's been no regulation of BPA.

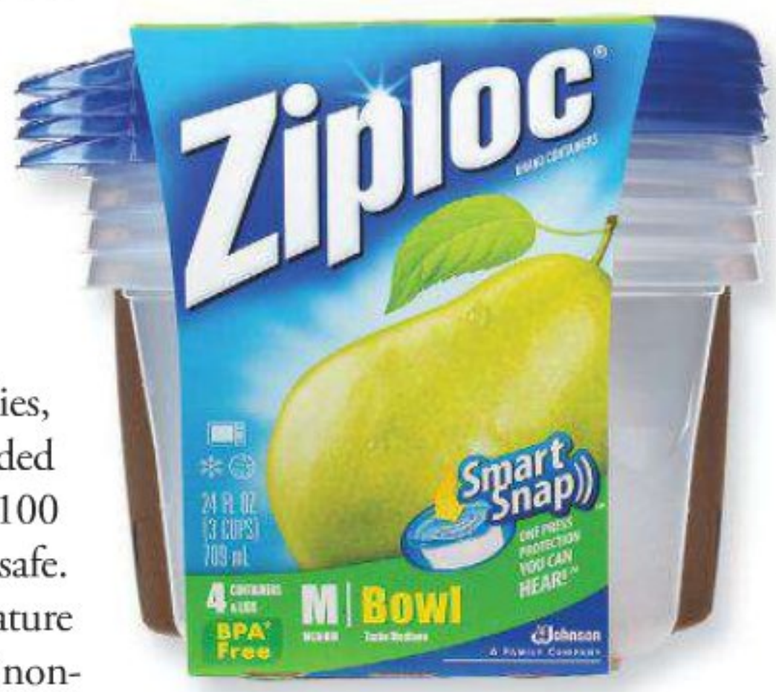
But in January 2010, the Food and Drug Administration did something remarkable—it reversed its position that BPA is safe, and said it agreed that there was reason for concern that BPA causes prostate cancer, early puberty, a variety of things. This was a huge breakthrough—a government agency conceded that this is a chemical to be avoided. But then the FDA said that because BPA is a grandfathered chemical, they don't have the authority to ban or regulate it. They don't even have the authority to go to the chemical industry and say, "What products contain BPA?" They can't even find that out.

What could the FDA do?

The FDA said it was working with Congress to try to get laws changed. But changing the rules that Congress operates by—even if we had a compliant industry—would take five to 10 years. And this is one extremely non-compliant industry. BPA is almost a $10 billion-a-year product. Companies don't give up when that kind of money is at stake. And 100 percent of chemical industry-funded studies say this chemical is completely safe. Every chemical, every drug—follow the money and it will tell you the outcome of the research. Independent scientists find harm. But none of the industry and corporate labs have any standing whatsoever in the scientific community. Their research is pathetic because it uses techniques that are 40 or 50 years old.

So what faith should we have in the system?

None. A group of us from The Endocrine Society told the head of the EPA Office of Chemical Safety, "You don't know what you're doing. And unless you bring in endocrinologists who know how to study hormonally active chemicals, you're going nowhere." He didn't want to hear that. He's going around telling people they have this wonderful program. It's a lie; it's a fraud. It's absolutely intolerable that this kind of thing is going on.



Food container manufacturers such as Ziploc have responded to BPA concerns by removing it.

Some people must say, "You're just being an alarmist." What do you say to them?

Look at the data. There is now a whole series of human studies finding exactly the same relationship between the presence of BPA and the kind of harm shown in animals. Right now, it's the most studied chemical in the world. The National Institutes of Health has $30 million-worth of ongoing studies of this chemical. Do you think federal officials in Europe, the United States, Canada and Japan would all have this as the highest-priority chemical to study if there were only a few alarmists saying it was a problem?

—Elizabeth Kolbert, for Yale Environment 360

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