

The Real Story Behind Bisphenol A

By [David Case](#)

Surely you've heard about BPA by now. It's everywhere. Some 7 billion pounds of it were produced in 2007. It's in adhesives, dental fillings, and the linings of food and drink cans. It's a building block for polycarbonate, a near-shatterproof plastic used in cell phones, computers, eyeglasses, drinking bottles, medical devices, and CDs and DVDs. It's also in infant-formula cans and many clear plastic baby bottles. Studies have shown that it can leach into food and drink, especially when containers are heated or damaged. More than 90% of Americans have some in their bodies.

BPA is dangerous to human health. Or it is not. That's according to two government reports in recent months that came to opposite conclusions. The National Toxicology Program (NTP), which is part of the National Institutes of Health, reported in September 2008 "some concern" that BPA harms the human brain and reproductive system, especially in babies and fetuses. Yet less than a month earlier, the U.S. Food and Drug Administration declared that "at current levels of exposure" BPA is safe. Even after the FDA's own science board questioned the rigor of this analysis in late October, the agency didn't change its position.

Let's take a moment to ponder this absurd dichotomy. How could our nation's health watchdogs reach such divergent conclusions? Are we being unnecessarily scared by the NTP? Or could the FDA be sugarcoating things? What exactly is going on?

We went on a journey to find out. What we learned was shocking. To some degree, the BPA controversy is a story about a scientific dispute. But even more, it's about a battle to protect a multibillion-dollar market from regulation. In the United States, industrial chemicals are presumed safe until proven otherwise. As a result, the vast majority of the 80,000 chemicals registered to be used in products have never undergone a government safety review. Companies are left largely to police themselves.

Just five companies make BPA in the United States: Bayer, Dow, Hexion Specialty Chemicals, SABIC Innovative Plastics (formerly GE Plastics), and Sunoco. Together, they bring in more than \$6 billion a year from the compound. Each of them referred questions about BPA's safety to their Arlington, Virginia -- based trade association, the American Chemistry Council. "Our view would be, Well, no, there isn't anything to be concerned about," says Steve Hentges, the council's point person on BPA. "In a sense, you could have 'some concern' about just about anything."

Perhaps. But consider this: Of the more than 100 independently funded experiments on BPA, about 90% have found evidence of adverse health effects at levels similar to human exposure. On the other hand, every single industry-funded study ever conducted -- 14 in all -- has found no such effects.



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It is the industry-funded studies that have held sway among regulators. This is thanks largely to a small group of "product defense" consultants -- also funded by the chemical industry -- who have worked to sow doubt about negative effects of BPA by using a playbook that borrows from the wars over tobacco, asbestos, and other public-health controversies. A secretive Beltway public-relations consultant. A government contractor funded by the industries it was hired to assess. A Harvard research center with a history of conflicts of interest. These have been the key actors in how the science of BPA has been interpreted by the government. And it is their work, as much as the science itself, that has stymied regulation.

Raging Hormones

There are a few facts about BPA that everyone agrees on. One is that people are constantly exposed to the compound. Babies -- particularly those fed canned formula via polycarbonate bottles -- are at the highest risk from BPA; their undeveloped digestive systems metabolize it poorly. It's also undisputed that BPA mimics the female sex hormone estrogen, and that some synthetic estrogens can cause infertility and cancer.

What *is* in dispute is whether the tiny doses of BPA we're exposed to are enough to trigger such hormonal effects. For decades, the assumption was that they didn't. This was based on traditional toxicology, which holds that "the dose makes the poison." In other words, a threshold exists below which a compound is harmless. This makes intuitive sense. Consider alcohol: The more you drink, the drunker you get; but if you drink just a little -- below the threshold -- you may not feel anything. In the 1970s and 1980s, government scientists used standard toxicology to test BPA. They concluded that, at doses far higher than those found in humans, it may cause organ failure, leukemia, and severe weight loss. Yet as BPA products have made their way into every part of our lives, biologists have discovered evidence that very low doses may have a completely different set of effects -- on the endocrine system, which influences human development, metabolism, and behavior.

At first, these discoveries emerged by accident, when test tubes and petri dishes in laboratories were switched from glass to plastic. A group of Stanford researchers in 1993 found that breast-cancer cells it was studying reacted with a mysterious estrogen, which it traced to polycarbonate lab flasks. A few years later, Patricia Hunt, a geneticist at Case Western Reserve University,

discovered abnormalities in the chromosomes of her lab mice. She eventually concluded that damaged polycarbonate cages were at fault.

In 1995, a developmental biologist named Frederick vom Saal stepped into the picture. A tenured professor at the University of Missouri -- Columbia, with funding from the National Institutes of Health, vom Saal tested BPA to see how it interacted with samples of human blood. He found that, because it bypassed mechanisms that control the dose of hormones in the body, its estrogenic effects were magnified. "We said, 'Wow, that's bad. This stuff should be considered a lot more potent than it is,' " vom Saal recalls. He then fed small amounts of BPA -- 25,000 times lower than the EPA's toxic threshold -- to pregnant mice. He discovered that the compound enlarged the prostates of the male offspring, signaling potentially serious developmental disorders. His study was published in 1997 in the peer-reviewed journal *Environmental Health Perspectives*.

In the years since, more than 100 experiments have shown BPA to cause permanent harm in lab animals at the low exposure levels found in humans. In 2000, Chandra Gupta, a biologist at the University of Pittsburgh, replicated vom Saal's prostate study. Hunt, the geneticist, replicated under controlled conditions her findings of damage to mouse chromosomes. Others have found impacts on sperm production, testes development, and mammary-gland tissue, as well as behavioral disorders including hyperactivity, aggressiveness, and impaired learning. Most recently, scientists found a correlation (though it's impossible to determine causation) between BPA levels and heart disease and diabetes in humans.

If these low-dose findings were counterintuitive to toxicologists, they made perfect sense to developmental biologists. After all, BPA is a synthetic *hormone*. Any physician knows that at small doses, most hormones are extremely powerful in stimulating their target organs, while at higher doses -- *above* a certain threshold -- they can paralyze these same organs. (Testosterone powers the male sex drive, for instance, but at high doses causes impotence.)

What's more, BPA is hardly the only chemical to be identified as an "endocrine disrupter." To date, more than 50 such compounds have been identified. Dioxins, PCBs, and DDT are some of the more infamous examples. Some cosmetics and soft plastic toys contain one or more phthalates -- a group of chemicals that interfere with testosterone and have been shown to lead to infertility and cancer. But because BPA is used in so many common products and has shown effects at such low doses, Hunt says, it quickly became the "poster-child chemical for these endocrine disrupters."

Rats in the Lab

As the evidence against BPA has mounted, some 29 studies have found the opposite: that the compound is safe. While these experiments have been fewer in number, many of them have the advantage of being far larger in sample size -- and thus, their backers say, more statistically significant. Yet the largest of these studies also have another thing in common: They have been funded by BPA's manufacturers. Sample size, of course, isn't the only criterion for judging a study. There's also methodology, lab procedures, and interpretation of data. And a close look at the big industry-funded studies indicates significant flaws.

One of the first such studies, paid for by the trade group Society of the Plastics Industry, was directed by Stuart Cagen of Shell Chemical Co.; another was conducted by John Ashby, at the AstraZeneca lab in the U.K. Both were attempts to replicate vom Saal's experiment. Published in 1999, the Cagen and Ashby studies gave BPA a clean bill of health. Independent scientists, though, questioned the findings. In addition to testing BPA, Cagen and Ashby had tested the chemical DES as a "positive control" -- a lab procedure to determine if a study is conducted properly. Although DES is known to harm mice, neither study found any effects from it. By the definition of a positive control, this indicates the experiments were flawed. (Cagen declined comment; Ashby has retired and could not be reached.)

The largest and most influential industry studies have been conducted by Rochelle Tyl of the Research Triangle Institute, a private lab in North Carolina. Tyl's first BPA study, published in 2002 at a cost that Tyl puts at around \$2 million (also funded by the Society of the Plastics Industry), examined three generations of rats and found no adverse effects at low doses. Yet here, too, there are questions of protocol. The study used a rat strain called the CD Sprague-Dawley, which has been shown to be insensitive to synthetic estrogens like BPA. (A Japanese study found that the CD Sprague-Dawley rat can withstand a dose of synthetic estrogen more than 100 times greater than what a female human can tolerate.) As of early 2007, of the 29 studies that have shown no harm due to BPA, 13 have used the CD Sprague-Dawley rat. Nonetheless, when the FDA declared BPA "safe" this fall, it relied almost exclusively on Tyl's work -- a shortcoming that the agency's science board publicly criticized in October.

To address criticisms of her first study, Tyl recently completed a follow-up, this time with funding from the American Chemistry Council. "It doesn't matter who pays for my studies," says Tyl, who denies there has been any industry influence over her experiments. "It offends the living bejesus out of me, that I'm going to alter a study design or a result." The follow-up used mice instead of the CD Sprague-Dawley rat and also found no adverse effects from low-dose BPA. However, the study's details indicate that the mice were fed a type of animal chow that has been shown to mask the effects of estrogens like BPA. Moreover, according to Tyl's own data, the prostates in both her experimental and her control mice were enormous, suggesting that her study had, in fact, shown effects from BPA, or that there were significant flaws in her team's lab practices.

Harvard to the Rescue

With two pools of warring studies, BPA regulation has hinged on scientific reviews that assess and pass judgment on the overall body of research. In April 2001, a select group of scientists received a letter emblazoned with the Harvard University crest inviting them to sit on the first such BPA panel. The Harvard Center for Risk Analysis (HCRA), a program under the Harvard School of Public Health, would assume "much of the technical writing responsibilities," the letter explained. In exchange for attending three two-day meetings and reviewing drafts of the panel's report, the scientists would be paid \$12,000 apiece plus expenses. The letter noted that the Society of the Plastics Industry had commissioned the study and that the panel's deliberations would be private. The letter concluded, "I assure you it will be a stimulating and productive experience."

"I said, 'Great! This is a Harvard center. They're obviously an honorable bunch,' " recalls one accomplished biologist on the panel, who spoke on condition of anonymity. What he didn't know at the time, he says, was that the center has a history of conflicts of interest. Under founder John D. Graham, a Harvard professor and later administrator of the Office of Information and Regulatory Affairs in the George W. Bush White House, the center had solicited funding from companies whose business might be affected by its research. HCRA's donors have included more than 100 corporations, including BPA producers Dow, Shell, and Germany-based BASF, as well as industry associations such as the American Chemistry Council.

"In the past, HCRA has acted very much like a product-defense group," says David Michaels, a Clinton-era Energy Department official and author of the book *Doubt Is Their Product*. "In a 2000 study, paid for by AT&T Wireless, HCRA justified letting motorists talk on their cell phones by arguing that the added productivity outweighs the cost of accidents. Three years later, in a Harvard-funded study, the same researchers found that not to be true." A more recent example: In 2005, the center published a study concluding that "government advisories on fish consumption and mercury may do more harm than good"; the lead researcher didn't disclose that most of the study's \$500,000 in funding was underwritten by the United States Tuna Foundation.

Back in October 1991, in a letter to Philip Morris (obtained through the archives of tobacco-industry files released during litigation and maintained by the University of California, San Francisco), Graham demonstrated how HCRA could recast opposition to regulation as concern for the greater good. In the D.C. debate on fuel-efficiency standards, he noted, "We have urged consideration of the safety risks associated with smaller vehicles." The letter concluded with an appeal for money and an offer of assistance. In an internal memo, a Philip Morris executive noted, "Depending on the 'vibes' you guys get when you meet Graham, I would also be in favor of PM becoming a contributor to the center."

When it came to its BPA review, the Harvard center held several meetings of its panel between summer 2001 and 2002. But then the report languished for two years, during which time dozens of studies were released that strengthened the case against BPA, including a human study that linked the compound to ovarian cysts (a cause of infertility). None of those findings made it into the final report. Instead, the review, published in the journal *Human and Ecological Risk Assessment* in 2004, focused on Tyl's research and a few other industry studies that downplayed BPA's health concerns. The review concluded that there is "no consistent affirmative evidence of low-dose BPA effects."

Several members of the 12-person panel didn't feel comfortable with the conclusions. Four removed their names from the study. One of those scientists, Marvin Meistrich, says, "I disagreed with the way the final report was prepared." After the panel's last meeting, the Harvard center selected additional studies to include in its review -- "ones that tended to demonstrate no effects," says Meistrich. One panel member who did sign the report, Claude Hughes, turned around and less than a year later published a paper with vom Saal in *Environmental Health Perspectives* (the NIH's premier journal) that refuted the Harvard center's conclusions.

In the end, HCRA paid even the scientists who pulled their names from the review. The published paper's acknowledgments thank them by name for their "helpful comments and

guidance." That, in itself, is a score for BPA's defenders: These scientists have rare specialties that would be vitally important if BPA were to wind up in court. A judge could rule that they had a conflict of interest. "It's fairly commonplace for companies facing tort suits to corner the market on experts, making it more difficult for the plaintiff to hire witnesses," says Peter Nordberg, a toxic-tort lawyer at Berger & Montague in Philadelphia.

Through a spokesperson, George Gray, the acting director of the Harvard center at the time, declined to comment on the study. (Shortly after the HCRA review appeared, President George W. Bush appointed him assistant administrator of the EPA.) For its part, the Harvard School of Public Health distances itself from the center's controversial past. "HCRA is a much different place since John Graham left [in 2001]," says assistant dean Robin Herman. Graham says that industry-funded studies at the center have always been subject to "rigorous quality-control procedures."

You might expect that a compromised review like this would wither away. Yet the opposite is true. The plastics industry still uses it as evidence that BPA is safe. Journalists and consumers who visit bisphenol-a.org, a site created by the American Chemistry Council, can see that none other than Harvard University has weighed in and pronounced BPA harmless.

For a Few Dollars More

In December 2005, another review of BPA began, this one spurred by the federal government, not industry. The National Institutes of Health had started the Center for the Evaluation of Risks to Human Reproduction (CERHR), an arm of the National Toxicology Program, in 1998 to study chemicals that might be contributing to alarming trends in the developmental health of Americans. Infertility and birth defects are up. Sperm counts are down. Girls reach puberty earlier. Breast cancer, prostate cancer, and neurobehavioral conditions such as attention-deficit disorder are mounting. Soon after the center's inception, however, its operations were outsourced to a Beltway consultancy called Sciences International. For a fee of about \$1 million a year, Sciences ran the evaluation of roughly 20 chemicals in an eight-year period.

On the surface, Sciences International appeared highly qualified for the task. Its president and founder was Dr. Elizabeth Anderson, a former government toxicologist who had helped establish the EPA. She conducted the EPA's first studies on carcinogens and later spearheaded its Office of Health and Environmental Assessment. A 10-person firm, launched in 1993, Sciences had analyzed the toxicity of dozens of chemicals for the EPA, the FDA, and other government agencies.

Sciences had also built a robust practice helping corporations grapple with lawsuits and regulation. Among its clients were law firms, trade associations, and oil-, tobacco-, and chemical-industry giants. Until 2006, Sciences reported on its Web site that it had defended MTBE (a gasoline additive since banned in 25 states), TCE (an industrial solvent in drinking water found highly likely to cause childhood cancer and birth defects), and perchlorate (another toxin in drinking water that California has deemed "a serious threat to human health"). Tools of the trade included providing expert testimony in lawsuits and producing scientific papers for publication.

A 2005 investigation in *Environmental Health Perspectives* raised questions about the boundaries that Anderson and her firm were willing to cross in service of their clients. The journal focused on Sciences' defense of the pesticide phosphine. In the late 1990s, the EPA proposed stricter standards for phosphine after several people died near fumigated warehouses. The tobacco industry determined that the restrictions would cost millions and turned to Sciences for help. Correspondence between Anderson and R.J. Reynolds, obtained from the UC San Francisco tobacco archives, reveals that Anderson lobbied her former colleagues at the EPA to reconsider. Then, with input from her clients, she drafted a report arguing for the old standards and offered to get it published in a peer-reviewed journal. "My experience is that consultant reports funded by those being regulated, and written expressly for the EPA, are easily and frequently ignored," she wrote in a memo to Joel Seckar, a toxicologist at R.J. Reynolds. "Since I am currently editor-in-chief of the international journal *Risk Analysis*, perhaps the peer-review process could be expedited." For this, "Sciences would need an additional \$35,000 over and above the \$50,000 provided by the original contract," the letter concluded. When the EPA eventually decided not to change the exposure standard for phosphine, the agency cited the review by Sciences International as justification. (*Risk Analysis's* board -- which included HCRA's George Gray -- later tightened its conflict-of-interest standards, after examining the Sciences-phosphine episode, but allowed Anderson to remain editor. Anderson declined to talk with *Fast Company* about the matter.)

Among the first tasks in Sciences' examination of BPA was to draft a review of previous studies. That draft would serve as a foundation for a panel of scientists who would judge the compound. According to biologist Pete Myers, chief scientist of the nonprofit Environmental Health Sciences, who analyzed the 330-page report, it shared flaws with the discredited Harvard review. "They contained similar biases, both giving undue weight to flawed industry studies and dismissing a wealth of research funded by the National Institutes of Health," he says. In its own investigation, the Environmental Working Group, a D.C.-based consumer advocate, found that the Sciences draft failed to note which studies were industry funded and ignored details such as Tyl's use of the estrogen-resistant CD Sprague-Dawley rat.

A further complication was that the panel of experts brought in to conduct the review itself -- while all highly accomplished in their own specialties -- included only one person with any experience in BPA research. Unfamiliar with the thousands of pages of literature, the panel was heavily dependent on the Sciences draft review, says Myers. In November 2007, the panel issued a weak warning on BPA: that the research merits "minimal concern" for most of the effects studied.

The fact that the National Toxicology Program eventually overruled the panel -- strengthening the warning to "some concern" -- has much to do with outrage in Congress over revelations that Sciences International had a significant conflict of interest. In February 2007, another investigation by the Environmental Working Group had revealed that Anthony Scialli, a top Sciences employee whose title was "principal investigator" under the 2005 CERHR contract, had coauthored a 2004 study on birth defects from chemicals with a toxicologist from Dow, a manufacturer of BPA. In response, Senator Barbara Boxer and Representative Henry Waxman, both of California, wrote letters upbraiding NIH brass and vowing to keep a close eye on the

BPA panel. The NIH requested an explanation from Sciences, which denied that any conflicts had "impaired its judgment or objectivity."

But *Fast Company* has learned that Sciences' conflicts of interest went even deeper. The firm had passed its verdict on BPA, under oath, even before it began the government review. In 2003, Sciences provided expert testimony for the defense in a lawsuit over BPA. On an archived page of the firm's Web site, the company bragged that, for a private client, it had acted as an expert witness "challenging the validity" of the science on BPA's health risks. "The case was decided in favor of the defendants," the site said. (Anderson, who sold Sciences for \$5.1 million in 2001 and left for rival Exponent in 2006, confirmed by email that the testimony happened but declined to provide details. Herman Gibb, who took over as president of Sciences, says the staff working on the CERHR contract was not aware of the testimony.)

The NIH terminated the Sciences contract in April 2007, and the firm is now down to four employees. The Environmental Working Group has since reported that Sciences had client relationships with the makers of nearly every chemical it reviewed under the CERHR contract.

Echoes of Agent Orange

As the Sciences International scandal broke, John D. Dingell, Michigan congressman and then-chair of the House Committee on Energy and Commerce, launched an investigation into the product-defense industry. "I have grave concerns that science may be for sale at these consulting firms," Dingell told *Fast Company*. "If supposedly reputable scientists are paid to cast doubt on valid scientific data that raise public-health concerns about everyday products, then the public's health and safety are being endangered."



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Dingell's probe zeroed in on a 75-employee Beltway firm called the Weinberg Group (tagline: "Science minds over business matters"). The firm got started in the 1980s defending the carcinogenic defoliant Agent Orange. According to documents from the tobacco archives, founder Myron Weinberg was a major player in Philip Morris's infamous "whitecoat" project, under which the company secretly paid dozens of PhDs to challenge the findings that secondhand smoke caused cancer. More recently, the firm has fought restrictions on drugs such as ephedra and Fen-phen -- both since pulled from the market. On its site, it has noted that when the FDA proposed canceling an unspecified client's drug, the Weinberg Group launched a lengthy appeal process that led "to 10 additional years of sales prior to the ultimate cancellation."

An April 2003 marketing letter written by Weinberg vice president P. Terrence Gaffney provides insight into the services the firm offers. The letter offered DuPont help in defending PFOA, a component of Teflon that has been the subject of lawsuits and EPA enforcement costing the

company more than \$100 million. "Manufacturers must be the aggressors," the letter urged. "We must implement a strategy at the outset which discourages government agencies, the plaintiff's bar, and misguided environmental groups from pursuing this matter." Specifically, Gaffney offered to facilitate "the publication of papers and articles dispelling the alleged ... harm." He promised, "We will harness, focus, and involve the scientific and intellectual capital of our company with one goal in mind -- creating the outcome our client desires."

According to Dingell's investigation, Sunoco is among the manufacturers that hired the Weinberg Group to defend its BPA business. A spokesperson for Sunoco confirms the company hired Weinberg but says it was only to analyze BPA science. Weinberg also downplays its role. "The Weinberg Group certainly has been involved," says spokesman John Kyte, managing director of PR giant Burson-Marsteller. "But critics want to attribute to the Weinberg Group this exorbitant influence and this cloak-and-dagger kind of thing. In the big picture, it's not the reason the product is in widespread use."

James Lamb, a lawyer and toxicologist, has been a prominent advocate for BPA's safety, both as a Weinberg vice president and an independent contractor. In 1998, when BPA became a major issue at a scientific conference in Kyoto, Japan, Lamb led press conferences attacking vom Saal's studies. In a 2001 press release publicizing Tyl's study using the CD Sprague-Dawley rats, Lamb -- identified only as a former NIH scientist, not a consultant to BPA manufacturers -- declared that "the concerns raised by sketchy or incomplete data have now been conclusively addressed. The results indicate very clearly that there is no risk to human health from these low-dose exposures."

The Weinberg Group also sponsors the journal *Regulatory Toxicology and Pharmacology*, which has published much of the industry-backed science on BPA. It published one of Cagen's BPA studies, as well as the Ashby experiment that cast doubt on vom Saal's prostate findings. George Gray, formerly of HCRA, is a regular contributor, and many of the studies the Harvard center sent to its expert panel were published here.

Reg Tox Pharm, as the journal is known, is published by the International Society of Regulatory Toxicology and Pharmacology. That may sound like a weighty organization, but its annual budget is about \$50,000, according to its nonprofit tax return. The society was headed by its founder, C. Jelleff Carr, until he passed away in 2005 at age 94. It is now managed by his wife from her suburban Columbia, Maryland, home.

Every year, the society presents an International Achievement Award, for which "there are no specific criteria ... however, international scientific developments in toxicology are of special interest," according to the society's Web site. The 2004 award went to Dr. Lester M. Crawford, who later was appointed FDA commissioner by President Bush but resigned after two months. The following year, he pleaded guilty to conflict-of-interest charges. In 2005, the award went to Jerome H. Heckman, general counsel to the Society of the Plastics Industry since 1954. And the 2006 honoree was Elizabeth Anderson of Sciences International.

Watchdogs and Canaries

Where the BPA saga goes from here is unclear.

The dueling government reports' effect on business began rippling out as early as last April, when a draft version of the National Toxicology Program decision was made public. Outraged activists accused the chemical industry of poisoning infants for profit. Trial lawyers filed class-action suits against bottle manufacturers. Senator Charles Schumer of New York proposed banning the suspect baby bottles outright. Wal-Mart, Toys "R" Us, and CVS all announced plans to phase out polycarbonate bottles. Some companies, such as bottle maker Nalgene, have adopted BPA-free plastic. Yet most businesses stuck with BPA products -- at least partly because they don't have a good substitute. Nearly all of the 130 billion food and beverage cans made in the United States each year are still lined with a BPA resin, for example. There is an alternative called Oleoresin, but it's more expensive, has a shorter shelf life, and can't be used for acidic foods like tomatoes.

You might expect the government to start controlling the use of BPA, but the track record suggests otherwise. The United States has a long tradition of keeping harmful substances -- lead, DDT, tobacco, PCBs -- on the market for decades after scientists find adverse effects. The National Toxicology Program report citing "some concern" has no regulatory impact, and the FDA has repeatedly deemed BPA "safe," even in the face of criticism. Senator Charles Grassley of Iowa, who has launched numerous investigations into the agency, contends, "The FDA has got to be a watchdog, not a business partner with industry." (The agency owes a substantial portion of its budget to fees it collects from companies registering new products.) What's more, the *Milwaukee Journal Sentinel* reported that the outside scientist supervising the FDA's latest review, Martin Philbert of the University of Michigan Risk Science Center, failed to disclose a \$5 million donation from a man named Charles Gelman -- a retired medical-device executive and an opponent of BPA regulation.



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The EPA could theoretically step in, but that's unlikely too. The agency "has no real program to regulate industrial chemicals, as a result of deep flaws in the 1976 Toxic Substances Control Act," says Andy Igrejas, environmental-health campaign director for the Pew Charitable Trusts. Under the act, the EPA needs to show "substantial evidence" that a chemical is harmful, and must weigh the costs of restrictions against the economic benefits of keeping the chemical in commerce. That's a byzantine chore and helps explain why the agency has managed to restrict only five chemicals in the law's 33-year history. Under the 1996 Food Quality Protection Act, Congress ordered the agency to screen industrial chemicals to determine if they interfere with the endocrine system, a program that might have flagged BPA. Nine years after the 1999 deadline, the agency has yet to screen a single chemical.

Senator Frank Lautenberg of New Jersey has proposed an overhaul of the whole system. In May, he introduced the Kid-Safe Chemical Act of 2008, which would reverse the burden of proof on chemicals, requiring manufacturers to demonstrate their safety in order to keep them in commerce. The E.U. passed a similar law in 2006, as did Canada in 1999. (Canada has banned BPA in baby bottles.) Still, even if Lautenberg's bill passes, the question remains whether it would be any less vulnerable to product-defense firms gaming the science.

In the meantime, consumers and concerned producers and retailers of BPA products are left with two options: Trust that the chemical industry has their best interests at heart, or take precautions. In its report, the NIH's National Toxicology Program advised "concerned parents" to reduce their use of canned foods; use BPA-free baby bottles; and opt for glass, porcelain, or stainless-steel containers, particularly for hot foods and liquids. Independent scientists applauded, though many of them contend that the advice should have been even more strongly worded -- and would have been, were the agency not constrained by the industry-funded science.

"The U.S. has this disjointed approach to chemicals management that doesn't focus on the inherent hazard of the chemical," says Joel Tickner, project director at the Center for Sustainable Production at the University of Massachusetts Lowell. BPA is far from the only modern-age substance whose effects we don't fully understand, and isn't the only product whose safety record has been twisted. In that way, perhaps, it may be the canary in the coal mine. And so the question looms: In our quest for progress -- and profit -- are we putting our future at risk?

David Case interviewed unlikely wind-power tycoon T. Boone Pickens in the June 2008 issue. He is an editor of the Global Post.