

## Special Report: The New Boys' Health Scare

Male infertility appears to be on the rise, and studies suggest that more boys are being born with genital malformations. Could chemicals in our air, our homes, and even our kitchens be to blame? Brian Alexander investigates how you can [protect your family](#).

By Brian Alexander



toddler drinking bottle

You wouldn't know it to speak to her, because she's cheerfully chatty, with a pronounced Chicago-land accent, but Brandie Langer is worried. She's also a little worried about being worried. "Do you think I might be paranoid?" she asks. She has three children. The youngest, a son, is 5 years old, and Brandie has read a lot online about endocrine-disrupting chemicals (EDCs), which some scientists say can scramble male hormones. EDCs are commonly found in plastics, bug- and weed-killers, the linings of food and drink cans, fragrances, and other household products. "Sometimes I do a Google search about a chemical and half the sites say, 'It's fine, you're paranoid, and you need a hobby,'" says Brandie, 31. "Others say, 'There's no hope! We cannot turn back! Humankind is going to die.' And I feel like, *Am I crazy?*" But instead of freaking out about it, she and her husband made a plan: They avoid buying food packaged in plastic

containers and cans whenever possible. They switched from their heavily scented laundry detergent. They stopped treating their lawn, ignoring typical suburban neighborhood gossip about their weedy yard. Yet she's not positive they absolutely *need* to do any of these things.

Same with Karly Field, a Birmingham, AL, mother of two boys, 5 and 2. She was pregnant with her younger son when she first saw news reports about the possible negative effects of bisphenol A (BPA), a chemical often used in hard plastics and in the lining of cans. She reluctantly threw out all the BPA-containing baby bottles she used for her older son and spent about \$250 buying a new set. "I didn't know if he would be affected," she says, but she acted anyway, just in case.

But it's not just moms like Brandie and Karly: Scientists, regulatory organizations, and government groups are concerned that chemicals in everyday products may have launched an unintentional war on our health. Children may be most seriously affected because their developing brains and bodies are especially vulnerable to chemicals. Over the last few years, there has been a glut of new research about the possible effects on baby boys, in particular. Some research has suggested that EDCs can change the way male fetuses' brains form in the womb. Other studies have linked EDCs to a rise in genital birth defects such as hypospadias (in which the opening of the urethra develops on the shaft, not at the tip, of the penis) and cryptorchidism (undescended testicles, a risk factor for poor semen quality and testicular cancer). And although data from the United States is inconclusive, studies from across the globe suggest that adult male sperm quality and fertility are dropping. European scientists even coined a term — testicular dysgenesis syndrome — to describe the increasing rates of testicular cancer and low sperm count. "Across Europe, sperm counts in young men are remarkably low on average, and 20 percent or more fall into the subfertile/infertile range," says Richard Sharpe, Ph.D., of the MRC/University of Edinburgh Centre for Reproductive Health. "It appears to be more prevalent now

than 50 years ago."

EDCs are emerging as a prime suspect in these troubling trends. That's why REDBOOK asked more than a dozen of the country's top researchers in the field to explain the issue, and help women like Brandie, Karly, and *you* make informed decisions for your families.

## THE LATEST NEWS ON ENDOCRINE DISRUPTORS

The official opinion of the Endocrine Society, which represents experts who specialize in the body's hormonal systems, is that "the evidence for adverse reproductive outcomes (infertility, cancers, malformations) from exposure to endocrine-disrupting chemicals is strong." And the U.S. Environmental Protection Agency (EPA) is now taking notice. "Endocrine-disrupting chemicals are showing up in low doses in our water supply, and it is troubling," says EPA administrator Lisa Jackson. Reminded that moms like Brandie and Karly want answers about EDCs *now*, she says, "We all wish the science came out quicker, but I would like readers to know that EDCs are one of my priorities." The EPA has commissioned several new studies, and Jackson is also pushing to update the Toxic Substances Control Act, which has remained virtually unchanged since 1976. She says the bar the EPA must clear in order to restrict a chemical's use is remarkably high: "We feel hamstrung. The law that governs chemical safety is antiquated; it has not kept up with the prevalence of chemicals."

Industry has a strong interest in keeping that bar high; retooling manufacturing processes to reduce or eliminate EDCs could cost billions. The proof the EPA has now isn't strong enough to drive new regulation; bottom-line results of studies on EDCs range from "Danger, Will Robinson!" to "No big deal." And manufacturers insist that the doses of these chemicals that we get are benign. "[Exposure to low doses] is something that has been discussed over and over by numerous risk reviewers and has been dismissed," says John Rost, Ph.D., chairman of the North American Metal Packaging Alliance, which represents the food and beverage metal packaging industry. "I think consumers are getting a one-sided story." BPA-containing linings in cans reduce the risk of potentially deadly illness, he argues. "I know I can open a can of vegetables or soup and it has been properly treated and is free of food-borne illnesses," he says. He also points out, accurately, that the World Health Organization and the European Union's food-safety agency have deemed BPA safe for use in cans. In 2008, at the end of George W. Bush's presidency, the Food and Drug Administration declared BPA, the chemical that caused Karly to chuck her baby bottles, safe even for infants.

But the Canadian government *banned* BPA in baby bottles that same year. And in 2010, a report by Barack Obama's President's Cancer Panel acknowledged the links between BPA and hypospadias, undescended testicles, early puberty, and breast cancer, and said that EDCs found in items like baby toys may pose a danger.



toddler drinking bottle

## WHAT EDCS MIGHT DO IN THE BODY

Many of the cells in our bodies have receptors, like little docking bays. When the right hormone molecule pulls into a docking bay, it triggers an action. Estrogen, for example, instructs cells to make female genitals, or to start puberty, or to regulate a woman's monthly cycle. Androgens tell cells to build boy parts, to make sperm, and so on. If a chemical that mimics estrogen pulls into a receptor at the wrong time, or in the wrong amount, it could cause unwanted changes, including genital malformations or infertility — the very things that seem to be happening more to boys. Though BPA has gotten the most attention, there are many other suspected EDCs: polybrominated diphenyl ethers are found in flame retardants on furniture; phthalates show up in everything from flexible plastics to cosmetics; an

EPA study recently found that triclosan, a bacteria-killer used widely in deodorants, toothpastes, and soaps, had hormonal effects on rodents; atrazine is one of the most commonly used herbicides in the

world, and it finds its way into streams and water supplies. (Karen Reardon, a spokeswoman for RISE, a pesticide trade group, says that weed- and bug-killers these days are so advanced and so targeted that they only work on the organisms they are meant to destroy — so the chemicals are not likely to affect people or even other mammals.)

All these substances are appearing in the bloodstreams of adults, children, and even newborns, according to new data from the Centers for Disease Control and Prevention. Simply finding a chemical in our bodies doesn't mean it's hurting us, but EDCs have harmed people before, points out Heather Patisaul, Ph.D., who studies endocrine disruptors at North Carolina State University. A synthetic estrogen called diethylstilboestrol (DES) was given to millions of women from 1940 into the 1970s to help prevent miscarriage. The children they gave birth to paid a price: Doctors later discovered that their daughters were developing rare vaginal cancers and their sons suffered from testicular cysts and, some research found, increased rates of hypospadias and undescended testicles. "We have an idea of what an endocrine-disrupting chemical can do to humans because of the DES experience," Patisaul says.

Estrogen-like chemicals are known to harm animals. But the science around the effects of EDCs on humans is still murky — in part because researchers cannot ethically dose people with them on purpose. Instead, they have to rely on studies that show links between a possible cause, like the amount of EDCs in a person's body, and an effect.

Even doctors on the front lines of treating baby boys with genital malformations don't fully agree about what is happening in their field. Julia Barthold, M.D., a pediatric urologist at A.I. DuPont Hospital for Children in Wilmington, DE, says she hasn't seen an uptick in these issues in her practice, and even if she had, whether or not EDCs should get the blame is still a question: "We don't know which factors — like family history — might be most important."

Other doctors will tell you they have no doubts; Howard Snyder, M.D., a pediatric urologist at the Children's Hospital of Philadelphia, says, "As a nation, we *are* seeing a rise in hypospadias and undescended testicles. And it's not because we are better at making diagnoses. If that were the case, we would be seeing minor cases, and that is not what we are seeing at all. I think this is the real deal — and EDCs may be to blame."

## **WHY IT MAY BE SMART TO CHANGE OUR WAYS**

Product manufacturers often argue that most animal studies use large doses of EDCs, and that the amounts humans are likely to receive from any one product are much lower. But every scientist we contacted for this story brought up the fact that in the real world, humans aren't dosed with only one chemical at a time: From the moment we wake up and brush our teeth with antibacterial toothpaste, swipe on mascara, spray a little air freshener, eat some canned soup for lunch, we are receiving constant tiny doses of EDCs, and they mix in our bodies. "It is the source of some of the greatest fear: the unknown of what we might be exposing ourselves to inadvertently, or just because it all adds up," says Jackson.

Although the full picture isn't yet painted, it is clear that people like Brandie and Karly, who are actively trying to reduce their family's exposure to endocrine-disrupting chemicals, *aren't* acting crazy. Even the most conservative doctors and scientists — like Barthold and Sharpe, who don't believe the case against EDCs has been proven yet — agree it's a good idea for parents to reduce their household's exposure to these chemicals, especially when a woman is pregnant. "Scientists realize that there may never be a smoking gun, but nonetheless, when their daughters get ready to have children, they say, 'Stay away from EDCs,'" says Snyder. As Sharpe says, why not avoid unnecessary chemical exposures? "It can do no harm, only potential good."

---

<http://www.redbookmag.com/health-wellness/advice/health/causes-of-male-infertility>