



Written by [Selwyn Duke](#) on October 7, 2009

Are Hormone-mimicking Chemicals Harming Our Children?

Are chemicals in our environment masculinizing girls and feminizing boys? A growing body of scientific evidence suggests that this is the case, and one of the latest studies has linked exposure to a substance known as bisphenol A, or BPA, with aggressive behavior in girls.

Liz Szabo reports on the research in *USA Today*, [writing](#), "In the study of 249 pregnant women, the first to examine the effects of BPA on children's behavior, researchers found that girls ... were more likely to be aggressive if their mothers had high levels of BPA — an estrogen-like chemical used in many consumer products — early in pregnancy."



Discussing the same study at Canada.com, Mark Iype [writes](#), "'The girls showed a definite difference in temperaments,' said [researcher Bruce Lanphear]. 'Their behaviour was actually much more like boys at the same age.'" Iype goes on to explain, "BPA, a hormone disrupter that can cause reproductive damage and lead to prostate and breast cancer in adulthood, is a building block in polycarbonate plastic. People are exposed to BPA through medical tubing, some hard plastic water bottles, some baby feeding bottles, dental fillings, food-can and packaging linings, and carbonless paper."

It should also be noted that the same BPA-aggression link had previously been demonstrated through studies on juvenile female animals and that concerns about its safety have existed for decades. This is why Canada has already outlawed its use in baby bottles.

Now, since the male hormone testosterone is usually associated with aggression, many may wonder how an estrogenic compound could increase aggressiveness. This is explained in Szabo's piece:

Although estrogen is often considered a "female hormone," it actually helps to "masculinize" the male brain around the 11th and 12th weeks of pregnancy, says neuropsychiatrist Louann Brizendine, author of *The Female Brain*. "In the developing brain, timing is everything," Brizendine says. "I'm worried that tiny amounts of this stuff [BPA], given at just the wrong time, could partly masculinize the female brain."

For sure, the presence of hormone-mimicking substances in the environment is a serious matter. After all, the use of synthetic male hormones, or steroids, is banned in sports for a reason: Hormones are extremely powerful substances. They can turn a young boy who sounds like a girl into a muscular man with a deep voice and a girl with the physique of a boy into a curvaceous woman. And, as Brizendine indicated, they help mold us starting in the womb. For instance, it is a burst of testosterone that a baby boy produces six weeks into pregnancy that initially masculinizes his brain and body.

But this delicate process of pre-natal development — during which the baby must successfully negotiate growth from a mere two cells to trillions — can be easily disrupted through the introduction of extraneous hormones and other chemicals. And while we've all heard of crack-addicted babies, fetal alcohol syndrome, and the horrible deformities visited on thalidomide-affected children, hormone-mimicking compounds may be the most troubling of all.

The problem is chemicals known as endocrine disruptors, sometimes called environmental estrogens, which either mimic



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or block the effects of natural hormones. We're all exposed to them continually, as they're found in thousands of products at levels that, presumably, are too low to pose a health risk. BPA is one of them, and some other common ones are DDT, Polychlorinated biphenyls (PCBs), Polybrominated diphenyl ethers (PBDEs), and a number of Phthalates. Estrogenic compounds also enter our environment when women taking birth-control pills excrete urine.

While endocrine disruptors might be found in a given product in amounts deemed insignificant, their cumulative effect perhaps cannot be thus described. It has been [discovered](#), for instance, that almost 40 percent of male toads in the most heavily agricultural area of Florida exhibit hermaphroditic abnormalities. And reporting on studies of U.S. rivers nationwide, Physorg.com [reports](#):

Of the 16 fish species researchers examined from 1995 to 2004, the [hermaphroditic] condition was most common by far in smallmouth and largemouth bass: a third of all male smallmouth bass and a fifth of all male largemouth bass were intersex. This condition is primarily revealed in male fish that have immature female egg cells in their testes, but occasionally female fish will have male characteristics as well.

In fact, staggeringly, [recent research](#) shows that more than 80 percent of male smallmouth bass in the Potomac River are producing eggs and that hermaphroditic qualities are manifesting themselves in a wide range of animal species.

And what of human males? While boys' aggressiveness seemed unaffected by BPH, they are, not surprisingly, the ones most imperiled by an estrogen-rich environment. As to this, Andy Coghlan at NewScientist.com reports on phthalates' feminizing effect on baby boys. Citing a study conducted by University of Rochester School of Medicine and Dentistry researcher Shanna Swan and her colleagues, he [writes](#):

As an index of feminisation, she measured the "anogenital distance" (AGD) between the anus and to the base of the penis.... Earlier studies have shown that the AGD is twice in boys what it is in girls, mainly because in boys the hormone testosterone extends the length of the perineum separating the anus from the testicles.

... When Swan's team measured concentrations of nine phthalate metabolites in the urine of pregnant women, they found that four were linked with shorter AGD in sons born to women showing high exposure levels.

And although all the boys had genitals classified as "normal," 21% of the boys with short AGDs had incomplete testicular descent, compared with 8% of other boys. And on average, the smaller the AGD, the smaller the penis.

Note that these are precisely the effects animal phthalate studies had shown; the studies also indicated that these changes' severity increases as exposure to the chemical does.

Moreover, while small amounts of estrogenic compounds have less of an effect after birth, this is when children may get them in abundance from an under-recognized source: soy products. In fact, writer Jim Rutz [claims](#) that the worst offender, soy baby formula, gives a child the estrogen equivalent of *five birth control pills a day*.

But in the womb or out, exposure to environmental estrogens seems to have far-reaching consequences. It may, for instance, be compromising male fertility; in fact, some studies indicate that men's sperm counts had fallen by a third between 1989 and 2002. Then there is the matter of pubertal development. While both sexes now enter puberty sooner than earlier generations, the age of onset has dropped more precipitously in girls. So we have to ask: Are environmental estrogens accelerating sexual development in girls as they stunt it in boys?

Lastly, just as BPH may masculinize girls' brains, exogenous estrogenic compounds may feminize boys' brains. And this has some troubling implications. After all, if this is in fact what is happening, is it a stretch to say that endocrine disruptors might be increasing the incidence of homosexuality and lesbianism? Might they be partially responsible for the sexual confusion so apparent today?

Whatever the details, the pollution of our environment with hormone-like compounds is not to be taken lightly. Not, that



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is, if we want to keep the sugar and spice and the puppy-dogs' tails exactly where they belong.



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