

Next up: BPD(uh)?

By ACSH Staff — January 13, 2015

Fear, Inc. is having a big day on the New York Stock exchange. It is up 45 percent on heavy volume.

How could it not be? After all, the plastic component BPS supposedly a safe replacement for BPA [isn't looking so great](#) [1] after all. BPA (bisphenol A) is a chemical so deadly that Times columnist Nick Kristof by far the most accomplished toxicological expert who never took a chemistry class refuses to touch cash register receipts because they contain small amounts of the chemical.

ACSH's Dr. Josh Bloom admits, I haven't checked the stock of Whole Foods, but there might be reason for concern. I cannot begin to comprehend the effect that these findings will have on shoppers who are waltzing up and down the aisles of the store **in a** haze of organic delight at every BPA-free sign, as if each one will add a few months to their lives. I hope they don't worry enough to crash their 15 mpg SUVs on the way home.

As we've been saying forever, if you take a chemical with a very long track record that shows it to be quite safe, and replace it with a similar one, you will end up a chemical with a much shorter track record (which might well also be safe). This is progress?

Yet, it is not all bad news. Environmental groups and academics, such as Freddie Vom Saal, who has spent his entire career trying to find *anything* wrong with BPA, still have 24 letters left, which should guarantee job security for many years to come.

Let's take a quick look at what all of this means. All plastics are polymers very long strands of repeating chemical units. The first one ever made was nylon, which was invented by DuPont in 1935. Depending on the chemical, the properties of the plastic will be different. The plastics made with BPA are called polycarbonate and epoxy resin plastics. They are especially useful for lining the inside of cans to provide better sealing. A very small amount of BPA leaches out of the linings, so between this and the fact that plastics are ubiquitous, virtually everyone has minuscule, but measurable amounts of BPA in their urine. Why urine? Because BPA does not stick around very long. It is metabolized and excreted. Good luck finding it in blood.

The knock on BPA is that it is an estrogen mimic that will screw up your reproductive system, and that of your kids. The fact that it has been lining cans and making sippy cups for more than 50 years, and that the FDA has declared it safe seems to be of little comfort.

So, does it mimic estrogen? Sure. But it does a really terrible job.

Chemical	Estrogen Binding Affinity	Difference
Estradiol	1.0	1
BPA	0.000080	12,500

The chart above shows how tightly a few chemicals bind to estrogen receptor. BPA does so 12,500 fold less so than estradiol. And there is far more estradiol in your blood than BPA. If seems like nothing to worry about, check this out:

From the always reliable [Dr. Oz show](#) [2] from 2012: Since isoflavones [chemicals found in soybeans] bind to estrogen receptors, they can have similar effects to estrogen, but not nearly as strong as animal-based estrogen. Human estrogen is over 1000-times stronger.

Chemical	Estrogen Binding Affinity	Difference
Estradiol	1.0	1
<u>Genistein</u>	0.000600	1,667
BPA	0.000080	12,500



Dr. Bloom says, Well, ain t that interesting? Even though soy is full of isoflavones (genistein, a popular antioxidant is one), it s OK, because it binds only about one-thousandth as tightly as estrogen. My math is pretty awful, but it looks like BPA binds to estrogen receptors about 10-fold worse than this, yet it is dangerous because it is an estrogen-mimic. People stuffing their faces with soy might want to realize that they are eating large amounts of something that behaves more like estrogen, while wearing Ebola suits to handle cash register receipts. Doesn t make a helluva lot of sense, does it?

The fear du jour comes from the comparative effects of BPA and BPS on the number of neurons in zebrafish brains, and if you d really, really like to read more about it, here is the [news release](#) [3] from the scientists from the University of Calgary.

Dr. Bloom, who gave it a cursory look says, I m not going to bother delving into the details of a scientific study of something that is very far from being relevant to human health. Besides, this could be good news. I could use a few more neurons before even attempting the Saturday Times crossword puzzle.

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Links

[1] <http://www.660news.com/2015/01/12/a-new-study-shows-bpa-and-bps-affect-embryonic-development/>

[2] <http://www.doctoroz.com/article/soy-good-bad-and-best>

[3] http://www.eurekalert.org/pub_releases/2015-01/uoc-rfb010915.php