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Why I Don't Write About Pottery From the Ming Dynasty And Nick Kristoff Shouldn't Write About Science

By Josh Bloom — May 15, 2012

Sometimes it's good to recognize your limitations.

For example, I could describe how DNA works, or how to make crystal meth, poison your neighbor or blow stuff up. I won't, but I could. And I'd know what I was talking about.

Perhaps I could also write something about teapots from the Ming Dynasty if I read about it on Wikipedia, but in reality I wouldn't know one if it fell off the Chrysler Building onto my head.

Nicholas Kristof is a columnist for *The New York Times*. As such, he has written about a wide range of topics such as politics, human rights, poverty, foreign affairs, and economics. He does this extremely well, as demonstrated by his multiple awards, including two Pulitzer Prizes. He also appears to be nothing short of brilliant, and an all-around good guy as well.

But sometime prior to May 2nd, when his last column, "How Chemicals Affect Us" was published, he may have been walking a little too close to the Chrysler Building.

Kristof's formal training is in law and foreign languages. Notably absent are: chemistry, toxicology, pharmacology and reproductive biology. Which is a shame, because that is what his entire piece was about.

And it showed. Kristof rattled off a bunch of mostly unrelated claims, that, to a non-scientist would appear very scary. These involved the usual suspects, such as increasing cancer rates, low sperm counts and a host of others. But once you scratch beneath the surface, a very different story arises.

The column makes generous use of the nonsensical term "endocrine disruptor," something that is supposed to interfere with our endocrine system--the incredibly complex series of glands that produce hormones. "Disruptor" is a nice scary sounding word, but scientifically meaningless. What exactly do endocrine disrupters disrupt? And how?

In your body, hormones, whether synthetic or natural, interact with receptors on particular cells and elicit a response. Two common natural hormones are estrogen and testosterone, both critical to sexual development. Drugs frequently interact with hormone receptors and either amplify or diminish a physiological process. The breast cancer drug Tamoxifen blocks the estrogen receptors in breast tissue, suppressing the growth of cancer cells that are dependent on estrogen to replicate.

Once in a while something will go very wrong.

A particularly awful example of this was diethylstilbesterol (DES), a drug that until 1971 was sometimes given to pregnant women since it was thought to prevent miscarriages and premature deliveries. But its use was discontinued after it was discovered that it caused a rare cancer and reproductive abnormalities in the daughters of mothers that took the drug. Sons had different and less serious conditions, but by any measure, this was a drug disaster.

Thalidomide, used for morning sickness more than 50 years ago was found to be a potent teratogen-- a chemical that can cause severe developmental problems. Children of mothers that took this drug often were born with undeveloped arms or legs, or sometimes none at all.

Even today, teratogenic drugs exist, but they are treated quite differently. Accutane, used for severe acne, is a powerful teratogen. However Roche, its maker, is so careful that it doesn't get near a pregnant woman that a pregnancy test is required *every month* before it can be purchased and the women needs to sign a form swearing she's using at least two methods of birth control.

It is very rare, but still possible for these unforeseen side effects to occur; however, modern preclinical assays make this much less likely for drugs.

But can you take a serious teratogen like DES or thalidomide, which were given in therapeutic quantities to pregnant women, and claim any relevance to trace chemicals found in everyday life?

At this point it becomes clear that Kristof is entering the Ming Dynasty. He equates DES with a chemical called bisphenol-A (BPA), a component of many plastics that has been in use for more than 50 years. Very small amounts of BPA leach out from the plastic, which has caused it to be tested a bazillion times, with no evidence of human harm. Sometimes, if you shovel enough into a rat, bad things can happen, but you better have a big shovel. Even the FDA has said, on several occasion and despite withering activist pressure, that it is safe as used, a decision called "cowardly" by environmental groups that wanted it banned.

But what does giving mega-doses of BPA (or anything else, really) to a mouse or rat have to do with the real world where we take in (and rapidly excrete) tiny quantities of it?

Since BPA plastics are used to seal food cans, among other things, virtually all of us have some measurable amount of it in our bodies, albeit in miniscule amounts. Just like we have thousands of other chemicals, both synthetic and natural, floating around in there.

This fact has led groups and individuals to try to pull the wool over the eyes of those lacking a science background--that is, they imply or just assert that the *presence* of a chemical is necessarily related to any *health consequences* from it. This contradicts one of the tenets of toxicology--the dose makes the poison. It may sound trite, but it's just as true as ever.

If this were not the case, one would expect to be seeing massive health consequences for the estimated 80 thousand chemicals used in modern life today. So where are they?

I have no idea. In fact, the incidence of almost all cancers in the U.S. has been slowly drifting downward over the last thirty-five years according to the American Cancer Society. And the myth of declining sperm counts was thoroughly debunked in a Columbia University paper in 2008 and several other large epidemiological studies. The research alleging declining sperm counts used to

reach this "conclusion" was flawed.

All of this brings up some practical matters. How is testing 80 thousand chemicals going to work? Should we ban all 80 thousand until they are first tested? What will it cost? Who is going to do it, and how will they measure whatever property they are looking for? At what dose? In what animal? And please believe that even if this monumental task were ever completed, there would be no shortage of borderline or ambiguous data with no clear answer. And it will still be animal data, which may or may not have any relevance to human health. Then what? How can anything useful ever come out of this?

Kristof "takes a cue from [his] experts," but I have to wonder about his choices. One of them, Dr. John Peterson Meyers, the chief scientist at Environmental Health Sciences is so afraid of BPA that he and his family stopped buying any canned food and refuses to touch receipts (many of which have traces of BPA) from gas stations or ATMs. Kinda makes me wonder if you could screw with his head by giving him a whole bunch of really bad birthday gifts and include the gift receipts, knowing he couldn't return any of them.

In the end, this is all silly. People are not dropping dead from ATM receipts or canned soup. Cancer is still cancer, but rather than the "cancer epidemic" we hear so much about, there is actually less of it than there used to be, despite the aging of our population. And if you should be in the mood to count your sperm, they will be fine too.

Health doesn't come from eliminating everything that might conceivably be unsafe from the environment. It comes from not smoking, getting vaccines, wearing seatbelts, staying in shape -- and a whole lot of luck.

Tea time.

This article also appeared on the Manhattan Institute site MedicalProgressToday.com [1]

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[1] https://web.archive.org/web/20120522065507/http://www.medicalprogresstoday.com/2012/05/why-i-dont-write-about-ming-dynasty-sculpture.php