

What started the phony phthalates scare? Utterly inept science

By ACSH Staff — December 3, 2013



Phthalates, a group of ubiquitous chemicals that are perennial darlings

of the anti-chemical movement, have been accused of being responsible for just about everything from birth defects to the assassination of Archduke Ferdinand. Well, now they may be going onto California's chemical wastebasket called Proposition 65, ostensibly a list of chemicals that cause cancer or reproductive toxicity.

The list itself is mostly a joke, as pointed out by ACSH's Dr. Josh Bloom in his 2012 op-ed called [Proposition Preposterous](#) [1]. It includes a host of perfectly safe, common drugs, foods and chemicals that are consumed every day.

Phthalates have been used for decades to soften plastics (among many other uses). The best example is IV tubing, which would be a really unpleasant experience without something to soften it and make it flexible. But these plasticizers are found almost everywhere in cars, flooring and other everyday building materials. Some types of phthalates are found in cosmetics and cleaning products, too.

But the real story here is the amateurish science that generated the scare in the first place. The experiments from which conclusions were drawn were so poorly designed that an accurate assessment of any real risk (or lack thereof) of phthalates is impossible to determine.

Dr. Bloom (who sincerely apologizes for any headache you may get from reading the following) explains the two major flaws in the science. The problems with these measurements is something that scientists in drug discovery research run into constantly trying to determine an effect of a chemical that is insoluble in water the solvent used in the test.

He continues, One of two things can happen. The insoluble chemical simply sticks to the surface of the testing vessel and with nothing in solution you get a false negative. Or, the chemical may glom onto the protein or receptor you are studying and appears to be doing something real, but is not. This gives you a false positive. What you rarely get is anything real.

The other problem is that groups studying the effects of phthalates are actually measuring the wrong chemical. Phthalates in the blood are rapidly metabolized to give a number of breakdown

products that are excreted in the urine. So, in order to really determine any risk, you would have to examine the metabolites of the phthalates, and not the phthalates themselves.

Finally, like pretty much any chemical under attack, phthalates are called endocrine disruptors, which typically means that they bind to estrogen receptors and elicit some kind of effect. But, when this effect was examined properly, there was no actual binding to estrogen receptors, which pretty much short circuits the endocrine disruptor hypothesis.

When you add in high-dose experiments in rodents, which are notoriously poor predictors of biological effects in humans, you have the perfect storm of bad science.

Dr. Bloom concludes thusly: Phthalates may very well be added to the Proposition 65 list, but given some of the other stuff in there you could almost look at this as a badge of honor except that the consequences of this ridiculous label will help no one.

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