Fact or Fiction?

Jack W. Dini
1537 Desoto Way
Livermore, CA 94550
E-mail: jdini@comcast.net

Junk Science

What exactly is junk science? One of the most prominent crusaders against junk science, Steven Milloy applies this description: "In a word, fraud. In a sentence, it's faulty scientific data and analysis used to advance a special interest."[1] Milloy is an adjunct scholar with the Cato Institute and developer of a Web site (www.junkscience.com) devoted to presenting discourse about junk science. This site is worth checking out.

Junk science is characterized by one or both of two properties: (1) data that do not meet the normal criteria for being unbiased and objective, and (2) inappropriate or incomplete representations of tests of the predictive accuracy of models that create a false impression of reliability.[2] Junk science results when conclusions are drawn using low quality data such as testimonials, anecdotes, and case reports rather than from randomized, controlled clinical experiments. These conclusions are often in support of a political or legislative agenda.[3]

Junk science rises to its zenith in the courtroom, because science and the law are so very different. As John Dodes reports: "In science, 'facts' are established by 'incremental adjustments and carefully bounded negotiations among communities who share a commitment to closure.' In law, every fact is treated as 'equally contingent' and every party has 'every incentive to overstate the weakness in the other's case.' The difference between these two approaches can make it difficult to evaluate scientific opinion in the courtroom."[3] Peter Huber adds: "Maverick scientists shunned by their reputable colleagues have been embraced by lawyers. Eccentric theories that no respectable government agency would ever fund are rewarded munificently by the courts. Batteries of meaningless, high-tech tests that would amount to medical malpractice or insurance fraud if administered in a clinic for treatment are administered in court with complete impunity by fringe experts hired for litigation. The pursuit of truth, the whole truth, and nothing but the truth has given way to reams of meaningless data, fearful speculation, and fantastic conjecture. Courts resound with elaborate, systematized, jargon filled, serious sounding deceptions that fully deserve the contemptuous label used by trial lawyers themselves: junk science."[4]

Some Examples

Bendectin, the Audi car company, environmental estrogens and breast implants are good examples of junk science at its best (worst case scenarios?). The anti-nausea drug Bendectin[5] was forced off the market because of junk science litigation, and the Audi car company was almost bankrupted by successful lawsuits alleging that brakes somehow failed.[6]

The topic of endocrine disrupters is another good example. Steven Milloy reports: "The recent hysteria about 'environmental estrogens'—so-called manmade chemicals in the environment that allegedly disrupt hormonal systems, causing everything from infertility to cancer to attention deficit disorder—is a travesty. In 1996, a study by Tulane University scientists claimed that combinations of pesticides were very potent environmental estrogens. Congress then passed a law mandating that EPA test for these chemicals. One year later, the Tulane study was retracted by its authors because the results could not be duplicated in any other lab in the world. Study gone; law stayed." [7]

On this same topic, what gets overlooked in the haste to blame man-made chemicals is that many foods we routinely eat exhibit some of the same characteristics. Chocolate, garlic, celery, coffee, grapefruit, tea and cola, have been shown to have antispermatogenic activity.[8] Theo Colborn's book, *Our Stolen Future*,[9] published in 1996 has had a strong impact on public and political interest in environmental risks associated with endocrine disrupters. Although Colborn beats the heck out of man-made chemicals, she skips mention of naturally occurring foods except for sunflower seeds and oil. By contrast, Edwards[10] discloses that more than 300 plants, in 16 common families, contain estrogens that may bind with the receptors of humans or wildlife. Naturally occurring estrogens abound in many cereals, legumes, fruits and tubers. He concludes: "The authors of *Our Stolen Future* could probably have developed more frightening endocrine disruption scenarios based on healthy human diets containing cereals, fruits and vegetables!" In effect, endocrine disrupters are all around us and we eat some of them every day in natural foods. Synthetic chemicals

are a good whipping-boy to use when you want to excite the public and media, but it's best not to pick on everyday foods mankind has been eating for long periods of time.

The last example and perhaps the most egregious is breast implant litigation, which has become one of the great legal deluges in history, with thousands of women filing suit. In the 1990s, juries awarded huge damages to women claiming injury from silicone breast implants, leading to a $4.25 billion class action settlement, that is still on-going.[11] An entire industry essentially has collapsed as a result and Dow Corning was forced to file for bankruptcy protection.[12]

Marcia Angell, executive editor of the *New England Journal of Medicine*, warned that "there was almost no reliable scientific information at the time of the ban" by the Food and Drug Administration.[12] Her book on this topic *Science on Trial*, was highlighted by *Time* as "An instant classic on junk science".[11] There are a score of serious, peer reviewed studies from places such as Harvard University, Johns Hopkins University, the Mayo Clinic, and the University of Michigan, among others, that have found an insubstantial to nonexistent connection between silicone implants and disease.[12]

Summary

Derrick Niederman and David Boyum in their book *What the Numbers Say* observe: "Most Americans are poor quantitative thinkers. This widespread innumeracy is the father of zillions of bad decisions. Decisions are based on information. When people are innumerate, when they do not know how to make good use of available quantitative information, they make uniformed decisions."[13] Couple this with junk science, where insignificant health threats are blown out of proportion, and one can see how people can easily be misled.

The *Washington Times* observed: "The 1990s will be remembered for many things. None may be more important than the Decade of Junk Science."[12] I wish I had the optimism to say that I think there will be a change in the decade beginning with the year 2000, but I don't. We still are deluged with the latest chemical scare of the day, week, or month, often with little or no true peer reviewed scientific research supporting the claim. We haven't learned from past experience.

References

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