

# SCIENCE UNDER SEIGE

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**An ill wind is gusting through the halls of science these days: faked research, suppression of unwelcome results, corruption of science advisory panels, university research falling under the influence of corporate sponsors, and many other conflicts of interest. It's as if science were under siege.**

For at least the last thirty years science has strongly supported the positions taken by environmental and public health advocates. The proponents of 'business as usual' have claimed that chemical and nuclear technologies have created only minor problems or no problems whatsoever — but time after time science has shown otherwise. They said global warming was a "chicken little" fantasy. They said the Earth's ozone shield couldn't possibly be harmed. They argued that asbestos was benign. They said lead in paint and gasoline was entirely safe. They said harm from hormone-disrupting chemicals was imaginary. They said a little radioactivity might actually improve your health. They said human health was constantly and consistently improving — until scientific study revealed increases in birth defects, asthma, diabetes, attention deficits, nervous system disorders, diseases of the reproductive system, immune system disorders, cancer in children, and on and on. In each of these cases science showed that the advocates of 'business as usual' were simply wrong.

Science cannot solve all our problems or tell us everything we need to know, but it remains a powerful tool for reaching agreement about the nature of reality (at least for those parts of reality amenable to scientific inquiry). For the past 30 years, science has shown us unmistakably that we are destroying the natural systems (and bodily defenses) that we ourselves depend upon, so 'business as usual' is a dead end.

Perhaps this is why science itself is now under systematic attack by corporate interests. Whatever the underlying reasons, it seems clear that industry has lined up to discredit science, control the research agenda, take over the apparatus for scholarly publication and otherwise undermine the scientific and democratic pursuit of knowledge in the public interest. Perhaps they see it as their only hope of defending themselves against the overwhelming scientific evidence that — if accepted by the public — would end 'business as usual' and set us on a new precautionary path.

The Los Angeles Times reported July 11 that allegations of faked scientific findings increased 50% between 2003 and 2004.[1] But the Times also noted that the federal Office of Research Integrity cannot keep up with the rising tide of scientific fakery because its budget is far too small. The office received 274 allegations of scientific fakery in 2004, but was able to complete only 23 investigations.

Corporate suppression of data is now so routine that no one raises an eyebrow. In the wake of an EPA advisory panel classifying the Teflon chemical C8 (ammonium perfluorooctanoate, or PFOA) as a "likely carcinogen," reporter Ken Ward Jr. of the Charleston (W.Va.) Gazette learned that in 1981 DuPont initiated a study to learn whether exposure to C8 caused birth defects in the children of Teflon factory workers. When the study found an excess of birth defects in the children, the study was abandoned and the results filed away without

notifying the federal government. Under the Toxic Substances Control Act (TSCA) companies must tell the EPA when they find information "that reasonably supports the conclusion that [a chemical] presents a substantial risk of injury to health." [2]

## Generating Doubt — OSHA Gives Up

It is common practice for industry to wage scientific and public relations war against the regulatory agencies whose job is to protect public health. The Wall Street Journal reports that PR firm executives openly admit to hiring university professors to put their names on ghost-written letters to the editor.[3] The letters are written by hacks paid to put a corporate "spin" on the science, and the experts sign their names to lend credence to the spin (and to earn a fat fee).

Another common practice these days is "seeding the scientific literature" with bogus results, to create doubt and confusion. In recent years, corporations have seeded the literature with false findings related to tobacco, lead, mercury, asbestos, vinyl chloride, chromium, nickel, benzene, beryllium and others. They cook the numbers, publish misleading articles in obscure journals, and then cite their own work to create confusion and doubt.

This strategy has brought the federal government to its knees. The case of beryllium is illuminating. Beryllium is a strong, light metal used in nuclear weapons and nuclear reactors. Beryllium dust is a potent lung toxicant and carcinogen.

In 1999 the Department of Energy (DOE) set beryllium exposure levels for federal workers that are ten times as strict as the general industrial exposure standard set by the Occupational Safety and Health Administration (OSHA). The OSHA standard was set based on data available in 1949.

When OSHA proposed to tighten its safety standard for beryllium exposure, to bring it into line with the new standard set for federal workers, industry was able to create enough doubt and confusion that OSHA backed off and concluded that "more research was needed" before a tighter standard could be justified.

A writer in Scientific American concludes that "OSHA administrators have simply recognized that establishing new standards is so time and labor-intensive, and will inevitably call forth such orchestrated opposition from industry, that it is not worth expending the agency's limited resources on the effort." [4] Creating confusion and doubt pays off.

## Science in the Private Interest

Chester Douglass — chairman of the Department of Oral Health Policy and Epidemiology at Harvard — is being investigated for concluding that there is no relationship between fluoride in drinking water and bone cancer in children. He himself cites research — described as the most rigorous to date — concluding the opposite. The National Institute of Environmental Health Sciences (NIEHS), which funded the research with a \$1.3 million dollar grant, and Harvard are investigating. Why would a public health expert skew his results? Does it matter that Dr. Douglass is the editor of The Colgate Oral Health Report, a quarterly newsletter published by Colgate-

Palmolive, which makes fluoridated toothpaste?[5] Professor Sheldon Krimsky, author of *Science in the Private Interest*, warns that science in the public interest will increasingly lose out as the entire system favors a tight collaboration between industry, government and academia.[6]

Academic scientists are under increasing pressure to find commercial applications for their research so that their institution can patent, license and profit from the work. Corporate partnerships and lucrative consulting deals inject big money into the equation. In 1996, Sheldon Krimsky analyzed the biomedical literature and found in 34% of the articles, at least one of the chief authors had a financial interest in the research. None of these financial interests was disclosed in the journals. Krimsky said the 34% figure was probably an underestimate because he couldn't check stock ownership or corporate consulting fees paid to researchers.[7] No wonder allegations of misconduct by U.S. scientists are at an all time high. [1] A recent survey of several thousand scientists found that 33% had committed at least one of ten serious misbehaviors — like falsifying data or changing conclusions in response to pressure from a funding source. Six percent admitted to failing to present data that contradicted their own previous research.[8]

### FDA, NIH Broken

The National Institutes of Health (NIH) and the U.S. Food and Drug Administration (FDA) are now so thoroughly beholden to industry that they are broken, unable to perform their duties to protect the public. The New York Times reports "the White House and Congress forced a marriage between the agency [FDA] and industry years ago for the rich dowry that industry offered." Dr. Janet Woodcock, deputy commissioner of operations at the FDA said that the drug approval process is "pretty much broken down... and has been for some time." [9] The FDA has become so focused on approving new drugs at the expense of monitoring the ones already on the market that thousands of people have been put in harm's way by drugs like Vioxx. One FDA analyst estimated that Vioxx caused between 88,000 and 139,000 heart attacks — killing somewhere between 26,400 and 55,600 people (assuming 30 to 40 percent of heart attacks were fatal).[4, 10]

An investigation into drug company ties with NIH scientists found that more than half of those investigated had violated existing policies meant to limit conflict of interest. Director of the NIH Elias Zerhouni said, "We discovered cases of employees who consulted with research entities without seeking required approval, consulted in areas that appeared to conflict with their official duties, or consulted in situations where the main benefit was the ability of the employer to invoke the name of NIH as an affiliation." To his credit, Zerhouni ushered in reforms banning NIH employees from accepting drug company consulting fees or stock. But congress is now pressuring him to relent because NIH employees have objected to the restrictions.[11]

To their credit, many courageous government scientists are now speaking out about the corruption of science and there have been a number of high profile firings and resignations ranging from the Fish and Wildlife Service to NASA where scientists are blowing the whistle on government abuses of solid science.[12]

Some 6,000 scientists including 48 Nobel laureates, 62 National Medal of Science recipients, and 135 members of the National Academy of Sciences have signed the Union of Concerned Scientists' (UCS) statement, "Restoring Scientific Integrity in Policy Making." The Bush government is certainly not the first to abuse science, but

they have raised the stakes and injected ideology like no previous administration. The result is scientific advisory panels stacked with industry hacks, agencies ignoring credible panel recommendations and concerted efforts to undermine basic environmental and conservation biology science.[12]

In the words of the UCS, "The actions by the Bush administration threaten to undermine the morale and compromise the integrity of scientists working for and advising America's world-class governmental research institutions and agencies... To do so carries serious implications for the health, safety, and environment of all Americans." [12]

We have merely scratched the surface here. The corruption of the scientific enterprise has proceeded very far. In some areas of scientific endeavor, there are almost no independent researchers left because nearly every scientist in the field is funded by corporations with an axe to grind.

Agricultural biotechnology (genetically engineered food) is one such field of inquiry. The flip side of that coin is that certain avenues of research have been nearly eliminated by the funding sources — for example, researchers say funds to study the health effects of biotech foods are now almost non-existent. [13]

What does this all mean for science and society? The public's trust in science will most certainly continue to erode. When this happens, even honest science is tarnished and loses its power to protect nature and public health because the public doesn't believe it. Honest science in the public interest is becoming an endangered species. And America slides further from democracy by and for the people.

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[1] Martha Mendoza, "Allegations of Fake Research Hit New High," THE LOS ANGELES TIMES, July 11, 2005.

[2] Ken Ward Jr., "DuPont Proposed, Dropped '81 Study of C8, Birth Defects," THE CHARLESTON GAZETTE, July 10, 2005.

[3] Michael Schroeder, "Some Professors Take Payments To Express Views," THE WALL STREET JOURNAL, December 10, 2004, pg. B1.

[4] David Michaels, "Doubt Is Their Product, Industry groups are fighting government regulation by fomenting scientific uncertainty," SCIENTIFIC AMERICAN (June 2005) Vol. 29 No. 6, pg. 96, 6p.

[5] Juliet Eilperin, "Fluoride-Cancer Link May Have Been Hidden," THE WASHINGTON POST, July 14, 2005.

[6] Sheldon Krimsky, SCIENCE IN THE PRIVATE INTEREST; HAS THE LURE OF PROFITS CORRUPTED BIOMEDICAL RESEARCH? (New York, Rowman & Littlefield 2003). ISBN 074251479X.

[7] Sheldon Krimsky and L.S. Rothenberg, "Conflict of Interest Policies in Science and Medical Journals: Editorial Practices and Author Disclosures," SCIENCE AND ENGINEERING ETHICS (2001) Vol. 7, pgs. 205-218.

[8] Meredith Wadman, "One in Three Scientists Confesses to Having Sinned," NATURE (June 9, 2005) Vol. 435, pgs.718-719.

[9] Gardiner Harris, "Drug Safety System Is Broken, a Top F.D.A. Official Says," THE NEW YORK TIMES, June 9, 2005.

[10] The World Health Organization estimates that 39% of all heart attacks globally are fatal. INTEGRATED MANAGEMENT OF CARDIOVASCULAR RISK: report of a WHO meeting, (World Health Organization, Geneva, 9-12 July 2002).

[11] David Willman, "NIH Inquiry Shows Widespread Ethical Lapses, Lawmaker Says," THE LOS ANGELES TIMES, July 14, 2005.

[12] SCIENTIFIC INTEGRITY IN POLICYMAKING; INVESTIGATION INTO THE BUSH ADMINISTRATION'S MISUSE OF SCIENCE (Cambridge, Mass.: Union of Concerned Scientists, February 2004). And SEE SCIENTIFIC INTEGRITY IN POLICYMAKING; FURTHER INVESTIGATION (Cambridge, Mass.: Union of Concerned Scientists, July 2004), both available at: [http://www.ucsus.org/global\\_environment/rsi/index.cfm](http://www.ucsus.org/global_environment/rsi/index.cfm)

[13] "Monsanto research causes concern about biotech corn," Canadian Press June 23, 2005.