Summer 2006

Occupational Medicine Clinical Update

Occupational Health Clinics for Ontario Workers, Sarnia-Lambton

The 'Science' of Manufactured Uncertainty

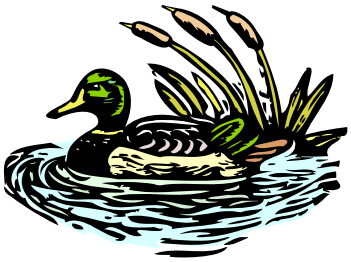
The scientific community, after years of manipulation from vested interest groups, is beginning to fight back

Easily the most frustrating aspect of occupational medicine is the awareness that there is sufficient evidence of harm from a process or substance, but because of manipulation of science and policy from interest groups, the harm is allowed to continue.

Until recently there had only been quiet rumblings from scientists, regulators, and legal professionals concerned about these 'attacks on science'.[1]

In our last newsletter we touched on this briefly with what has been described as manipulated science and lobbying that constitute 'manufactured uncertainty'.[2]

To date there has been a mere trickle of scientific literature exposing this interference. That trickle suddenly turned into a flood in the fall of 2005.



See inside for strategies to cast doubt on whether this is a duck

Two journals: the American Journal of Public Health and the International Journal of Occupational and Environmental Medicine devoted entire issues to these topics.[3,4]

This issue of the *Update* attempts to give physicians a brief overview of the range of scientific and policy manipulation techniques used by vested interests to protect profits or avoid losses. It is the science of making something that looks like a duck, appear to be something else entirely, or at least cast enough doubt that business as usual can continue until 'further study is done.'

Resolution of the American Public Health Association : 'In Defense of Science'[3]

In October 2005, the American Journal of Public Health published a strongly worded resolution[3] of the American Public Health Association, that specified some of the growing threats against science and how to respond. Some of the more important points appear as follows:

"Recognizing that special interests have exploited the nature of science, specifically scientific uncertainty, to delay protective legal and/or regulatory action;[6-14] *and...*

Recognizing that special interests, under the guise of a call for "sound science" have sponsored and promoted changes in public policy that have weakened and continue to threaten public health protections; [7-25] *and...*

Recognizing that special interests have challenged highly regarded public health research and researchers,[26-29] and inappropriately characterized established scientific methods as "junk science";[30-31] *and...*

Recognizing that the Executive Branch, beginning in 2001, has challenged core public health and scientific principles by manipulating the composition of scientific advisory committees[32,33] and dictating rigid, unrealistic peer review guidelines; *and...*

Recognizing that special interests are attempting to impede public health and environmental protections by promoting the application of the 1993 Supreme Court decision, *Daubert v. Merrell Dow Pharmaceuticals, Inc.*,[34] *...and...*

Recognizing that the Daubert decision has propagated misinterpretations and misapplications of scientific principles relied upon throughout the public health sciences...[40-44]; *and...*

Recognizing that special interests are engaged in a campaign to extend Daubert's reach to those states that have not embraced prescriptive definitions of scientific reliability.[45-46]

The resolution went on to outline approaches to dealing with some of these problems. It can be accessed in full at http://defendingscience.org

Manufactured Uncertainty - The Big Picture

Most physicians know what can happen when science is conducted by individuals or groups with a vested interest - examples within the pharmaceutical industry being the most familiar.

Far fewer physicians are familiar with the occupational or environmental scientific literature, where the history of manipulation has been long and infamous. Tobacco, lead, benzene, mercury, asbestos, vinyl chloride and more recently PFOA's (used to make Teflon) are just some examples of a pattern that often occurs when a substance that generates profit becomes studied for health effects.[5,6,7,8,9]

Shown below, we can see science is like a camera trying to capture, as near as possible, a clear image of truth. When the study investigators have no vested interest in the outcome of the research beyond enhancing our understanding of an issue, the image has the greatest chance of representing the truth.

When researchers have a vested interest in the outcome, this can change the focus of the 'camera'. This could lead to biased conclusions, such as when a researcher who is an activist has 'something to prove'.

Similarly, if researchers stand to gain financially or avoid regulatory/legal action by unclear

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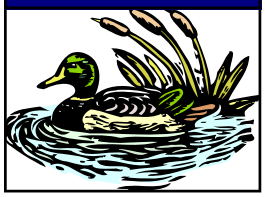
What is this?



Intention of 'Disinterested' Science: Develop greater understanding (sharpest possible focus)

Clearer Conclusions

Looks like a duck, swims like a duck, quacks like a duck…

Unclear Conclusions
"…the industry has generated enough fog to blur the truth."[6]

Difficult to establish with certainty, no clear relationship, at most more study required

Intention of Vested Interest Groups: Create uncertainty (blur focus)

Manipulation in the Scientific Arena

Abuse of Epidemiology: Automobile Manufacturers Manufacture a Defense to Asbestos Liability. Egilman & Billings, IJOEH 2005.[11]

Details how makers of asbestos-lined brakes, "….have corrupted the medical literature…" to escape liability for mesothelioma claims.

Corporate Interests as an Obstacle to the Primary Prevention of Cancer. Hagmar, SJWEH 2005.[12]

Manipulation by industry and the White House towards scientists and scientific agencies. The author concludes that these interventions result in obstruction of the primary prevention of cancer.

Over a Barrel: Corporate Corruption of Science and Its Effects on Workers and the Environment. Egilman and Bohme, IJOEH 2005.[10]

This article describes how the metaphorical barrel with too many 'bad apples', "…produces disease because political, economic, regulatory, and ideological norms prioritize values of wealth and profit over human health and environmental well-being."

Business Bias: How Epidemiologic Studies May Underestimate or Fail to Detect Increased Risks of Cancer & Other Diseases. Gennaro & Tomatis, IJOEH 2005.[13]

The authors, one a former head of the WHO's International Agency for Research on Cancer (IARC), show that occupational or environmental research studies funded directly or indirectly by industry are, "…likely to have negative results."

The Threat to Scientific Integrity in Environmental and Occupational Medicine. Tong & Olsen, OEM 2005.[6]

How various industries have distorted scientific findings and manipulated scientific advisory committees and tactics used to intimidate and attack non-compliant scientists. Ways to protect the veracity of research are explored.

findings, this can lead to fuzzy images from which it is difficult or impossible to draw conclusions. The depth of financial resources and influence an organization has increases the likelihood of this kind of bias.

This manufactured uncertainty is not restricted to the scientific realm of course. The regulatory, judicial, legislative and especially public sectors have all become arenas for aggressive lobbying and manipulation.

As stated in an article from the International Journal of Occupational and Environmental Health (IJOEH):

"Although occupational and environmental diseases are often viewed as isolated and unique failures of science, the government, or industry to protect the best interest of the public, they are in fact an outcome of a pervasive system of corporate priority setting, decision making and influence."[10]

The key arenas of influence are outlined below, with a few examples of papers that touch on these topics. The end result of such outcome-driven influence is perhaps best captured by the following statement :

"This system produces disease because political, economic, regulatory and ideological norms prioritize values of wealth and profit over human health and environmental well-being."[10]

This is an extremely brief overview of a very complex and controversial topic. Interested readers are advised to refer directly to the papers (see references on Page 4), which are available in their entirety, free on the web.[3,4]

References on Page 4

Manipulation in the Arenas of Policy and Decision Making

- **Judicial**
- **Legislative**
- **Political**
- **Public**
- **Regulatory**

Feedback Loop

Decisions in these 'arenas' can affect how science is carried out

The Perils of Relying on Interested Parties to Evaluate Scientific Quality. Wagner, AJPH 2005.[17]

Recent changes in litigation and regulatory law have resulted in an adversarial process for assessing scientific quality. The author writes that this is unwise and will result in an, "…unproductive deconstruction of science, further blur the distinction between policy and scientific judgments, and result in poor decisions because courts and agencies…sometimes lack the scientific competency needed to make sound decisions."

How Tobacco-Friendly Science Escapes Scrutiny in the Courtroom. Friedman, Daynard, Banthin, AJPH 2005.[16]

How the tobacco industry has defended itself successfully for decades by attacking reputable science with labels of 'junk science' while simultaneously creating, "…its own dubious scholarship."

The article also outlines the aggressive and successful approach of the industry's lawyers: "To paraphrase General Patton, the way we won these cases was not by spending all of [RJ Reynolds] money but making the other son of bitch spend all of his."

Also, through the creation of covertly funded front groups such as 'The Advancement for Sound Science Coalition' and others like it, the tobacco industry has sought to, "…influence perception in scientific and regulatory arenas…"

Lifting the Veil of Secrecy from Industry Funding of Non-profit Health Organizations. Jacobson, IJOEH 2005.[18]

Health organizations often provide information and take positions on scientific policies and issues under the guise of being objective and "scientific". A wide range of non-profit and other advocacy and professional associations receive covert funding from industry. This article explores some of the ways organizations' positions on scientific issues are influenced by such relationships.

Maximizing Profit & Endangering Health: Corporate Strategies to Avoid Litigation & Regulation. Bohme, Zorabedian, Egilman, IJOEH 2005.[14]

Citing examples of manipulation of science and regulatory agencies in the protection of products like tobacco, asbestos, beryllium, benzene and other chemicals, the authors review strategies used by industries to achieve "science to specification" and sway public, regulatory and judicial opinion.

Legislating "Sound Science": The Role of the Tobacco Industry. Baba et al, AJPH 2005.[15]

How Philip Morris and other corporate interests worked to dispute the link between secondhand smoke and lung cancer and ultimately, "…played a role in establishing laws that increase corporate influence on public health and regulatory policy decisions."

Manufactured Uncertainty: Contested Science and the Protection of the Public's Health & Environment. Michaels & Monforton, AJPH 2005.[2]

Using a variety of examples the authors show how the tobacco industry and others that produce hazardous products attack research that threatens their interests as 'junk science.' This manufactured uncertainty is, "…antithetical to the public health principle that decisions be made with the best evidence available."

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Occupational Health Clinics for Ontario Workers (OHCOW) is a pro-active team of health professionals committed to promoting the highest degree of physical, mental and social well being for workers and their communities. At five clinics in Ontario (Sudbury, Toronto, Hamilton, Sarnia and Windsor) a team of nurses, hygienists, ergonomists and physicians see patients and identify work-related illness and injuries, promote awareness of health and safety issues, and develop prevention strategies.

Contact us for the clinic nearest you.