

# Turning Science Into Junk: The Tobacco Industry and Passive Smoking

In this issue, Glantz and Ong offer a powerful analysis of the tobacco industry's attempt to discredit the scientific evidence on passive smoking, particularly the industry's use of the label "junk science." Environmental epidemiologic studies in other arenas have also been targets for the "junk science" label.

Lessons for researchers involved in high-stakes issues in the public policy arena include a need for awareness of competing interests, for transparency concerning funding, and for adherence to rigorous quality assurance and peer review practices. The goal of "sound science" seems an admirable one; it should not, however, be used to dismiss available but uncertain evidence in order to delay action.

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**THE TOBACCO INDUSTRY'S** scorched-earth strategies for attempting to counter the scientific evidence on active and passive smoking have now been laid bare as previously secret documents have become available. In this issue of the Journal, Ong and Glantz describe a piece of this story, the "sound science" campaign carried out by Philip Morris in an attempt to discredit the evidence on passive smoking and disease.<sup>1</sup> This campaign was only one component of a multi-pronged attack that has included letters to journals written by industry consultants that are critical of peer-reviewed publications; sponsorship of targeted research apparently intended to cloud interpretation of the evidence; attempts to discredit accepted research approaches, for example, meta-analysis and even epidemiology in general; and convening of meetings and expert panels to provide seemingly credible forums for highlighting scientific uncertainties.

The campaign described by Ong and Glantz was apparently motivated by the 1992 risk assessment report of the US Environmental Protection Agency (EPA) that identified environmental tobacco smoke (ETS) as a group A carcinogen, the strongest classification possible at the time.<sup>2</sup> Although the conclusion had been reached as early as 1986 that ETS was a cause of lung can-

cer,<sup>3-5</sup> the EPA is a regulatory agency, and its conclusion on ETS had potential implications for tobacco control policy. It was most likely these implications that were the principal concern of the tobacco industry.

In accordance with EPA guidelines, the agency's report included a quantitative risk assessment that used the epidemiologic evidence and exposure estimates to calculate the burden of lung cancer attributable to ETS. The methods of that calculation, particularly EPA's use of meta-analysis to synthesize the data, were subjected to a barrage of criticism during the report's review before the EPA's Scientific Advisory Board, in both the scientific and popular literature, and even in a lawsuit that eventually led to a decision and commentary from Judge William L. Osteen on such technical matters as meta-analysis and the width of confidence intervals.<sup>6</sup> Even now, the attack continues. In a small book published in Canada in 1999, Gori and Luik dismiss the risk assessment as "corrupt science," building from the criticisms of Judge Osteen.<sup>7</sup>

As documented by Ong and Glantz, a major component of the industry attack was the mounting of a campaign to establish a "bar" for "sound science" that could not be fully met by most individual investigations, leaving studies that did not meet the criteria to be dismissed as "junk science." The campaign also included attempts

to characterize relative risks of 2 or less as highly questionable and not amenable to investigation by epidemiologic methods.

Such tactics are not unique to the tobacco industry. For example, in his 1991 book, *Galileo's Revenge: Junk Science in the Courtroom*,<sup>8</sup> Huber reified the concept and offered a picture of lawyers and "junk scientists" united by the opportunity to make profits through litigation. Research on a number of current environmental issues is often labeled "junk science": particulate air pollution, electromagnetic radiation, and environmental estrogens, for example. Unfortunately, the insinuation that lower relative risks cannot be accurately studied by means of epidemiologic approaches has persisted, spilling over to other topics. Many studies demonstrate that effects of this magnitude can be studied, and on a biological basis we anticipate that many effects relevant to public health will fall into this range.

The tobacco industry campaign described by Ong and Glantz is remarkable for its covert nature and scope and the likely involvement of unknowing epidemiologists and other scientists. One of us, T.A.B., on invitation from the Harvard Risk Center, participated in the 1994 meeting held by Federal Focus, Inc, without knowledge of its funding source.<sup>9,10</sup> The letters of invitation to join The Advancement for Sound Science Coalition

were also silent on the coalition's tobacco industry funding.

Although the tobacco industry campaign failed to achieve its goal of undermining efforts to reduce ETS exposures, the terms “junk science” and “sound science” have stuck and continue to polarize the debates on many public health policy issues. Attacking the science underlying difficult public policy decisions with the label of “junk” has become a common ploy for those opposed to regulation. Unfortunately, environmental epidemiology studies have become convenient targets. One need only peruse JunkScience.com<sup>11</sup> to get a sense of the long list of public health issues for which research has been so labeled, including global warming, indoor radon, disinfection byproducts, ergonomics, pesticides in foods, mercury emissions, electromagnetic radiation, and particulate air pollution. This activity also appears to have tobacco industry support.<sup>12</sup>

“Sound science” has also become ingrained in the public policy vernacular. Policymakers and legislators have learned to call for “sound science”; how could anyone protest? This laudable pursuit of policy based in “sound science” has doubtless helped to increase understanding of the need for high-quality evidence and for research funding to gain this evidence. However, this pursuit may also provide a convenient excuse for delay or inaction.

For example, the recent decision to delay the proposed standard for arsenic in drinking water, while driven by concerns about the costs of implementation, was defended by the Bush administration as a move to ensure that the standard is based on “sound science.” No credible scientist or policymaker could

logically be opposed to “sound science,” yet the quest for absolute proof or the complete elimination of uncertainty must be tempered by reality. Ong and Glantz expose the destructive side of the “sound science” movement when it is manipulated to undermine public health efforts or delay regulatory action.

Although the tobacco industry's campaign attempted to create criteria that could never be met by individual studies, the criteria produced by Federal Focus, Inc,<sup>13</sup> have much in common with the principles that underlie the conduct of good epidemiologic research. It is their intended use that warrants concern, not the content. The EPA itself offers criteria for assessing the quality of evidence, including observational evidence, in its cancer risk assessment guidelines and requires that laboratory work be conducted according to established standards for investigation.<sup>14</sup> Epidemiologists conducting research, particularly research with potential policy implications, need to carry out their studies with adequate quality control and quality assurance and to be cognizant of the scrutiny that their data may receive, especially in light of the new requirements for data sharing under the amendments to Circular A-110 of the Office of Management and Budget (the Shelby Amendment).<sup>15</sup>

In spite of the attempt to cloud interpretation of the evidence on ETS and lung cancer and other diseases, the evidence has repeatedly passed the test of peer review. Since 1992, several additional reviews of the evidence have been carried out, and all, except for a review by an industry-sponsored panel,<sup>16</sup> have concluded that passive smoking increases risk for lung cancer in

nonsmokers.<sup>17,18</sup> Even Philip Morris cautiously acknowledges on its Web site that ETS is believed to be a cause of lung cancer:

Government agencies have concluded that ETS causes disease—including lung cancer and heart disease—in nonsmokers. We recognize and accept that many people have health concerns regarding ETS. In addition, because of concerns relating to conditions such as asthma and respiratory infections, we believe that particular care should be exercised where children are concerned, and that smokers who have children—particularly young ones—should seek to minimize their exposure to ETS.<sup>19</sup>

There are other lessons for public health researchers in this story. Ong and Glantz offer the disappointing news that some colleagues have received funds from the tobacco industry. The list does not appear too long, and the community of public health researchers has apparently generally resisted enticement by the tobacco industry. We are uncomfortable with the naming of names by Ong and Glantz, but the list leaves no doubt as to the campaign's reality, and the documents are now publicly available. Some colleagues have likely been unsuspecting participants in elements of the industry's campaign.

The lesson? The stakes are high in the public policy arena. Public health scientists will continue to be called on to research society's most vexing issues, and to inform and shape the public policy response. We need to be aware of the competing interests and to work for greater transparency to assure ourselves that we understand the purposes and funding sources of potentially invidious meetings and other activities. Ultimately, transparency about funding and adherence to

rigorous quality assurance and peer review practices will serve epidemiology far better than the proliferation of labels and the labeling of individual researchers as working for one side or another.

Unfortunately, “junk science” has now become an ingrained pejorative. The public health community will need to be watchful in other arenas where the “junk science” gambit will be used. Policymakers and the media need to be informed and cautioned about this approach. Rampton and Stauber, in *Trust Us, We're Experts*,<sup>20</sup> offer a popular and cautionary account, including extended coverage of the ETS story told by Ong and Glantz. The lessons learned from this episode reach far beyond the issue of ETS and may prove most valuable for other researchers who have not yet been labeled as “junk scientists.” ■

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The authors contributed jointly and equally to the planning and writing of the manuscript.

#### References

- Ong EK, Glantz SA. Constructing “sound science” and “good epidemiology”: tobacco, lawyers, and public relations firms. *Am J Public Health*. 2001; 91:1749–1757.
- Respiratory Health Effects of Passive Smoking: Lung Cancer and Other Disorders*. Washington, DC: US Environmen-

tal Protection Agency; 1992. EPA/600/006F.

3. *Tobacco Smoking*. Lyon, France: International Agency for Research on Cancer; 1986. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Monograph 38.

4. National Research Council, Committee on Passive Smoking. *Environmental Tobacco Smoke: Measuring Exposures and Assessing Health Effects*. Washington, DC: National Academy Press; 1986.

5. *The Health Consequences of Involuntary Smoking: A Report of the Surgeon General*. Washington, DC: US Dept of Health and Human Services; 1986. DHHS publication CDC 87-8398.

6. The Osteen Decision, July 17, 1998. US District Court, Middle District of North Carolina. Flue-Cured Tobacco Cooperative Stabilization Corporation v United States Environmental Protection Agency. Available at: <http://www.tobacco.org/Documents/980717osteen.html>. Accessed August 17, 2001.

7. Gori GB, Luik JC. *Passive Smoke: The EPA's Betrayal of Science and Policy*. Vancouver, British Columbia: Fraser Institute; 1999.

8. Huber PW. *Galileo's Revenge: Junk Science in the Courtroom*. New York, NY: Basic Books; 1991.

9. Graham JD, ed. *The Role of Epidemiology in Regulatory Risk Assessment*. New York, NY: Elsevier Publishers Inc; 1995.

10. Burke TA. The proper role of epidemiology in regulatory risk assessment: reaction from a regulator's perspective. In: Graham JD, ed. *The Role of Epidemiology in Regulatory Risk Assessment*. New York, NY: Elsevier Publishers Inc; 1995:149-155.

11. JunkScience.com. Available at: <http://junkscience.com/archlinks.htm>. Accessed August 17, 2001.

12. Rampton S, Stauber J. How big tobacco helped create "the Junkman." *PR Watch*. 2000;7(3). Also available at: <http://www.prwatch.org/prwissues/2000Q3/junkman.html>. Accessed August 17, 2001.

13. *Principles for Evaluating Epidemiologic Data in Regulatory Risk Assessment*. Washington, DC: Federal Focus Inc; 1996.

14. *Proposed Guidelines for Carcinogen Risk Assessment*. Washington, DC: US Environmental Protection Agency, Office of Research and Development; 1996. EPA/600/P-92/003C.

15. Cohen LR, Hahn RW. Science and regulation: a solution to concerns over public access to scientific data. *Science*. 1999;285:535-536.

16. Benitez JB, Idle JR, Krokan HE, et al., eds. *Environmental Tobacco Smoke and Lung Cancer: An Evaluation of the Risk*. Trondheim, Norway: European Working Group on Environmental Tobacco Smoke and Lung Cancer; 1996.

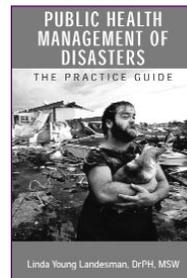
17. *Health Effects of Exposure to Environmental Tobacco Smoke*. Sacramento: California Environmental Protection Agency, Office of Environmental Health Hazard Assessment; 1997.

18. *Report of the Scientific Committee on Tobacco and Health*. London, England: Her Majesty's Stationery Office; 1998.

19. Philip Morris USA. Secondhand smoke: our actions to reduce unwanted ETS. Available at: <http://www.philipmorrissusa.com/DisplayPageWithTopic.asp?ID=62>. Accessed August 17, 2001.

20. Rampton S, Stauber J. *Trust Us, We're Experts: How Industry Manipulates Science and Gambles With Your Future*. Los Angeles, Calif: J.P. Tarcher; 2000.

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