

27 July, 1998

Dr. Sharon Boyse
Director, Scientific Communications
Brown and Williamson

The Fraser Institute *Vancouver & Toronto*
Right-wing but not too far

Dear Sharon:

Since our meeting in May Gio Gori and I have been working, as you know, on producing a small publication for your use on the two areas of the tobacco controversy that we agreed could be usefully addressed: ETS and 'social costs'. With the recent court decision on the EPA, however, might we suggest a concurrent idea? This would be to bring to publication very quickly the actual court judgement along with a selected commentary and accompanied by my CECM commissioned piece on the EPA and ETS, "Pandora's Box: The Dangers of Politically Corrupted Science." (Attached) You will recall that the Pandora piece was published in the peer-reviewed journal of Boston University, *The Bostonia*. You might also wish to include the somewhat more lengthy report I did for Brendan Brady when he was in Australia on ETS. This approach of actually publishing the judgement with commentary was used very successfully by the companies following the Canadian court decision on tobacco advertising. The advantage of this judgement is that it is substantially shorter than the advertising decision.

*Judgment
Bostonia +
Commentary*

*Int'l
Public Affairs*

We could have this booklet ready in just over a month and have it sponsored by a think-tank here if you wish. The CTMC (BAT, RJR, Rothmans) would be very interested in co-sponsoring such a venture and I think Rothmans in Denham would be interested as well. Gio and I would still keep working on the other project but this would simply be a more immediate opportunity.

Every good wish,

John Luik
905-468-0569

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Pandora's BOX

the Dangers of Politically Corrupted Science for Democratic Public Policy

BY JOHN C. LUIK

THE CONTEXT

THE ASSUMPTIONS ABOUT THE NATURE OF persons and of the legitimate role of the State (of necessity unargued for) which structure our argument are those of an unreconstructed liberal individualist, namely, that the individuals who make up democratic society are the best judges of the shape they wish their lives to take, and consequently they should be accorded the maximum liberty, compatible with similar liberty for everyone else, to think, believe, and live as they choose. This means that the State's role is at least fourfold: first, to prevent or minimize harms by one individual to another individual; second, to minimize and where necessary adjudicate the inevitable conflicts that occur between individuals and between individuals and the community; third, to defer, wherever possible, from moral judgements about how its citizens choose to shape their lives; and finally, to create the minimal institutional conditions which allow its citizens' self-chosen lives the best chance of fulfillment.

What this means is that the State will resist the impulse, however well-intentioned, to undermine and intrude upon its citizens' capacities and inclinations for autonomy by defining one vast and unassailable conception of the good life to which all must subscribe. What this means is that the State will see its citizens as persons of intrinsic worth, fully equivalent in moral standing with itself, with lives not to be managed or saved, but to be allowed to develop in ways of their own choosing.

In order to understand the ways in which science and public policy intersect in the debate over smoking — as indeed

over many other "health" issues — it is necessary to place the smoking controversy in general and the Environmental Tobacco Smoke controversy in particular within the larger context of both governmental and nongovernmental efforts to discourage tobacco use. For most of the twentieth century the campaign to delegitimize smoking has employed two major weapons, science, particularly epidemiology, and morality, within the general conceptual framework of what can be called health paternalism. Though the mix has varied, the conjunction of the two has been not only consistent, but also highly effective.

For example, once it was established that smoking increased the risks of ill health in smokers, the groundwork was laid for a series of moral arguments that purported to show that subjecting oneself to these risks was both so irrational and immoral as to justify government efforts to prevent one from assuming the risks. The health paternalism at work here rests on a series of assumptions about reason, autonomy, and the nature of persons that include the following:

1. autonomy is not the foundational democratic value inasmuch as considerations of happiness and welfare frequently take precedence over it;
2. individuals are frequently irrational in that they
 - a. often do not understand their interests; and
 - b. even if they do understand their interests they do not know how best to realize those interests;
3. individuals need the State's help in
 - a. discovering and realizing their "true" interests; and
 - b. avoiding irrational courses of action that result in unhappy consequences.

What unites these assumptions is the belief that the State is justified in protecting competent adults from the allegedly harmful consequences of their actions through restricting their autonomy.

Based on these assumptions, health paternalism advances the following claims:

1. health is the preeminent value which outweighs, in most instances, all other values such that a rational person would not normally place his health at risk in the interests of some other value;
2. there is but one healthy/rational way to live one's life and such a way does not include activities that carry with them significant risks to well-being or longevity;
3. individuals have a moral obligation to order their lives in this healthy/rational way; and
4. the State is justified, indeed the State has a moral obligation, to ensure that its citizens conform to this health/rational paradigm, even if they wish not to or are unable to through their own efforts.

Health paternalism is thus a subtle shift away from the generally uncontroversial right of the State to ensure that consumers are fully informed about the risks of certain products or activities to their health to the highly contentious claim that the State is justified in attempting to manipulate and coerce. Despite its highly problematic character, health paternalism has been to some degree immune from the sorts of objections that are routinely brought against other forms of paternalism. Health paternalism's immunity from such criticism does not derive from the cogency of its arguments but from the fact that it rests not just on moral argument but on "unquestionable" scientific fact. And in a world in which science is increasingly the source of both truth and value the scientific character of health paternalism is decisive.

But, however closely aligned to science, the ability of health paternalism to secure all of the public-policy objectives of the anti-smoking movement was always constrained by the fact that, at least within democratic societies, the justifications for government intervention to protect adults from themselves — to coerce "healthy" lifestyles — would continue to have a totalitarian flavor about them that would ensure significant and widespread opposition. It is only by demonstrating that the dangers from smoking transcend the smoker and extend to innocent bystanders that the anti-smoking movement could move beyond obvious health paternalism and enlist unambiguous support for public-policy measures designed to restrict, ban, and criminalize public smoking. The movement away from the risks of smoking for smokers to the alleged dangers of secondhand smoke for nonsmokers does not mean that the health-paternalist arguments have suddenly disappeared from the public-policy agenda of the anti-smok-

ing movement. Whether one is considering the policy implications of tobacco advertising or the supposedly addictive properties of nicotine, the paternalist justifications for government interventions in the lives of smokers still constitute a significant strand of the anti-smoking argument. What has changed is that arguments about harms to self have assumed a secondary place to arguments about harms to others. What has remained the same is the fact that the new arguments about harms to others, to innocent bystanders, strongly resemble the old "paternalistic" (often religious) arguments. What is new is the consideration of science and morality to justify public policy.

We wish to argue that:

1. the "science" supporting the claims about tobacco's risks to non-smokers is corrupted science, science that has been politically laundered, science that because of its corrupted status actually ceases to be science;
2. the use of such science by the government and the anti-smoking movement reveals not only the illegitimacy of their public-policy agenda but the flawed character of the advocacy as well; and
3. the existence and use of such corrupted science poses a significant threat to legitimate democratic public policy.

CORRUPTED SCIENCE

If the government and the anti-smoking lobby are to justify their claim that the debate in society about smoking in the last decade of the twentieth century is really a debate about the dangers that smoking poses to nonsmokers then it is imperative that those dangers be demonstrable, compelling, unequivocal, and significant. And it is only science that can deliver dangers with the requisite pedigree. Should the scientific evidence be less than decisive, the debate about smoking will return to a debate about the legitimacy of health paternalism, which is a debate that neither the government nor the anti-smoking movement can easily win. Everything, therefore, depends on science. And with so much at stake, the pressure to adjust, shave, create, ignore, reevaluate, even manipulate, is enormous.

The pressure comes from at least four sources: from the dispositions of scientists themselves, from the rational character of science itself, from the structure of the scientific enterprise, and from society's expectations of science.

• Scientists, like everyone else, have their own personal perspective, values, and ideological agenda, whatever their commitment as scientists to the objective nature of science. Indeed, a good many scientists, either apart from their scientific training or because of it, believe that tobacco use is dangerous and immoral. Most scientists and most healthcare professionals have come of age in a professional atmosphere

that for the last twenty five years has been increasingly hostile to tobacco use. It is not unreasonable to assume that many scientists have a strong professional interest in establishing their personal beliefs and the beliefs of their milieu as scientific fact. As William Broad and Nicholas Wade observe in *Betrayers of Truth: Fraud and Deceit in Science*, "science is not a perfectly objective process. Dogma and prejudice, when suitably garbed, creep into science just as easily as into any other human enterprise, and maybe more easily since their entry is unexpected."

- The ideology of science, which focuses almost exclusively on the objective and rational character of science, tends to blind both scientists and those who rely on science to the fact that there are other elements involved in science besides strict logic and rationality. "The presence of a strong rational element in science has been taken to mean that that is the only significant element of scientific thought. But creativity, imagination, intuition, persistence, and many other nonrational elements are also essential parts of the scientific process, and other less vital qualities such as ambition, envy and the propensity to deception also play a role" (Broad and Wade, p. 218). These other aspects of the scientific process, which are common to other areas of creative endeavor, tend to work against objectivity, particularly when they are not acknowledged as part of the scientific paradigm.

- Scientific careers are advanced on the basis of published, peer-reviewed findings — findings that for the most part grow out of funded research. The decisions about which research project to pursue and which research results to publish are often determined by a subtle interplay between scientific orthodoxy, funding procedures, quite genuine career considerations, and the search for scientific truth.

- Science exists within a society that has certain expectations about what science ought to do, one of which is that science exists to make the case, as it were, against whatever it is that society considers to be dangerous. The fact that much of society believes tobacco to be dangerous creates a strong series of incentives to establish and indeed enlarge the range of smoking-induced harms, while at the same time ignoring or suppressing research that questions these received orthodoxies.

But what, it might be asked, is corrupted science? And more importantly, what is the evidence that the official Environmental Tobacco Smoke (better known as ETA or "passive smoke") story is indeed an instance of such a corrupted science? Could it not be the story is indeed an instance of such science? Could it not be the case, for instance, that the Environmental Protection Agency's conclusions about ETS are in fact simply incompetent science, science that has failed to do its work properly but not science that has deliberately decided to tell the wrong story?

It is certainly true that not every instance of weak or flawed science is an instance of corrupted science. Corrupted

science has at least three characteristics that mark it off from simply incompetent science.

First, corrupt science is science that moves not from hypothesis and data to conclusion but from mandated or acceptable conclusion back to selected data in order to reach the mandated or acceptable conclusion. That is to say, it is science that uses selected data to reach the "right" conclusion, a conclusion that by the very nature of the data necessarily misrepresents reality.

Second, corrupt science is science that misrepresents not just reality, but its own process in arriving at its conclusions. Rather than acknowledging the selectivity of its process and the official necessity of demonstrating the right conclusion, and rather than admitting the complexity of the issue and the limits of its evidence, it invests both process and its conclusions with a mantle on indubitability.

Third, and perhaps most important, whereas normal science deals with dissent on the basis of the quality of its evidence and argument and considers *ad hominem* argument as inappropriate in science, corrupt science seeks to create formidable institutional barriers to dissent through excluding dissenters from the process of review and contriving to silence dissent not by challenging its quality but by questioning its character and motivation.

In effect then, corrupt science is science that is flawed in both its substance and its process and that seeks to conceal these essential flaws. It is essentially science that wishes to claim the policy advantages of genuine science without doing the work of real science.

The evidence that the EPA's science on ETS is corrupt science falls into two categories: evidence about the substance of the science and evidence about the process involved in creating and using the science.

THE SUBSTANTIVE ISSUE

The EPA's report *Respiratory Health Effects of Passive Smoking: Lung Cancer and Other Disorders* claims that "based on the weight of the available scientific evidence, the U.S. Environmental Protection Agency has concluded that the widespread exposure to environmental tobacco smoke in the United States presents a serious and substantial public health impact." The hedging is in the swerve from "hazard" to "impact." Is this the case?

In order to answer this question one must first know something about the data on which the EPA's decision is based. The EPA's report refers to the thirty epidemiologic studies on spousal smoking and lung cancer that have been published between 1982 and 1990. It is important to note that in referring to the report then-EPA administrator William

Reilly spoke about ETS in the workplace and, though the Report has been used as a basis for demanding smoking bans both in public places and in workplaces, the EPA *did not examine those studies that look at workplace ETS exposure*. The overwhelming majority of these do not find a statistically significant association between exposure to ETS and lung cancer in nonsmokers: a fact that by itself destroys the legitimacy of any harm-based demand for public or workplace smoking bans.

Thus, to begin with, the EPA's case is based not on workplace or public-place ETS exposure, but on the risks of non-smoking spouses contracting lung cancer from their smoking spouse. But what of the thirty studies? The thirty studies come from different countries and vary substantially in size. Some studied fewer than twenty subjects, others are based on larger populations, with the largest study involving 189 cancer cases. Of the thirty studies, twenty-four reported no statistically significant association; only six reported a statistically significant association, that is, a statistically significant increased risk for those non-smoking spouses. Relative risks are further classified into strong risks or weak risks depending on the magnitude of the risk ratio. Within the thirty studies on ETS and lung cancer *none* reported a strong relative risk. Moreover, whenever the assessment of relative risk is weak, there is a substantial possibility that the finding, the assessment, is artificial rather than real. That is to say, there is a strong likelihood that even the weak relative risk is a reflection not of some real-world risk, but of problems with confounding variables or interpretative bias. There are, for instance, at least twenty confounding factors ranging from nutrition to socioeconomic status that have been identified as associated with the development of lung cancer. Yet none of the thirty studies attempts to control for all of these factors. So in assessing the global scientific evidence about ETS and lung cancer, the crucial conclusion is that *none of the studies report a strong relative risk for nonsmokers married to smokers*.

The EPA Report discusses all thirty studies but limits its statistical analysis to only eleven U.S. studies of spouses of smokers. Of the eleven studies, the EPA claims that ten reported no statistically significant association between ETS exposure and lung cancer; and only one reported a statistically significant association. But this claim about the one U.S. study is in fact true only by using the EPA's unique 90 percent confidence level. Using the accepted 95 percent confidence level *none* of the eleven studies reported a statistically significant risk.

The EPA analysis of these eleven studies claims that together they show a statistically significant difference in the



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number of lung cancers occurring in the non-smoking spouses of smokers, such that they suffer 119 such cancers compared with 100 such cancers in non-smoking spouse of non-smokers. It is this finding of statistical significance, a finding based on only eleven U.S. studies, *none* of which demonstrate a statistically significant increased risk unless they are "reanalyzed" using the EPA's 90 percent confidence interval (and even such "coaxing" of the figures could produce only one study that purported to show statistically significant increased risk), that provides the *only* basis for the EPA's decision to classify ETS as a "Group A" carcinogen.

In order to arrive at its "conclusion," the EPA pooled the data from the eleven studies into a combined data assessment called a meta-analysis. Meta-analysis is governed by its own rules: not every study is a candidate for such combined analysis. In general, meta-analysis is appropriate only when the studies being analyzed together have *the same structure*. The difficulty with the EPA's use of meta-analysis of the eleven ETS studies is that it has failed to provide the requisite information about the structure of those studies, information crucial for an independent assessment of whether the studies are indeed candidates for meta-analysis. Thus, the EPA conclusion is based on a meta-analysis that is difficult, if not impossible, to verify.

Adjusted confidence levels are not, however, the only problem with the EPA analysis. Equally disturbing is the EPA's use of a one-tailed test as opposed to a two-tailed test. Two-tailed tests (see sidebar) are generally used in statistical analysis because it is rare for one to know *a priori* that a null hypothesis can be discredited in only one direction. By using a one-tailed test the EPA assumes that ETS exposure can only *increase* the lung cancer risk, despite the fact that *a substantial number of studies show a decreased risk*. (One recent large study even showed a statistically significant decreased risk.) While the EPA claims that a one-tailed analysis actually compensates for a 90 percent confidence interval, what the use of such an analysis actually does is reduce the confidence level even further.

The quality of the EPA's ETS science is the issue of "confidence intervals." Even by limiting its analysis to only eleven studies, and even by lumping these studies together through a meta-analysis, the EPA could not have achieved the "right" result if it had not engaged in a creative use of what epidemiologists call confidence intervals. Essentially, confidence intervals express the likelihood that a reported association could have occurred by chance. The generally accepted confidence interval is 95 percent, which means that there is a 95 percent confidence that the association did not occur by chance. Inasmuch as most epidemiologists use the 95 percent confidence interval, the EPA itself, until the ETS report, always used this interval. Curiously, the EPA decided that in this instance it would use a 90 percent confidence interval, something that effectively doubles the chance of being wrong. Even more curious is the fact that when asked to justify this departure from accepted scientific procedure, EPA administrator Reilly simply replied that the 90 percent confidence interval "was recommended to us by the scientific community as appropriate to this data." What Mr. Reilly really means by "appropriate to this data" is that *without using this 90 percent standard, the EPA could not have found that the eleven U.S. studies were "statistically significant."* Without employing a novel standard, without in effect changing the accepted rules of epidemiological reporting, the EPA result, already painfully coaxed into existence, would not have existed, and ETS could not

have been labelled a "Group A" carcinogen.

Thus, despite all of its careful selection of the right data, its meta-analysis and finally its relaxed confidence intervals, the conclusive point remains, as Huber, Brockie, and Mahajan note in *Consumers Research in the United States* (1991), that "no matter how the data from all of the epidemiological studies are manipulated, recalculated, 'cooked,' or 'massaged,' the risk from exposure to spousal smoking and lung cancer remains weak. . . . No matter how these data are analyzed, no one has reported a strong risk relationship for exposure to spousal smoking and lung cancer."

THE PROCESS ISSUE

While a careful look at the substance of the EPA's ETS claims clearly shows why this science can be called nothing less than corrupt science, an examination of the process underlying this science demonstrates even more clearly its wholly corrupted character. There are at least ten specific process issues worth noting, each of which highlights a slightly different dimension of the corrupted character of the EPA's ETS science.

First, EPA science issues from a perspective that can be traced back to the Lalonde Doctrine propounded by former Canadian Minister of National Health and Welfare, Marc Lalonde. Lalonde argued that health messages must be vigorously promoted even if the scientific evidence was incomplete, ambiguous, and divided. Health messages must be "loud, clear and unequivocal" even if the evidence did not sup-

TWO-TAILED TESTS

A null hypothesis is a precisely stated assertion associated with a statistical test; results of that test are intended to determine whether the null hypothesis should be accepted (regarded as true) or rejected (regarded as untrue).

Because we are more comfortable accepting demonstrations that statements are false than otherwise, statisticians usually arrange their experiments so that the null hypothesis is contrary to the underlying thesis. Thus, rejection of the null hypothesis corresponds to confirmation of the thesis.

Suppose that like the EPA we want to demonstrate that exposure to ETS increases the risk of lung cancer. Since we cannot examine everyone exposed to ETS we design a statistical experi-

ment to determine whether our thesis seems to be true. Our null hypothesis is: Exposure to ETS does not increase the risk of lung cancer. Next we select random samples of individuals exposed to ETS and random samples of individuals not exposed to ETS. If equality holds between the two samples, that is if the rates of lung cancer are not different, we have failed to demonstrate our thesis. If, on the other hand, individuals exposed to ETS have significantly higher rates of lung cancer we can reject the null hypothesis.

In posing a null hypothesis for statistical testing one always states an alternative hypothesis which is to be accepted if the null hypothesis is rejected. The alternative hypothesis must encompass the entire range of alternatives to the

null hypothesis. In this case the correct alternative hypothesis is that the risk of lung cancer in populations exposed to ETS and populations not exposed to ETS are *different*, that is populations exposed to ETS might have *increased* risks of lung cancer or they might have *reduced* risks of lung cancer.

This is an example of a two-tailed analysis since exposure to ETS can either increase or decrease the risk of lung cancer. In using a one-tailed test, the EPA failed to state the correct alternative hypothesis to its null hypothesis. The EPA in effect *assumed* that ETS exposure could only increase the risk (one tail) of lung cancer. Since a substantial number of studies have shown a *decreased* risk with ETS exposure — including a large recent one which was statistically significant — two-tailed tests are required.

port such clarity and definition. What we have in the EPA is simply the Lalonde Doctrine as an institutionalized process. Clearly the substance of the ETS data does not support its "Group A" status, nor does it support public and workplace smoking bans (desirable as some might find them on other grounds) on the grounds that ETS threatens the health of nonsmokers.

But the substance of the ETS data is to be ignored because the Lalonde Doctrine requires that the substance be portrayed as something that it is not in order to further the health agenda.

What this does is to build into the heart of the scientific enterprise an institutionalized motivation and justification for allowing ends extrinsic to science to determine the findings of science, for allowing science to be subject to an agenda not its own, for allowing science to lie with a clear conscience. Once one has come to see science as something that of necessity happens within the context of health promotion, then the process corruptions of the EPA follow quite "naturally."

This explains why at one level those involved with the EPA decision on ETS are quite frank about the process. For instance, the EPA official responsible for the revised ETS risk assessment was quoted in *Science* (July 31, 1992) as admitting that "she and her colleagues engaged in some fancy statistical footwork" to come up with an "indictment" of ETS. (The footwork to which she refers is the novel 90 percent confidence interval and the one-tailed test.) Or to take another process example, the Science Advisory Board which reviewed the initial draft risk assessment on ETS, and found the case against ETS based on its association with lung cancer unconvincing, actually urged the EPA staff to attempt to "make the case" against ETS on the basis of the similarities between ETS and mainstream smoke.

To be fair, the consequences of the Lalonde Doctrine are not confined to the EPA's anti-smoking agenda. For instance, an article in the *Journal of the American Medical Association* for July 29, 1989, reported a study that claimed to show a link between ETS exposure and an increased risk of cervical cancer. In response to critics who noted that such a link was biologically implausible and that the study had ignored confounding factors, the authors replied that the study was justified simply on the ground that it might reinforce the "dangers of smoking" message. "While we do not know of a biologic mechanism for either active . . . smoking or ETS to be related to cervical cancer, we do know that cigarette smoking is harmful to health. The message to the public, as a result of this study, is one that reinforces the message that smoking is detrimental to health." It would be difficult to find a more succinct example of the Lalonde Doctrine at work. There is no compelling evidence to support our claim, the authors all



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but admit, but it is important, in the interests of health promotion, that the public be made to think that there is scientific evidence of harm.

2. But second, while those involved in the EPA process are at one level open about the process, at another level they are profoundly dissembling. For instance, the EPA fails to mention that the "Group A" status for ETS was arrived at using a process that violates its own *Guidelines for Carcinogenic Risk Assessment*. Rather than acknowledging that this suggested that both the substance of its findings and the process were corrupt, the Science Advisory Board reviewing the ETS issue argued that this suggested a need: not that ETS posed no threat to the health of nonsmokers, but rather that the *Guidelines for Carcinogenic Risk Assessment* be changed. Given that the right conclusion must be reached and the data do not support that conclusion, one must manipulate the data and revise the guidelines governing the process and the conclusion.

3. Third, the ETS risk assessment process has been corrupted from the outset by the fact that it has repeatedly violated the standards of objectivity that prevail in legitimate science by utilizing individuals with anti-smoking biases. One member of the group working on the ETS issue at the EPA is an active member of U.S. anti-smoking organizations, while the Science Advisory Board that examined the EPA's ETS work included not only a leading anti-smoking activist, but several others strongly opposed to tobacco use. Finally, the EPA contracted some of the work on certain documents related to the ETS risk assessment to one of the founders of a leading anti-smoking group.

4. Fourth, the EPA changed the accepted scientific standard with respect to confidence intervals, without offering any compelling justification, in order to make its substantive findings statistically significant.

5. Fifth, the EPA's Workplace Policy Guide which as a policy document would, in the course of normal scientific process, be developed only after the scientific evidence was in, was actually written before the scientific risk assessment was even completed, let alone reviewed and finalized. Quite obviously, science was to be made to fit with policy, rather than policy with science.



Given that the right conclusion must be reached and the data do not support that conclusion, one must manipulate the data and revise the guidelines.

6. Sixth, the EPA fails to note that, if the two most recent U.S. ETS studies were to be included along with its eleven other studies, it would have resulted in a risk assessment that was not statistically significant, even using the 90 percent confidence interval. With its entire "conclusion" at risk, there are exceedingly compelling process reasons for the EPA to have excluded these two later studies from their analysis.

7. Seventh, exclusion, however, was apparently insufficient, for the EPA does more than simply not use the studies, it actually refers to them in an appendix and misrepresents one of them by claiming that it supports the EPA's ETS conclusions. The study, by Brownson, et. al, which appeared in the November, 1992 *American Journal of Public Health*, reported no statistically significant increase in risk between lung cancer and ETS exposure. In order to get around this politically unacceptable conclusion, the EPA quotes Brownson as concluding: "Ours and other recent studies suggest a small but consistent increased risk of lung cancer from passive smoking." But this is not the issue, as the EPA well knows. The question is not whether there is a small increased risk, but whether there is a statistically significant risk, which Brownson concludes there is not. In effect, the EPA misrepresents a scientific finding by changing the terms of reference from statistical significance to just plain risk.

This penchant for misrepresentation is not, however, confined to recent studies. For instance, the EPA analysis consistently makes reference to the Garfinkel, et. al. study. At Chapter 5.48 the EPA claims that the Garfinkel study presents "at least suggestive evidence of an association between ETS and lung cancer. . . ." But a careful reading of Garfinkel does not confirm this at all. Garfinkel actually says that "we found an elevated risk of lung cancer, ranging from 13-31 percent, in women exposed to smoke of others, although the increase was not statistically significant." (L. Garfinkel et al, "Involuntary Smoking and Lung Cancer: A Case-Control Study," *Journal of the National Cancer Institute*, 75, 1985.) The entire question of suggestive evidence is bogus: the relevant question is whether Garfinkel found a risk that was statistically significant. He did not, and the EPA misrepresents his findings.

56 WINTER 1993-1994 BOSTONIA

8. Eighth, the EPA represents its process as a comprehensive and objective analysis of the ETS data. In the usual course of things this would imply a careful examination of the criticisms that have been leveled at the studies used to reach its conclusions. However, a careful examination of the bibliography accompanying the report suggests that this is not the case. Although the note with the bibliography indicates that it is not a "comprehensive list of all references available on the topic," it is still a list of all references cited and

reviewed for the report. Yet, to take but one example, one would never know from the report or its bibliography that the work of Trichopoulos had been subjected to significant criticism by both Burch and Heller, since neither is mentioned in the bibliography. Nor would one know that Trichopoulos acknowledged such criticism and even criticized his study himself. (See Trichopoulos et. al, "Lung Cancer and Passive Smoking" *Int. J. Cancer*, 27:1-4.)

Now the possible explanations for such selectivity are that:

1. The authors of the study are not familiar with such criticisms, which would suggest incompetence, or
2. they are familiar with the criticisms but have misunderstood, ignored, or discounted them.

But even if one were to discount or ignore them, it is still odd, if one is committed to objectivity and openness, not to cite them. Not to cite them suggests that one wishes to act as if they didn't exist, and to do this is to give rise to more than the suspicion that the EPA's ETS work is really an instance of a closed-loop process abuse. In a closed loop the circle is never opened up to divergent, dissenting views that challenge the orthodox conclusion. It is not simply that such divergent views are discounted, it is rather that, as the EPA discussion and bibliography indicate, they simply are never heard — indeed judging from the bibliography they don't exist. When one considers this closed loop process in the context not merely of what the EPA excluded in terms of dissenting voices, but in the context of what it sought to include in terms of determining voices — the anti-smoking movement — then it is hard to assign any degree of objectivity to the process.

9. Ninth, there is significant evidence that the EPA ignored the misgivings of its own scientists about its ETS assessment process and conclusion. Two internal EPA documents (April 27, 1990, and March 23, 1992), both by the EPA's Environmental Criteria and Assessment Office and both recently released by Congressman Tim Valentine, suggest that the EPA process and report was badly conceived and argued, that the alleged "causal" connection between lung cancer and ETS was overstated, and that the evidence does not support a Group A carcinogen classification for ETS.

10. Tenth, despite the significant difficulties that have been raised about the quality of EPA science, the EPA process is incapable of correcting itself. This was made particularly clear by the Expert Panel in its report *Safeguarding the Future: Credible Science, Credible Decisions*, which noted that:

1. EPA "science is of uneven quality";
2. the "EPA has not clearly conveyed to those outside or even inside the Agency its desire and commitment to make high-quality science a priority";
3. "the science advice function — that is the process of ensuring that policy decisions are informed by clear understanding of relevant science — is not well defined or coherently organized within EPA";
4. the "Agency does not have a uniform process to ensure a minimum level of quality assurance and peer review for all the science developed in support of Agency decision making";
5. the "Agency lacks the critical mass of externally recognized scientists needed to make EPA science generally credible to the wider scientific community";
6. "science should never be adjusted to fit policy."

This is perhaps the most significant process corruption of all, namely a process that is quite conscious of its problems but is unwilling and unable to address them. Of course even this characterization is perhaps too kind given that what the Expert Panel describes as problems are really, for the anti-smoking movement, just the normal way that science must proceed if it is to make the anti-smoking case. If this is the case, then there is no conscious sense of process problems. What the Expert Panel's Report actually provides, of course, is another description of corrupted science — science corrupted in its substance and its process; science driven by a pre-determined policy agenda; science based on inadequate data; science of uneven quality and inadequately peer-reviewed; science lacking critical validation by outside scientists representative of "wider scientific community;" and science, finally, fully aware of its corruption, but unable to heal itself.

THE USES OF CORRUPTED SCIENCE

It is clear from the way in which the EPA has handled the ETS issue that the anti-smoking movement is aware of, if not directly involved in, using corrupted science in the pursuit of its public-policy agenda. Indeed, as Alvan Feinstein, a Yale University epidemiologist writing in *Toxicological Pathology* noted, a prominent epidemiologist commenting on the EPA's work on ETS admitted that, "Yes, it's rotten science, but it's in a worthy cause. It will help us to get rid of cigarettes and to become a smoke-free society." But what sorts of moral questions are raised by the anti-smoking movement, a movement that has always claimed the moral high ground for itself alone, using and pressuring govern-

ments to use corrupted science as a basis for public policy?

One moral question is obviously the question of the legitimacy of misrepresentation, for corrupted science is at bottom science that misrepresents the state of reality. And what a careful analysis of the scientific claims of the EPA and the anti-smoking movement reveal is a profound and systematic disregard for the truth about the dangers from ETS. Not only are data manipulated to produce the desired results and suppressed or dismissed when they do not fit the standards of political correctness, but accepted standards about confidence intervals are changed without justification. In effect, one has an ethic that legitimizes misrepresentation in the service of a good cause — "a smoke-free society."

But is a smoke-free society a sufficient justification for a public health movement founded on unreliable science and blatant misrepresentation? We would suggest that it isn't. First, structuring a public health campaign on deceit is to place it upon terrain that is both notoriously slippery and crevice-laden. The frightening thing about institutionalized deceit, even in the allegedly righteous cause of eliminating smoking, is that like any moral corrosive it is both so easy to justify and so difficult to restrict its use to the ends that originally justified its employment. Second, the entire project of corrupted science, like all projects of deception, is designed to manipulate individuals and society to do things that they would not normally do, and to do so based on a false picture of reality. The liar's game, is after all, morally deviant precisely because it subverts our autonomy by misinforming us. The liar distorts the truth in order to obtain our consent not through argument but through coercion. And the great enemy of freedom is not so much overt coercion but the coercion brought about by biased information. The corruption of a science that misrepresents is moral corruption of the most foundational sense, for it corrupts a centerpiece of both morality and democracy, namely our ability to act freely.

But there is a second moral question here that goes beyond the morality of misrepresentation into what might be called the morality of suppressing dissent. Both the process of producing corrupted science and of utilizing it as the basis for public policy demand a fundamental intolerance of dissent, both scientific and otherwise. The imperatives of health promotion are such that both the ambiguities and uncertainties that form a legitimate part of science and more importantly, serious questions about the quality of the evidence and whether it justifies the proposed public-policy measures, cannot be tolerated. This means that scientific and public-policy dissent must be suppressed by portraying dissenters as in the pay of the tobacco industry or marginal to the scientific establishment. This strategy raises a host of subsidiary moral questions. Whatever the cost, "science" must be seen to provide a conclusive and united answer to the question of tobacco and its harms to the innocent. Thus, despite the vital role of questions, argument, and dissent in science as well

as in democratic life, the anti-smoking movement seeks to silence dissent in the interests of protecting not the truth but its misrepresentation of the truth.

The third moral question centers on what the manufacture and use of such science does both to science and to legitimate democratic public policy. Corrupted science is rather like an intellectual acid rain that eats away at everything that it touches. For instance, it gnaws

away at the distinguishing characteristic of science — its objectivity — and threatens to render science essentially worthless for public-policy purposes. Though science is never completely objective, if indeed complete objectivity is possible, it at least, in distinction from much of the political process, professes a fundamental interest in reason, evidence, and bias-free judgement. In fact, much of science's standing in contemporary society derives from its objective character, as does much of its usefulness in the public-policy process.

In effect, we have a high degree of confidence in the scientific process as providing a careful, evidenced, and to some degree, value-free, assessment of certain questions relating to public policy, and it is precisely this utility that the use of corrupted science threatens. If science ceases to work outside of the political and policy process, if it ceases to be a tool available to all sides of an issue, if it becomes politicized and ideologically sensitive, then it ceases to be valuable in the policy process. Rather than acting on the voice of reason, it becomes nothing more than another special pleading.

In this sense, to use corrupted science, for however allegedly worthy an end, is inevitably and irretrievably to corrupt science itself. No one who genuinely cares about good public policy, policy crafted on the basis of careful argument, cogent reasoning, and compelling data, policy that can stand the test of careful probing and consistent dissent, can countenance the corruption of science.

But the use of bogus ETS science to manipulate the public policy debate on smoking threatens not just science, but also the standards of rationality that distinguish legitimate public policy. Adherence to the norms of rationality require that the identification of problems, causes, and solutions be based on empirical evidence of the most rigorous sort, evidence that is specific, strong, consistent, or coherent and demonstrates the appropriate causal connections, that rests on rational arguments which are clear and logically compelling. Problems and solutions that cannot meet this standard of argument are not allowed a place in the public-policy process since to do so is to abandon the commitment to reason that is a fundamental democratic value.

Yet the use of corrupted ETS science as a basis of public policy is nothing less than an abandonment of rationality as a measure of legitimate public policy. As we noted above,



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the EPA and the anti-smoking movement's ETS science cannot meet any of the tests of rationality that determine legitimate public policy problems and solutions. The ETS "evidence" is not specific, strong, consistent, coherent, nor does it demonstrate the appropriate causal connections. If it fails these tests, it cannot provide compelling rational reasons — as opposed to rhetorical and emotional reasons — for its public-policy recommendations.

The use of corrupted ETS science is, however, more than simply an abandonment of reason in the public policy process; it is also frightening, an attempt to institutionalize a particular irrational view of the world as the only legitimate perspective: to replace rationality with dogma as the legitimate basis of public policy. If the use of corrupted ETS science by the EPA and the anti-smoking movement represented simply the abandonment of reason, then such actions would be simply nonrational. But the EPA's efforts go beyond the nonrational to the irrational, to an assault on reason itself. By refusing to include evidence of scientific dissent from the officially determined "truth" about ETS, as evidenced in the omission from key bibliographies of any references to criticisms of key findings and studies, by manipulating and mis-reporting data, and by portraying those who disagree as being "mouthpieces" for the tobacco industry, the proponents of the anti-smoking policy agenda reveal themselves as enemies of the open and self-correcting process of reason. In a very real sense the "truth" about ETS ceases to be open to rational assessment and assumes instead the status of revealed dogma. And only those who ultimately fear, if not loathe, reason are comfortable with dogma as the basis of public policy.

By far the most morally objectionable aspect of the anti-smoking movement's use of the ETS issue is its readiness to use corrupted science to deprive smokers not only of their right to pursue their pleasure in public, but quite possibly to gain or retain their employment, or advance their prospects. Put more bluntly, it is the question of whether it is morally justifiable to use bad science to hurt people? What should never be lost sight of in this debate is that without the alleged scientific justification of harm to innocent parties, there is no compelling public-policy rationale for banning or restricting smoking in public places or workplaces. Once the corrupted science is stripped away, there simply are no harms, and without

those harms, smoking becomes a self-regarding behavior, interventions against which can only be advanced on patently paternalistic grounds. The anti-smoking movement might still argue that public and workplace smoking should be banned in order to discourage smokers from smoking, but this argument loses its compelling harm-to-others' character and becomes instead nothing more than an argument about the state intervening in the private lives of competent adults.

What is so morally offensive here is that truly morally blameless people — not the alleged victims of smokers — but smokers themselves, are to be harmed in significant ways on the basis of bogus science and for no good reason. What makes the morality of the anti-smoking movement as corrupt as its science is that it is prepared to exploit for its own ends our readiness to deprive individuals of certain rights if the exercise of those rights appears to harm others by explicitly manufacturing harms to others. In doing so, the anti-smoking movement simultaneously violates perhaps the two most fundamental moral principles, first by treating persons, in this case smokers and their alleged harms to others, as merely means to the end of a smoke-free society and not as ends in their own right, and second by inflicting substantial pain on an entire class of people without their consent and for no compelling reason.

But the question of the moral justifiability of using corrupted science to hurt people goes beyond the question of depriving individuals of their right to a significant pleasure, or even of a job, to something far more crucial, namely the justifiability of depriving individuals of their moral standing through stigmatizing them as moral outcasts. In the end, this is, of course, the logical outcome of ETS science, to make smokers a class of moral miscreants who see themselves and are seen by others as so ruthlessly intent on pursuing their own interests that they are blind to the harm they inflict on others. It is indeed but a short way from the claim, "Smoking kills" to the conclusion that "Smokers kill." But then, such a conclusion is the public-policy justification for bans on public smoking.

The debate about Environmental Tobacco Smoke, though ostensibly a debate about smoking, is really a debate about much more than smoking. It is a debate at bottom about the legitimacy of perverting science and public policy founded on science in the interests of a particular health ideology. It is a debate at bottom about the worth of a health paternalism that guarantees to leave all of us substantially less free but no less ill.

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The Last Time I Had A Good Tomato

I mean, a *really* good tomato,
 not a window-silled, salted,
 and arranged-on-a-plate
 tomato,
 not a dutch red with a twin,
 some hay, and an oval label
 so you pay the five extra
 tomato,
 not a sun-dried, organic, plum,
 cherry, stewed, peeled, imported
 tomato,
 not a Dean & DeLuca, Williams & Sonoma,
 Smith & Hawken, Crate & Barrel, Merchant & Ivory
 tomato,
 not this tomato.

This tomato still had dirt on it,
 dirt with specks that glistened
 in the sun, so Mrs. Zsetresum
 called it "soil,"
 as her thin brown fingers carefully
 picked my two nickels off the
 splintered grey wood of her stand,

and then there was no talk of a bag
 because suddenly it was clear
 it was very clear
 clear despite my last name
 clear despite my mother over by the corn
 clear despite 13 years of facing forward
 that time was slowing to the pace of an accident.
 I bit into it.
 Juice was everywhere
 redder and redder the world was gone
 and the softness around the seeds took over
 it was texture
 it was action
 it was silence
 it was dripping down my chin, wrist, and throat
 it was the last good tomato
 and I ate it
 in 1978.

Bridget Fahrland

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