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## INTRODUCTION: "SOME FANCY STATISTICAL FOOTWORK"

By Lord Harris of High Cross

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The argument that adults in a free society should be coercively restrained from smoking in their own interests was always vulnerable to the powerful objection that a mature democracy had no place for puritan paternalists who "see other men's lives as the proper end product of their own activity". If only it could be shown that by puffing my pipe I am not so much damaging my own health as killing innocent bystanders, the case for restraining me "in the public interest" becomes very much more persuasive. It is to this sinister end that scientists have lent themselves by the invention of "environmental tobacco smoke" (ETS) and "passive smoking".

The nicest thing that Dr. John Luik has to say about scientists is that they are, after all, only human with their own personal perspectives and values. From that simple observation follows the perversion of science on the age-old pretext that the end, namely banning smoking, justifies any means, including at first exaggeration, then deliberate distortion, and finally systematic selection or suppression of the evidence.

The most shocking example of scientific deception worthy of the late Herr Goebbels was the United States Environmental Protection Agency's assessment in 1992 of the health effects of passive smoking, which our author examines in more detail than I had previously seen. If the reader will persevere in grasping such elementary technical

phrases as statistical significance, confidence intervals, two-tailed tests and meta-analysis, he will plumb the murky depths of the scientific deception deployed to make smokers frightened of unproven dangers.

Happily, it requires no technical expertise to grasp the admission of one of the EPA authors that the "indictment" of ETS involved "some fancy statistical footwork". In the same spirit, Dr. Luik quotes the verdict of one prominent epidemiologist: "Yes, it's rotten science, but it's in a worthy cause. It will help us get rid of cigarettes and become a smoke-free society".

Not the least service performed by this wide-ranging and profound study is the reminder that non-smokers have as much to lose as smokers if they acquiesce in the prostitution of science to justify other policies that suit party politicians but progressively deprive free men and women of inexpedient freedoms. Smoking is only the first target. Beware! The health police are already invigilating our drinking and eating habits.

Let all of us, therefore, ask ourselves one question. What would be left of the free society if we encourage bogus science to dictate the ideal lifestyle? As we discover in these pages from the example of so-called ETS, there is little likelihood that we would end up being more healthy - only less free.

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# THROUGH THE SMOKE SCREEN OF "SCIENCE": THE DANGERS OF POLITICALLY CORRUPTED SCIENCE FOR DEMOCRATIC PUBLIC POLICY

By Dr. John C. Luik

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## I Moral & Political Values: The Issue in 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 minimise harms by one individual to another individual; second, to minimise and where necessary to 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 fulfilment.

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 way 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 particular within the larger context of both governmental and non-governmental efforts to discourage tobacco use. For most of the twentieth century the campaign to delegitimise 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 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 realise those interests.
3. Individuals need the State's help in:
  - a. discovering and realising 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 pre-eminent 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.
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 justification for government intervention to protect adults from themselves - to coerce "healthy" lifestyles - would continue to have a totalitarian flavour about it 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 criminalise public smoking. The movement away from the risks of smoking for smokers to the alleged dangers of secondhand smoke for non-smokers does not mean that the health-paternalist arguments have suddenly disappeared from the public policy agenda of the anti-smoking 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.
3. The existence and use of such corrupted science poses a significant threat to legitimate democratic public policy.

## II 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 about the dangers that smoking poses to non-smokers 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, re-evaluate, 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 health-care 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 objectives 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 non-rational 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 endeavour, 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 ETS or "passive smoke") story is indeed an instance of such a corrupted 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?

### III The Characteristics of Corrupted Science

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 to 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 used 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 the process and its conclusions with a mantle of 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.

### IV The American Environmental Protection Agency Report on Passive Smoking

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 EPA's 1992 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, the 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 non-smokers: a fact that by itself destroys the legitimacy of 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 30 studies? The 30 studies come from different countries and vary substantially in size. Some studied fewer than 20 subjects, others are based on larger populations, with the largest study involving 189 cancer cases. Of the 30 studies, 24 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 30 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 20 confounding factors ranging from nutrition to socio-economic status that have been identified as associated with the development of lung cancer. Yet none of the 30 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 non-smokers married to smokers.

The EPA Report discusses all 30 studies but limits its statistical analysis to only 11 U.S. studies of spouses of smokers. Of the 11 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 11 studies claims that together they show a statistically significant difference in the 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 spouses of non-smokers. It is this finding of statistical significance, a finding based on only eleven studies, NONE of which demonstrate a statistically significant increased risk unless they are "re-analysed" using the EPA's 90 percent confidence interval (and even such "coaxing" of the figures could produce only one study that purported to show a 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 analysed 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

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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 Appendix I) 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 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 Drs. Gary Huber, Robert E. Brockie, and Vijay K. Mahajan note in "Passive Smoking: How Great a Hazard?", 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 analysed, no one has reported a strong risk relationship for exposure to spousal smoking and lung cancer." (*Consumers Research*, Vol. 74, No. 7, July 1991)

## V The Process of Corruption

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.

1. 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 support such clarity and definition. What we have in the EPA is simply the Lalonde Doctrine as an institutionalised 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 non-smokers.

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 institutionalised 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* (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 biological 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 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 non-smokers, 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 utilising 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 organisations, 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 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 finalised. Quite obviously, science was to be made to fit with policy, rather than policy with science.

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 quoted 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 at 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 the 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.

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 levelled 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 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 criticised his study himself. (See Trichopoulos *et al.*, "Lung Cancer and Passive Smoking", *International Journal of 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 by 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 movements - 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:

- \* EPA "science is of uneven quality".
- \* 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".
- \* "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 organised within EPA."
- \* 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".
- \* The "Agency lacks the critical mass of externally recognised scientists needed to make EPA science generally credible to the wider scientific community".
- \* "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 characterisation 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 predetermined policy agenda; science based on inadequate data; science of uneven quality and inadequately peer-reviewed; science lacking critical validation by outside scientists representative of the "wider scientific community"; and science, finally, fully aware of its corruption, but unable to heal itself.

## VI The Uses of Corrupted Science: The Moral Issues

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 (see Appendix IV), 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 get rid of cigarettes and 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 governments 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 legitimises 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 institutionalised 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 centrepiece 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 utilising 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 centres on what the manufacture and use of such science does both to science and 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 politicised 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 requires that the identification of problems, causes and solutions be based on empirical evidence of the most rigorous sort, evidence that is specific, strong, consistent and 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, 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 institutionalise 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 non-rational. But the EPA's efforts go beyond the non-rational 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 misreporting 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 habit in public, but quite possibly to gain or regain 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 behaviour, 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, 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 stigmatising 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.

## VII Conclusion

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.

## APPENDIX I:

### 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 experiment 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 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.

## APPENDIX II:

### JUSTICE, SCIENCE AND THE "BAD GUYS"

By Professor Alvan R. Feinstein

The following extracts (with emphases added) are taken from an essay, "Justice, Science and the Bad Guys" (pp. 303-305), by Alvan R. Feinstein, Sterling Professor of Medicine and Epidemiology at Yale University School of Medicine, which appeared as a commentary on C. J. Smith *et al.*, "Environmental Tobacco Smoke: Current Assessment and Future Directions", in *Toxicologic Pathology*, Vol. 20, No. 2, 1992, pp. 289-303.

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When accused of a new offence, does someone regarded as a "bad guy" have the right to due process and a fair trial? If such a right is inherent in the systems of civilised society, is it also a part of justice in the "courts" of scientific evaluation? I ask these questions because, in private conversation, I recently heard an authoritative leader in the world of public health epidemiology make the following statement: "Yes, it's rotten science, but it's in a worthy cause. It will help us get rid of cigarettes and become a smoke-free society."

The statement, of course, referred to the data evaluations assembled in the past few years for accusations about what is formally called environmental tobacco smoke and informally designated passive smoking. According to the accusations, one type of exposure causes at least two of the prime effects hitherto attributed to direct smoking: lung cancer and cardiovascular disease. In fact, several recent cardiovascular studies found risks that were even higher for passive smokers than for direct smokers. (The authors tactfully refrained, however, from stating the implicit conclusion that people who cannot avoid passive exposure should lower their risk by beginning to smoke directly.)

A new part of the current indictment is the claim that passive smoking is responsible for respiratory and otologic difficulties in children. Because young children so rarely engage in direct smoking, paediatricians have hitherto had little participation in the research industry devoted to studying cigarettes. Now, with open hunting season declared on the effects of passive smoking in children, a fertile new opportunity has arisen for selfless public service, fame, grants, and publications.

Nevertheless, if the science is as "rotten" as the public health authority admitted, does the end really justify the means? If objectivity, precautions against bias, and careful operating guidelines are essential for a "bad guy" to get fair treatment in a court of law, should those principles be abandoned or abolished when the "bad guy" is in a court of science?

A peripheral inspection, without any in-depth appraisals, of the current accusations about passive smoking would suggest that many scientific principles have vanished. I shall cite three overt examples:

1. Many of the paediatric researchers seem unaware of the frequent disparity between symptoms and objective evidence of

ailments whenever people are passively exposed to a "bad guy". Perhaps the most striking demonstration of this phenomenon occurred in a classic and scientifically superb epidemiologic field investigation on "Subjective Fear and Objective Data". In that landmark study, Spitzer *et al.*, showed the excessive frequency with which residents of a Canadian community, exposed to "sour gas" fumes from a nearby mine, complained of diverse ocular, respiratory, neurologic, and other symptoms for which no objective pathology could be found. In an analogous control community elsewhere, where residents were exposed to the same degree of emissions but where their evils had not been publicised, the prevalence of analogous symptoms was substantially lower. Nevertheless, no attention seems to have been given to this phenomenon when symptoms were evaluated for children exposed to the presumptive evil of passive smoking.

2. In meta-analyses of passive smoking studies, as recently pointed out by Fleiss and Gross<sup>2</sup>, the investigators have complied with almost none of the scientific guidelines established for this type of research. While agglomerating masses of data obtained without randomised trials, the meta-analysts have also given little or no attention to the frequently stated guideline that randomisation is a *sine qua non* for the scientific credibility of a meta-analysis.

3. A fundamental rule in criteria for causality is that the evidence from different studies consistently goes in the same direction. This consistency in different investigations of direct smoking was one of the key supports in the Surgeon General's Committee's original decision<sup>1</sup> to label cigarettes as the "bad guy". In the investigations of passive smoking, however, the various studies are contradictory, some going in positive directions and others not. The inconvenient failure of the evidence to comply with a prime requisite of scientific reasoning for causality, however, has not inhibited the causal accusation. The "prosecution" has simply ignored the inconvenient results and emphasised those that are (their memorable term) "helpful".

Aside from the problems of getting a fair trial in a court of law, does a "bad guy" also have the right to get a lawyer? If this principle is also a traditional bulwark in systems of justice, what kind of "lawyer" will be available in scientific courts if the act of defending a "bad guy" is almost universally regarded as depraved and immoral? For example, in the current fervour of anti-smoking evangelism, what young scientists would want to risk their careers and what older scientists would want to risk their reputations by doing anything that might be construed as support for the "bad guys" of the tobacco industry? What governmental agency would fund research in which the established "accepted" anti-smoking doctrines were threatened by a study proposed by someone - an obviously deranged sceptic - who wanted to do an unbiased, objective investigation?

The governmental agencies that fund scientific research were once expected to be above the battle, uncommitted, and

devoted to seeking truth, however it might be found. For diverse political, social, and fiscal reasons, however, those agencies have often in recent years become mechanisms of advocacy rather than scholarship, pursuing goals of policy rather than science.

Any organisation that is under attack - a governmental agency, a foundation, a university, a political group, even a profit-making industry - is always given the right to defend itself by getting a "lawyer," who is usually called a "consultant". This right is apparently also denied to the tobacco "bad guys". Like any other group under attack, the "bad guys" would like to get a respectable, competent consultant - in this instance, an academic or federal investigator of impeccable credentials, who has never been tainted by anything other than federal grants, and who is preferably so disinterested as to believe perhaps that Philip Morris signed the Declaration of Independence and that R.J. Reynolds manufactures aluminium. In the current atmosphere, however, the consultant's stature, credibility, and integrity become instantly impugned and tarnished by the depravity of associating with the tobacco "bad guy".

Another interesting principle is that no one seems troubled when a "good guy" does things that are feared as the behaviour of a "bad guy". For example, the National Institutes of Health (NIH) regularly conducts "consensus conferences" in which the main goal is a press release and published document intended to impress Congress into larger allocation of research funds. The assembled participants for these conferences are usually investigators beholden to the NIH for grants (or hopeful of getting them). No one complains that the methods exemplify poor science; the goals and morals are serene, laudable, worthy. No one seems troubled when a federal agency exercises tight censorship over the work of its grantees, as in later years of the Framingham epidemiologic study. Yet large outcries of immorality arise when an investigator doing pure research in basic human biology accepts funds from the Tobacco Industry, given with no strings, no censorship, and complete scientific liberty to pursue the work wherever it leads.

In such an atmosphere, "bad guys" who believe they are getting a "bum rap" will defend themselves as best they can. There thus appears, in this issue [of *Toxicologic Pathology*], a review of passive smoking written by four people<sup>4</sup> who have the worst possible background for scientific acceptability. They are not even "hired-gun" outside consultants; they are actually directly employed by the tobacco industry.

Many readers will adamantly refuse even to examine a report from such sources. The few who actually begin reading will probably do so with clenched teeth and firm preconceptions. Nevertheless, if science depends on evidence and reasoning rather than on the sponsoring source, the report is a fascinating document. Expecting a partisan polemic, I found it surprisingly even-handed, well constructed, and well written. It is certainly much better in all these respects than analogous documents prepared by the allegedly disinterested and dispassionate evaluators at governmental agencies. In fact, if the report by Smith *et al.*<sup>4</sup> were published anonymously, with no identification of the authors or their employer, it might well be lauded as an excellent or even model review of the topic.

Instead, however, what the authors have prepared will probably be instantly dismissed because it comes from the "bad guys," and

because they failed to do the self-immolation that would have gained approval in the scientific policies of the current status quo. Beyond the authors' sin of engaging in rational self-defence, the editor of this journal will probably be pilloried for publishing the report, and I expect my own share of slings and arrows for failing to castigate it and for even hinting that it may be a worthwhile scientific document.

If public health and epidemiology want to avoid becoming a branch of politics rather than science the key issues are methods and process,<sup>5</sup> not the "goodness" of the goals or investigators. In science even more than law, the "bad guy" (often appearing as a counter-hypothesis, paradigm shift, or sceptical evaluation) should always have the right to state his case, and a well-stated case has the right to be heard, regardless of who pays for it. Besides, the "bad guys" sometimes turn out to be correct. Galileo was assailed by the Church when he doubted Earth's centrality in the solar system. Semmelweis was denounced by obstetricians when he said their inadequately cleansed hands were transmitting disease; Florence Nightingale was detested by the British establishment when she campaigned for better sanitation of water and sewage, and Joseph Goldberger was deemed a fanatical nuisance when he questioned an esteemed epidemiologic commission's report that pellagra was an infectious disease.

Just as "bad guys" are sometimes right, the "good guys" are sometimes wrong. The history of medicine and public health is replete with the errors (sometimes harmful blunders) committed by revered, respectable leaders in the field. The most recent memorable public events were the unnecessary, fallacious hysteria about the hazards of Agent Orange, and the needless evacuation of homes (and harm to lives) by residents of an entire town in Missouri, responding to the mistaken zeal of a governmental agency.

The "bad guys", of course, are not always right, but if they are denied a fair and proper scientific hearing, neither society nor science will benefit. Society is entitled to make political decisions based on advocacy. The scientific basis for those decisions, however, should depend not on political advocacy but on scholarship - no matter how it is produced, or by whom.

#### Notes

(1) Spitzer, W. O., Dales, R., Schecter, M.T., Tousignant, P., and Hutcheon, M. (1987), "Subjective Fears and Objective Data: An Epidemiologic Study of Environmental Health Concerns", *Transcriptions of the Association of American Physicians*, 100, pp. 40-44.

(2) Fleiss, J. L. and Gross, A. J. (1991), "Meta-Analysis in Epidemiology, With Special Reference to Studies of the Association Between Exposure to Environmental Tobacco Smoke and Lung Cancer: A Critique", *Journal of Clinical Epidemiology*, 44, pp. 127-139.

(3) Surgeon General's Report (1964), *The Health Consequences of Smoking*.

(4) Smith, C. J., Sears, S. B., Walker, J. C., and DeLuca, P. O. (1992), "Environmental Tobacco Smoke: Current Assessment and Future Directions", *Toxicologic Pathology*, 20(2), pp. 289-303.

(5) Feinstein, A. R. (1988), "Scientific Standards in Epidemiological Studies of the Menace of Daily Life", *Science*, 242, pp. 1257-1263.

### APPENDIX III:

## PROFESSOR CHRISTIE DAVIES ON THE STATE CONTROL OF SCIENCE AND ITS DANGERS

The following is an excerpt from a paper, "Smoking, Pollution and Contagion", delivered by Professor Christie Davies, speaking in a purely personal capacity to the FOREST Conference "Risk, Freedom and Paternalism" on 7th March, 1992.

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I am depressed, but entirely convinced by Dr. Simon Wolff's argument concerning the publishing of scientific articles: namely that if somebody puts forward an unfashionable case it won't be published in the main journals in that person's field. Such scientists do have to sneak in sideways, and publish the work in peripheral journals. This has been somewhat of a problem for a long time; indeed, it's even to some extent built into the organisation of science. But it is going to get worse. The reason I think it's going to get worse is this: for a long time the situation has been that you are much more likely to get a big grant to do a piece of scientific work in an area that is fashionable or in an area that the Government wants research in. By contrast, there was in the past some freedom to do small scale research that did not require expensive apparatus. Now, this is changing. People who obtain large grants are now seen as being ahead of the game relative to people who achieve small grants. If you have somebody who has a £500,000 grant in order to do a piece of research that will produce anti-smoking data, this carries much more clout than somebody who, say, has a £10,000 grant do a small scale piece of research which undercuts and undermines the anti-smoking arguments, quite regardless of the objective value and validity of the results they produce.

What is ominous is that we now have a degree of centralised control of university research such that the scientist who has got the £10,000 grant will in future not be permitted the time in which to do the research. If he or she has not published in the "right", ie bureaucratically approved, journals, it is now the case that a small panel of people in each scientific field pass judgement on their colleagues throughout Britain and decide whether their research time should be funded or not. This masquerades as an equivalent of the competitive forces of the market place, but is in fact a monopsony created by centralising state bureaucracy. This is where the mode of control has dramatically increased within the last five to ten years.

Ironically we've had a succession of Ministers and Under-Ministers of Education whom I know were libertarians before they became ministers. I can remember talking politics with Sir Keith Joseph, Lord Joseph as he now is. I can remember working on a radio documentary with Robert Jackson, whom I knew when he was quite a youngster. I can remember listening to Kenneth Clark, whom I knew when he was quite an oldster - he was already an oldster when a student at Cambridge. They were all reasonably sensible libertarian chaps. However, as soon as they took office they fell under the influence of "Sir Humphrey". The television series *Yes Minister* isn't fiction, and it isn't humour. It is an accurate description of how the British system works. What happens is that the Minister gets nobbled by the civil servants, who are interested in only one thing: centralised state power. And what they have now achieved is a degree of centralised state power over the quangos which in turn have

a degree of control over scientific research, which they never had in the past. Now that they control not merely the size of grants that scientists get to do research, but the time in which the research will be done, it is quite clear that the degree of concentration that already exists will become intensified. For that reason alone, the volume of the anti-smoking noises that will come out of scientific research will be greater in the future than ever before. In effect, the Government will have used its power finally to silence any kind of dissent on this issue, not simply directly through banning advertising and subsidising the anti-smoking industry, but also through its indirect control of scientific research. We will have a system with a potential for repression now that is greater than it has ever been in the past. And this is far more dangerous than any form of tobacco smoking.

Ironically, however, in the particular case of tobacco smoking the bias in favour of anti-smoking research is greater in a capitalist society than in the former socialist societies of Eastern Europe or in China today. In socialist societies the political and economic forces in favour of the state monopoly tobacco industry and of a leisure activity that is not anti-system ensure that the anti-smoking research gets a low priority and the cadres directing research do as they are told. In a capitalist society individual economic pressure groups such as the tobacco industry do not have the same kind of power. Rather, power lies with a "new class" of civil servants and quango-members and their appointees, who have their own ideological agenda, which is likely to include a hostility to tobacco smoking. Since this is dressed up as value-free, value-for-money decisions about priorities in scientific research, it is very difficult for dissenters to criticise them. We are destined to hurtle down a fiercely anti-tobacco road.

#### Notes

(1) Dr. Wolff's paper at the FOREST conference was entitled "Air Pollution, Lung Cancer, Public Policy and the Smokescreen". Wolff is Senior Lecturer in Toxicology at University College London Medical School and has contributed to such journals as *Nature*, *Experientia*, *American Journal of Epidemiology*, *Public Health*, *Chemistry and Industry*, and *Times Higher Educational Supplement*.

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Professor Christie Davies is Professor of Sociology at the University of Reading. He is the author and editor of many academic books, including *Permissive Britain: Social Change in the 60s and 70s*, *Wrongful Imprisonment: Mistaken Convictions and Their Consequences*, *Censorship and Obscenity*, and *Ethnic Humour Around The World: A Comparative Analysis* and of numerous articles in such journals as *American Journal of Sociology*, *British Journal of Sociology*, *Annual Review of the Social Sciences of Religion*, *The Howard Journal of Penal Reform*, *Human Studies*, *International Annals of Criminology*, *Policy Review*, *Humour: The International Journal of Humour Research*, *Economic Affairs*, *European Business Review*, *Chronicles*, *National Review*, *Soviet Jewish Affairs* and *Free Life*. He is also a regular contributor to such newspapers as *The Times*, *The Daily Telegraph*, and *The Wall Street Journal*.

## APPENDIX IV

### A SELECTED CRITICAL BIBLIOGRAPHY ON "PASSIVE SMOKING" & THE EPA REPORT

Compiled by Chris R. Tame

The anti-smoking lobby consistently argues that it is now only the tobacco industry that does not believe in the dangers of "passive smoking". This is an untruth. However, when challenged on this in a public debate at the University of London, the current Deputy Director of ASH, one Steve Woodward, actually made the defamatory statement that those academics and intellectuals who disputed the dangers were simply a "handful of crooks, has-beens and corrupt rogues dragged out of bars by the tobacco industry". The further veracity of this statement can be judged by the following bibliography.

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Jad Adams, "I Don't Like Cigarette Smoke Either, But I like Intolerance a Lot Less", *i to i*, April-June 1993. Dismisses the idea that passive smoking is a proven threat and rejects the American Environmental Protection Agency (EPA) report as "another case of the old adage that if you torture the statistics long enough they will tell you what you want to hear". (Adams is a medical journalist, author and TV producer.)

Barbara Amiel, "Smoke in Their Eyes", *The Times*, 13 March 1987. Rejects the passive smoking hypothesis as a "lie" and a "subversion of science to politics". (Amiel is an independent journalist.)

A. K. Armitage, ed., *Other People's Tobacco Smoke*, Galen Press, Beverley, East Yorkshire, 1991. Collection of critical essays by academics, scientists and consultants.

Domingo M. Aviado, MD, "Health Issues Relating to 'Passive Smoking'", in Robert D. Tollison, ed., *Smoking and Society: Toward a More Balanced Assessment*, Lexington Books/D. C. Heath, Lexington, Mass., 1986.

Professor Jonathan Barnes, "Soapbox", BBC Radio 4, 21 October, 1993. Attacks popular beliefs about passive smoking as "clearly false: grotesque and hysterical nonsense". (Barnes is Professor of Philosophy at the University of Oxford.)

Robert J. Barro, "Send Regulations Up In Smoke", *The Wall Street Journal*, 3 June, 1994, p. A14. Argues that both general evidence regarding passive smoking, and the EPA Report, are seriously in doubt. (Barro is Professor of Economics at Harvard University and a Fellow of the Hoover Institution at Stanford University.)

Professor Peter Berger, "Furtive Smokers - and What They Tell Us About America", *Commentary*, Vol. 97, No. 6, June 1994. Criticises the broader "selective" use and "misuse" of science by anti-smokers and the clear "political corruption of the scientific ethic" in the EPA report. (Berger is Professor of Sociology at Boston University.)

Professor James A. Blackburn, "How Politically Correct Policy Decisions Are Made Without Considering the Facts", *Toronto Globe & Mail*, 27 November, 1993. Traces the spread of dubious scientific "findings", and the submersion of critical scrutiny in the case of "politically correct" movements. (Blackburn is Professor of Physics at Wilfred Laurier University, Ontario.)

Hon. Thomas J. Bliley, Jr. (US Senator), "EPA and Environmental Tobacco Smoke: Science or Politics? Statement to House Committee on Energy and Commerce Health and Environment Subcommittee", Washington, D.C., 21 July, 1994. Reveals that the EPA's pattern of research contract mismanagement and bias has been described as a "cesspool" by the Chairman of the Health and Environment Subcommittee, that the EPA's approach to passive smoking has "at every turn been characterised by both scientific and procedural irregularities", and that its "pursuit of media headlines rather than good science" has been "notorious and well-documented" in many other areas. Argues that "there appears to have been a conscious misuse of science and the scientific process to achieve a political agenda that could not otherwise be justified".

Marjorie Brady, *A Response to Passive Smoking*, FOREST Information Sheet No. 1, FOREST, London, 1991. A brief response to the Imperial Cancer Fund's report *Passive Smoking: A Health Hazard*.

Christopher Caldwell, "Smoke Gets in Your Eyes", *American Spectator*, May 1992, pp. 25-28. Concludes that the research does not support the view that ETS is a health hazard, that the EPA's draft report was biased and unscientific, and that "bad science" was being manipulated for partisan political motives. (Caldwell is Assistant Managing Editor of *The American Spectator*.)

Robert Caldwell, "Lost in the Smokescreen: Bad Science Makes Bad Law", *The San Diego Union-Tribune*, 22 May, 1994. Argues that "there is no provable health risk in occasional exposure to secondhand smoke" and that the EPA report was "a conscious distortion of the scientific data" and "a flagrant example of politicised science". (Caldwell is Editor of his paper's "Insight" section.)

Dr. William Campbell Douglas, "Health Notes: Has Smoke Clouded Our Judgement?", *Second Opinion*, Vol. III, No. 4, April 1993. Declares the EPA report to be the same sort of "pseudoscientific mutt" as previous blunders by the agency. (Douglas is a General Practitioner, medical writer and editor of his own medical newsletter.)

Professor Kevin Dowd, "The Myths of Anti-Smoking", *Economic Affairs*, Vol. 11, No. 4, June 1991. Argues that "even with the 'rigged jury' of standard statistical procedures... there is still no convincing evidence in favour of the adverse effects of passive

smoking". (Dowd is Professor of Economics at Sheffield-Hallam University.)

Donald J. Ecobichon and Joseph M. Wu, eds., *Environmental Tobacco Smoke: Proceedings of the International Symposium at McGill University, 1989*, Lexington Books/D. C. Heath, Lexington, Mass., 1990. Another collection of critical essays by academics and scientists.

"Editorial", *The Evening Standard*, 28 January, 1993. Declares that "The truth is that there is no scientific proof that passive smoking causes cancer".

*EPA Watch*, a twice monthly independent newsletter edited by Dr. Bonner Cohen, monitoring the statements and activities of the EPA. Generally reveals them to be based upon junk science and to result in harmful, costly and counter-productive policies. Dr. Cohen has explicitly declared the EPA passive smoking report to be "scientifically indefensible". (*EPA Watch*, 14140-L Parke Long Court, Chantilly, Virginia 22021, USA; Tel: 0101 703 968 9768.)

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Prof. Antony Flew, *Passive Smoking, Scientific Method and Corrupted Science*, FOREST, London, 1994. Analysis of the difficulties of the epidemiological study of passive smoking and of the corruption of science in the American Environmental Protection Agency (EPA) Report on the subject. Also discusses

the philosophy of science and its relevance to the study of passive smoking. (Flew is Professor Emeritus of Philosophy at the University of Reading and a distinguished and widely published philosopher.)

Michael Fumento, "Is EPA [Environmental Protection Agency] Blowing Its Own Smoke: How Much Science Is Behind Its Tobacco Finding?", *Investor's Business Daily*, 28 January, 1993. (Fumento is a distinguished writer on AIDS, environmentalism and other scientific subjects where political distortions have triumphed over science.)

R. J. Gething (Sipendiary Magistrate), "Legal Decision: Dept. of Occupational Health, Safety and Welfare v. Burswood Resort Casino", Court of Petty Sessions, Perth, Western Australia, 17 September, 1992 (Case No: 19515-16 of 1992). Important legal decision that found that "it has not been proved at the required standard, or at all ... that [Environmental Tobacco Smoke] is a risk to the health of the employees at the Casino".

Dr. Jane G. Gravelle & Dr. Dennis Zimmerman, "Statement on Environmental Tobacco Smoke to The Subcommittee on Clean Air and Nuclear Regulation Committee on Environment and Public Works of the United States Senate", Congressional Research Service, The Library of Congress, Washington, D.C., 11 May, 1994. Concludes that "the statistical evidence does not appear to support a conclusion that there are substantial health effects of passive smoking." (Gravelle and Zimmerman are, respectively, Senior Specialist in Economic Policy and Specialist in Public Finance at the Congressional Research Service.)

Dr. Jane Gravelle & C. Stephen Redhead, "Discussion of Source of Claims of 50,000 Deaths from Passive Smoking", Congressional Research Service, Library of Congress, Washington, D.C., 23 March, 1994. Concludes that the commonly cited estimate of 50,000 deaths due to passive smoking in the USA "seem implausible". (Redhead is Analyst in Biomedical Science, Science Policy Research Division.)

Bruce Herschensohn, "Let Free Market Decide Smoking Rules", *Human Events*, 11 September, 1993. Concludes that the EPA report "was not based on accepted scientific methodology. It was concocted to support a predetermined conclusion". (Herschensohn is a Senior Fellow at the Claremont Institute.)

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Dr. Gary Huber *et al.*, "Smoke and Mirrors: The EPA's Flawed Study of Environmental Tobacco Smoke and Lung Cancer", *Regulation* (Cato Institute Review of Business and Government), No. 3, 1993, pp. 44-54. Argues that in the EPA report "scientific integrity was compromised, if not outright abused".

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- Russell Lewis, *The Environmental Alphabet*, The Adam Smith Institute, London, 1993. Includes a section on smoking that concludes "Whatever certain - in reality highly partisan, biased and unreliable - alleged 'authoritative', 'official' and government reports claim, 'passive smoking' is no threat to the non-smoker - and might even be good for them." (Lewis is a distinguished journalist and author.)
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- John O'Sullivan, "Editorial: They Don't Embarrass Easy", *National Review*, 20 September, 1990. Attacks the "EPA's manipulation of science to justify its imperial agenda". (O'Sullivan is a distinguished journalist and current Editor of *National Review*.)
- John O'Sullivan, "Editorial: Junk Science", *National Review*, 12 April, 1993. Critique of EPA passive smoking decision as "a quite shameless abandonment of regular scientific procedures".
- John O'Sullivan, "The Week: Second-Hand Science", *National Review*, Vol. XLV, No. 14, 19 July, 1993, p. 15. Rejects the EPA report as "junk science, in which almost every known statistical confidence trick is on display".
- Ernest G. Ross, "How Bad is Passive Smoke - Really?", *The Positive Economist Bulletin: Supplement for Objectivists*, Vol. 2, No. 4, July/August 1993. Critique of the EPA report and its statistical and scientific irregularities as bearing "deeper marks of politics than of science". (Ross is a scientist and defence expert and editor of *Understanding Defense* and *The Positive Economist*.)
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- Petr Skrabanek, *The Death of Humane Medicine and the Rise of Coercive Healthism*, Social Affairs Unit, London, 1994. A general critique of health paternalism and pseudo-scientific propaganda. Comments on the corruption of epidemiology by the "politically correct" motives of health campaigners.
- C. J. Smith, *et al.*, "Environmental Tobacco Smoke: Current Assessment and Future Directions", *Toxicologic Pathology*, Vol. 20, No. 2, 1992, pp. 289-303. A critique by four tobacco industry scientists, praised by Professor Alvan Feinstein (see above).
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- Jacob Sullum, "Smoke and Mirrors: EPA Wages War on Cigarettes", *The Wall Street Journal*, 24 March, 1994. Critique of EPA report as reliant on "blatant tricks", "controversial assumptions", "other contrivances". States that "it is difficult to avoid the conclusion that policy has dictated science in the case of ETS". (Sullum is Editor of *Reason* magazine.)
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Chris R. Tame, ed., *Enough Is Enough: Journalists and Academics Respond to the Anti-Smoking Fanatics*, FOREST, London, 1992, pp. 23-31 contains extensive quotations from journalists and academics attacking the UK Froggatt Report on passive smoking and the passive smoking hypothesis in general.

Chris R. Tame, *'Junk Science' in Action: Critical Notes on the Environmental Protection Agency*, FOREST, London, 1992. A background evaluation of the American EPA in the light of its view of ETS as a "Class A Carcinogen". Demonstrates that the EPA has been both wrong and partisan on virtually every subject with which it has dealt.

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Robert D. Tollison, "Statement Before the Subcommittee on Clean Air and Nuclear Regulation, Committee on Environment and Public Works, United States Senate", 11 May, 1994. Critique of the objectivity of the EPA over passive smoking and a

demolition of its cost-benefit estimates regarding public smoking bans. (Tollison is Duncan Black Professor of Economics at George Mason University and formerly Senior Staff Economist at the Council of Economic Advisors and Director of the Bureau of Economics at the Federal Trade Commission.)

Robert D. Tollison, ed., *Clearing the Air: Perspectives on Environmental Tobacco Smoke*, Lexington Books/D. C. Heath, Lexington, Massachusetts, 1988. Collection of critical essays by academics and scientific consultants.

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T. E. Uley, "Morality Overcome by Fumes", *The Times*, 29 March, 1988. Biting critique of the conclusion of the allegedly "independent scientific" Froggatt Report on passive smoking (which argued that a health risk existed).

Dr. Tage Voss, *Smoking and Common Sense: One Doctor's View*, Peter Owen, London, 1992. Includes critical sections on the passive smoking hypothesis. (Voss is a leading Danish General Practitioner and popular medical journalist and broadcaster.)

## APPENDIX V:

### A SELECTED BIBLIOGRAPHY ON FRAUD, CORRUPTION AND POLITICISATION IN SCIENCE AND POLICY

Compiled by Chris R. Tame

There is now a growing literature on the general subject of fraud, corruption and politicisation in science and social policy. The following list is merely an introductory selection of material on both the general theme and on a number of specific instances of politicisation and corruption. I am currently compiling a more extensive bibliography and further details can be supplied on request.

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- Robert Bell, *Impure Science: Fraud, Compromise and Political Influence in Scientific Research*, John Wiley, New York, 1992.
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- W. Broad & N. Wade, *Betrayers of the Truth: Fraud and Deceit in the Halls of Science*, Oxford University Press, 1982.
- Robert Formaini, *The Myth of Scientific Public Policy*, Social Philosophy and Policy Centre/Transaction Publishers, New Brunswick, 1990. (Focuses more on broader issues of economics, cost benefit analysis and policy formation, but also touches upon the politicisation and corruption of science and upon the vested interests and biases of allegedly independent and objective institutions.)
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- Daniel S. Greenberg, *The Politics of Pure Science: An Inquiry into the Relationship Between Science and Government in the United States*, New American Library, New York, 1967. (A general study that demonstrates that "Science, like agriculture, the military, labour, business, or the civil rights movement has its vested interests, elites, downtrodden, alliances, bosses, loves, and hates. The politics of science is in essence no different from other politics.")
- Paul R. Gross & Norman Levitt, *Higher Superstition: The Academic Left and Its Quarrels With Science*, Johns Hopkins University Press, 1994.
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## THE AUTHOR

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### WHAT IS FOREST?

FOREST (the Freedom Organisation for the Right to Enjoy Smoking Tobacco) is a civil liberties group, seeking to defend the rights of those adults who smoke tobacco. FOREST does not promote smoking in any form, amongst any age group. Its concern is the growing intolerance of some sectors of society towards smokers and their increasing efforts to prohibit smoking, or have it made illegal.

### HOW DID IT START?

FOREST was founded in 1981 by Sir Christopher Foxley-Norris, a Battle of Britain fighter pilot. Legend has it that he was standing on the open air platform of Reading station one fine sunny day, quietly smoking, when he was verbally assaulted by a woman. So stunned was Sir Christopher by the virulent reaction of the woman, that he decided that something had to be done before such intolerance became established in British society.

### WHAT DOES FOREST DO?

**Research:** A wide range of booklets, pamphlets and leaflets which examine the claims made by the anti-smoking industry, as well as the philosophical, economic and historical basis of those who seek to dictate to us how we should live our lives, have been published by FOREST.

**Campaigns:** FOREST organises, and gives support to, campaigns in defence of smokers' rights.

**Advisory:** FOREST provides information to Members of Parliament, journalists, businessmen, and the public about the continued erosion of civil liberties and the growing intolerance to certain aspects of personal lifestyle. A range of practical booklets on how to accommodate the needs of smokers and non-smokers are available.

Perhaps the most important aspect of our advisory work is to people subjected to smoking restrictions in the workplace. This work

is always undertaken in the strictest confidence for we are dealing with people's livelihoods. And because of this, we cannot publicise our successes which draw unwelcome attention to those we have assisted in countering the draconian demands of employers or fellow workers.

### WHY IS FOREST IMPORTANT?

FOREST is the only British national organisation that defends the rights of adults who smoke, that provides critical examination of the claims made by the anti-smoking industry, and that is prepared to speak publicly about the dangers and the myths surrounding smoking. It is the only organisation providing impartial advice on how to ensure that the needs of both smokers and non-smokers are met, and has as its goal the promotion of understanding between both groups to ensure that tolerance reigns. And FOREST is one of the few organisations to have studied the actions of the anti-smoking industry and the implications for other areas of lifestyle which the Establishment and various interest groups deride.

### WHY SHOULD I SUPPORT FOREST?

You should support FOREST for three main reasons. First, it is the only organisation that can provide you with information and advice to counter the claims of the anti-smoking industry. Second, FOREST needs supporters to carry the message to others that, while smokers are top of the hitlist for lifestyle dictators, drinkers, consumers of fried food, eaters of sweets - and anyone else deemed to have a lifestyle which might, at some time in the future, be said to have resulted in illness - fill the places below. And third, unless you raise your voices now, the threats of legislation to make smoking illegal, already made by current Government Ministers, and hinted at by other political parties, will be carried through.

### YOUR SILENCE TODAY WILL MEAN THEIR VICTORY TOMORROW

#### FOREST SUPPORTER'S APPLICATION FORM

Tick and answer as appropriate. This form may be photocopied to preserve this document.

I confirm that I am over 18 years of age.

I enclose my cheque/postal order for my annual donation of: £10.00   
(Student/Pensioner/Unemployed) £ 5.00

I would like to make an additional donation of:  
£5.00  £10.00  £20.00  Other \_\_\_\_\_

I would like more information about FOREST before deciding whether to join

Please send me details of what I can do to promote FOREST and its campaigns

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Tel: (day) \_\_\_\_\_ (evening) \_\_\_\_\_

I am a smoker  non-smoker  Occupation: \_\_\_\_\_

I certify that the information in this application is correct and that I am not involved in any anti-smoking organisations.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Return to:

FOREST, 2 Grosvenor Gardens, London SW1W 0DH

If it is determined by FOREST that any of the applicant's information is incorrect, subscriptions may be denied, revoked, or suspended with or without refund, at FOREST's discretion.

FOREST supporters receive a bi-monthly newsletter, *Free Choice*, and details of all new publications, campaigns and events organised by FOREST.

#### HOW IS FOREST FUNDED?

FOREST is funded from three sources: donations from companies involved in the manufacture and retail of tobacco and related products; sales of publications; and donations from supporters. Members of the public who support FOREST include smokers and tolerant non-smokers who are concerned about the ever increasing interference in freedom of choice. FOREST does not accept money from Government sources, believing that private enterprise should donate some of its profits to defend the rights of their consumers.

#### SPECIAL NOTE

FOREST does not, and has never, promoted smoking amongst any age group. Information will NOT be sent to people under the age of 18 years. However, material will be provided to teachers, on written request, for use in a classroom setting as part of a project. In this way we seek to ensure that both sides of the smoking debate are heard, and free discussion encouraged.

