RESEARCH PAPER

Tobacco industry litigation position on addiction: continued dependence on past views

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This paper reviews the tobacco industry's litigation strategy for addressing the addiction issue through trial testimony by its experts, and opening and closing statements by its lawyers. Despite the fact that several companies now claim to accept, in varying degrees, the conclusions of the Surgeon General concerning tobacco addiction, the tobacco industry litigation strategy pertaining to addiction is essentially unchanged since that of the early 1980s when the issue emerged as crucial. The industry uses its experts and the process of cross-examination of plaintiff's experts to imply that the addictiveness of tobacco and nicotine are more comparable to substances such as caffeine, chocolate, and even milk, than to heroin, cocaine and alcohol. Furthermore, the tobacco industry contends that the definition of addiction has now become so broadened as to include carrots and caffeine and hence that any concurrence that smoking is addictive, does not imply that cigarettes are addictive to the standards that drugs such as heroin and cocaine are addictive. Finally, the industry has continuously asserted that tobacco users assumed the risks of tobacco since they understood that quitting could be difficult when they began to use, and moreover, that the main barrier to cessation is lack of desire or motivation to quit and not physical addiction. These positions have been maintained through the 2004–2005 US Government litigation that was ongoing as the time of this writing.

In 1994, the heads of the major US tobacco companies gave sworn testimony before the US Congress that they did not believe that nicotine was addictive.[1] This was consistent with the position of the industry in prior litigation as well as in prior testimony of tobacco industry representatives before the US congress. But in 1994 the public reaction was quite different and resounding. The image of the seven tobacco CEOs testifying before Congress left an indelible impression on the American public. Their testimony was lampooned in the media, became an issue in the US presidential election two years later, and generally reinforced the notion that such a position was no more credible than denying that smoking caused lung cancer. The practical challenge faced by the industry was how to avoid admitting the truth of their deeds and knowledge without taking positions that further eroded the industry's evaporating credibility. The public position of the tobacco industry on addiction began to evolve with carefully worded concessions on company websites and in congressional and courtroom testimony. By 2000, several of the major tobacco companies acknowledged that smoking could be addictive and harmful on their websites, and paraded these carefully constructed ''admissions'' as evidence that it was a new day with a higher standard of corporate responsibility. But did anything really change in the courtroom? Did the companies really change?

As trial strategy evolved, however, the core tenets of the industry did not change. The industry continued to hold that to smoke or not is an adult choice and that cigarettes are not addictive in the sense that heroin and cocaine are addictive. However, their trial strategy had to evolve from the relatively blunt denials of addiction and pharmacological importance of nicotine in smoking taken in the 1980s in trial and in media campaigns.[2] That evolution has, in fact, occurred.

Since the late 1990s the industry strategy has shifted to a more nuanced acceptance that smoking might be considered addictive, but only by applying new definitions that are overly broad; that nicotine is important, but mainly for its overall contribution to the pleasures of smoking; that smoking cessation is difficult for some people, but smokers knew that when they made the ''choice'' to smoke and more than 40 million smokers have quit since 1964. All of this implies that stopping smoking is mainly a matter of personal choice and willpower and that ''most people who want to quit smoking can quit'' as Philip Morris' chief executive officer, Michael Szymanczyk, testified in Engle v. RJ Reynolds *et al* in Florida on 13 June 2000.[3]

This paper summarises our analysis of courtroom testimony and related statements by the tobacco industry on the topic of addiction. It is a preliminary analysis but the testimony and documents we have reviewed support our core conclusions expressed above. In this paper we highlight and cite examples that help unveil an evolving tobacco industry litigation strategy concerning addiction.

Nicotine addiction: boon and bane of the tobacco industry

By the 1960s, and probably well before, the tobacco industry understood that nicotine shared many key characteristics of highly addictive drugs and they designed and marketed their cigarettes on this premise.[2 4–8] In fact, the tobacco market is built on the concept that exposure to tobacco-delivered nicotine carries a high risk of causing addiction and that most tobacco-addicted persons pay cash to consume the products many times per day for decades. There is no multibillion dollar market for smoked substances other than those which contain addictive drugs, specifically, marijuana and smoked forms of cocaine and opium.

The tobacco industry understands nicotine pharmacology well and has developed its products on the premise that nicotine is the critical and key psychoactive drug that causes addiction and other pharmacological effects that contribute to sustained tobacco use.[9] For example, in 1963, a senior Brown & Williamson legal executive, Addison Yeaman, concluded that cigarette companies were not really in the

Abbreviations: DATTA, Tobacco Deposition and Trial Testimony Archive; FDA, Food and Drug Administration; FTC, Federal Trade Commission; ISO, International Standards Organization; WHO, World Health Organization

business of selling tobacco products but rather were *''in the business of selling nicotine, an addictive drug…''*.[6] A senior Philip Morris researcher, known in the company as ''The Nicotine Kid'' described this product as follows: ''The cigarette should be conceived not as a product but as a package. The product is nicotine.''[5 7] Similarly, Claude Teague, Jr of RJ Reynolds wrote the following in 1972: ''In a sense, the tobacco industry may be thought of as being a specialized, highly ritualized and stylized segment of the pharmaceutical industry. Tobacco products uniquely, contain and deliver nicotine, a potent drug with a variety of physiological effects.''[7] This understanding led the industry to investigate nicotine pharmacology to optimise its addictive effects and ensure that virtually all cigarettes, regardless of their Federal Trade Commission (FTC) and International Standards Organization (ISO) nicotine and tar ratings, were able to deliver addictive dosage levels of nicotine.[10 11]

Importance of addiction in litigation against the tobacco industry

The tobacco industry has also long understood that addiction could undermine its positions that tobacco use is a wilful choice of users and is not coerced in any sense, and therefore that tobacco users assume responsibility for any harms caused by the products. The tobacco industry attempts to augment this position by its so-called historical reviews of common knowledge about the health effects of tobacco to support their contention that tobacco users understood that smoking could cause disease and that it could be difficult to stop, as discussed elsewhere in this issue.[12 13] This is tantamount to the position that tobacco users, included those afflicted by addiction and other diseases, did so voluntarily and with implicit informed consent. Addiction is to voluntary choice what emphysema is to a healthy productive lifestyle. In fact, a Tobacco Institute document noted: ''…the entire matter of addiction is the most potent weapon a prosecuting attorney can have in a lung cancer/cigarette case. We can't defend continue smoking as ''free choice'' if the person was ''addicted.''[7]

The implications were not only risky from a litigation perspective but also from a regulatory perspective, as noted by Philip Morris' William Dunn in 1969: ''I would be more cautious in using the pharmic-medical model – do we really want to tout cigarette smoke as a drug? It is of course, but there are dangerous FDA implications to have such a conceptualization go beyond these walls.'' Later he warned: ''Any action on our part, such as research on the psychopharmacology of nicotine, which implicitly or explicitly treats nicotine as a drug, could well be viewed as a tacit acknowledgment that nicotine is a drug. Such acknowledgement, contend our attorneys, would be untimely.'' He noted further: ''Our attorneys, however, will likely continue to insist upon a clandestine effort in order to keep nicotine the drug in low profile.''[7] Additional comments taking similar positions by the major tobacco companies have been summarised elsewhere and are important in understanding the enormous lengths that the tobacco industry was willing to go to thwart conclusions that tobacco products are addicting, that the industry knew this, and that the industry actually exploited this knowledge in product development and marketing.[5–8 14–17]

Thus, the tobacco industry faced incredibly complex legal, regulatory, marketing, and product image challenges. It understood long before—and in far greater detail than public health officials—that cigarettes were highly addictive nicotine delivery devices, profited tens of billions of dollars per year for most of the 20th century, but had to hide the facts from consumers, and from all outside the industry. This drove the extraordinary levels of deceit that characterises the industry to this day. The courtroom was long understood to be the potential unravelling of the industry and the industry used every asset, including witnesses willing to defend its ''cause'', to prevent judges and jurors from concluding what the industry knew to be the truth about tobacco addiction.

The tobacco industry addiction strategy in transition

Before the 1994 congressional hearings—which exposed the tobacco industry as never before—the companies had maintained a clear three-pronged position: smoking is a free and voluntary choice; quitting is possible though difficult for some; and addiction is not an issue. The key contention was that neither nicotine nor tobacco smoke were addictive in the sense that ''classic addicting drugs'' such as heroin and cocaine are addictive and therefore any application of the term ''addiction'' was as meaningless as its application to virtually any other behaviour that becomes highly repetitive in at least some people. Suddenly, in 1997, the several decades old ''Berlin Wall'' of the tobacco industry developed a crack: one ''major'' tobacco company, albeit the relatively small Liggett Group, Inc, admitted that cigarettes were addictive, provided internal documentation to plaintiffs' attorneys, and added an addiction warning to its cigarette brands.[18]

Website evidence of evolving addiction strategy

Although no major tobacco company followed the course of Liggett (now Vector Group), within a few years, many had made some concessions regarding the addictiveness of smoking (table 1). None admitted that nicotine itself was an addictive drug or conceded that addiction was a major barrier to smoking cessation, but the evolution of website statements (beyond the scope of this article) is fascinating in its own right.[19] Perhaps the most delicate balancing act is that of Philip Morris, which acknowledges that smoking can be addictive on its website, providing links to the 1988 Surgeon General's report on nicotine addiction, offers cigarette smoking cessation advice, and yet continues to refer to smoking as an ''adult choice'' and trivialises the role of addiction in cessation. Further, in the courtroom, through at least 2005, Philip Morris and other industry defence attorneys continued to challenge the conclusions, definitions, process, and science of the 1988 Surgeon General's report on nicotine addiction.[4]

The position taken by Japan Tobacco International (which markets RJ Reynolds brands outside of the United States) is a concise mirror of lines of defence that all of the companies (excluding Vector/Liggett) continue to take in the courtroom through their witnesses and cross examination of plaintiffs' witnesses. Some examples of tobacco industry witness statements along these lines will be provided later in this paper. US Smokeless Tobacco Company, which has petitioned the FTC to be able to make safety claims for its products (relative to cigarettes), states no opinion as to whether or not tobacco or nicotine are addictive.[20]

It is evident from the website statements that the strategies of the tobacco companies have shifted, though not as the unified position that was taken when most of their health related positions were coordinated by the Tobacco Institute.[21] In trial, the companies have also taken the position that their website statements are evidence that the companies have changed and providing consumers with full and reasonable disclosures.[22] However, as is suggested by the variation across company websites, the meaning of these concessions is rendered almost meaningless by the caveats such as by the ''common understanding today'' and insistence that smoking and quitting are voluntary adult choices. These concessions also contrast with trial testimony by experts on behalf of the companies as illustrated later in this paper.

Table 1 Tobacco industry website statements related to addiction. Accessed 21 July 2005

British American Tobacco
(http://www.bat.com/OneWeb/sites/uk__3mnfen.nsf/vwPagesWebLive/BEDB4BB1FDD4F7CE80256BF400033157?opendocument&SID=0898F04D9890A75C7A8850E6474B37F8&DTC=20050721)
We accept the common understanding today that smoking is addictive. Certainly smoking is pleasurable and smokers can find it hard to quit even though they know that smoking brings a real risk of serious disease. People realise, as they should, that someone who starts smoking may find it difficult to quit.
Lorillard Tobacco (http://www.lorillard.com/index.php?id=32)
Cigarette smoking can also be addictive.
Japan Tobacco International (http://www.jti.com/english/corp_responsibility/our_positions/position_addiction.aspx)
As the term addiction is commonly used today, cigarette smoking is addictive. Many smokers, who say they want to stop smoking, report difficulty quitting. The reasons they offer vary. Some say they miss the pleasure they derive from smoking. Others complain of feeling irritable or anxious. Still others speak simply of the difficulty of breaking a well-ingrained habit.
However, equating the use of cigarettes to hard drugs like heroin and cocaine, as many do, flies in the face of common sense. Smoking, unlike heroin and cocaine, does not cause acute or chronic mental disorders, any dependence is weak and poorly defined and there is no evidence of chronic tolerance or intoxication. In particular, neither social problems nor family disruption can be attributable to cigarette smoking.
''In the United States, according to government data, 90% of those who have given up smoking have done so without formal treatment...
Philip Morris, USA (http://www.philipmorrisusa.com/en/health_issues/default.asp)
Philip Morris USA agrees with the overwhelming medical and scientific consensus that cigarette smoking is addictive. It can be very difficult to quit smoking, but this should not deter smokers who want to quit from trying to do so.
RJ Reynolds (http://www.rjrt.com/smoking/quittingCover.aspx)
Smoking is addictive as that term is commonly used today. Many smokers find it difficult to quit and some find it extremely difficult. However, we disagree with characterizing smoking as being addictive in the same sense as heroin, cocaine or similar illegal substances. Any smoker with a sincere desire and determination to stop smoking can – and should – quit.
US Smokeless Tobacco (http://www.ustinc.com/index.cfm)
No statement concerning addiction.
Vector Group, Liggett Group subsidiary (http://www.liggettgroup.com/index.jsp)
Smoking is addictive.

Smoking is addictive

Meanwhile, in the courtroom, despite a less hard line position denying addiction, all of the companies continue to argue that cigarette smokers can quit if they so choose and to the extent to which quitting is difficult, that has long been understood by the general public. They also continue to deny any product development or marketing efforts that would contribute to the risk of becoming addicted, remaining addicted, or relapse to addiction following cessation.

Addiction issue from the perspective of health authorities

To put tobacco industry expert testimony in perspective, it is useful to keep in mind some key concepts, beginning with the issue of definition which has been a major issue of concern to the tobacco industry.[6 7 14 15 17]

Definitions

The tobacco industry has continuously referenced 1950s World Health Organization definitions of addiction which were used in the 1964 Surgeon General's report as the ''classic'' definitions, even though these were discarded by the WHO itself in the 1960s.[2 23] The contemporary definitions used in science and medicine are those of the American Psychiatric Association and WHO.[24 25] In turn, these are supported by the US National Institute on Drug Abuse which also concluded that nicotine met the same criteria as a dependence producing drug, as did cocaine and morphine.[2] The most comprehensive review was that issued by the US Surgeon General in 1988 which concluded that cigarettes were addictive by the same standards applied to heroin, cocaine and other prototypic addictive drugs. These conclusions were affirmed by the Royal Society of Canada, the Royal College of Physicians of London, the WHO in its *International classification of diseases*, 10 revision (ICD 10) and other reports, and numerous other reports.[14 15 17 26 27]

Terminology ''addiction'' versus ''dependence'' and ''withdrawal''

Scientific reports and medical diagnoses use the terms ''dependence'' and ''withdrawal'' to define compulsive drug seeking behaviour and the abstinence associated behavioural and physiological disruptions, respectively. Such terms are useful to scientists and clinicians because reference can be provided to specific definitions.[2] For broader communications, however, the term ''addiction'' is more typically used as the most universally recognised term in general communications by major health organisations, and in fact, remains the term used to describe the phenomena of compulsively driven drug seeking behaviour.* This is parallel to practice in other areas of medicine and science—for example, oncologists carefully define various ''neoplastic disorders'' while using the term ''cancer'' as the umbrella for the category of diseases.

Tobacco versus nicotine

Nicotine is the drug in tobacco that defines tobacco use as drug addiction. As a drug, nicotine meets standard criteria for addiction and is delivered in sufficient quantities to produce physiologic and behavioural effects that comprise addiction.[2 4 23] However, nicotine alone does not fully explain all aspects of the addiction risk, symptoms, clinical course, or treatment needs.[2 4 23] Just as is the case with other addictive drugs, prevalence of use, addiction risk and consequences involve the formulation of the drug, cost, access, social image, and other factors.[23]

ANALYSIS OF TOBACCO INDUSTRY TESTIMONY: METHODS

Since the 1980s the tobacco industry has employed many clinicians and scientists to bolster its position that tobacco use was a free and voluntary behaviour. They have provided such testimony before the US congress in 1982, 1983, 1988, 1994 and before the Food and Drug Administration (FDA) in August, 1994, and in the courts in the form of expert reports

* For example, this is the practice of the WHO, the US National Institute on Drug Abuse, and the Royal College of Physicians of London. It is also the practice of lead professional organisations and research centres (for example, American Society of Addiction Medicine, Canada's Addiction Research Foundation, and the US Public Health Service's Addiction Research Center (also called the ''Intramural Research Program'' of the National Institute on Drug Abuse), and scientific journals in the field (for example, *Addiction*, *Journal of Addictive Diseases*, and the recently launched *Addictive Disorders and their Treatment).*

and testimony under oath. Together, this material comprises millions of pages of documents. Many of these were obtained to build the database for the present analysis as described elsewhere in this supplement.[28]

Using search techniques described by Davis *et al* (2005), all defence opening and closing statements made by tobacco industry attorneys in the Tobacco Deposition and Trial Testimony Archive (DATTA) database were considered. Twenty-five statements were selected for examination based on relevance and date; most statements examined occurred after 1999.[29] General themes including individual responsibility of the smoker, definition of addiction and nicotine manipulation were selected and excerpts referring to these themes were noted from each statement. Similarities in defence strategies became evident among the different trials. Expert reports and testimony (from depositions and actual trials) by persons offered by the tobacco industry as addiction experts were also reviewed to ascertain their positions, themes, and specific arguments.

Tobacco industry testimony: 1980s and early 1990s

In the 1980s, the tobacco industry position in courts of law, in congressional hearings and in press releases was consistent and can be summarised as follows: nicotine is not addictive; tobacco users are not addicted; smoking is a free choice behaviour driven by smoking taste and mild sensory effects of nicotine, more closely resembling eating hamburgers, gummy bears than drug addiction. Perhaps most recently and comprehensively these positions were elaborated on in the Tobacco Industry Comments to the FDA on 2 January 1996.[15]

Three trials in the 1980s gave the industry the opportunity to bluntly state these opinions through its experts' testimony and in opening and closing statements. In Cippellone v. Philip Morris, Dr Jerome Jaffe testified for the plaintiffs that cigarettes were addictive and that the persistent use of tobacco by most smokers in the face of health warnings was consistent with that interpretation.[29]

A key tobacco industry witness, Dr Theodore Blau, testified in both the Galbraith and the Cipollone trials according to a defence pattern that continues in 21st century trials. Specifically, to downplay the difficulty of quitting and the importance of nicotine and other ingredients, while shifting the responsibility to the smoker with the implication that the smoker's motivation to quit is the main factor.

Deposition of Theodore Blau, 2 January 1988 [p.m.], Cipollone v. Liggett Group Inc:

> Q. You believe that, uh, it's easy to stop smoking?
> A. Do I believe it is?
> Q. Hum-hum.
> A. Yes, sir, for most people.
> Q. For some people it's not?
> A. Only those who don't want to stop.
> Q. But there's nothing in cigarette smoke itself that has an effect on a person's ability to discontinue the use of cigarettes; is that correct?
> A. I've never seen any definitive data to suggest that.

Similarly, in 1985 (Galbraith v. RJ Reynolds) Dr Blau testified as follows:

> A. I do not believe it to be addictive. I do not believe that the scientific evidence supports any such conclusion.

Later in direct testimony:

> Q. Are there other substances available to us every day, either eaten or drugs, that have psychoactive effects?
> A. Sure
> Q. Would you name some?
> A. Cold water on a hot day changes your feelings immensely. You get a strong positive feeling taking cold water on a hot day. Salt, sugar, coffee, they all have psychoactive effects.[30]

In the Marsee v. United States Tobacco Company in 1986, Dr Jack Henningfield testified on behalf of the plaintiffs that nicotine met the same criteria for an addictive drug as did heroin and cocaine and that US Tobacco designed its products to facilitate the establishment and maintenance of addiction with products they termed ''starter'' products and according to a marketing plan that US Tobacco called the ''graduation [nicotine] strategy''. In response, tobacco industry expert Dr Theodore Blau testified that tobacco use was not a form of drug addiction and, in a step back to the 1950s concepts of addiction, argued that truly addicting drugs caused life threatening withdrawal, severe intoxication, and frequently criminal and antisocial behaviour.[31]

Tobacco industry testimony since 1990

Litigation against the tobacco industry exploded in the 1990s as a result of the convergence of many factors described elsewhere in this issue.[32] Several of these factors, however, were related to the addiction issue and include the following:

- The overwhelming and rapidly expanding science base that led major medical and scientific organisations to conclude that tobacco and nicotine were addicting which emerged in the 1980s.[23]
- The investigation of the FDA which revealed the extent to which the tobacco industry understood and fostered the spread of tobacco addiction through its product design, internal scientific research, and marketing.[14 15]
- The release of scientific documents through tobacco industry ''whistle-blowers'' and early litigation.[6]
- The willingness of several major law firms and political leaders to highlight the addiction issue support litigation against the tobacco industry with the level of resources essential to win the initial settlements that spawned further litigation.[29 33]
- This litigation and the FDA's investigation resulted in the release of millions of tobacco industry documents, which, in turn, have provided the fuel for further litigation assessed in the present report. In addition, these documents have provided the basis for a new line of tobacco control research based on evaluation of the documents. This has produced a growing stream of research articles that have addressed tobacco industry strategies, research findings, and product design rationale.[33–35]

In our review of the in-court statements, we have documented continued exploitation of the addiction issue as part of the tobacco industry's efforts to evade legal liability and punitive damages. These efforts by the industry continue to deflect responsibility for addicting consumers and for harms suffered by tobacco users as a result of their long term tobacco use by misrepresenting addiction science and the addictive effects of tobacco, and by invoking the concept of ''free to quit'' as a perverse legal argument that is at odds with the science. The general approach of the tobacco industry appears to be aimed at placating judges and jurors by appearing to take a reasonable approach in conceding that smoking can be addictive while maintaining that anyone who really wants to quit, is motivated to quit, and tries to

quit, can quit. The corollary, then, is that if smoking related harm was suffered it was the responsibility of the smoker whom, the industry contends, was free to keep smoking or quit but chose to keep smoking.

This seeming sleight-of-hand position is achieved in part by confirming, through defence and/or cross examination of plaintiffs witnesses, the following facts: (1) there are approximately as many former smokers as current smokers with former smokers totalling in excess of 40 million; (2) success in quitting is related to confidence in quitting ability (that is, ''self-efficacy); (3) success in quitting is related to level of motivation to quit; (4) approximately 90% of smokers who have quit did so without treatment assistance.

Since the 1990s, the tobacco industry has continued to rely upon outside experts as well as its own employees, but also uses its own regular employees. These are listed in table 2.

Definition of addiction and trivialisation of application to tobacco/nicotine

The tobacco industry continues to argue that ''addiction'' is a poorly defined label that is used so broadly that it can be applied to virtually any substance or behaviour. Further, that the definitions change at the apparent whim of the government and health authorities and that the term, therefore, no longer has the serious meaning it had when it was used as defined by a 1957 WHO committee.[2 23] Its witnesses have remained true to the pattern set by Dr Blau in the 1980s in his testimony before the US Congress in 1983 and in litigation as discussed above in which he distinguished tobacco from ''hard'' or known ''addictive'' drugs and compared it to substances including chocolate, caffeine, and the behaviour of smoking to everyday activities.[36]

Richard Carchman

7 January 1999:

> …Whether nicotine would be addictive, I'm not aware of any work that's been done with nicotine. So, smoking cigarettes, tobacco that also contain nicotine, that behavior of smoking may be something that may be akin to addictive. Nicotine being addictive, I'm not aware of any clinical studies that would support that or pharmacological studies that would support that.[37]

16 March 1999:

> Q. You don't know if some Marlboro smokers are addicted to the nicotine in the cigarettes that they smoke?
> A. All I know is that some people who smoke cigarettes have a hard time quitting. Whether it's related to the nicotine or some other feature of the cigarette, I don't know.

Later:

> Q. Well, for some people, for some individuals, is smoking cigarettes and the nicotine
> that they get from the cigarettes, does that make them addicted to the nicotine? I don't mean everybody, but for some people?
> A. You mean addicted to smoking cigarettes?
> Q. No. I mean addicted to nicotine?
> A. I don't know the answer about being addicted to nicotine.
> Q. Are you aware of the position that the public health community has taken in that regard?
> A. Since 1988, yes.
> Q. …Would it be fair to say that Philip Morris does not recognize that smoking its products for some people makes them addicted to the nicotine in the product?
> A. My awareness of Philip Morris' position on this is the following. For some people who smoke cigarettes, they cannot or have a very hard time stopping smoking. That is, I believe, the company's position, and that is my position.[38]

John Robinson (1997)[39]

> Q. Well, Doctor, is smoking addictive?
> A. …it depends on what you mean. I've -- by the word ''addictive.'' I've – I've said it in writings. I've said it in my presentations. If your meaning or your definition of ''addiction'' is a behavior that may be difficult to quit or some people may find difficult to quit, then yes, cigarettes are addictive. If your definition of ''addiction,'' as is generally understood and certainly has been highlighted by many in the -- on the other side of this issue, if your definition is like heroin and cocaine, no, I disagree with that very strenuously, and I've – I've put that in my writings.

Later:

> …I think the physiologic, pharmacologic and behavioral effects of things like nic -- nicotine and caffeine are fundamentally different from addicting drugs like heroin and cocaine.[6]

Later:

> … If we had information that would suggest that cigarette smoking or nicotine is, as I think you would like to characterize it, addicting in the sense of heroin, cocaine, barbiturates, I don't think we should be selling them.

Table 2 Repeatedly testifying experts on behalf of the tobacco industry regarding addiction

Name	Organisation	Specialty
Richard A Carchman, PhD	Philip Morris (consultant since 1998)	Pharmacology
David Townsend, PhD	RJ Reynolds	Cigarette design
J Donald Debethizy, PhD	RJ Reynolds	Pharmacology, cigarette design
Catherine Ellis, PhD	Philip Morris	Pharmacology
Peter P Rowell, PhD	University of KY	Pharmacology
C Robert Cloninger, MD	Washington University	Psychiatry
Domenic Ciraulo, MD	Boston University	Psychiatry, psychopharmacology
John H Robinson, PhD	RJ Reynolds	Psychopharmacology

Later:

…There is a role for nicotine in tobacco use. I've documented that in my – in my literature. People smoke. They do absorb nicotine. There is some mild pharmacology, physiological effect associated with that.

Later:

Q…Doctor, would you agree that smokers need to build up, especially beginning smokers need to build up, tolerance to nicotine?
A. If -- if you're referring to some of the effects that beginning smokers seem to get when they -- when they first start to smoke, such as light-headedness, things like that, some people have postulated that that's a – that's a form of -- of tolerance. I don't know if that's true or not. I think very likely there – there's also a learning component that goes along with smoking cigarettes, first starting smoking cigarettes, that when you learn what the effects are, you – it's not – it's not a physiological tolerance. It's more of an expectation kind of thing.

Peter Rowell (1998)[40]

In the Minnesota Blue Cross Blue Shield tobacco litigation trial, Peter Rowell cited various studies and texts to support his opinion that nicotine may be considered habit forming but not addictive as are drugs such as cocaine, morphine and heroin that he conceded were addictive. On 17 April 1998, in response to questions on the dependence potential of nicotine, he stated:

''I would say that nicotine is on the low end of the spectrum… more similar to caffeine than it is to the classical drugs of abuse in its pharmacological activity.''

The following testimony included a chart which purported to show that nicotine's effect on dopamine release in the brain was more similar in magnitude to that produced by milk than to that produced by cocaine. However, the validity of the chart is questionable since the comparisons across studies and measurement approaches appears to have been selected to maximise the apparent differences across the selected substances.

Q. Are there substances, foods, plants, substances in our environment and that we consume which have the effect of releasing neurotransmitters?
A. Yeah. We got – as this kind of picture just shows – that many natural substances from food or plant sources can act on these receptors that are on the downstream side of the nerve.

Later:

Q. Let's talk, for example, about milk. Does milk interact with these receptors and neurotransmitters?
A. Well milk contains a natural substance called tryptophan, and I'll just move right through there, it contains tryptophan.
Q. And what does that do?
A. Okay. Tryptophan would work here on serotonin receptors. Now serotonin is – it works through serotonin. Serotonin is another neurotransmitter in another type of nerve cell called the serotonin-containing nerve cell. These would be the serotonin receptors. And actually what the tryptophan does….

Later:

Q. Any other examples of common substances that act through receptors and neurotransmitters?
A. Yes. The next one I have here is – next one, chocolate, and chocolate contains a compound called theobromine. And theobromine acts through the adenosine receptors, and so those would be adenosine receptors.
Q. Now adenosine, is that another neurotransmitter?
A. Yeah. Here we go again. We've got adenosine inside adenosine-containing nerves. That's why our brain can do lots of fancy things, because we've got a variety of neurotransmitters it can use. And so we have a variety of substances from natural plants or – usually plants, but sometimes animal sources that I say can act on these different kinds of receptors. And here of course the cocoa bean contains this compound called theobromine, and it can interact here with these adenosine receptors that are really put there to interact with – to be contacted by the neurotransmitter adenosine. So in this case, rather than coming into this upstream nerve, you'll see here that adenosine can come in directly – I mean, sorry, theobromine can come in directly from the outside of the synapse when it's eaten or taken it in and can act on these adenosine receptors on the post-synaptic side, and we see this starts to cause an increase there in the electrical signal in the downstream nerve, and then adenosine comes in and it's just metabolized in the body.

Continued on April 17:

As I presented earlier, nicotine has some reinforcing properties and some mild physical dependence properties. In my opinion it would be classified as a drug on the very low end of the spectrum for dependence.

Donald Debethizy (1997)

Dr Debithizy has testified that the only way that nicotine could be considered addictive is by definitions so broad as to include substances that he did not consider were appropriately regarded as addicting. For example, in Minnesota v. Philip Morris he testified as follows:

Q. Right now do you think nicotine is addictive?
A. No, not by any meaningful definition.
Q. Do you know whether your employer has ever indicated that it believes nicotine is addictive?
A. I – I think you're – I don't know whether – whether they have or not. I'm sure there's been a lot of testimony and things, and as I've said before, it just depends on the definition that you use for addiction. If you use the layman's definition of difficult to quit, then I'm sure there are people…[41]

Catherine Ellis

Dr Ellis has repeatedly testified that classic pharmacological criteria for addiction were intoxication, tolerance and withdrawal and denied that tobacco produced these effects. This included in her testimony before the US Congress in 1994

and in litigation. Her misrepresentation of so called ''classic pharmacological criteria'' became a liability when, in a deposition on 20 March 1997, she was embarrassingly confronted with the statement at an FDA hearing by one of the world's premier addiction researchers, Dr Louis Harris, Chair, Department of Pharmacology, Medical College of Virginia.[42 43]

At a 1994 FDA hearing Dr Harris had presented on behalf of the College on Problems of Drug Dependence and the American Society of Pharmacology and Experimental Therapeutics.[44] His statement before FDA included a strong statement that nicotine met criteria as an ''abusable and dependence producing substance'' including psychoactive effects, mood alteration, tolerance, withdrawal, and reinforcement. He also observed that the ''inhalation route can provide high doses at a rapid rate'' and that ''chronic use of nicotine containing tobacco products appears to be far more addictive and produce more severe adverse health effects than the nicotine containing medications…''.[44]

Dr Ellis claimed to be unaware of Dr Harris' testimony, and appeared to have been put in an awkward position when confronted with it a few hours after she had described as ''ridiculous'' that a cigarette is a drug delivery device. When confronted with Dr Harris' statements, Dr Ellis disagreed with even the most universally accepted statements of Dr Harris' such as the fact that the ''psychoactive effects of nicotine are dependent on both dose and rate of administration'' and even that ''nicotine produces tolerance and dependence such that abstinence after appropriate dosing may result in withdrawal symptoms''.[44]

Robert Cloninger (1999)

> A…Second feature is that an addiction involves a tendency to keep upping the dose. You can't ever get enough. You get one dose, you get used to that, so you have to go up with the next dose in order to feel the satisfaction you're getting from the drug. So people need more and more, and they get drawn into this addiction.
> In the case of cigarette smoking or habits or general, there's no tendency to increase the dose. People can smoke the same cigarette, the same number of cigarettes for years without increasing that dose, once they've gotten adjusted to the initial adverse effects.[45]

Domenic Ciraulo (1997)

Dr Ciraulo has testified extensively on addiction in an effort to distinguish addictions that he considers serious from everyday behaviours including tobacco use.

> ''These are various things that have been labeled as addictions, both in the lay press and in the scientific press. Caffeine, both from coffee and from other sources, like Coca-Cola or soft drinks, has been labeled an addiction. Internet or computers has also been labeled as an addiction…I think you've all heard of the concept of sexual addiction, food addiction. Food is listed in the major textbook in substance abuse published by Williams and Wilkins as an area of substance abuse of addiction. Alcohol, of course, is cited as an addiction. Psychoactive drugs, we all know that. Television has been viewed as an addiction. Love addicts, workaholics are sometimes called addicts as their life is interfered with by their pursuit of work. Of course, pathological gambling is a very serious addiction in many cases; shopping addiction has been discussed. Tanning addiction is another addiction that has recently gotten some attention…Video games have been called an addiction by someone no less than C. Everett Koop. Exercise addictions are actually quite common…''

Later:

> Q. Does the fact that nicotine affects the brain differentiate it from anything else?
> A. Well, a lot of things affect the brain, if that's what you mean. Any kind of behavior or any kind of stimuli – me looking out here, being in a stressful situation up here, affects my brain, and drugs affect the brain, yeah

Later, compares actions of nicotine to those of milk and chocolate:

> Q. Are you saying that there are chemicals in milk which affect the brain like nicotine and cigarettes affect the brain?
> A. Yes, there are.
> Q. And other substances that affect the brain?
> A. This is chocolate. And here is theobromine coming from chocolate and being absorbed and hitting on the nerve and actually causing a nerve to impulse channels, receptors on the other side of the cell body…

Later, downplays actions of nicotine by comparing them to caffeine:

> Q. You said that other substances also bind to these same receptors that nicotine binds to?
> A. Absolutely, yes….
> Q. What is up-regulation?
> A. Up-regulation just means that there is an increase in either the number or the binding capacity of a receptor.
> Q. Does nicotine cause up-regulation?
> A. Nicotine causes up-regulation.
> Q. Does caffeine cause up-regulation.
> A. Caffeine causes up-regulation.[46]

The industry's efforts to trivialise the addictiveness of tobacco have continued without abate through the US Department of Justice litigation. For example, through its cross-examination of two of the editors of the 1988 Surgeon General's report on nicotine addiction, the industry attempted to show that the report was biased from the start, and had reached its conclusions by changing the definition, ignoring the facts that the National Institute on Drug Abuse had come to similar conclusions six years earlier and that the definitions of addiction (more technically known as ''dependence'') had been changed by other organisations keeping pace with science and medicine.[2 4 47]

In United States of America v. Philip Morris *et al*, Dr Rowell and other tobacco industry witnesses again testified that cigarettes were closer to caffeine than to drugs such as cocaine and heroin with respect to addictiveness. In fact, Dr Rowell went so far as to describe smoking as common non-addictive habitual behaviour such as in the following testimony: ''the habitual part of it [smoking], which is kind of like biting your fingernails… ''and quite different, from the studies I've done and looked into it quite a bit, than individuals injecting themselves with heroin.''[48]

Public understanding of the risks

In the case that any degree of addiction was accepted by the industry or established by plaintiffs, the industry core

strategy continues to include attempting to establish that knowledge that cigarettes were addicting was universally understood and had been for a century or more. Often, this was done by simply using the understanding that cigarettes could be difficult to give up as a proxy for addiction. For example, the 1940s country western music song, ''Smoke Smoke That Cigarette'' was often used to imply that the airwaves were flooded with addiction information; early 20th century references to cigarettes as ''coffin nails'' and ''little white slavers'' were also used to imply that the virtually everyone assumed the risk that cigarettes were dangerous and hard to stop using.[49]

Opening and closing statements from the industry reinforced their positions as illustrated in the following:

> ''There was no secret about the pharmacological effects of nicotine, there was no secret about the fact that we were doing this kind of research. We shared the results. Not all of the results, but the results that were felt to be of publishable quality and would contribute to ongoing scientific knowledge were openly shared.''[50]
>
> ''Not a secret, nothing Philip Morris kept from anybody, published in book, and, in fact, everyone said that's been known for a long time, that nicotine is one of the reasons people smoke.''[51]
>
> ''…and within Philip Morris the study of nicotine was an appropriate thing to be doing. It wasn't squashed or suppressed.[52]

Design of tobacco products contributes to addiction

In recent years it has become increasingly well understood by scientists investigating tobacco products, and through the efforts of document researchers, that cigarettes have been designed and manufactured to provide highly addicting doses of nicotine, regardless of their FTC nicotine delivery ratings. Furthermore, that many sophisticated design features and ingredient interaction have been applied to increase the speed of nicotine delivery and the addictive kick of the cigarettes.[2 6 7 9 11 14–17 34 53–55]

Industry opening and closing statements, exemplified by the following, may provide the most succinct illustration of their denials of these concepts:

> ''Nicotine is a natural part of tobacco, just like caffeine is a natural part of the coffee bean…Like any organic material, a tobacco leaf is a mixture of sugars, proteins, starches and other compounds. It's no different than any other plant.''[56]
>
> ''Philip Morris chose to take a natural product, a tobacco plant, and make a cigarette out of it.''[57]
>
> ''Nicotine is not added to tobacco. The cigarette is not manipulated in any way to hook the smoker.[58]
>
> ''…there is nothing that's been added to the cigarette that would make it more harmful nor has there been anything added to the cigarette that would make more addictive or more difficult for somebody to quit smoking.[59]
>
> ''You'll also learn that the HHS…has never, never determined that any of the ingredients reported or ever said that any ingredients reported by the companies are unsafe.''[57]
>
> ''…the small amount of flavors that are added to tobacco, the small amount of ingredients that are added to tobacco as flavors are reviewed by the Food & Drug Administration, and the Department of Health and Human Services. Neither Government agencies has ever told any of the, companies that any of those should be removed.''[59]
>
> ''…the federal government has never requested removal of any ingredients in Philip Morris cigarettes.''[58]
>
> ''…nicotine through the manufacturing process is actually taken out of tobacco. So the rod has much less nicotine in it than what you find in a natural or rolled tobacco cigarette.''[58]
>
> ''…there's less nicotine in the final product after it goes through this reconstituted tobacco process than if it had not gone through that process''[60]
>
> ''Nicotine is lost in the process, it's lost in the drying, it's lost in the curing. So there's less nicotine in the product than if you took it right from the field.''[57]

Tobacco industry motives for addiction related research

It is now known that the tobacco industry explored many aspects of tobacco addiction since at least the 1950s and probably earlier. This was documented in great length by the FDA in its 1994–96 investigation of what the tobacco industry knew, when they knew it and what they did, as well as many revelations by document researchers.[2 4 5 34 36 61] The tobacco industry has used several approaches to undermine the implications of these revelations. The core approaches are: first, to argue that it was their right and obligation to do research to understand their product and any findings were applied to make the product healthier and not more addictive; and second, that since the 1960s at least, they were simply doing research advocated by health authorities. The following opening and closing statement summarise these approaches:

> ''Well, it turns out the reason we got into the research of looking in the pharmacy of nicotine was that the National Cancer Institute scientists asked us to do that, as did the Surgeon General of the United States.''[53]
>
> ''It was the U.S. Government itself that suggested that ways be studied to create a cigarette with low tar and medium nicotine so that the nicotine doesn't drop as fast… Give the consumer a little more nicotine, keep the nicotine up so that more people will smoke it. That was the government's idea.''[57]
>
> ''They suggested that the companies should consider adding nicotine, for example. They suggested that companies should consider genetically modifying the plant to change the nicotine to tar ratio that's produced when the plant is burned. They suggested that the companies consider using additives to boost the impact of nicotine. These were all recommendations of the public health community.''[62]

DISCUSSION AND CONCLUSIONS

In closing statements in the US Department of Justice litigation, tobacco company attorneys claimed that the companies agreed with the Surgeon General's reports with respect to addiction and health effects of tobacco and therefore that the court need not order any corrective actions (''remedies'') concerning their communications. This rhetorical sleight-of-hand is at odds with numerous other industry statements in court that continue to parse and dissemble on issues related to addiction.

Although the blunt position through the mid 1990s that tobacco was not addictive was no longer tenable, an unmitigated admission of the truth—that tobacco is a form

What this paper adds

Historically, the tobacco industry argued that tobacco use was a matter of free will. This position is undermined if tobacco use is addictive. It further jeopardises the industry's contention that the users were responsible for any harm.

Before the 1990s, the industry argued that nicotine is not addictive and smoking is a matter of choice. More recently, some companies claim to have changed and now agree with the 1988 US Surgeon General Report's conclusion that tobacco use is drug addiction.

In the courtroom, however, it appears that the main change is that the strategies of the industry have become more oblique. The industry may agree that smoking might be considered addictive, but it still argues that nicotine differs from ''classic'' addicting drugs such as cocaine, and that quitting is primarily a matter of personal motivation (that is, ''free-will''). This courtroom sleight-of-hand reveals that little about the tobacco industry has really changed.

of drug addiction no less than that to cocaine or heroin—would undermine continuing legal defence that smokers bear responsibility for any harms resulting from their choice to use and continue to use tobacco. Rather than admit the truth, the industry has worked to placate jurors, judges, and the public with qualified admissions concerning addiction, while continuing to lay the responsibility for tobacco use and resultant harms on the tobacco users themselves. Some of the strategies of the tobacco industry to achieve this seeming contradiction are revealed through our analysis.

It may never be known whether the tobacco industry would have fared better by admitting their deceit and unambiguously labelling their products addictive or by taking the course they have, at least through this writing. Certainly, it is true that every year that they were able to continue the deceit and market their products to continue to feed the pipeline of new smokers, and keep smokers smoking, was worth tens of billions of dollars to every major company. Today, the major companies have argued that they have fundamentally changed and are rededicated to emerging as responsible and ethical corporations.[63] In contrast to such claims, our analysis concludes that to this day, at a fundamental level, nothing has changed except hollow admissions that appear geared more for public relations and a refining of legal strategy.

Testimony in the 2004–5 trial brought by the United States Department of Justice against the major cigarette manufacturers confirms the industry's attempts at deception in the courtroom. Its sympathetic witnesses continue their testimony to undermine the conclusions of every major health organisation in the world that nicotine is additive and that cigarette smokers become addicted to the same criteria as held for heroin and cocaine. The main refinements in strategy are greater efforts to create the illusion of conceding that tobacco is addictive by some definitions, but that this is not a serious barrier to smoking cessation and that it has not resulted from any wilful behaviour of the tobacco industry. One wonders if the only way for the industry's argument to succeed would be if reality was suspended—a la Alice in Wonderland—in order for a looking glass to create some illusion of reality out of the industry's statements. But the tobacco industry has enormous assets to put towards litigation, skilled attorneys, and a stable of witnesses willing to support its positions.

On the other hand, only a decade ago, the tobacco industry could argue that it never lost a substantial legal battle, whereas today it pays billions of dollars per year as a result of settlements and courtroom losses. More importantly, resulting increased costs of tobacco products and increased restrictions on marketing are beginning to take their toll on the industry as smoking rates by youth and adults continue to decline, albeit very slowly.[64] Of course courtroom judgments are not settled simply on the basis of scientific truth and public health outcome but equally on legal strategies and reliance upon witnesses who support the legal strategies of the industry. Undoubtedly the tobacco industry will continue to refine its strategies to obscure the truth about tobacco addiction, even as plaintiffs continue to find ways to effectively bring scientific truth and public health reality to prominence. If the recent trial on behalf of the United States government is any indicator, the courtroom battles will continue for many years to come.

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