

Low Tar, High Toll

Nicotine-dependent Americans have a bewildering array of products with which to satisfy their drug craving, including over 400 varieties of cigarettes, plus pipe tobaccos, cigars, and smokeless tobacco products. The more adventurous experiment with a cornucopia of innovative alternative nicotine delivery systems, including, in recent years, Premier, a thermal drug nebulizer capable of delivering crack as well as nicotine,^{1,2} Masterpiece Tobacs, a chewing gum impregnated with tobacco flakes, and Ipcoc Creamy Snuff, a tobacco toothpaste.³

Some opt for the decidedly "low-tech" end of the cigarette market, roll-your-own (RYO) tobacco, papers, and paper tubes with filters. During the past year, Americans smoked an estimated three billion RYO cigarettes, a drop in the ashtray compared with more than 500 billion manufactured cigarettes.⁴ In neighboring Canada, however, where manufactured cigarettes are viewed by some smokers as prohibitively expensive, RYO sales accounted for 14% of the cigarette market in 1989.⁵ A minor provision of the Canadian Tobacco Products Control Act⁶ recently required manufacturers of the RYO cigarette tobaccos to measure and report "tar," nicotine, and carbon monoxide yields. In this issue of the *Journal*, Kaiserman and Rickert demonstrate that it is differences in the cigarette papers and filters, rather than in the tobacco blends themselves, that determine "tar," nicotine, and carbon monoxide yields.⁵

This work follows the checkered tradition of cigarette yield assessment and associated public policy that began in the United States in the mid-1950s. In the early part of that decade, following the first major public smoking-and-health scare,⁷ advertisements for filtered brands boasted of the "health protection" conferred by the filters. In 1955, the Federal Trade Commission prohibited such claims. Eleven years later, however, the Commission approved factual statements about tar and nicotine (t/n) yields provided they were based on an FTC-approved method of testing yields.

Since 1971, cigarette manufacturers have put t/n yields in advertising copy in response to pressure from the FTC, but such labeling on packages is voluntary and appears only on packs of the lowest yield brands. There is no disclosure of carbon monoxide yields on packs or ads. Nor is there public disclosure of the additives

used in cigarettes. Data on the yields of 4000 other chemicals in cigarette smoke, including more than 40 carcinogens, are also missing from ads and packs.³

At times, both government and the medical profession have lent implicit or explicit support to so-called low t/n cigarettes as alternatives to their supposedly more toxic kin. Well into the 1970s, the National Cancer Institute supported a research program to develop a "less hazardous cigarette," and through 1990 the US Department of Agriculture maintained research to develop "a safer tobacco." Until the last few years, major textbooks in internal medicine and family medicine advised physicians to recommend low t/n smokes to patients who would not stop smoking.^{8,9}

Epidemiologic data do not support the wisdom of this approach. Smokers of low t/n brands experience only a modest decline in lung cancer risk and no change in heart disease risk compared with smokers of higher yield brands.³ A likely explanation is that machine-produced t/n yield data are not directly applicable to human smoking behavior. As Kaiserman and Rickert observe,⁵ the machine method holds constant puff volume, frequency, and duration, as well as butt length, regardless of cigarette type. Smokers do not hold these variables constant, however. Smokers regulate their nicotine ingestion, compensating for lower yields by smoking more cigarettes, puffing more frequently, and inhaling more deeply.¹⁰ Some smokers subvert the technologies that reduce yield, blocking air dilution holes on filter tips either intentionally (e.g., with tape) or inadvertently (with lips or fingers).¹¹ Some even snap off the filters, apparently believing that the lower yields derive solely from the tobacco in the cigarette.

Of equal consequence in evaluating the importance of t/n yield differences is whether (or, rather, to what extent) the existence of low t/n alternatives, and the belief that they entail less health risk, causes some smokers to switch to low t/n brands rather than quit, and perhaps some children to start smoking.³ Survey evidence demonstrates that the public, and particularly smokers, perceive low t/n cigarettes as carrying less risk; some smokers apparently believe that moderate use of low t/n cigarettes verges on being risk free.¹² Compared with quitting smoking, the option of switching down is dramati-

cally easier for the addicted smoker. The industry capitalized on this in not-so-subtle advertising campaigns for low t/n cigarettes in the late 1960s and early 1970s. The following ad copy illustrates how some low t/n brands were competing with smoking cessation, rather than with other brands of cigarettes: "All the fuss about smoking got me thinking I'd either quit or smoke True. I smoke True." The current bait-and-switch battle between Carlton and Now for the distinction of being "lowest" perpetuates this theme to the present day, albeit in a more subtle manner: these brands are indeed competing with each other, at the same time that they compete with abstinence from smoking.

Combined, nicotine compensation and switching instead of quitting suggest the very real prospect that the existence of low t/n cigarettes has actually caused more smoking than would have occurred in their absence and thereby raised the morbidity and mortality associated with smoking.³

Low t/n cigarettes evolved in a climate of increased criticism of smoking by public health officials in the 1960s and 1970s, just as filters appeared in the 1950s in reaction to the first substantial public awareness that smoking caused lung cancer.⁷ Both products seemed to promise technologic solutions that would let people continue to smoke with the belief that they were minimizing their exposure to risk. These approaches precisely fit the thinking emblematic of an addicted individual: the user tries to solve a problem in a manner that lets drug consumption continue without interruption.

From a business perspective, the technical fixes to maintain customer confidence and sales worked fabulously well. Smoking rates actually rose through most of the 1950s after 2 years of sharp decline, and all the growth was in the filter segment of the market: constituting a mere 0.6% of the market in 1950, the filter share climbed to over half of all cigarettes sold a decade later.³ Ironically, until 1957 the first breakthrough filter brand, Kent, achieved its "superior filtration" with crocidolite asbestos.¹ Workers at the factory that made the filters have since then experienced an epidemic of mesothelioma, lung cancer, and asbestosis.¹³

Editor's Note. See related article by Kaiserman and Rickert on page 108 of this issue.

Beginning in the late 1960s, low t/n cigarettes (called "low poison" brands by Dr. Alan Blum) grew from 2% of the market to around 55%.³ Recent smoking rates likely would have fallen more rapidly had the industry not built up an expectation of reduced hazard by low t/n product advertising.

While both filtered and low t/n brands were enormous commercial successes, their power to hold customers in the market is waning. Appreciation of the enormous harm caused by tobacco continues to grow, and the social cachet once associated with smoking has evaporated. The new social unacceptability of smoking has been spurred in large part by a rapidly expanding understanding of the dangers posed by tobacco smoke pollution.^{14,15} The tobacco industry has tried to introduce the next generation of innovative tobacco products in this increasingly difficult environment. The industry has test marketed cigarettes with a built-in air freshener, "de-nicotined" brands, and several "low smoke" brands.^{1,16} As was the case with filtered and low t/n products (and with Premier), none of these products was shown to be safe prior to their testing or national marketing, even though each purported to address one or another serious concern about smoking. No federal government agency requires cigarette manufacturers to demonstrate the safety of their products. Congress has specifically forbidden the Consumer Products Safety Commission from assessing the safety of cigarettes, and absent explicit health claims, the Food and Drug Administration has long refused to regulate cigarette safety.³

The battle for the hearts and minds (and wallets) of America's smokers rages on. The industry creates new-generation products as it attempts to maintain old-generation customers and seduce a new generation of Americans into dependence on nicotine. The federal government should halt the proliferation of new products, unless the manufacturers can demonstrate that these products are genuinely safe when used as intended.

A moratorium on the introduction of new addictive nicotine products repre-

sents a pragmatic middle ground between the current absence of safety regulation and an insistence that all nicotine delivery systems, including those now marketed, be subject to regulation. Prohibiting unsafe tobacco products is not a viable policy option in a nation with nearly 50 million people addicted to nicotine; nor would it necessarily be desirable even if the numbers of addicted consumers were "small." In any event, it is politically infeasible because scores of legislatures and government agencies remain caught in the stranglehold of tobacco industry influence. A moratorium on new products would represent one small but constructive step forward in grappling with this industry and the devastation wrought by its products. If nothing else, it would free public health resources from the need to continually evaluate and respond to the industry's technologic creativity. Freed resources could be dedicated to increasing tobacco product taxes, combating promotional techniques, and restricting children's access to nicotine.

Smoking low tar and nicotine cigarettes is the equivalent of jumping out the window of the 29th floor of a building rather than the 31st floor. Whether you suck on a high-tech Premier or puff on an old-fashioned roll-your-own, the industry is always there to give you a push. □

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