

# Information on Tar and Nicotine Yields on Cigarette Packages

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**Abstract:** We examined information on tar and nicotine yields on the packages of 160 cigarette brands, 58 percent of the 275 brands for which tar and nicotine yields were listed in a recent Federal Trade Commission report. The tar yield was indicated on 14 percent, the nicotine yield was indicated on 11 percent. As tar yield increased

among brands, the yield was progressively less likely to be shown on the package and was not disclosed on the package of any cigarette yielding 11 mg or more of tar. (*Am J Public Health* 1990; 80:551-553.)

## Introduction

Since 1971, all major cigarette manufacturers have voluntarily disclosed the tar and nicotine yields of cigarette brands in advertisements.<sup>1</sup> The cigarette industry agreed to "voluntary" disclosure after the US Federal Trade Commission (FTC) had proposed a regulation that would have required such disclosure.<sup>2</sup> This agreement does not apply to cigarette packages.

The tar and nicotine yields listed in cigarette ads have been obtained by machine smoking of cigarettes under standardized laboratory conditions using an FTC method developed in the 1960s.<sup>3</sup> Through early 1987, the FTC conducted tar and nicotine measurements in its in-house laboratory; currently, the Tobacco Institute Testing Laboratory performs tar and nicotine measurements using the FTC's standard method. The Institute provides these test results to the FTC which, in turn, makes the information available in a public report.<sup>4</sup>

In 1981, the Secretary of Health and Human Services recommended that:

"... manufacturers should list yields of 'tar', nicotine and other hazardous components on their packages and in their advertising with appropriate explanatory information on the health significance of these measurements. This would be a minimum first step in giving cigarette consumers full and adequate information about the products they are buying."<sup>5</sup>

Seven years after that recommendation was made, we conducted a study to examine the types of information related to tar and nicotine yields that are provided on cigarette packages.

## Methods

In May of 1988, we visited eight retail stores that sell cigarettes in Montgomery County, Maryland to find as many different cigarette brands as possible. We found 160 (58 percent) of the 275 brands listed in a 1988 FTC report on tar, nicotine, and carbon monoxide yields of domestic cigarettes.<sup>4</sup> (The 275 brands include 272 in the report's primary listing, plus three varieties of Barclay cigarettes for which tar and nicotine yields were provided in the text.) These 160 brands accounted for approximately 78 percent of the domestic cigarette market in the second quarter of 1988.<sup>6</sup>

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Many of the 160 brands were "extensions" of the same primary brand name but differed in cigarette length, the type of package (soft or hard pack), the number of cigarettes per package (20 or 25), the presence or absence of a filter, or the presence or absence of methylation. All of these variables (including type of package) may be associated with differences in tar and nicotine yield.<sup>4,7</sup>

For each brand, we examined the package for any information relating to tar and nicotine yields, including quantitative measurements (mg per cigarette) and qualitative descriptions (e.g., "light," "low-tar," "99% tar free"). Because tar and nicotine yields in cigarette brands are highly correlated (high-tar brands tend to have high nicotine yield, and low-tar brands tend to have low nicotine yield),<sup>4</sup> we analyzed package labeling patterns only with respect to tar yields.

For six brands, the tar yield indicated on the package was 1-2 mg higher or lower than the yield listed in the FTC report. In these cases, we used the yield indicated on the package in our analysis of package labeling patterns.

## Results

### Package Disclosure of Tar and Nicotine Yields

The tar yield was indicated on the package of 23 brands (14 percent). For 17 (74 percent) of the 23 brands, the nicotine yield was also indicated. In no case was the nicotine yield shown without the tar yield. The 23 brands fell within six brand "families" produced by five different manufacturers: seven Carlton varieties (American Brands); seven Merit varieties (Philip Morris Company); three Now varieties (RJR/Nabisco); three Barclay varieties (Brown & Williamson Corp.); two Triumph varieties (Loews Corp.); and one Benson & Hedges variety (Philip Morris). The 23 brands accounted for approximately 5 percent of the domestic cigarette market in the second quarter of 1988,<sup>6</sup> or about 6 percent of the combined market share of the 160 brands in our sample (78 percent).

Table 1 shows the proportion of brands whose packages disclosed tar yield within the six tar-yield categories used by the FTC in analyzing cigarette sales and advertising expenditures.<sup>8</sup> As tar yield increased among brands, the package was progressively less likely to show the yield. The tar yield was disclosed for all 11 brands yielding 3 mg or less of tar but not for any of the brands yielding 11 mg or more. When the six tar-yield categories shown in Table 1 are collapsed into four categories to allow use of the chi-square test for trend, the trend is statistically significant ( $p < 0.001$ , two-tailed).

### Package Label Messages

Table 2 shows the frequency of use of words and phrases on cigarette packages that indicate or suggest a low-tar/

**TABLE 1—Proportion of Cigarette Brands That Disclose Tar Yield on Packages, among a Sample of 160 Brands (stratified by tar yield), United States, May 1988**

Tar Yield* (mg/cigarette)	Total Brands	Brands with Tar Yield on Package	
		N	%
≤ 3	11	11	100
4-6	19	6	32
7-9	29	5	17
10-12	46	1	2
13-15	23	0	0
≥ 16	32	0	0
Total	160	23	14

\*Source of information on tar yields of cigarette brands is the Federal Trade Commission.<sup>4</sup>

low-nicotine yield, stratified by tar yield. Five brands claimed to have the lowest yield. Two varieties of Carlton cigarettes, each having a tar yield of 1 mg, claimed that "Carlton is lowest." Three varieties of Now cigarettes, having tar yields of 1 mg, 2 mg, and 3 mg, claimed that "Now is lowest." Three varieties of Barclay cigarettes, ranging from 3 to 5 mg of tar, were said to be "99% tar free."

The phrases "ultra low tar" and "ultra lights" were used almost exclusively for brands yielding 7 mg or less of tar. The terms "low tar" and "lights" were generally used for brands yielding 15 mg or less of tar, conforming with the FTC's usual definition of low-tar cigarettes.<sup>9</sup> However, three brands with tar yields of 16-18 mg were called "lights" (Doral Lights king-size soft-pack, Richland Lights 100's soft-pack, and Richland Lights Menthol king-size soft-pack). One "ultra low tar" brand (Merit Menthol 100's soft pack) had a tar yield of

**TABLE 2—Frequency of Use of Words and Phrases on Cigarette Packages That Indicate or Suggest a Low-Tar/Low-Nicotine Yield, among a Sample of 160 Brands (stratified by tar yield), United States, May 1988**

Tar Yield* (mg/cigarette)	Wording	Brands	
		N**	%
≤ 6 (N = 30)	Ultra low tar	16	53
	Ultra lights	13	43
	Lowest	5	17
	99% tar free	3	10
	Ultra low	2	7
	Smooth	2	7
7-12 (N = 75)	Light/Lights	49	65
	Low tar	29	39
	Lowered tar & nicotine	5	7
	Ultra low tar	3	4
	Mild/Milds	3	4
	Low nicotine	2	3
	Smooth	2	3
	Ultra lights	1	1
	Recessed filter	1	1
	Famous Micronite II filter	1	2
≥ 13 (N = 55)	Light/Lights	8	15
	Smooth	6	11
	Low tar	5	9
	Mellow	2	4
	Activated charcoal filter	2	4
	Famous Micronite II filter	1	2
	Mild	1	2

\*Source of information on tar yields of cigarette brands is the Federal Trade Commission.<sup>4</sup>

\*\*Within a particular tar-yield category, the sum may exceed the total because some package labels used more than one descriptive term.

10 mg, which is higher than that of some brands labeled as merely "low tar." One brand (Lucky Strike Unfiltered Lights) had the phrase "only 9 mg tar" on the package.

Several words or phrases that may suggest a low-tar yield are used on packages, including "smooth," "mild," "mellow," and references to special filters (Table 2). One filter was described in detail on the package: "Lark Lights filter has two outer 'tar' and nicotine filters, plus an inner chamber of tiny charcoal granules specially treated to smooth the taste in a way no other filter can." The term "full flavor," often used by cigarette companies as a euphemism for high tar, appeared on the package of three brands yielding 14-17 mg of tar (Cambridge and Doral varieties).

## Discussion

Although several studies have shown that those who smoke lower tar cigarettes have a reduced risk of lung cancer,<sup>5,10,11</sup> many concerns have been expressed about low-yield cigarettes.<sup>12,13</sup> First, because the cigarettes are less harsh, they may facilitate experimentation with and initiation of smoking among children and adolescents. Second, smokers who switch to lower yield brands often change their smoking behavior to compensate for reduced nicotine delivery (e.g., by increasing daily cigarette consumption; by increasing the depth, duration, or frequency of puffs; or by smoking cigarettes to a shorter butt length).<sup>14-17</sup> These compensatory changes may, in some smokers, increase the total intake of tobacco smoke constituents. Third, the use of flavoring additives is thought to be more common in low-tar brands to compensate for reduced "taste." These additives and their products of combustion may pose additional health risks to smokers. Fourth, those who smoke lower yield cigarettes may consider them to be safe or less hazardous, and may therefore be less motivated to quit.<sup>18</sup> Fifth, there is little or no evidence that low-yield cigarettes reduce the risk of cancers other than lung, of cardiovascular disease, of chronic obstructive pulmonary disease, or of fetal damage when smoked during pregnancy.<sup>5,13,19</sup>

Consumers have received mixed messages about the advisability of switching to low-tar cigarettes. For example, widespread publicity in the media has followed the publication of articles reporting "benefits" of low-yield cigarettes.<sup>20</sup> These reports have been buttressed by cigarette advertising claims implying that low-tar cigarettes are less hazardous or safe.<sup>18</sup> On the other hand, articles reporting no "benefits" have also received substantial publicity.<sup>19</sup>

Consumers' ability to sort out and act on these disparate messages is complicated by the fact that package information on tar and nicotine is provided selectively and is ambiguous or inconsistent at times. Among the 160 brands included in our study, the tar yield was not disclosed for any brand yielding 11 mg or more of tar. (The sales-weighted average tar yield was 13 mg in 1987.<sup>21</sup>) Five different brands claimed to be "lowest," even though the tar yield of one (3 mg) was three times the tar yield of another (1 mg). One "ultra low tar" brand had a tar yield higher than that of several "low tar" brands. Three brands with tar yields ranging from 3 to 5 mg claimed to be "99% tar free," an ambiguous term which suggests the brands are virtually free of tar.

Requiring disclosure of tar and nicotine yields on all cigarette packages would eliminate the selective manner by which cigarette companies now provide this information. Uniform disclosure on packages would also make these figures more accessible than those currently provided on

cigarette advertisements. A standard coding system should be developed to define tar-yield categories using easily understood terms (e.g., low tar, medium tar, high tar). The appropriate designation could be required on each package and advertisement. Such a coding system is used in the United Kingdom for cigarette advertisements.<sup>22</sup> In the United States, no official government coding system exists for tar-yield terminology, and no industry standard apparently exists (Judith P. Wilkenfeld, Federal Trade Commission, oral communication, July 6, 1989).

Chapman, *et al.*,<sup>22</sup> have suggested that retailers be required to display at the point of sale a table showing the yields of all brands (from lowest to highest yields). According to these authors, the state of South Australia has adopted a law implementing this recommendation.

Above all, mechanisms should be developed to warn consumers that any health benefits of switching to lower tar brands are minimal when compared with the benefits of quitting and are offset by smoking more cigarettes per day, puffing more frequently, etc. Warnings could be required, for instance, on package inserts, in advertisements, and at the point of sale. According to the 1986 Adult Use of Tobacco Survey, 21 percent of smokers (approximately 10 million Americans) believe that the kind of cigarettes they smoke are less hazardous than other cigarettes.<sup>21</sup> Many of these smokers might quit if they understood that any benefits of switching to low-yield cigarettes pale in comparison to the benefits of quitting.

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