

*Short Communication*

## Consumer Perception of Risk Associated with Filters Contaminated with Glass Fibers

K. Michael Cummings,<sup>1</sup> Janice L. Hastrup, Tracy Swedrock, Andrew Hyland, Jeanne Perla, and John L. Pauly

Departments of Cancer Prevention, Epidemiology, & Biostatistics [K. M. C., T. S., A. H., J. P.] and Immunology [J. L. P.], Roswell Park Cancer Institute, Buffalo, New York 14263, and Department of Psychology, State University of New York at Buffalo, Buffalo, New York 14263 [J. L. H.]

**Abstract**

**The filters in Eclipse, a new cigarette-like smoking article marketed by R. J. Reynolds Tobacco Company, are contaminated with glass fibers, fragments, and particles. Reported herein are the results of a study in which consumers were questioned about their opinions as to whether exposure to glass fibers in such a filter poses an added health risk beyond that from smoking and whether the manufacturer has an obligation to inform consumers about the glass contamination problem. The study queried 137 adults who were interviewed while waiting at a Division of Motor Vehicles office in Erie County, New York in 1997. All but one person expressed the view that the presence of glass fibers on the filters poses an added health risk beyond that associated with exposure to tobacco smoke alone. Nearly all expressed the position that the cigarette manufacturer has a duty to inform the public about the potential for glass exposure.**

**Introduction**

In June 1996, RJR<sup>2</sup> began selling Eclipse, a cigarette-like smoking article that delivers nicotine to the consumer primarily by heating instead of burning tobacco (1). Pauly *et al.* (2) have recently reported that the filters in Eclipse are contaminated with glass fibers, fragments, and particles. The observed glass fibers and particles on the Eclipse filter tip arise from two glass fiber insulating mats that surround a carbon fuel rod located at the lit end of the cigarette. The glass contamination of the filter tips of Eclipse appears to be the result of the shattering of these glass insulating mats during the manufacturing process. The shattered glass fragments are externally translocated to the surface of the cigarette wrapping paper and to the cut surface of the cellulose acetate filter tip. Examination of the cut filter surface with a stereo zoom microscope and scanning electron microscope showed that the filter contained nonbound glass

fibers and glass particles (1). Because many of the glass fragments observed on the surface of the filter tips were of a respirable size, Pauly *et al.* (2) have recommended that RJR be required to inform Eclipse smokers of their potential exposure to glass material.

We have found no mention of the use of glass material or the potential for glass contamination of the filter tip in newspaper advertisements for Eclipse, in the Eclipse promotional video tape, or in the leaflet accompanying the pack of Eclipse. The leaflet that accompanies each pack of Eclipse instructs the smoker to “take an extra puff and a longer draw while holding a flame to the carbon tip.” The recommendation to puff vigorously on Eclipse may increase the chances that glass fibers, particles, and fragments contaminating the filter tip would be discharged into the smoker’s mouth and air passages during smoking (1). Thus, it is likely that Eclipse smokers are unaware of their exposure to glass.

This study reports the results of a survey in which current, former, and never smokers were asked about their beliefs as to whether exposure to glass fibers in a new cigarette-like smoking article (*i.e.*, Eclipse) poses an additional health risk to smokers beyond that associated with exposure to tobacco smoke alone and whether the manufacturer has an obligation to inform consumers about the risk of exposure to glass in the product.

**Materials and Methods**

The study population consisted of 137 adults, 18 years of age and older, who volunteered to be interviewed while waiting in line at a Division of Motor Vehicles office in Erie County, New York on three different days in July, August, and September, 1997. Of the 137 individuals interviewed, 53 were current smokers, 24 were former smokers, and 60 identified themselves as never smokers (see Table 1 for definitions). Table 1 provides a summary of the characteristics of survey participants. The brief (~10 min) survey was administered by a trained research assistant who asked a series of about 20 questions designed to measure beliefs about the safety and benefits of cigarette filters. Respondents were asked why cigarette companies put filters on cigarettes, if they believe a filter makes a cigarette safer, and whether or not they had ever heard of research on filter material getting into the lungs. Responses to questions about the risks and benefits of conventional cellulose acetate filters can be found elsewhere.<sup>3</sup> Two of the questions in the survey were on the subject of glass contamination of filters on a “new cigarette.” These questions were as follows:

(a) A new kind of cigarette has been designed which produces very little smoke. The cigarette contains glass fibers,

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<sup>1</sup> To whom requests for reprints should be addressed, at Department of Cancer Prevention, Epidemiology, & Biostatistics, Roswell Park Cancer Institute, Elm and Carlton Streets, Buffalo, NY 14263. E-mail: Michael.Cummings@Roswellpark.org.

<sup>2</sup> The abbreviation used is: RJR, R. J. Reynolds Tobacco Company.

<sup>3</sup> J. L. Hastrup, K. M. Cummings, T. Swedrock, A. Hyland, and J. L. Pauly. Consumer knowledge and beliefs about the safety of cigarette filters, unpublished manuscript, available on request from Michael Cummings (E-mail: Michael.Cummings@Roswellpark.org.).

Table 1 Characteristics of survey participants

	<i>n</i>	%
Age (yrs)		
18–40 y	74	54%
41+ y	63	46%
Gender		
Male	78	57%
Female	59	43%
Years of formal education		
12 or less	56	41%
13+	81	59%
Smoking status <sup>a</sup>		
Current smoker	53	39%
Former smoker	24	17%
Never smoker	60	44%

<sup>a</sup> Current smoker, has smoked more than 100 cigarettes in his/her lifetime and smokes now; former smoker, has smoked more than 100 cigarettes in his/her lifetime but does not currently smoke; never smoker, has not smoked more than 100 cigarettes in his/her lifetime.

which are not mentioned in the advertising. If these fibers are inhaled into the lungs or eaten, would you consider this an additional health risk beyond the exposure to tobacco itself?

(b) If the glass filter fibers on the filter become loose, and the cigarette companies are aware of this, do you think they have an obligation to let people know about this?

## Results

As shown in Table 2, all but one person stated that eaten or inhaled glass fibers pose an added health risk to smokers beyond that associated with exposure to tobacco smoke alone. All but two persons responded that if the glass fibers become loose, the cigarette manufacturer should be obligated to inform consumers of this potential hazard.

## Discussion

Human health risks associated with inhaled glass fibers and particles have been the subject of recent scientific debate (3–7). A 1994 review article on the association of fibrous glass and cancer concluded that fibrous glass materials are carcinogenic and that, on a fiber per fiber basis, glass fibers may be as potent or more potent than asbestos (3). In response to our study on the glass contamination of Eclipse filters, Dr. J. E. Swauger, a scientist at RJR, has argued that the glass fibers used in Eclipse are too large to be drawn into the human lung and therefore do not pose a health risk to the smoker (8, 9). We disagree with this conclusion for two reasons. First, in inhalation studies on rats, Hesterberg *et al.* (10) have shown that large numbers of glass fibers can be recovered from the lungs several years after exposure. Rats exposed to fibrous glass for 12 months showed “bronchiolization” of proximal alveolar ducts and the formation of microgranulomas. Secondly, we and others have observed glass fibers in the residue of chemically digested human lung tissues that are comparable in size to those of the glass fibers used in Eclipse (11, 12). Thus, we think it is reasonable to assume that glass fibers and particles contaminating the Eclipse filter tip could be inhaled into the human lung, which, after all, is significantly larger than the respiratory tract of a rat.

We are not the only ones to have expressed health concerns regarding the use of glass fibers in Eclipse. Schuller International, Inc., currently known as Johns Mansville Inc.,

Table 2 Perceptions about glass-contaminated cigarette filters

Question	Current smokers ( <i>n</i> = 53)		Former smokers ( <i>n</i> = 24)		Never smokers ( <i>n</i> = 60)	
	Yes	No	Yes	No	Yes	No
Are eaten or inhaled glass fibers an additional health risk?	98%	2%	100%	0%	100%	0%
Should tobacco companies make the public aware of loose glass fibers?	100%	0%	100%	0%	97%	3%

sued RJR in 1995 to bar them from further use of Schuller’s glass fibers in Eclipse (13). We are not aware of any medical or scientific evidence that would enable RJR to ensure that the glass fibers and particles that contaminate the Eclipse filters are not inhaled and do not pose a health risk to the smoker.

Because RJR has been reluctant to inform consumers about the glass contamination of Eclipse filters, we felt that it was relevant to see how consumers might perceive the risk associated with glass exposure while smoking. Not surprisingly, the data in this study demonstrate that consumers are likely to perceive information about the presence of glass fibers on the filters of Eclipse as an added health risk beyond that associated with exposure to tobacco smoke. A 1988 Philip Morris study found that smokers had a strong negative reaction to RJR’s Premier cigarette when the use of “fiberglass” in the product was revealed (14). While the subjects included in this study were not selected to be representative of the population at large, the consistency of responses across different age, gender, and smoking status groups strongly suggests that the findings from this survey would be reflective of the views of most consumers. However, it is possible that perceptions about the risk of glass contamination reported in this study would have differed had subjects been informed about other features of Eclipse (*e.g.*, different smoke chemistry, lower biological activity, and so forth) compared with conventional cigarettes. Future studies should determine how consumers’ beliefs about Eclipse or other similar products (*e.g.*, Accord) might vary depending on the amount and type of information divulged about each product.

We believe that tobacco companies, like other consumer product manufacturers, have an obligation to fully inform their consumers about the risks and benefits of their products, regardless of what the business consequences might be. RJR recently announced that Eclipse will be test marketed in the Dallas/Fort Worth area and will be available through direct mail and internet sales. The press announcement for the new test market informed consumers that scientific studies showed that Eclipse “. . . may present smokers with less risk of cancer, chronic bronchitis and possibly emphysema, when compared to other cigarettes” (15). However, the press announcement made no mention of the glass contamination of Eclipse filters. When questioned about the potential health concerns associated with glass exposure from Eclipse, RJR spokespersons have stated that there is no health risk (16, 17).

This study demonstrates that consumers consider information about possible glass contamination of the Eclipse filter to be relevant to their decision to use the product. We believe that consumers should be informed of all aspects of Eclipse, especially because RJR has not undertaken any long-term human health studies to evaluate the health consequences of using

Eclipse (17). In particular, we think that RJR should immediately inform current and past users of Eclipse and Eclipse-like products (*i.e.*, Premier) about their likely exposure to glass material while using these products.

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