

IMPERIAL TOBACCO PRODUCTS LIMITED

February 7, 1973

Dr. D.G. Felton
38 Regent's Park Road
Millbrook
Southampton

Dear Geoff,

Thank you for your letter of January 10th. I feel flattered at the attention paid to my letter and certainly agree with the comments about the lack of precision to my "health index". I am groping for a working conception of a safer cigarette to serve as a guide for product development decisions, and to assess the relevance of research projects. Being very much of an unscrupulous in this field, I greatly appreciate the sort of letter you have written, and if you will bear with me I would like further to test my thinking with you. I might say I am doing the same thing with our own people, and they, possibly out of politeness, have not discouraged me from writing this letter.

Another reason for pursuing this search for a concept of a "safe cigarette" is the conviction I have that sooner or later we shall have to conduct a genuine scientific dialogue with our health authorities. I do not believe we should permit a research program to be mounted by our Department of Agriculture, jointly fostered by Department of Health, without an honest input from the industry. This means to me that there must be a sound statement of objectives, which I think requires the formulation of a sensible concept of what a safer cigarette ought to be.

One ought not to think only in terms of the composition of cigarette smoke, and describe its "safety" just in terms of the quantity of tar and its specific biological activity. We know that individual smokers smoke according to their own individual needs, and are fairly certain that an individual smoker changes his method of smoking according to the smoking article presented to him. This is obvious when comparing pipes to cigars to cigarettes. We think it is true for different classes of cigarette. Such being the case, the safety of a cigarette is a function of the properties of its smoke and of the way in which it is smoked. I make the assumption that relative! less harm can come to the smoker from smoke that is not inhaled

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3810 St. Antoine Street, Montreal 707, Quebec
Tel. 342-4181, 342-4500, Montreal 101, Quebec, Cable "Imperial"

beyond the mouth, consequently the ~~harm~~ in smoke can be described in terms of the quantity of biologically active material that goes beyond the mouth, ("inhaled"), and of its specific biological activity. I would argue that nicotine is the *raison d'être* for smoking, and it is pointless to put nicotine content as an independent factor in the concept of a safe cigarette, and yet this is what is being done in league tables and directives to agricultural researchers, "Develop low nicotine tobacco".

Of course, if the Germans over the years of adaptation to cigarettes of ever reduced nicotine content, have in fact reduced their intake of biologically active materials, then I would be convinced of the merits of the low tar and nicotine approach.

As a first approximation I would restate a "safety index" as being:

$$S.I. = \frac{\text{quantity of nicotine absorbed}}{\text{quantity of bio. active substances inhaled} \times \text{specific bio. activity of inhaled bio. active substances}} \quad (1)$$

An expansion of this expression would be to lend greater precision to the bottom term. If (1) is put as

$$S.I. = \frac{Q_n}{Q_b \times A_b}$$

S.I. = Safety Index

Q_n = Quantity of nicotine

Q_b = Quantity of bio. active substances

A_b = Activity of bio. active substances

I would expand the equation to a form like:

$$S.I. = \frac{Q_n}{r [Q_c A_c, Q_e A_e, Q_n A_b, \dots, \dots]} \quad (2)$$

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where the subscripts c, e, b ... denote cancer, emphysema, bronchitis, etc., etc. In other words, the term "biologically active" is inadequate. I think this kind of equation has relevance to the assessment of the meaning of the myriad of biological test systems. At some point in time they need to be demonstrably linked to one or more of the diseases associated with smoking.

A different sort of concept could be based on the notion that the harm in smoke is not specific to any particular disease, i.e. there are substances that, on contact with various sites in the body, do some sort of harm to the functioning of the cells contacted, rendering them more susceptible to disease. If this were true, then biological activity could be assessed in terms of the degree to which smoke impairs the functioning of cells. In other words assessment of biological activity need not be disease specific. This is the notion behind the approach being taken by our biology group. As a consequence of reading a draft of this letter, they are preparing a more disciplined exposition than is written here, which will be forwarded when ready.

The equations attempt to deal with either possibility, but I think it is not really necessary to have had this one sorted out in order to arrive at a conceptual definition of a safer cigarette. Another way to put it would be to say "Our objective is to give each smoker his personal nicotine requirement in the safest possible way".

I enclose a copy of a press release stating the joint research objectives of Health and Agriculture, also a copy of a letter from Dr. Morrison to Paul Paré. These both speak strongly in support of reduction of tar and nicotine. If our thinking about personal nicotine requirement is valid, then the stated objective may be seriously questioned, on health grounds.

I realize there are medical opinions about the danger of nicotine, as there are about alcohol, but in both cases the only answer for the consumer is moderation, unless of course in the case of smoking low nicotine cigarettes really reduce the intake of nicotine which I doubt.

The real question I am asking is how do we talk about the subject in the context of research objectives?

With kind regards,

Yours sincerely,

R.M.

R.M. Gibb

cc: Dr. S.J. Green

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