

CONFIDENTIAL

AIDE MEMOIRE ON PLAIN AND FILTER TIPPED CIGARETTES

The following statement provides information on a number of questions that have been asked about plain and filter tipped cigarettes.

1. Cigarette smoke consists of three groups of substances:-
 - (a) Uncondensable or permanent gases.
 - (b) Condensable vapours. (These are substances which can be condensed by the application of moderately low temperatures).
 - (c) Particulate material. (These are minute droplets of a highly complex nature suspended in the mixture of vapours and gases).

2. A medium-size plain cigarette contains about one gram of tobacco. The total puff volume of the average smoker is slightly over 3/10ths of a litre per cigarette. The main gases in the smoke and the quantities in which they are present are approximately 260 ml. nitrogen, 45 ml. oxygen, 28 ml. carbon dioxide and 9 ml. carbon monoxide.

3. The weight of particulate material (at room temperature, including water) in the smoke from a cigarette is about 30 mg. A further 10 mg. of vapours are obtained by cooling the smoke to about - 70°C. It is not known whether the relative weights of these materials have any relation to their possible importance for health.

4. Materials having a beneficial effect on flavour as well as materials which have been suspected by one scientist or another as possibly being undesirable are to be found in each of the three groups of substances in cigarette smoke.

5. The filters on U.K. filter tipped cigarettes remove more of the particulate material from the smoke than would the corresponding length of tobacco. In almost all cases, therefore, filter cigarettes yield less particulate material than plain cigarettes of the same size. On the other hand, filter tipped cigarettes give at least as much vapours and gases as plain cigarettes of the same size. The yield of particulate material is affected not only by filter efficiency but also by the tobacco blend and density, paper

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porosity and other factors.

6. The popular brands of both plain and filter tipped cigarettes give the smoker widely varying amounts of particulate material. It would, of course, be possible to produce a filter that removed all the particulate material and some of the vapours and gases, but the result would not satisfy the smoking public.

7. It was at one time considered that substances could not be selectively filtered out of cigarette smoke. However, selective filtration is now possible for several classes of compounds - for example, phenols and aldehydes. Until more is known about possibly harmful or undesirable constituents of cigarette smoke there is no clear basis for judging the value of chemically selective filters. Nevertheless, if removal of any classes of compounds is shown to be desirable, their selective removal by filtration is a possibility.

8. Biological experiments have brought certain substances in cigarette smoke under suspicion of possibly being harmful. However, no one has yet been able to identify any specific substance in cigarette smoke, whether filterable or not, as definitely being harmful to the smoker in the quantities in which it is present. For example, 3:4-benzpyrene was an early suspect but in 1957 the Medical Research Council stated that "there is no certainty that it is harmful in such low concentration". Further experiments are in progress on a large scale, notably at the Tobacco Research Council Laboratories at Harrogate, to ascertain whether any and, if so, what changes in the constituents of tobacco smoke are desirable and possible.

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