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SELECTIVE FILTRATION OF CIGARETTE SMOKE CONSTITUENTS

PROGRESS REPORT

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Research & Development Establishment,
British-American Tobacco Company Ltd.,
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SELECTIVE FILTRATION OF CIGARETTE SMOKE CONSTITUENTS

(Report No. RD.295-R)

SUMMARY

This report lists some current results on (i) active carbon in cigarette filters, and (ii) tetraethylene pentamine and polyethyleneimine as filter additives.

CONCLUSIONS

(1) The most effective carbon filter examined was that on TEMPO cigarettes (R. J. Reynolds).

(2) There is an approximately exponential relationship between the mass of carbon in a filter (granule type) and the proportion of aldehydes removed.

(3) The adsorption of nicotine and aldehydes on carbon granule filters is independent of granule size; for other constituents measured (tar, phenols, acids, and hydrogen cyanide), the efficiency is a function of granule size.

(4) The efficiency of aldehyde filtration on carbon is enhanced by the prio removal from the smoke of a proportion of the particulate phase.

(5) Polyethyleneimine improves the efficiency of filters for acids and phenols; the nicotine efficiency is decreased.

(6) Tetraethylene pentamine also improves acids and phenols filtration, and removes the greater part of the aliphatic aldehydes. It is probably too toxic for commercial use itself but attempts should be continued to find more suitable chemical derivatives.