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EDM/LAP/46D

28 April, 1983

MUTAGENICITY AND CIGARETTE SMOKE FRACTIONATION
A Project for Dr. M. H. Bilimoria, Imperial Tobacco Ltd, Canada.

The broad goal of this work is to determine the overall chemicals responsible for the mutagenic/tumourigenic activity of cigarette smoke condensate. Following the meeting at GR&DC Southampton with the Company's biological consultants, Dr. F. J. C. Roe, Professor B. A. Bridges and BAT scientists on 26 April, the following guidelines are recommended for the fractionation/mutagenicity project.

- (1) The Grimmer and Klimisch scheme of fractionation should be used, this involves partition between solvent systems and thus minimises chemical modification of the condensate during fractionation. In addition, the results can be compared with the mouse skin painting carcinogenicity data available for this fractionation procedure.
- (2) The mutagenicity test system should be a bacterial point mutation assay using the appropriate strains of *S. typhimurium* and if time permits *E. coli*. It is expected that the results will generally indicate where the biological activity may be found following fractionation. However, it should be remembered that Professor Bridges did point out that compounds that showed strong mutagenicity were not necessarily that most potent carcinogens.
- (3) Fractionation should be carried out on 3 types of smoke condensate which have different mutagenic activities by the Ames test using *S. typhimurium* strain TA 98.
- (4) Accordingly, it is suggested that the following plain cigarettes manufactured by BAT Germany are investigated. I. Gauloises (Flue), II. Fenas (Oriental) and III. North State (Virginia).
- (5) Completion of the programme, up to and including identification of compounds responsible for the bulk of mutagenic activity, is likely to involve a substantial amount of work, some of which would have to be carried out by GR&DC Southampton, and may take up to 5 years to complete.
- (6) The following should be instigated by ITL Montreal:
 - I Negotiate with BAT Germany for the production of cigarettes
 - II Condensate fractionation
 - III Perform Ames mutagenicity assays on the fractions.

At the end of this phase of the work, a further meeting will be held to determine the next stages which are envisaged as subfractionation and chemical analyses with involvement of some of the facilities at GR&DC Southampton.

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