

Conference Report

51st Tobacco Chemists' Research Conference (TCRC), September, 1997

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The 51st Tobacco Chemists' Research Conference (TCRC) took place September 14–17, 1997, in Winston-Salem, North Carolina, USA. It was hosted by the Wake Forest University Winston-Salem State University and sponsored by the R. J. Reynolds Tobacco Company. About 370 scientists participated in the excellently organized conference. In total, 73 scientific papers were presented: 5 oral presentations at the TCRC Symposium, 58 oral papers at Technical Sessions and 10 posters. For the first time, a Poster Session was arranged within the scientific program of a TCRC. The Poster Session was well accepted and, hopefully, this type of scientific communication will be retained at future conferences.

The title of the 1997 TCRC Symposium was 'Smoke, Smoking, and Smokers' and was chaired by JOHN ROBINSON. As indicated in the title, the five presentations held at the Symposium dealt with analytical machine smoking, human smoking behaviour as well as with motives and benefits of human smoking.

ALAN RODGMAN presented a comprehensive overview entitled 'FTC "tar" and nicotine in mainstream smoke: a retrospective'. He gave a chronology of the origin of machine smoking parameters such as puff volume, puff duration, puff frequency etc., of the analyses of mainstream smoke (MS) total particulate matter (TPM), MS TPM nicotine and water as well as of the use of spectrometric methods to determine the "tar" yield of cigarettes. RODGMAN emphasized that the Federal Trade Commission (FTC) method intended to accomplish the cataloguing or sequential listing of the cigarette brands for their MS yields of "tar" and nicotine (and, since 1980, also for carbon monoxide) and that it was never anticipated to

catalogue or rate smokers. The author pointed out that the recent criticisms levelled at the tobacco industry for the limitations of the FTC method were repetitions of similar criticisms addressed to the FTC by members of the tobacco industry in the years preceding the implementation of the standard machine smoking method by the FTC in 1965.

MICHAEL BORGERDING, the 1997 Philip Morris Awardee, reviewed research into alternative analytical smoking regimens. In his paper entitled 'The FTC method in 1997: What alternative smoking condition(s) does the future hold?', BORGERDING briefly summarized the recommendations of the National Cancer Institute (NCI) Ad Hoc Committee for evaluation of the FTC Cigarette Testing Method. The NCI Committee recommended that the 'new' FTC protocol should (i) measure and publish information on the range of "tar", nicotine, and carbon monoxide that most smokers should expect from cigarettes sold in the USA, (ii) clearly communicate this information to smokers, (iii) provide a simple graphic representation of the yields with each pack of cigarettes and all advertisements. The expert committee, however, did not specify, how these goals should be achieved.¹ BORGERDING underlined that the FTC method was not intended to replicate human smoking conditions, to de-

¹ In the middle of September 1997, the FTC requested comments for a cigarette testing protocol which includes two puffing regimens: Original FTC regimen (35 ml puff volume, 60 s⁻¹ puff frequency, 2 s puff duration) and a regimen for more intensive smoking (55/30/2). This proposal also permits the usage of equations to calculate the "tar", nicotine, and carbon monoxide yields of the more intensive smoking conditions on the basis of the original FTC values.

termine what an "average" smoker would get from a particular cigarette, to measure the amounts of "tar" or nicotine inhaled by any individual or to define the conditions under which individuals smoke cigarettes. Furthermore, the author reported on four studies in which alternative smoking conditions were applied. In these studies, which include an investigation for a German Consumer Magazine (*'plus'*), puff volumes (44 - 60 ml), puff frequencies (1/50 - 1/26 s⁻¹), and filter ventilation (open, 50 % of 100 % blocked) were varied. As expected, the MS yields for "tar" and nicotine increased with increasing puff volume and/or frequency as well as with degree of filter ventilation blockage. BORGERDING and his colleagues evaluated the possibility of using a simple multiplier when changing the smoking parameter and found a dependency on the brand style. For example, when changing from the original FTC puffing regimen (35 ml puff volume, 60 s⁻¹ puff frequency, 2 s puff duration) to a more intensive puffing regimen (55/30/2) the multiplier for "tar" yield was 4.2 for ultra-low brands and 2.1 for low-tar and full-flavour brands. A better predictability over the wide range of cigarette brands was observed when applying quadratic equations. In addition, this approach has the advantage that the currently validated FTC method could be used. Returning to the title question of his presentation, BORGERDING asked the perhaps more appropriate question: 'Will any of the alternative smoking conditions proposed satisfy their objective of providing the consumer with better information about the amount of smoke he or she obtains from a particular cigarette on a particular day?'.

In their presentation entitled 'Filter ventilation - has there been a "cover-up"?', RICHARD BAKER and LESLIE LEWIS critically discussed the issue of blockage of filter ventilation. They examined the evidence from smoking behaviour studies on the incidence of filter vent blocking by smokers and assessed the effects of vent blocking as might occur in practice on the ventilation rate of the cigarettes and yields of MS components. Apart from published work, previously unpublished studies performed by the tobacco industry were also considered. The new data reveal that (i) the presence or absence of a distinctive 'bull eye' staining pattern of the filter, as used for example by Kozlowski and coworkers, is not necessarily related to the incidence of vent blocking; (ii) interview data on degree of vent blocking are not in line with video-recordings showing that self-report is not a valid information about actual vent blocking; (iii) coverage of the ventilation zone area rarely occurs and is much less complete than hitherto believed; (iv) MS yields and degree of filter vent blocking are not linearly related: while blocking 50 % or the ventilation zone area of a 20 % ventilated filter reduces the ventilation to 12 %, an equivalent vent blocking in a highly ventilated cigarette

(90 %) reduces the ventilation to only about 81 %. BAKER and LEWIS concluded that vent blocking does sometimes occur in a minority of smokers and that vent blocking *per se*, as it occurs in practice, has a relatively minor effect on smoke yields.

GERHARD SCHERER and HUBERT KLUS presented a review entitled: 'Cigarette smoking and compensation: an evaluation of the literature'. According to the authors, compensation is defined as the change in smoking pattern (consumption, puffing and inhalation pattern) in order to adjust for a different MS yield of the cigarette smoked presently compared to the cigarette smoked previously. From the vast amount of data available in the literature, the following conclusions were drawn: (i) There is evidence for partial compensation when changing to cigarettes with higher or lower yields compared to the cigarette usually smoked; (ii) compensation appears to be more complete when switching to higher yield cigarettes; (iii) higher yield cigarettes are smoked less intensively than lower yield cigarettes; (iv) there is strong evidence that nicotine uptake regulation, if any, is imprecise, the data available rather suggest that a subgroup of smokers may partially compensate for nicotine; (v) due to the limited data available, the role of other factors such as "tar", taste, irritating properties of the smoke and draw resistance of the cigarette for compensational smoking is unclear.

In the most entertaining final lecture of the Symposium with the title 'Why Deep Blue does not use tobacco', DAVID WARBURTON examined the multiple motives of tobacco use in humans. The author elegantly showed that the human brain is much more than a neural network computer such as Deep Blue, the famous chess robot which beat Gary Kasparov in May, 1997. In contrast to a computer, the performance of the human brain is dependent on distraction, concentration, mood etc., properties which may be positively influenced by the use of tobacco, possibly by the action of nicotine. Sensory effects are of importance as well. WARBURTON pointed out that tobacco use cannot be seen as aberrant or unique, but has motives in common with many other products rendering it as a part of a natural pattern of peoples' activities.

Many papers presented at the 1997 TCRC as well as at previous TCRCs go beyond tobacco chemistry. Therefore, it appears logical that it was decided at the Business Meeting that the 'Tobacco Chemists' Research Conference' will be renamed to 'Tobacco Science Research Conference'.

The 52nd Tobacco Science Research Conference will take place September 13-16, 1998, in Atlanta, Georgia, USA.