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Conference Report

Fifty Years of Tobacco Science and Technology: Tobacco Chemists' Research Conference (TCRC), October, 1996

Michael Meger

Analytisch-Biologisches Forschungslabor München
Goethestraße 20
D-80336 München

The occasion of the 50th anniversary of the Tobacco Chemists' Research Conference (TCRC) in October, 1996, offered an ideal opportunity to look back at the contribution of the conference to the advancement of science and technology related to tobacco and tobacco products.

Begun in October 1947, the impetus for the origination of this conference derived from the desire of several tobacco chemists to discuss their work with others inside and outside the tobacco industry. Today, the annual TCRC meetings serve as a forum for discussion of the chemistry and physics of tobacco, tobacco products, and tobacco smoke in its broadest context. Participants include scientists from the manufacturing industry, suppliers, universities, public agencies, and private research organisations.

Major trends in the field of tobacco science are reflected in the history of the TCRC. While the early conferences dealt with agronomic topics and leaf chemistry, analytical methodology was rapidly incorporated into the program. The development of an apparatus for smoking cigarettes was discussed at the 1953 TCRC. Studies on the chemistry and physics of cigarette smoke, mechanisms of smoke formation, and individual parameters during smoking started in the early 1950s. Puff volume, puff frequency, and puff duration variations and application to smoking robots became a matter of research. Discussions related to filters and filtration in 1954 led to numerous papers on cigarette smoke delivery and the influencing chemical and physical properties.

In the following years, significant progress was made in the identification and analytical quantitation of leaf and smoke constituents. This progress was based on enormous advances in chromatography and spectrometric techniques and placed conference attendees at the forefront of technology.

In 1967, the Philip Morris Tobacco Company instituted an award for outstanding contributions to tobacco science. For nearly thirty years this Award for Distinguished Achievement in Tobacco Science is presented annually at the TCRC to American scientists under the age of 45, recognizing excellent work in the development of fundamental scientific knowledge related to growth, harvesting, and curing of tobacco or the development of fundamental methodology for the evaluation of tobacco properties and qualities.

TCRC has played a key role in reporting and documenting scientific and product- related technologies used to advance the design of tobacco products. Based on solid research in all phases of tobacco manufacture, the today's cigarette is filter tipped, precisely ventilated, about half the weight, and made at speeds and tolerances unimaginable fifty years ago. Altering demands of the marketplace required the development of new cigarette designs. A crowning achievement of technology was the introduction and commercial use of the cigarette filter. First reported at TCRC in 1954, the 1960s saw an explosive growth in filter tip technology. This development led to a new filter type documented on conferences in the 1980s, using activated carbon in a filter to remove

gaseous smoke compounds.

The next milestone in cigarette performance was introduced by the filter ventilation technic. To maintain proper smoke taste the cigarette was ventilated through the filter tip. A key to manufacture reduced delivery cigarettes was found.

Further innovative research programs were conducted. Measurements of environmental tobacco smoke (ETS) were reported at TCRC in the 1980s, the role of cigarette paper in sidestream smoke reduction was described at several meetings, and finally, in 1988 a new type of cigarette was presented, that heated rather than burned tobacco.

The number of technical presentations has grown significantly over the lifetime of this conference. The 50th meeting from October 20-23 in Richmond, Virginia, set a new record with 79 papers scheduled for presentation.

The number of participants fluctuated around 200 in the first two decades of the conference and increased above 500 in 1990. From that time on, a reduction in participation was observed. This undoubtedly originates from the downsizing of several cigarette manufacturers and suppliers, the elimination of tobacco research from the USDA programs (United States Department of Agriculture), and a general reduction in tobacco faculty at the Land Grant institutions.

USDA scientists were significant contributors to the TCRC program, involved in establishing the conference for nearly a half-century. In addition to scientists from the manufacturing and supplying industry, or land grant universities, the participation of other groups has been noteworthy. Scientists from the Sloan-Kettering Institute, later affiliated with the American Health Foundation, have been joining the conference since 1966. Many of their papers have dealt with the identification and characterization of smoke constituents, mainly polynuclear aromatic hydrocarbons (PAH) and tobacco specific nitrosamines (TSNA). Oak Ridge National Laboratories should be mentioned for investigating physico-chemical processes occurring in burning tobacco and some basic work on the field of environmental tobacco smoke (ETS).

Through its symposia and technical programs, the TCRC has continuously provided a forum for presentation and exchange of information among scientists. More than ever, tobacco-related scientific topics require a forum where results can be displayed and discussed openly. This is of importance especially today, where some scientific societies are restricting tobacco industry-related investigations at their meetings or in their publications.

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