

Historical development and present activities of the scientific committee of the EOA

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Mr. Boyd joined Dodge & Olcott Inc. in the Pesticide Division in 1941. He was later promoted to Plant Chemist at the Dodge & Olcott Bayonne, New Jersey plant. Mr. Boyd came to Fritzsche Brothers Inc. in 1952 and was placed in charge of the Analytical Division. He later became Director of Quality Control and then Quality Assurance.

The Essential Oil Association was formed in 1927 mainly as a discussion group and forum for industry views. However, it was soon recognized that a major part of these discussions revolved around the analytical requirements and quality of the products used throughout the industry. Thus the Scientific Section was organized in 1937 to keep pace with the accelerating progress of the essential oil and aromatic chemical industry. The section was charged with the responsibility to adopt quality standards and specifications to facilitate the buying and selling of various commercial grades of essential oils and aromatic chemicals. The member company laboratories collaboratively proved out the analytical methods for specific gravity, optical rotation, refractive index, acid value, esters, ketones, aldehydes, alcohols, and phenols, and brought a common denominator to the industry.

By 1946, when the EOA Book of Standards and Specifications was first published, data on the physical and chemical constants of most of the essential oils had already been accumulated over a long period of time by the analytical and control laboratories of member firms which were active in the importation, processing, and selling of these articles of commerce.

Data from these individual companies was examined by the members of the Scientific Committee, who were chemists active in the analyses and quality control of these materials for their respective companies. The Committee agreed upon the ranges for the physical constants such as specific gravity, optical rotation, and refractive index, and the ranges for the chemical groups such as esters, aldehydes, ketones, alcohols, and phenols. The ranges were adjusted to reflect differences in the geograph-

ical origins of the same oil from different producing regions. It can be assumed that the definitive constants for essential oils were based on thousands of analyses performed by at least twenty active companies. It may also be stated that only data from oils fully acceptable in odor and flavor quality were included in the compilations.

These monographs served the practical purpose of controlling quality for the benefit of purchasing requirements of individual companies and the subsequent resale in the flavor and fragrance fields. Since many essential oils were produced with rather primitive equipment and in far-flung corners of the earth, the monographs also provided a guide to these producing regions as to the qualities that could be expected by consumers and which would be readily saleable.

In general, the monographs for isolates and synthetic aroma chemicals were set up by the same procedure. However, most of these materials were produced domestically and in great part by EOA member firms. Since none were subject to the vagaries of nature, a much tighter specifications could be written. These monographs have been widely used as product specifications for both purchase and sale by all segments of the fragrance and flavor field.

As a matter of course, the Scientific Committee has been staffed by the best technical people of active EOA member firms who are well versed in all the aspects of analysis and quality control of the products used by the industry. There are 25 to 30 firms represented at the usual monthly committee meeting. The chairmen of this Committee over the last forty years have been very able men who are highly respected by their contemporaries. They include Dr. E. C. Kunz (1937-1953) of the Givaudan Corporation,

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Albert Fiore (1954-1961) of the Givaudan Corporation, Edward Fearn (1962-1964) of International Flavors & Fragrances, Inc., Daniel Johnston (1965-1967) of Givaudan Corporation, and Frank Boyd (1968 to present) of Fritzsche, Dodge & Olcott, Inc.

During recent years, the emphasis of the Committee has moved toward further defining the quality of essential oils and aroma chemicals by instrumental means. These included ultraviolet and infrared spectrophotometers, gas liquid chromatography, thin layer chromatography, liquid chromatography, nuclear magnetic resonance, and mass spectrophotometry. The Scientific Committee is presently engaged in assembling for publication the infrared and gas liquid chromatographs of all materials now defined by their physical and chemical properties in the Book of Standards. The Committee is also actively involved in supplying materials of EOA quality to the Research Institute for Fragrance Materials for its use in evaluating the safety of all raw materials used in the fragrance field.

The EOA Book of Standards was used freely by the Subcommittee on Specifications, Food Chemicals Codex, of the Committee on Food Protection National Research Council in the

preparation of both the first and second editions of the Food Chemicals Codex. A close relationship has existed between these two Committees and continues as the Codex Committee prepares to issue their third edition, probably in 1979.

Historically, quality control by analytical methods supports the fundamental organoleptic evaluation of flavor and fragrance materials which are used by perfumers and flavor chemists for their odor and flavor effect. Only when the standard odor or flavor character is established can a chemical and/or instrumental specification be set and followed. However, in this day of regulation by the FDA and similar agencies charged with assuring the safety of flavor and fragrance products purchased and used by the general populace, the purity of a product assumes great value. Therefore, any impurity or even a prime constituent of a material that is detrimental to the public safety must be removed or limited in its amount even though it contributes greatly to the overall odor or flavor effect of the consumer product. It is in this area of trace impurity and constituent identification and quantification that the modern instrumental methods are of great importance. The Scientific Section of EOA is devoting its major effort to this aspect and its profound effect upon our industry.