

## SYSTEMS OF FOOD QUALITY STANDARDS

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### Summary

Consumer protection in the field of adulteration and falsification of food represents one of the earliest forms of government regulation of commercial enterprises. Food laws can be traced to earlier societies. Food regulations are referred to in ancient Egyptian, Chinese, Hindu, Greek, Roman, and Arab literature. In the Middle Ages, European trade guilds exerted powerful influence on the regulation of commerce. Later, in the seventeenth and eighteenth centuries, the initiative in food control was taken by state, municipal, or other local authorities. Until the late nineteenth and early twentieth

centuries, food laws and standards, as understood today, did not exist. Most national standards organizations were established in the twentieth century.

Among different types of modern food standards, commodity (product) standards are the most common, containing requirements concerning composition and quality factors, safety, additives, eventual contaminants, labeling, and so on. It is a general principle of standardization that no requirement should be included in a standard for which no test method is defined. That is the reason why standards of test methods are important. Based on their status as standards, their public availability, and their amendment or revision as necessary to keep pace with the state of art, national, regional, and international standards may be distinguished. With the increasing volume of trade among countries, difficulties arising from the independent establishment of laws and standards in different countries are becoming evident. It has become obvious that there is a need to harmonize food requirements globally, and there is a growing need for international regulations and standards. Among international organizations founded to assist countries in the harmonization of food standards, the Codex Alimentarius Commission (CAC), the Food and Agricultural Organization (FAO), the World Health Organization (WHO), and the International Standardization Organization (ISO) play the most important roles.

## **1. Introduction**

Quality is important for all product types, but for food it is vital. As more and more processed foods are being consumed, the public is becoming increasingly vulnerable to injury from food. The centralized processing and packaging of foods in large quantities increases the chances of contamination. When a food becomes contaminated or spoiled, it may result in outbreaks of food-borne illness affecting hundreds or even thousands of people over great areas. Increasing use of pesticides and food additives, chemical contamination of the environment, and pathogenic bacteria are sources of potential health hazards. To give an idea of the complexity and size of the problem of reducing health hazards, it should be mentioned that the EEC has listed more than 600 additives that may be mixed with food products. These are designed to color food, preserve it, sweeten it, prevent oxidation, emulsify and stabilize it, make it shiny, make it bulky, and enhance flavor. Similarly, the number of pesticides used in different countries and the potential chemical and microbiological contaminants is high, not to speak of the willful adulteration of foods.

In the framework of efforts to avoid health hazards connected with food, and to hinder adulteration, food standards play an important role. Food standards are helpful for the orderly marketing of foods and for effective application of food control laws. Without food standards, the consumer would have no assurance that a packaged food will be of the identity and quality expected. Traders in distant markets cannot buy with confidence if there are no standards by which they can specify the kind and quality of food to be delivered. Most national standards organizations were established in Europe in the 1920s.

With the increase of the international food trade and growing interest in common markets after World War II, the harmonization of food standards began at international

levels. In the last decades of the twentieth century, a number of international standardization bodies were established and many international standards were developed. The present trends of development confirm the view that the role of international standards will increase. For this reason, when a nation elaborates its national standards, it should carefully consider existing international standards, and try to harmonize its standards with these.

## 2. History

Consumer protection, in the field of adulteration and falsification of food, represents one of the earliest forms of governmental regulation of commercial enterprises. Mosaic and Egyptian laws included provisions to prevent the contamination of meat. India also had regulations prohibiting the adulteration of grains and edible fats.

The laws of Moses and the books of the Old Testament contain regulations connected with food quality.

In early records classical writers in Athens and Rome also referred to the control and inspection of foods, “to ensure purity and soundness of these products” (see *History of Food Quality Standards*).

In the Middle Ages, some European communities formed trade guilds, which exerted a powerful influence on the regulation of commerce. These were groups of tradesmen of particular specialties whose purpose was to provide control and general supervision over the honesty and integrity of their members and the quality of their products (see *History of Food Quality Standards, Middle Ages*).—The second half of the nineteenth century produced clear recognition of the importance of food control services, and nations legislated accordingly. The dangers of food adulteration were accepted as a real threat, and these enactments formed the base for more modern laws.

A major issue of the times was the recognition of the need and value of the food analyst. With a food law and a public analyst, two main requirements in any food control service had become available. The third essential for a comprehensive service was still missing: unbiased inspection and sampling procedures. In contrast to ready development of food control and general economic prosperity in industrialized countries, the developing nations did not benefit directly from the Industrial Revolution. A subsistence economy remained in force, as it had done for many centuries, and a measure of consumer protection arose from the fact that people would either produce their own food or barter within their villages. Later many nonindustrialized nations found ready markets, and increased potential for export, in the production of the particular foods for which they were climatically suited.

The expansion of export crops continued alongside the more primitive systems where local people continued to “work” smallholdings for their immediate needs, or for local barter. At the same time a situation arose where the developed and the nonindustrialized societies became dependent on each other in the production and purchase of various foods. This situation stimulated some developing countries to start establishing their own food control systems (see *History of Food Quality Standards*).

For example, in India, the influence of English thought could be seen, when as early as 1860 the adulteration of foodstuffs was prohibited under the Penal Code and later under the provisions of some municipal acts.

The twentieth century, and particularly the postwar period, was a period of growing importance for international standards. The idea of needs for harmonization of food regulation at the international level arose earlier, at the end of the nineteenth century.

Realizing the seriousness of the deteriorating situation after the beginning of the Industrial Revolution, several international congresses on public health, hygiene, medicine, pharmacology, and chemistry were held, notably in 1879 in Amsterdam, in 1884 at The Hague, in 1885 in Brussels, in 1887 and 1891 in Vienna, and in 1903 in Berlin. It was in Vienna in 1887 that a congress on public health appointed the members of an international commission who were also responsible for the “International review on adulteration and analysis of foodstuffs,” which was published between 1887 and 1916.

The tremendous technological advances following World War II further stimulated world food trade and created a demand that the situation be reassessed. Groups of nations once again considered international problems of food additives and pesticide tolerance, but these discussions, which provided a valuable springboard for further talks, failed to produce positive international or regional harmonization of food standards. Postwar years also produced groups of nations that saw the need for the removal of some national obstacles to facilitate the smooth flow of perishable and other foodstuffs between nations. Groups of this type were found in Europe, Africa, Latin America, the Western Hemisphere, and elsewhere. They were, however, principally concerned with marketing conditions.

With the increasing interest in common markets and improved international food trade, member governments of the Food and Agriculture Organization (FAO) and the World Health Organization (WHO), following procedures dating from 1958, established in 1962 a Joint FAO/WHO Food Standards Program and created a joint subsidiary body: the Codex Alimentarius Commission (CAC). The Commission has now assumed the leading role in the setting of international food standards throughout the world. Details of CAC work and the question of the harmonization of food standards is considered in detail in other articles (see *International System of Food Quality Standards*).

### **3. Food Standards**

#### **3.1. General**

In writing or speaking about standardization and standards in relation to food, it is necessary to know that standards and standardization are part of a complex system of institutions and actions aiming to assure honest and safe food supply for consumers. Generally, the food law governing food in a country is divided into two parts: (1) a basic food act and (2) regulations. The act itself sets out broad principles. Regulations contain detailed provisions governing the different categories of products coming under the jurisdiction of each set of regulations. These regulations are adopted by legislative

authorities of the state and are legally binding. The most detailed requirements concerning characteristics of individual foods are included in the standards. Standards are generally developed by the parties concerned, in the framework of a standards body. They are based on consensus, and in many cases are only recommendations. The most common examples of voluntary standards are found among those drawn up by trade organizations, both national and international, for the guidance of their members. In this case, their field is primarily that of specifications for raw materials and methods of analysis, areas not covered by national food legislation. In addition, a voluntary standard is sometimes issued by a public body of whatever type, from municipal to international.

Though generally standards are voluntary documents, their use may be made mandatory in some cases, such as:

- if contracting parties make reference to a standard in a contract;
- if contracting parties did not clarify sufficiently some technical conditions of a contract, and the case comes to court, the principles according to which a decision will be taken include that the supplier should have applied due diligence and followed “state-of-the-art” standards supposed to be the codification of the former.

In many countries some standards are obligatory. Such legal standards draw their authority from a law or subsidiary legal provision.

With the growing complexity of requirements concerning food and drink products, the need for reference to standards in regulations is also growing. To verify the compliance of products with the relevant requirements, some uniform testing and inspection methods are needed. The specification of all details in regulations would lead to voluminous sets of requirements, the development and maintenance of which would be a difficult task for governmental bodies and similar authorities, so they are ever more frequently faced with the problem of leaving a part of the responsibilities to standards bodies (which are usually well prepared to cope with them). In such cases the regulations to be issued would make some reference to the relevant standard.

Reference to standards can be made in various ways:

- dated reference to a particular standard: the standard is identified by using its identification number with its year of issue
- undated reference to a particular standard: the standard is identified by using its identification number with its year of issue
- general reference to standards: without identification of a particular standard

All three possibilities mentioned above can be either an exclusive reference: the only acceptable solution is that specified in the standard; or an indicative reference: the standard referred to is only an example of the possible acceptable solutions. In the European Union, the use of the method of reference to standards is generally used in connection with the so-called new approach directives. They apply the general reference to standards in which the reference is not exclusive but only indicative: if a product complies with the requirement of the relevant, harmonized European standard, it must be assumed that the product complies with the relevant directives.

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### **Biographical Sketch**

**Radomir Lásztity** D.Sc., Professor of the Department of Biochemistry and Food Technology at Budapest University of Technology and Economics, was born in 1929 in Deszk, Hungary, ended his studies in 1951 at the Faculty of Chemical Engineering of the Technical University of Budapest. Dr. Lásztity received his M.Sc. degree in Chemical Engineering in 1951 and his D.Sc. degree in Chemical Science in 1968.

Dr. Lásztity is honorary president of ICC (International Association for Cereal Science and Technology). He was Acting Chairman of the Codex Committee on Methods of Analysis and Sampling of the FAO/WHO Food Standard Program in the period 1975–1988. Dr. Lásztity is a member of the Food Division of the Federation of European Chemical Societies, and a member of the editorial boards of several international scientific journals. He was acting as Vice-Rector of the Technical University from 1970 to 1976.

Among other awards, he has received the Bailey and Schweitzer Medal of the ICC, the State Prize of the Hungarian Republic, and the Golden Medal of the Czech Academy of Sciences.

Dr. Lásztity's main research activities are chemistry and biochemistry of food proteins, food analysis, and food control. The results of his research work were published in more than 700 papers in foreign and Hungarian journals. He is the author of more than 20 books and textbooks, among them: *Chemistry of Cereal Proteins*, First and Second editions in 1984 and 1996, respectively; *Amino Acid Composition and Biological Value of Cereal Proteins*, 1985; *Use of Yeast Biomass in Food Production*, 1991; *Gluten Proteins*, 1987; *Cereal Chemistry*, 1999.