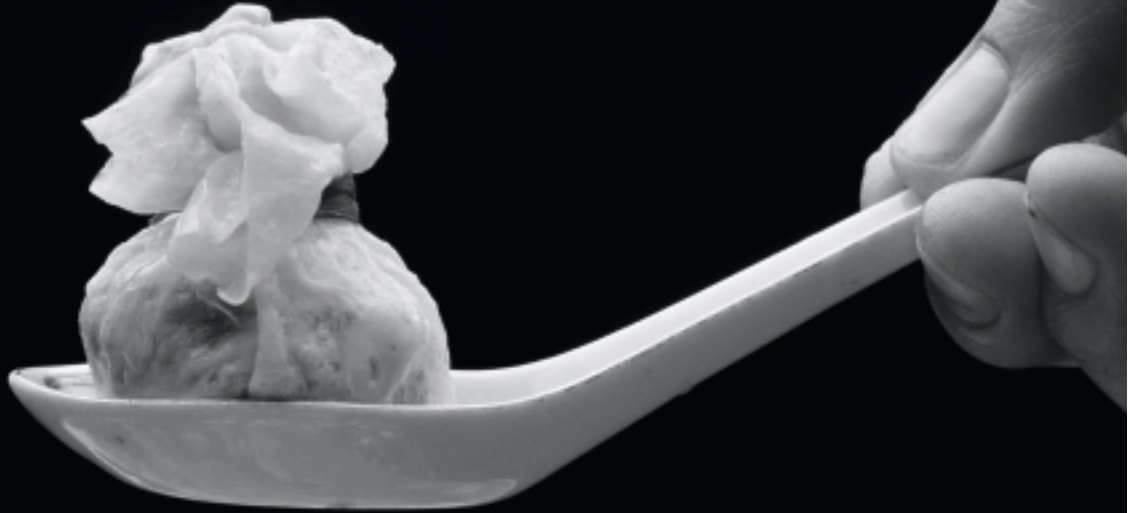


Food safety management systems



a new International Standard under development will help improve food safety

The sheer number of regulations and controls as well as the increasing demands of customers have made the position of food manufacturers more and more uncomfortable. Consequently, they turned to their standardization bodies and requested them to develop such voluntary standards as could help them to meet all the requirements demanded. As a result, many countries developed national standards specifying

requirements for food safety management systems. The idea of harmonizing the relevant national standards on the international level was mooted by the Danish Standards Association (DS), and work is underway.

By Dr. Martha Petro-Turza, Secretary of ISO/TC 34, Food products, Hungarian Standards Institution

The challenge of evolving eating habits

One of the greatest challenges of our age is the production and delivery of safe food. In the last few decades, opportunities for food contamination have

increased. In addition to the “traditional” reason – human negligence or ignorance of hygiene – many other opportunities for such contamination have appeared. Food contamination may be the outcome of a few modern agricultural practices, food handling techniques, as well as the change in food distribution patterns or consumer preferences. Eating habits have undergone a major change in many countries over the last two decades, and new food production, preparation and distribution techniques have developed reflecting this. The discovery that some diseases of previously unknown origin resulted from the complications in foodborne infections has also contributed to the increasing number of detected cases of foodborne illness.

Sources of infection

Infection of foods with bacteria, viruses or parasites is a major world public health hazard, especially in developing countries. For this reason, hygienic practices are crucial at every stage of food production and handling. The importance of such care is well-illustrated by the data provided by the World Health Organization (WHO). According to their estimate, food-borne diarrhea is one of the most common illnesses among children, and one of the major causes of infant and childhood mortality in developing countries. Children of age five or younger suffer 1,5 billion episodes of this illness annually from consumption of both unsanitary drinking water and contaminated foods.

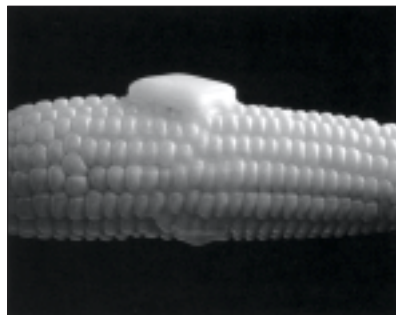
...“ Each country attaches more and more importance to the production of food that is as safe as possible.”

As a result of the growth in the international food trade and in foreign travel, the spread of pathogenic microorganisms has become easier all over the world, thereby increasing the number of people potentially at risk.

Consumers, mainly in developed countries, demand that a wide variety of fresh fruits and vegetables be available, with fewer preservatives, throughout the year. At the same time, the possibility of sickness resulting from improper food-handling in restaurant kitchens has increased, since a higher proportion of people consume restaurant-prepared meals. All of these factors contribute to the increase in the risk of microbiological and/or other contamination of food.

Other sources of contamination

Among modern procedures used more and more comprehensively in agriculture, the application of genetically modified organisms has probably provoked the greatest debate. Besides their



undoubtedly favourable characteristics, misgivings have also arisen following their application. For example, the new proteins introduced into foods during genetical manipulation may increase the morbidity rate of allergy, as all allergens are proteins.

However, we should not forget the chemicals that can also get into our foods through intensive agricultural production (e.g. pesticide residues, growth hormones) and that these represent a direct health hazard; or those chemicals that may exert their noxious effects indirectly, as, for example, antibiotics that, after being added to animal feeding stuffs, may ultimately form resistant strains of microorganisms.

Unsuitable manufacturing processes may also bring about the development of hazardous chemicals in food. Recently, the presence of the carcinogenic acryl amide was detected in some



starch-based foods that were cooked at high temperatures (biscuits, potato crisps, etc.). The use of food additives in higher dosage than the permitted levels may also be hazardous to human health.

As a result of better health care and higher living standards, the proportion of elderly people is growing in the population. In addition, the progress of medicine prolongs the lives of many people who suffer from chronic diseases. Such individuals' compromised immune systems make them more vulnerable to foodborne illness.



All the above-mentioned reasons go to explain the high number of detected foodborne illnesses worldwide. Despite of the fact that the standard of life in the USA is fairly high and that their food supply is one of the safest in the world, foodborne illnesses are a living problem in the USA as well. According to an estimate of the US Center for Disease Control, about 76 million people fall sick, 300 000 are hospitalized, and approximately 5 000 die every year as a result of the basic human activity of eating.

The economic cost of food-borne disease

Foodborne diseases cause enormous damage to economies: we need only think of the high cost of treatment, case investigations, absenteeism, and loss of human potential due to long-term damaging effects. The annual economic cost of foodborne diseases in the USA alone is estimated at several billion USD.

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Thus, it is not surprising that each country attaches more and more importance to the production of food that is as safe as possible. Health authorities regulate what kind of raw materials, ingredients and additives are to be allowed for use for food production, and declare the tolerance levels of materials which are qualified as hazardous for human health. Governments build up efficient food inspection systems, reducing the intervals between checks as well as reinforcing the sanctions.

However, the globalization of the food trade has meant that measures made on the national level need to be harmonized more and more extensively, initially on the regional level, and subsequently on the international level. The latter is done at governmental level by the WHO/FAO Codex Alimentarius Commission, which has worked out the so-called “HACCP [Hazard Analysis and Critical Control Point] system” based on finding the critical control points and carrying out a continuous hazard analysis. The HACCP system has been

implemented in many countries; in most of them, it is mandatory.



Demand for a food safety standard

The sheer numbers of regulations and controls, as well as the increasing demands of customers, have made the position of food manufacturers more and more uncomfortable. Consequently, they turned to their standardization bodies and requested them to develop such voluntary standards as could help them to meet all the above-mentioned requirements. As a result, many countries (Denmark, Netherlands, Ireland, Australia, and others) developed national standards



specifying requirements for food safety management systems. The idea of harmonizing the relevant national standards on the international level was mooted by the Danish standardization body (DS). They submitted it as a new work item proposal to the Secretariat of ISO/TC 34, *Food products*, early in 2001. The majority of P-members of the

technical committee supported the idea; only one of them voted against it and two abstained. Fourteen P-members were willing to participate in the development of the new standard, and they proposed to set up a working group (WG) for this purpose.

The first meeting of ISO/TC 34/WG 8 took place in November 2001, in Copenhagen, where participants accepted the work plan and the timetable for the development of the project ISO/AWI 22000, *Food safety management systems – Requirements*, (see box p. 14)



submitted by the Danish convener of the working group. In their view, the new standard will be published by the end of 2004. Members of the WG agreed that they should expend special care when taking into consideration the relevant

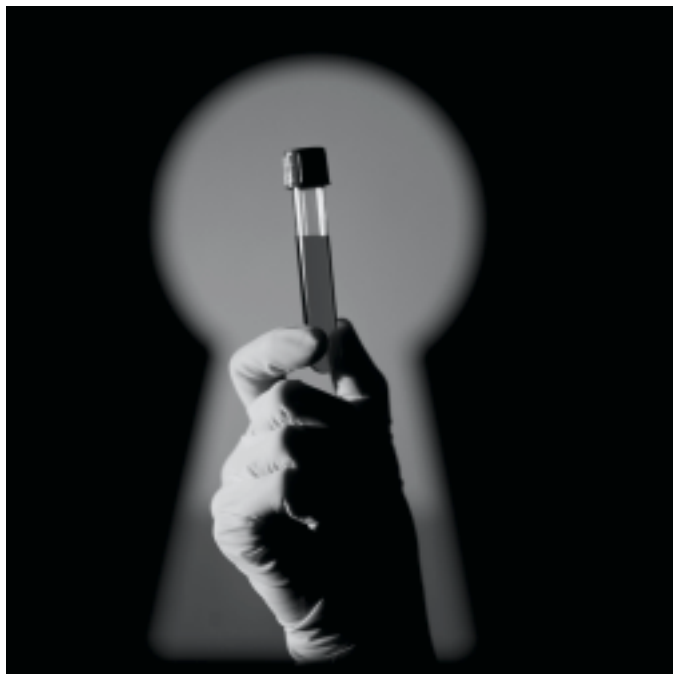
Codex, FAO and WHO publications to avoid any conflict with them. At the same time, the standard should be developed in accordance with ISO Guide 72:2001, *Guidelines for the justification and development of management system standards*.

standards.

It was also accepted that all parts of relevant national standards that proved to be useful and seemed to be feasible on international level should be incorporated into the new ISO standard.

ISO 22000 will assist the food manufacturers in the appropriate use of the HACCP (Hazard Analysis Critical Control Point) principles in such a way as not to

jeopardize their profitable food production. This new International Standard and ISO 15161:2001, *Guidelines on the application of ISO 9001:2000 for the food and drink industry*, will complement each other very well. The scope of ISO 15161 is much wider than that of ISO 22000. The first deals with all aspects of food quality, while the second one concentrates exclusively on food safety. The first shows how the HACCP system can be integrated into a quality management system, while the second one will instruct food producers how they can build up the food safety system itself.



As the activity of ISO/TC 34/WG 8 came out into the limelight, more and more new member bodies joined in the development of the new standard. Just recently, the Chinese, Swiss and Irish member bodies have nominated experts to this working group. In accordance with the accepted timetable, the second meeting of the WG was held in June 2002. The professional skill of the experts participating, the competence of the convenor and the excellent organization by the Danish standardization body are a guarantee



ISO 22000 will be an effective tool in the hands of food manufacturers to produce safe foods which comply with legal, customer and their own demands.

Magic number

ISO Central Secretariat registered the new work item in the work programme of ISO/TC 34 on 26 June 2001. Just as a curiosity item, let me tell you the story of its registration number. The first number given to the project was 20543. After receiving this news, the Dutch member body objected that to commit this number to memory was difficult, and highlighted the fact that the new standard would be as important as the ISO 9000 or ISO 14000 series of standards, so that this one, too, should have received a round number. We should mention here that the number given to a new ISO project is selected randomly by computer, and only with the permission of the Secretary General may that number be changed. In our case, the justification was accepted, so that our new project was registered as: ISO/AWI (Active Work Item) 22000, *Food safety management systems - Requirements*.

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that the new food safety standard will be ready by the planned date and of the quality expected.

It is our sincere hope that ISO 22000 will be an effective tool in the hands of food manufacturers to produce safe foods which comply with legal, customer and their own demands, and will contribute to decrease the number of food-borne illnesses all over the world. □