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Food Safety and Quality in Europe - emerging issues and unresolved problems

FRANCE

Food safety and quality issues are paramount in Europe, where bovine spongiform encephalopathy, resistance to antibiotics, dioxins, and concerns over technological innovations from biotechnology (genetically modified organisms) are often in the headlines. However, other lower-profile food safety and public health concerns are also dealt with by national, European and international officials: the control of zoonoses (salmonella, listeria), the detection of contaminants (mycotoxins, heavy metals), pesticide residues and accidental radioactive contamination.

These problems of food safety and public health are complex and systemic, often extending from the production environment to the end-consumer. The very identification of risk to humans is often difficult or belated, as in the case of resistance to antibiotics. These problems arise from the complexity of the food chain and are highlighted in the monitoring of each link, relating to hygiene, contaminants, presence of GMOs or some other factor. These food safety and public health issues inevitably trigger a host of juridical and economic questions over the responsibilities of producers, manufacturers, importers, exporters and public authorities on an open European market.

But the concerns of Europeans, as citizens and as consumers also transcend food safety. Consumers are adamant over their right to choose and to have the means to make informed decisions over quality of food products. They want access to more information on short or long-term risk assessment, risk control and production methods. In brief, they want to be informed and to participate in the making of policy decisions on food safety and quality, including water.

These legitimate concerns of the population and these complex and systemic problems call for a methodological framework. The effective management of risk to health needs to follow a structured approach, with anticipatory systems to detect hazards and risks, and reactive systems

of control. Beyond the food safety issue, the control of food quality and consumer confidence requires new forms of interrelationship between all the players.

I. Anticipatory systems to detect hazards and risks

To be effective, anticipatory systems need to be two-pronged: surveillance of human diseases linked to food, detection of biological, physical and chemical hazards associated with food; and assessment of identified risk.

1. Surveillance networks

a) Networks for the surveillance of food-borne human diseases

The permanent surveillance of public health and examination of changes is the responsibility of the Institute for Health Surveillance (INVS), a government body answerable to the Ministry of Health. This surveillance focuses in particular on food-borne diseases.

Different surveillance systems are used to gather the most complete data possible and to have a thorough understanding of all the elements needed to adjust health policies to population needs.

Some diseases carry mandatory notification, where each case is reported and recorded and the case history studied to determine the cause. This happens with botulism, listeriosis and a group of toxic infections where entry is exclusively from food; it also happens with brucellosis and tuberculosis, where food is only one route of entry.

The national reference centres also communicate their data to assist the surveillance process. These are microbiological laboratories or epidemiological surveillance centres that have been selected and certified for their excellence. They receive microbial strains relating to their field of expertise, which they classify according to type. They liaise closely with their counterpart national reference laboratories working on foodstuffs, thus further enhancing the surveillance of pathogens and helping alert the authorities to the existence of an emerging hazard. The national reference centres also work with the European and world laboratories and surveillance institutions.

This surveillance mechanism also includes the participation of a network of hospital laboratories and services, particularly for diseases where notification is not mandatory. The purpose is to track the evolving patterns of a disease and to identify its epidemiological characteristics. Each episode reported by the network is usually followed up with a request for further information from the clinician.

The system is completed with a network of 500 "watchdog" doctors, general practitioners spread throughout the country who send weekly reports on all recorded cases. Such a network operates for example for acute diarrhoea.

Finally, when considered necessary, the Institute for Health Surveillance organizes limited-duration epidemiological investigations to determine prevalence among a population group or to identify exposure factors predisposing to the disease in question.

These various arrangements are complementary and interactive, and thus under the coordination of the Institute for Health Surveillance, which gathers, processes and publishes the data.

The population is regularly involved in the investigation process, not only as patients but also as healthy volunteers, for the purpose of comparison. Every precaution is taken to ensure a person's anonymity, as required by French legislation.

The findings and recommendations are disseminated to the health professionals, who can convey the information to their patients. These data are communicated to the authorities responsible for the control of foodstuffs (agriculture and consumer affairs) in accordance with the cooperation protocol defining the type of information to be exchanged between these administrations, which also co-manage food alerts. The French Agency for Food Safety (AFSSA) also receives information that could help its mission to assess food risks, as do the European Commission and the World Health Organization.

b) Network of surveillance and control of biological, physical and chemical hazards linked to foodstuffs (animal, plant)

France has both surveillance plans and control plans. The surveillance plans mainly involve assessing overall consumer exposure to risk, and are based on strict random sampling. The control plans deal with non-compliance and fraud, and employ targeted sampling.

These plans are put into effect by the local services of the Ministry of Agriculture (Food Directorate, DGAL) and of the ministry responsible for consumer affairs (Directorate of Competition, Consumer Affairs and Fraud Control, DGCCRF). A control coordination protocol between the two administrations envisages the mutual and prior communication of their prospective control and investigation plans of national interest to food safety. There is also a coordination unit to validate their respective proposals in case of appropriation by the AFSSA. In the areas of shared responsibilities joint surveys can be programmed for these subject areas.

The control plans and surveillance plans are put in place at all stages of the production and supply chain: processing of raw materials, manufacturing of foodstuffs, distribution and importation.

The network arranges for this work to be done by the eight laboratories attached to the DGCCRF - (ministry responsible for consumer affairs) as well as the departmental veterinary laboratories and the AFSSA (French Agency for Food Safety) national reference laboratories used by the DGAL (Ministry of Agriculture).

Finally, the French Research Institute for Ocean Utilization (IFREMER) and the Water Authority together monitor the quality of coastal catchment waters impacting on the sanitary quality of selected fish products.

2. Risk assessment

It is therefore important that risk assessment - which helps the risk manager take decisions, including the drafting of food safety legislation - should meet several criteria: be based on useful

and available scientific and technical information; result from top-calibre expertise; be as objective as possible; and, in particular, be transparent without links to economic lobbies.

a) Risk assessment must be based on solid scientific evidence

France has a number of bodies involved in food safety research and assessment:

- The National Institute for Agricultural Research (INRA) which has long-standing relations with the National Institute for Health and Medical Research (INSERM) and related university hospital teams. A wide variety of works have been pursued in chemical and biological fields related to food safety. These have focused mainly on microbiology and hygiene, and have sought to optimize the role of useful micro-organisms and to reduce the impact of harmful ones. At the same time, INRA has reflected on its missions of surveillance, forecasting and expertise and gives priority to the development of risk analysis and support to decision-making. It has also decided to increase its resources for human nutrition and the link between food and health by 40 percent in the next four years.

- AFSSA, with its 13 national specialist laboratories, is a centre of research and technical support for food safety;

- IFREMER is especially active in the field of virology and epidemiology of viral gastro-enteritis of food origin associated with the ingestion of shellfish. Progress in understanding the genomes of Norwalk-like viruses facilitates their detection in clinical and environmental samples;

- INSERM conducts studies on cancer and food-borne diseases. It also conducts social investigations (nutritional deficiency, obesity), some dealing with hazards associated with food safety (dioxins).

b) Effective scientific assessment, interactive with but independent from management

Certain countries or regional interest groups have decided to separate risk assessment from risk management (while maintaining the degree of connectivity needed for a pragmatic approach) in order to ensure the independence and transparency of this high-calibre scientific and technical support. Such an approach is also internationally recognized, with the Codex Alimentarius calling for a functional separation of risk assessment and risk management.

French legislation established a scientific expert structure in 1998, the French Agency for Food Safety (AFSSA), which is charged with assessing health and nutritional risks from food and feed, including risks from water for human consumption. It is also responsible for providing scientific and technical support for the drafting of regulations. This body has a broad scientific remit as regards food safety, extending from farm (animal and plant products) to table.

It is organized in the form of expert committees on nutrition, microbiology, biotechnology, transmissible sub-acute spongiform encephalopathies, chemical and physical residues and contaminants, animal feed, contact materials, technological additives, aromas and ingredients, animal health, and water. The AFSSA is under the triple supervision of the Ministries of Agriculture and Fisheries; Economy, Finance and Industry (consumer affairs); and Employment

and Solidarity (health), and provides independent scientific opinions. The members of its expert committees are appointed after public call for nomination to ensure their independence.

French risk managers work closely with the AFSSA, which has to be consulted over any change in food safety regulations. AFSSA can propose any measure it considers necessary to safeguard public health. The AFSSA also plays a role in surveillance and alert. It has a duty to inform and must be transparent, and its opinions and recommendations are made public. It has no controlling authority.

c) Cooperation between national and regional assessment bodies

This division between risk assessment and risk management will be consolidated at European Community level in early 2002 with the establishment of the European Food Authority, which will be responsible for assessing risk, while the European Commission and the Council will be responsible for risk management. The future European Food Authority will work in tandem with the network of risk assessment structures of the Member States so that its expertise can provide a useful contribution to food safety and thus to the prevention of serious crises in the Community.

II. Reactive control systems

To be reactive, control systems need to cover the whole food production and distribution chain and to be based on cooperation of all the players: those producing, processing and selling foodstuffs, the control authorities and consumers.

1. Responsibility of the food operators

Food operators have primary responsibility in placing their products on the market, and are involved in food safety in a number of ways.

a) Obligatory verification on the part of the food industry

Current regulatory texts, in particular the Code on Consumption and the Rural Code, stipulate that those responsible for placing a product on the market (importers, manufacturers) have to ensure that it conforms with prevailing requirements regarding people's health and safety, that trade practices are fair and that consumers are protected. This internal control mechanism also applies to distributors for their part in the process. The companies therefore need to put in place an internal verification mechanism that is effective, relevant and reliable in detecting inadequacies in their production systems that can affect product safety or quality. They must therefore put in place a mechanism that will monitor and control their production process; and effectiveness of this mechanism has to be validated by having their products checked for compliance by laboratory analysis inside or outside the company.

Companies can have their own analytical laboratories accredited to give their findings greater credibility, thus enabling them to give guarantees of reliability and transparency that are recognized by the controlling authority and by their own clients.

b) Instruments available

Guides on good hygienic practices

In France, many sectors have produced guides on good hygienic practices recommended by the risk manager (French and European Community regulations). These guides have been prepared by trade associations and validated by the relevant authority on the basis of the scientific opinion of the AFSSA. They are based on implementation of the HACCP system, which helps determine preventive measures of control and surveillance of specified risks.

Standardization and harmonization of methods of analysis

French and European standardization has long targeted the harmonization of food analysis methods. The standards indicate a willingness to subscribe to a number of commitments, and many enterprises therefore voluntarily provide technical specifications on their products, manufacturing processes or methods of analysis and control. This is widespread practice in France, and the French Agency for Standardization (AFNOR) coordinates the drafting of the resulting standards.

Certification

This is a voluntary system for the certification of a company's quality control system. In France, certification is carried out by an independent and accredited agency and over 1000 French agro-industrial plants now have a quality assurance certificate resulting from implementation of the ISO 9000 standards.

Traceability of products

There are procedures for the timely recording of information and the identification of products or batches of products. These help trace the origin of a product or batch of products and determine the production and distribution conditions. Traceability is an essential component of quality assurance or product certification and is increasingly practised by French agri-food enterprises.

2. General principles of controls conducted by official control services

a) An integrated approach to controls

Food safety now requires attention to all aspects of the production chain, from primary production (including animal health and protection) and production of animal feed to final distribution to the consumer. Each element, including the product environment, can impact on food safety.

Thus, for example, in the case of the dioxin crisis in Belgium in 1999, it was shown that the heavy dioxin contamination of certain animal products was due to animals ingesting dioxin present in their feed following accidental pollution. In another example, the discovery of salmonella in food can result not only from problems of hygiene in the agro-industry, but also from contamination by this pathogen of the originating livestock.

This integrated approach facilitates the circulation of information, decision-making and the implementation of controls. It provides for better coherence and effectiveness, not only of the epidemio-surveillance systems (i.e. the gathering of information on human and animal diseases), but also of the measures to control zoonoses (e.g. salmonellosis) or the food contaminant surveillance plans. This system approach is essential in risk management linked to bovine spongiform encephalopathy, requiring coherence of monitoring from farm (epidemio-surveillance) to table (traceability of meat), through the abattoir (for example, withdrawal of specified risk materials). Traceability is an important tool in this approach.

b) Traceability

Traceability is an essential component of food safety assurance. When a hazard emerges (e.g. a toxic food infection), the risk manager must be able to find the defective food, to rapidly implement the targeted withdrawal of dangerous products, to inform consumers and food control officers, and, if necessary, to go back through the whole food chain to identify the origin of the problem and take remedial action.

Traceability therefore helps risk managers limit consumer exposure to risk and the targeting of products with risk limits the economic impact of the remedial measures on businesses. To be effective, the traceability system needs to embrace every stage of the production process, from live animal or raw material to finished product, from livestock farm to food industry, including feed manufacturers.

All cattle are identified in the European Union, with the computerized (ANIMO) system tracking the movements of animals within the EU. When animals are slaughtered, the abattoir notes the animal data in its records and has a system of traceability enabling it to link carcass to animal. The carcasses are stamped to identify the abattoir of origin. Meat for the market has an accompanying document stating the establishment of origin and the establishment of destination. This system is repeated at each subsequent level of product processing.

3. Cooperation between official control services

a) At national level

Cooperation between control services can be illustrated by the control of listeria.

In France, the surveillance of listeriosis is done through the National Listeria Reference Centre (Institut Pasteur of Paris - IPP) which centralizes and characterizes the strains of Listeria Monocytogenes originating from private and public laboratories, and through the mandatory notification by doctors in the local services of the Ministry of Health. From the questioning of patients or their relatives on food habits, officers from the veterinary services and local consumer affairs services might decide to inspect the refrigerators of the patients or points of purchase. Cross-checking different food habit inquiries serves to identify common elements (foods, display cases, etc.) among patients infected by similar strains and thus helps trace a common source of contamination. This analysis is conducted by the Institute for Health Surveillance (INVS). Investigations into group cases of listeriosis are coordinated at national level by an investigation coordination unit comprising representatives of the Ministry of Health, the Ministry of Agriculture, the ministry responsible for consumer affairs, the IPP and the INVS.

b) At regional level

Cooperation between regional control services is vital, especially when health problems occur, as it helps increase the promptness and effectiveness of risk management measures.

One example of this was the handling of the dioxin crisis in the European Union. This crisis broke out in late May 1999, when the Belgian authorities alerted the European Commission and the other Member States to the high level of dioxin contamination of certain products of animal origin.

The episode had begun some months earlier in Belgium, in February, with the emergence of unusual clinical symptoms among poultry stocks. Investigations carried out by Belgian authorities linked these symptoms to animal intoxication from dioxin probably present in their feed and enabled them to identify the feed manufacturer in question, as well as the establishment that had processed the fats used in the animal feed, which were the source of the problem.

The Belgian authorities then conducted traceability surveys to determine the possible scale of damage. They informed the European Commission and the other Member States and decided to destroy all the contaminated eggs and poultry.

The close collaboration between the authorities of the Member States concerned and the Commission permitted the quick withdrawal and destruction of products presenting a hazard to human health, and the identification of animal stocks that could have consumed possibly contaminated feed. In the specific case of France, this cooperation resulted in the following measures being taken:

- *withdrawal and destruction of possibly contaminated Belgian products then located on French territory;*
- *given the introduction into France of two batches of suspect fats from the Belgian establishment that had processed the fats used in the feed causing the problem, a traceability survey was conducted on French territory to identify poultry stocks that could have consumed possibly contaminated feed. These suspect stocks were then placed under restriction;*
- *withdrawal and destruction of products originating from suspect French stocks.*

In conclusion, the close collaboration between the different Member States involved and the services of the European Commission permitted a relatively rapid reduction in consumer exposure to the risk. No adverse impact on human health from this contamination has so far been identified, which tends to suggest that the measures taken were effective.

4. Cooperation between official (public) and producer (private) control services

Cooperation is essential, especially for the management of food-based alerts and crises. Interaction between the control and own-check arrangements of the food industry and the national surveillance of sanitary quality of food by the public authorities helps reinforce the quality and safety of food products. The management of alerts and crises requires effective coordination among all players so that the imperatives of safety and the legitimate demands of consumers can be met, and the adverse effects or damage to the production process limited as much as possible.

The management of alerts and crises therefore requires cooperation between the authorities directly responsible (Ministry of Economy, Finance and Industry, Ministry of Agriculture and Fisheries, Ministry of Health) and the representatives of food manufacturers and distributors. The purpose of the public mechanism to manage alerts and crises is not to replace the arrangements or crisis management mechanism of food businesses, but simply to facilitate coordination between all parties concerned: the manufacturers, importers, intermediary users of raw materials used for the finished product, distributors, and central and local administrations.

Such situations unfold in three phases:

1. The first is the reporting of the risk or hazard, a phase that includes an assessment and exchange of information on the hazard between the parties concerned - the alert phase;

2. The second corresponds to the actual management of the non-conformity or crisis event, with the exchange of information on measures to be taken, the monitoring of these measures and their results;

3. The third phase corresponds to the end of the alert or crisis.

When considered necessary by the assessment exercise, the alert is communicated to the parties concerned through the "turnaround card" system. The turnaround card ('fiche navette') is the document that serves to transmit information on a potentially hazardous food product between the food industry and the administrative services. It has three sections: description of the event, the product, and the actions undertaken, envisaged or recommended. Its purpose is to provide each party with the information needed to address the hazard. As necessary, it can be accompanied by other information or documents to help with decision-making. It is also used to transmit updated information and situation bulletins. It can originate from the administrative services or from the food industry operators.

It transmits administrative service information to the food business: results of samples taken by the control services when these originate the alert, contact numbers of the administrative services, identification of local or national officer in charge of the case. The information exchanged between the food business and administration is strictly confidential.

III. How to inform and educate consumers

Food safety and quality have become major preoccupations of public authorities, as they seek to satisfy the aspirations of French citizen consumers. Meeting consumer expectations, having all partners dialogue and ensuring better communication are the operational thrusts pursued by the public authorities.

1. Concern to meet consumer expectations

The French authorities now attach high importance to enabling citizen consumers to voice their opinions. The Parliamentary Office for Scientific and Technological Decisions thus organized a citizens' conference in June 1998 to discuss GMO issues. In the following years, the French Government organized similar "democratic debates" in regional fora, grouping all players (citizen consumers, scientific experts, economic operators) and extending discussion to other

topical areas and concerns. This was the rationale behind the "Public Hearings on Food and Nutrition" (Etats Généraux de l'Alimentation) that were organized by the French authorities throughout the country from September to December 2000. These Public Hearings constituted a dynamic and interactive process, comprising:

- a corpus of qualitative and quantitative studies by a market research institute;
- a series of workshops to highlight the major concerns of the public;
- a compendium of questions sent to the Public Hearings' Web site;
- five fora grouping local food-production operators, associations, elected representatives, health and education professionals, the public at large and the media;
- a national colloquium in Paris with the participation of the Prime Minister.

The Public Hearings on Food and Nutrition have helped clarify the food quality and safety expectations of the public at large and to publicize measures put in place to safeguard public health and guarantee the quality of foodstuffs.

2. Close association of all partners in interactive structures

France has a specific forum for the discussion of food for today and for tomorrow. This is the National Food Council (CAN) which was set up in 1985 under the Ministers for Agriculture and Fisheries, Health and Consumer Affairs. The CNA includes representatives of the agri-food production system, consumers, scientists and administrative bodies. It is consulted for food policy decisions:

- adjustment of consumption to nutritional needs;
- food safety for consumers;
- quality of food products;
- consumer information on food products.

Another site for coordination between consumers and the food industry is the National Consumer Council (CNC), which was set up under the Minister for Consumer Affairs and is a joint advisory body of consumer and user representatives and representatives of economic operators.

The CNC has a dual mission:

- coordination between consumers and the food industry;
- consultation to help the public authorities with consumer policy.

These bodies provide a mouthpiece to hear grassroots opinions, to learn of emerging problems and as far as possible to forestall potential crises. They also help democratize relations between decision-makers and consumers with regard to food and nutrition.

3. A communication effort on the part of the public authorities

Consumers are responsible for the hygiene of food storage and preparation in the home. They also decide on their dietary regime, so a sound education in food safety and quality is essential for good eating habits. This has spurred the Ministry of Consumer Affairs and the

Ministry of Agriculture to create spaces on their Internet sites to inform and educate the public on food safety and quality.

Apart from the National Food Council and its public advisory statements, the National Consumer Council publishes reports and opinions to inform and educate consumers. For example, in 2000 it issued a report and statement on educating the young consumer and a statement on the quality of fresh fruit and vegetables on the market, while in 1999 it issued a report and a statement informing consumers on methods of preserving perishables (especially meat).

French consumers also have Internet access to the findings of surveys and studies of the Institute for Health Surveillance, and to its published articles. The focus is generally on recommendations aimed at reducing exposure to risk. More targeted information is made available to groups at risk, such as listeria prevention for pregnant women, an exercise systematically carried out from announcement of pregnancy.

The AFSSA is also involved in informing and educating the consumer by publishing its opinions and reader-friendly documents. Scientific information is made more accessible through Internet discussion groups (e.g. listeria forum, organic farming forum) and illustrations (e.g. the diet boat used to illustrate a balanced diet).

Managing the problems of food safety in Europe and thereby meeting one of the main concerns of the citizen consumer requires a structured approach that links early detection of hazards and risks and reactive control. Its effectiveness depends on close collaboration among producers, control services and consumers. This overview on food safety and quality leads to the following recommendations.

Recommendations

From the preceding analysis these recommendations could be extracted:

1) the need to establish a national and regional network for the compilation and utilization of epidemiological data;
2) the need to develop multidisciplinary research networks;
3) the need for regional cooperation of risk assessment bodies;
4) the need for coordination and cooperation of official control services at national and regional level;
5) the need to implement a systems approach, with consideration of the environmental interaction of the product;
6) the need to facilitate better control of food safety and quality by the food industry, with due consideration to internal checks considered effective by public inspectors;
7) the need to organize public debate on food safety and quality with consumer participation;
8) the need to reinforce consumer education and information.