FOOD SAFTELY – RISK ANALYSIS IN MEAT INDUSTRY

Oana-Raluca Rusu[1], Gheorghiță Vlad[1]

University of Agricultural Sciences and Veterinary Medicine ”Ion Ionescu de la Brad”, of Romania” of Iași, Faculty of Veterinary Medicine,700489 , Mihail Sadoveanu Alley, No. 8, Iasi, Romania

Abstract

Food business operators must control food hazards by developing and implementing food safety programs based on HACCP principles. Thus, risk analysis has become a priority for research and decision-makers. In the meat industry, risk analysis has been a hotly debated topic lately, given that most foodborne illnesses and toxin infections come from its consumption either raw (beef tartare, salmon tartare, etc.) or partially prepared (beef in the blood), or as a result of its manipulation by people infected or going through the disease who have remained carriers and eliminators of pathogens. It can be contaminated with species such as Salmonella, Staphylococcus, Listeria, Clostridium, Escherichia, a real biological danger to the end consumer. Currently, the aim is to prevent the dangers that may appear on the technological flow and not only, thus taking into account the restaurants that have in their menu's dishes made from raw and semi-prepared meat partially at the consumer's request.

Introduction

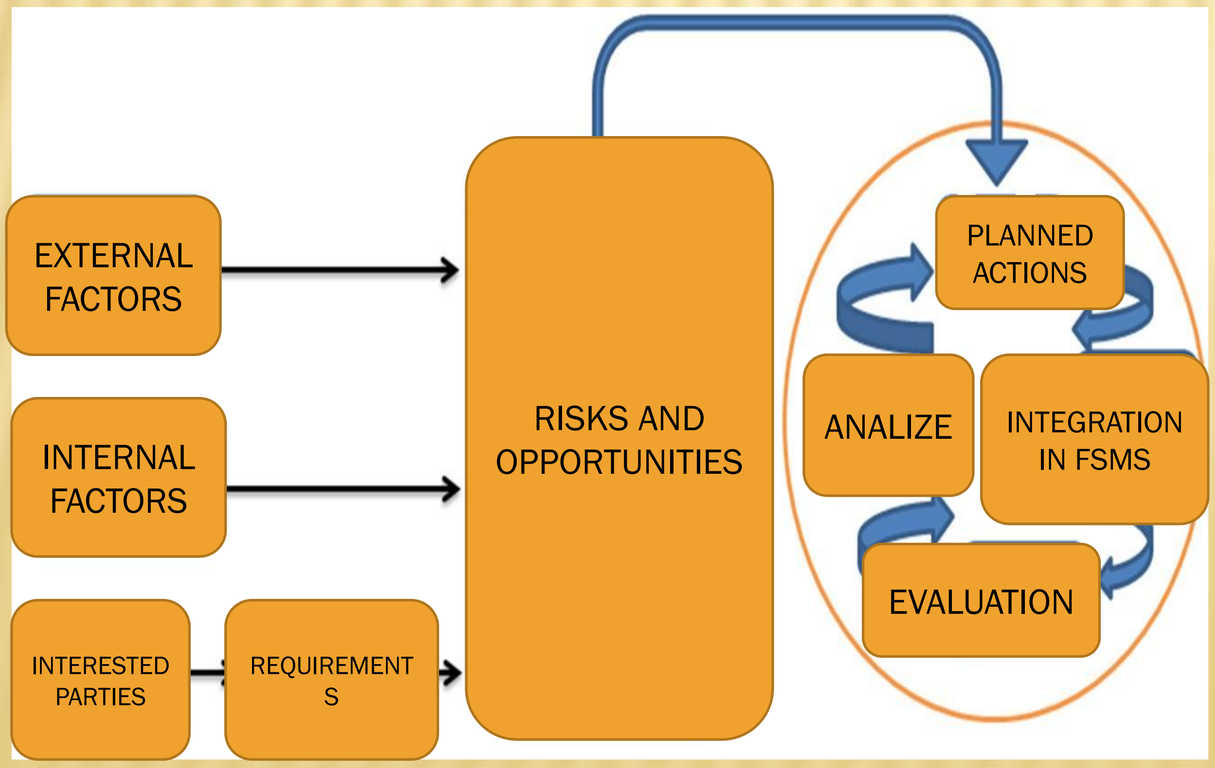
Food business operators must control food hazards by developing and implementing food safety programs based on HACCP principles. Thus, risk analysis has become a priority for research and decision-makers. This rapid development also resulted from the fact that international organizations (World Trade Organization, International Office of Epizootics, Codex Alimentarius Commission, International Convention for the Protection of Plants) have urged states to resort to risk analysis methods, considering that international norms are not just appropriate to meet the level of protection they have determined for the human, animal or plant population. The risk is defined by the NACMF (National Advisory Committee on Microbiological Criteria of Foods) as an element of a biological, physical or chemical nature that may pose a threat to consumer health. A food product can be associated with three categories of risks: biological risks; chemical hazards; physical risks.

The operator must consider and describe the control measures, if any, that can be applied for each risk, to eliminate them or to reduce their impact or likelihood of occurrence at acceptable levels. In the meat industry, risk analysis has been a hotly debated topic lately, given that most foodborne illnesses and toxin infections come from its consumption either raw (beef tartare, salmon tartare, etc.) or partially prepared (beef in the blood), or as a result of its manipulation by people infected or going through the disease who have remained carriers and eliminators of pathogens. It can be contaminated with species such as Salmonella, Staphylococcus, Listeria, Clostridium, Escherichia, a real biological danger to the end consumer.

Results and discussions

Risk-based thinking in ISO 22000: 2018 is structured on two levels: 1. organizational (common with ISO 9001: 2015) -explicitly mentioned (chapter 6.1 of both standards) and 2. Operational (based on the HACCP method) - implicit (chapter 8.5 of ISO 22000: 2018) Hazard analysis is a key step in the management of food safety and is done responsibly and thoroughly to include all raw and auxiliary materials, packaging, process steps, characteristics of the finished product, production conditions and activities.

The hazard assessment to identify significant food safety risks to be controlled by the CCP or PRPO in the hazard control plan. A significant change from HLS is the requirement to identify food safety risks and opportunities from an organizational perspective.HLS organizational risk approach.



The phases corresponding to the hazard analysis are:- identification of the risks associated with bakery products and/or specialties in all phases of the manufacturing process- evaluating the probability of occurrence of these risks and their importance- identifying the preventive measures necessary to control these risks each step described in the technological flow, potential hazards (biological, chemical or physical agents) that have the ability to compromise food safety are considered, potential contaminants are identified and the significance of potential hazards is assessed. Appropriate control measures shall be established to prevent, eliminate, and/or reduce a potential hazard to an acceptable level.

Fundamental to understanding the CCP and OPRP classification, is that ISO 22000 distinguishes between two levels in assessing severity and probability. The first level is focused on the assessment of hazards, the second level on the assessment of the failure of control measures. CCPs are characterized by a high probability x severity of danger, a high probability x severity of the failure, and good feasibility for detecting and correcting this failure. The premises are mainly aimed at preventing contamination and maintaining a hygienic environment. To achieve this, the prerequisites are applied as part of a program with a combination of measures that contribute to food safety. This implies that, in many practical cases, the probability x severity of failure of a single requirement has only a minor impact on food security. In the practice of safe food production, there are situations in which, despite a high probability x of the severity of hazards and failure, the feasibility of measurements to detect and correct failure is quite low. Table 1 presents a possible interpretation of the evaluation results. Note that this classification in clause 8.5.2.4 does not include PRPs: PRPs are added to Table 1 to complete the overview. The impact of PRP failure is low, practically because it does not control significant hazards.

Table 1

		Severity x probability of failure .		
Feasibility of detection and correction failure		Low	Moderate	Picked up
	Picked up	PRP	OPRP	CCP
	Low	PRP	OPRP	CCP

Assessing the probability x severity of failure in ISO 22000 is fundamental to understanding OPRPs: a control measure, administered as OPRP, controls a significant hazard, but failure on OPRP does not necessarily lead to an unsafe product. Control measures can be classified as managed as OPRP when) the probability of failure is low and / orb) the severity of the consequence of the failure is low. As the failure of an OPRP does not necessarily lead to an unsafe product, it is not necessary to detect and correct each case of failure. To express this, the criteria for applying the OPRP are called action criteria. Failure to comply with an action criterion requires corrective action against the process. The correction for the product is decided on a case-by-case basis, after assessing the causes and consequences of the failure. For the CCP, if the probability x severity is high, the criteria for applying the control measure are called critical limits.

Conclusions

. In the practice of safe food production, there are situations in which, despite a high probability x of the severity of hazards and failure, the feasibility of measurements to detect and correct failure is quite low.

The severity of the failure of a control measure may be reduced when:

1) failure has a small effect on significant food safety risks, and / or
2) there is a subsequent control measure that will reduce the danger to an acceptable level (location compared to other control measures), and / or
3) the control measure is not specifically established and applied to reduce hazards to an acceptable level, but to prevent hazards, and / or
4) the control measure is part of the combination of control measures (measures).