OBTAINING FOOD SAFETY BY APPLYING HACCP SYSTEM

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ABSTRACT: *In order to increase the confidence of the trading partners and consumers in the products which are sold on the market, enterprises producing food are required to implement the food safety system HACCP,a particularly useful system because the manufacturer is not able to fully control finished products . SR EN ISO 22000:2005 establishes requirements for a food safety management system where an organization in the food chain needs to proove its ability to control food safety hazards in order to ensure that food is safe at the time of human consumption. This paper presents the main steps which ensure food safety using the HACCP system, and SR EN ISO 20000:2005 requirements for food safety.*

KEY WORDS: *food safety; health; critical control points; risks; market.*

JEL CLASSIFICATION: *D18, I12, L66, Q18.*

1. NEED TO IMPLEMENT HACCP IN MANUFACTURING FIRMS

HACCP (Hazard Analysis Critical Control Points) is a systematic approach used to identify, assess and control the risks associated with food. The implementation of this system in enterprises is extremely useful because the manufacturer cannot afford and cannot fully control the finished products.

Hygienic production involves the manufacture of food in conditions of maximum security, represented by the achievement of the health parameters of the resulting product falling within the limits to avoid or reduce the risk of physical damage caused by the consumption of these products (Sperdea, 2010).

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Successful implementation of HACCP system requires work and commitment of all employees, including managers of food production units, requiring a team approach as well.

The application of HACCP involves food, safely produced and consumed by taking control in all processes: from farm to table.

This system enjoys international recognition, being effective in keeping food safe as well as obtaining proper food for human consumption.

Besides the pursuit of food security, other benefits of this system include the effective use of resources and equipment used in producing safe food. In addition, the HACCP system can promote international trade and confidence of consumers in buying safe food.

2. HACCP PRINCIPLES

Hazard Analysis Critical Control Points is a systematic approach to food safety and its main goal is to apply the seven basic principles (Figure 1.). The general principles are the foundation that may ensure food hygiene. This follows the food chain from primary production to the consumer, recommending the use of HACCP system to improve the safety level of the product.

Risk assessment should be carried out during the product design and manufacturing process technology to define critical control points before starting manufacturing. Risk assessment is performed in two stages: evaluating the type of product depending on its risks and the second one is the evaluation of its risks considering the degree of the risk.
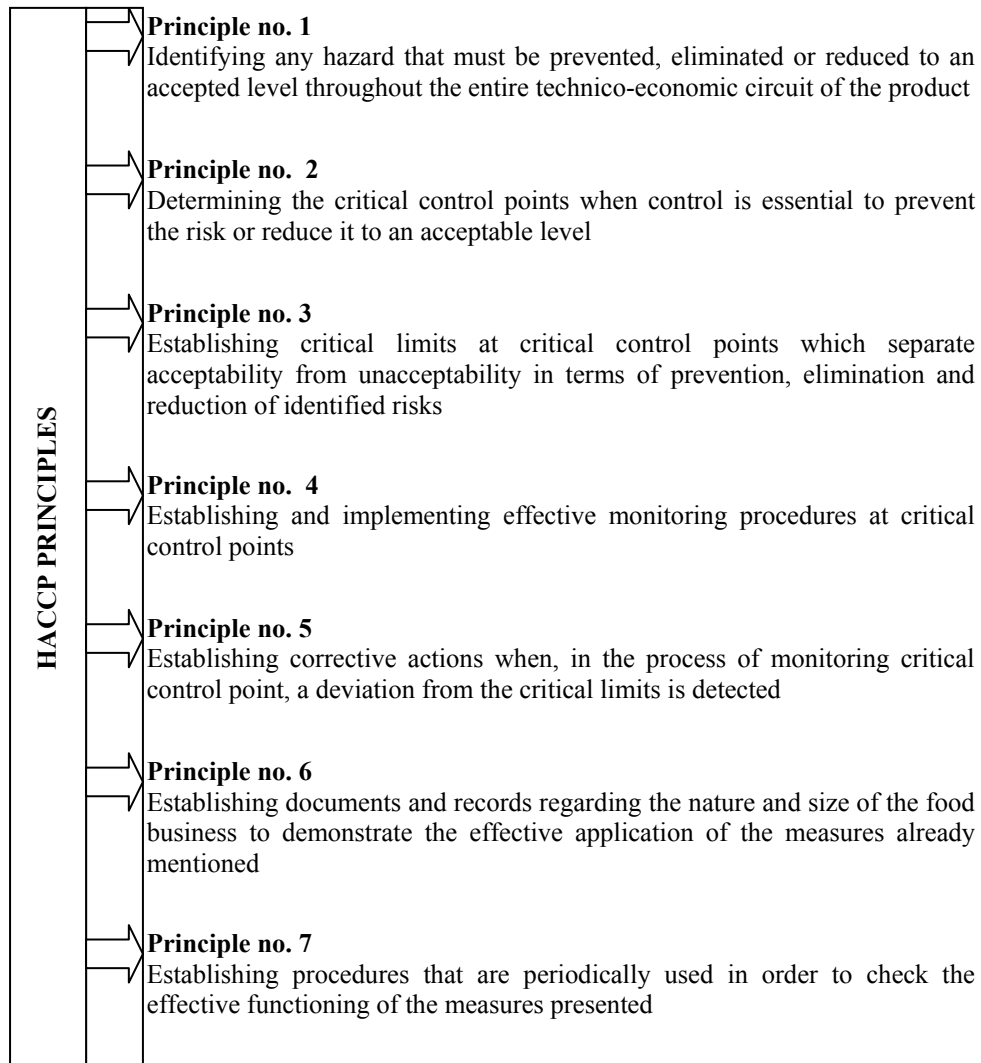
Determination of critical control points can be made at any stage of the manufacturing process when necessary and possible to control the identified risks. A critical control point is any point or stage in a production system where the loss of control may therefore endanger consumer health (eg heat treatment, refrigeration, freezing, cleaning machinery, production facilities, etc.).

Critical limits are established for selected parameters in each critical control point. The most used critical limits are: temperature, acidity, time, humidity, pH, nitrite content, salt content etc.

The monitoring and monitoring results must be documented and interpreted as monitoring errors may cause critical food defects.

Establishing corrective actions means considering deviations from the critical limits, deviations revealed after monitoring, and aimed at eliminating risks and at the same time, insurance products harmlessness. All occurred deviations and corrective measures must be recorded as they represent the HACCP plan documentation. These records shall be kept until the expiry date of the batch.

When establishing which procedures   will be chosen to check wheather the HACCP system is working properly or not, the use of already known methods, procedures and tests should be taken into consideration. Verification is to confirm if the HACCP system identified all risks and check if they are kept under control.

Principle no. 1
Identifying any hazard that must be prevented, eliminated or reduced to an accepted level throughout the entire technico-economic circuit of the product

Principle no. 2
Determining the critical control points when control is essential to prevent the risk or reduce it to an acceptable level

Principle no. 3
Establishing critical limits at critical control points which separate acceptability from unacceptability in terms of prevention, elimination and reduction of identified risks

Principle no. 4
Establishing and implementing effective monitoring procedures at critical control points

Principle no. 5
Establishing corrective actions when, in the process of monitoring critical control point, a deviation from the critical limits is detected

Principle no. 6
Establishing documents and records regarding the nature and size of the food business to demonstrate the effective application of the measures already mentioned

Principle no. 7
Establishing procedures that are periodically used in order to check the effective functioning of the measures presented

(HACCP PRINCIPLES)

Source: Scheme designed by SR EN ISO 22000/2007

Figure 1. HACCP Principles

3. THE STEPS FOR IMPLEMENTING HACCP SYSTEM

The seven principles of HACCP method can be applied BY FOLLOWING A logical sequence that includes 14 steps presented in table 1.

Table 1. Stages of the HACCP system

1.	Define terms of reference;
2.	HACCP team selection;
3.	Product description;
4.	Intention to use ;
5.	Construction of flow diagram;
6.	Flow diagram verification;
7.	Listing risks associated wich each step and listing the measures that will keep risks under control;
8.	Critical control points identification by using a decision tree in each stage;
9.	Establish critical limits for each control point;
10	Establish a monitoring system for each critical control point;
11	Establish a corrective action plan;
12	Establish a system for storing records and documents;
13	Checking the operation of the HACCP system;
14	Review of the HACCP plan

Source: Synopting processing by SR EN ISO 22000/2007

4. FOOD SAFETY EN ISO 22000:2007 STANDARD

Security management system and food safety is found in standard SR EN ISO 22000:2007 specifying system requirements in a food chain. In Romania, the implementation of this standard is found in Law 150/2004, regarding food safety, being the legal basis for ensuring a high level of public health protection and consumer interests, taking into account the diversity of food correlated with the effective functioning of the internal market.

The law establishes general principles that apply to food in order to achieve food safety in the food chain.

According to this law, food safety is assured, taking into consideration following requirements (Figure 2.).

SR EN ISO 22000:2007 establishes requirements for a food safety management system where an organization in the food chain needs to demonstrate its ability to control risks threatening food safety in order to ensure that food is safe at the time of human consumption.

Communication along the food chain is essential to ensure that all significant threats to food safety are identified and adequately controlled at each stage in the food chain. This implies communication among both upstream and downstream organisations in the food chain.

Communication with customers and suppliers about identified risks and control measures will help in clarifying customers and supplier's requirements.
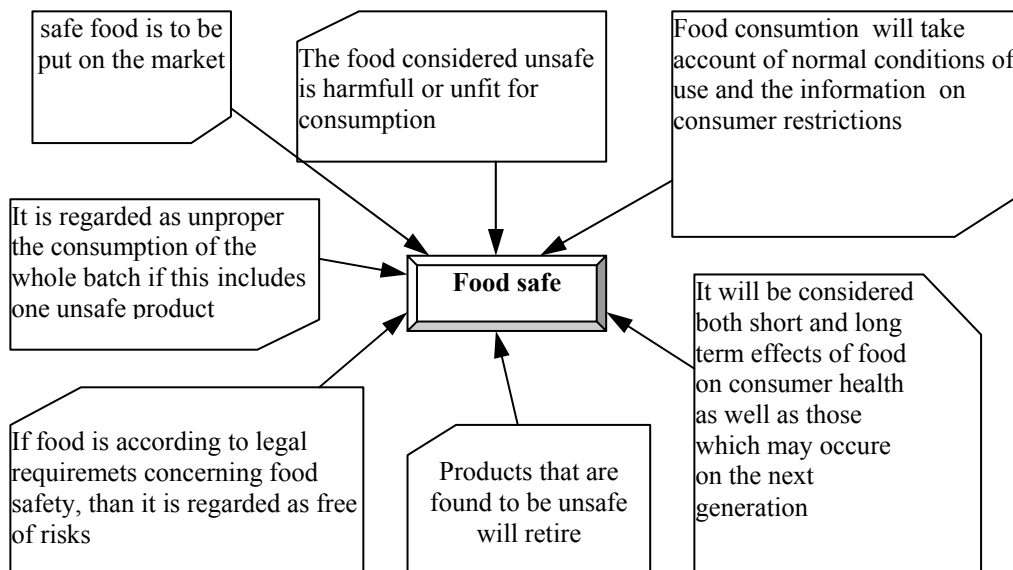
*Source: Scheme designed by Law 150/2004 Art. 14*

Figure 2. Requirements to ensure food safety

It is essential to recognize the role of the organization and its position in the food chain so that it can ensure effective interactive communication throughout the chain in order to provide safe food to the final consumer. An example of communication between stakeholders within the food chain is shown in Figure 3.

The standard also incorporates HACCP principles and the application stages developed by the Codex Alimentarius Commission. By means of auditable requirements, it combines the HACCP plan with standard preliminary programs (PRP). Risk analysis is the key to an effective food safety management as risk analysis assists in organizing the required knowledge to establish an effective combination of control measures. All risks and dangers should be identified and evaluated.

According to this standard, any organization which aims at producing and / or marketing safe food should:

- Ensure that potential threats to food safety are identified, assessed and controlled so that products do not affect the health of the consumer;

- Communicate appropriate information alongside the food chain on the potential problems regarding the safety of the products;

- Provide information on the development and implementation of a food safety management system by all levels of the organization;

- Periodically assess and update, its own system of food safety management.
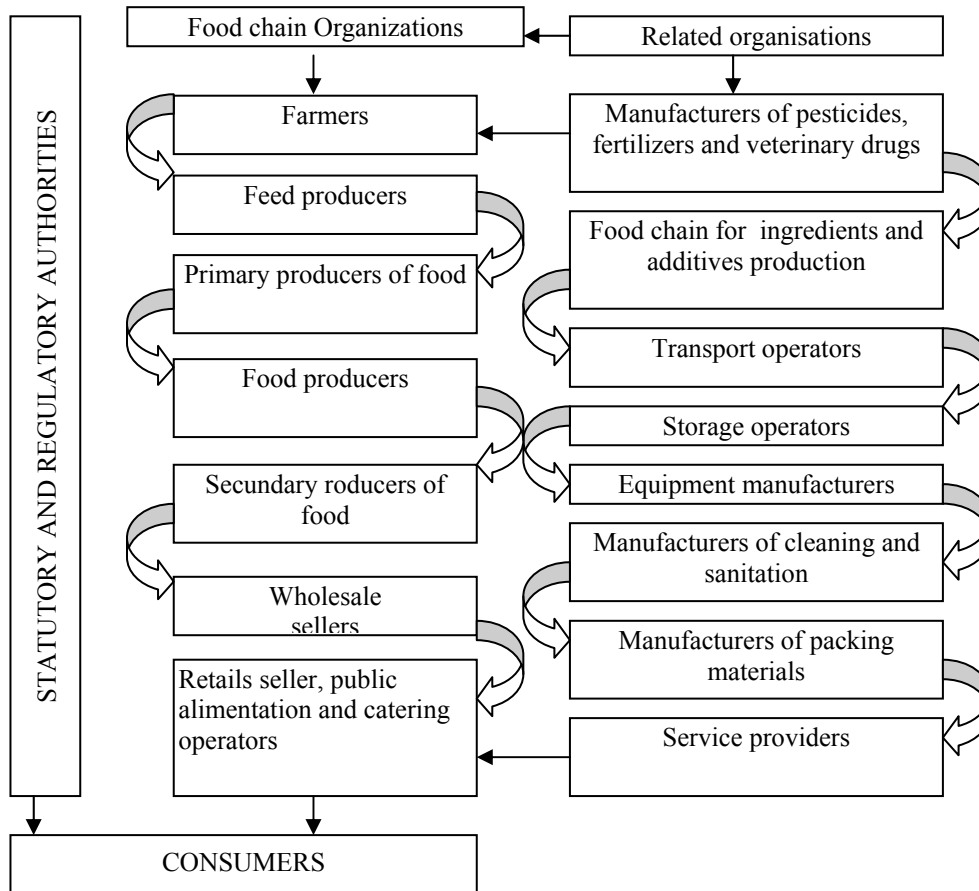
Source: Figure realized by SR EN ISO 22000/2007

Figure 3. Communication channels in food chain

It is also suggested the implementation of a food safety management system, system which must combinine the basic principles of risk analysis by critical control points (HACCP) with those of so- called preliminary programs (PRP) for food safety.

In both cases, an effective analysis of food safety risks must consider issues such as:

- Product name or similar identification;
- Origin of the product;
- Biological, chemical and physical characteristics relevant for food safety;
- The ingredients in the recipe, including additives and processing aids;
- Labeling on food safety and handling, processing, use,instructions
- Storage conditions and shelf life;
- Preparation and handling before processing or use;
- Method and manufacturing processes;
- Packaging;

- Distribution methods.

Preliminary programs help maintain a hygienic environment throughout the food chain and finally provide safe food for human consumption. These programs include (SR EN ISO 22000:2007): buildings, utilities, ancillary services, equipment, materials and supplies purchased, cleanliness, hygiene, staff etc. ..

Each preliminary program includes (Law no.150/2004):
- Food safety risks which are about to be controlled;
- Control measures;
- Monitoring procedures;
- Corrections and corrective actions when necessary;
- Inspection staff, applying the necessary corrections and responsibilities;
- Monitoring specific documentation.

Applying this standard by all organizations in the food chain aims at harmonizing the interests of consumers, with the acquisition of food, which is safe for consumption, with the help of the economic agents, whose main aim is that of maximizing profits. Consumers have the right to eat safe food, and traders are required to provide these foods.

CONCLUSIONS

Food safety is related to the presence of hazards in food consumption. Because these dangers can occur at any stage of the food chain, adequate control throughout product's circuit is required impetuously.

Organizations taking part in the food chain are varied, ranging from feed producers and primary producers to food manufacturers, transport and storage operators, wholesale stores and retail food stores, service providers, and and related organizations (producers of equipment, packaging material, cleaning agents, additives, ingredients and so on). Because many of these "actors" are present on stage nutrition, food safety for human consumption is an essential requirement. Food safety has become an impetuous necessity of current society, which is why food has become the center of the universe. If until now, the main concern of producers was only consumer needs, we are now in a position to say that, more important than this, the concern is to satisfy their needs safely.

In order to achieve food security, the European Union claims for implementing food safety management systems, systems that on the one hand help manufactures achieve safe products, and on the other hand, give traders and consumers the confidence that the products they buy do not endanger their health. Through implementing the HACCP system, firms succed in getting safe food.

European consumers want safe and healthy food. Concern of the EU is to ensure that the foods we eat are all on the same level of standards for all its citizens, whether food is produced within the EU or imported. Food safety is a top priority for the EU. The regulations were strengthened and tightened since 2000 and to date in order to ensure that food consumed by European citizens are very safe. This kind of safe it is not in detriment of food quality. Conversely, we can say that it is an element

that enhances the quality, is virtually a new property of the food, or another dimension of food quality.

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