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RISK ANALISYS AND PREVENTIVE MEASURES IN THE HACCP IMPLEMENTATION APROACH

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INTRODUCTION

Food safety has been taken the first place in EU legislative according to the human's health safety. Food production is the main issue in every country of the world and establishing safety food production trough food chain (from raw materials to the final product) is a big challenge for food producers. Food production has many hazards with different nature, like: economical, political and environmental nature.

Food safety systems, particularly HACCP system has been united, estimated and controlled every risky step in food production, from the beginning to the final product. It means from farm to fork. That is the main reason why the HACCP system has to be used like appropriate food safety system in EU countries.

NASSR(Hazard analysis and critical control points) is a modern way to produce safety food according to EU legislative.

NASSR system is preventive system witch includes identification, determination, estimation and monitoring of critical control point in food processing. This process has to be provided step by step in each suspect area of food processing. There are many biological, chemical and physical hazards in food processing and appropriate preventive measures have to be propose for safety food production.

In meat factory “Mik-Sveti Nikole” we have been provided all PRP (Pre Requisite Programs) before HACCP implementation in the line of canned meat products. All mentioned activities, includes: assembling HACCP team, determination objectives and scope of the HACCP study, products description and its intended use, flow chart of the process, it's verification on site etc.

MATERIAL AND METHODS

Material for this paper witch has been taken was meat pastry and canned small meat fragments. Method for this investigation that has been used is implementation of HACCP in 14 steps, which include 7 HACCP principles for those 2 lines of meat products production.

First of all we started with implementation of 7 HACCP principles:

- Provide risks analysis and determination of preventative measures for them
- Determination of Critical Control Point, (CCP)
- Establishing of critical limits
- Establishing monitoring procedures
- Establishing corrective actions
- Keeping records and documentation procedures
- Establishing verification procedures

First HACCP principal - analyze risks and determination of preventive measures is the primary information source for providing safety food processing. All steps of meat processing from the beginning one (raw materials) to the final product has been observed in fields of: biological, chemical and physical risks and after that HACCP multidiscipline team has been suggested preventive measures for its elimination or establishing in acceptable level for getting safe meat final product. Every particularly step of processing could be prevent by one preventive measure, or one preventive measure could prevent more than one steps in food processing.

Biological risks are the next one:

- Contamination of raw materials before delivery
- Contamination of raw materials after delivery
- Surviving of bacteria's
- Bacteria's developing process

Chemical risks are the next one:

- Pesticide, mycotoxin and heavy metal contamination of raw materials before delivery
- Pesticide, mycotoxin and heavy metal contamination of raw materials after delivery
- Contamination with toxic chemical materials after usage of improper chemicals (disinfections and disinfections materials)

Physical risks are the next one:

- Metal contamination of raw material
- Wood contamination of raw material

Risks analysis has been provided by 5M methods. This method is very famous one and his name is Ishikava method (table 1).

Table 1: Ishikava method-5 method:

Raw materials	Medium	Equipment	Manuel work	Methods
Raw materials contaminated with bacteria's, chemical matters or physical contaminants/ damaged packing materials; secondary contaminated materials	Waste; old water; ambient air (bad ventilation); surface; equipments; floors; improper maintained of equipments for elimination of used water; domestical animals in near environmental; improper temperature in the objects;	Chemical or physical matters witch has contact with used materials; woods; plastics; window fragments; mechanical oils; Microbiological contamination of dirty floors and surface; damaged accessories; without disinfections and disinfections plans; unripe maintained of equipments'	Microbiological contamination of nasal secret; hair rests; unhealthy personal; improper hygiene maintained of employments, equipments and accessories; javelins;	Microbiological contamination as resultant of improper employs movements in all parts of objects; Elimination of cross contamination from employs; chemical contamination from dezinficients and other used improper chemicals; improper implementation of FIFO system for all products and raw materials'

In Table 2 have been presented preventive measures for every step of food processing.

Table 2: Preventive measures for every step of processing food

Step	Hazard	Preventive measures
Acceptance	Primary contamination	Temperature control
Accommodation	High temperature	Sensory Measuring of temperature
Unfreezing	Getting higher temperature from surface	Sensory Measuring of temperature
Fragmentation	Contamination trough manipulation	Personal hygiene and disinfections of equipment
Canning process	Contamination of canes	Washing canes before usage
Closing cans	Improper closing	Pressure control
Sterilization	Getting overvalue of temperature and pressure	Time and temperature control
Declaration		
Accommodation		
Cleaning and disinfections	Choosing of termoresistent bacteria	Cleaning program

RESULTS AND DISCUSSION

Risk analysis of every particularly step allowed us to get exactly information about bacterial contamination of raw materials and food products, by processing food.

We obtained results witch show us that bacterial contamination has been penetrated from outside as: dirty ambient air, raw materials or developing of endogenous microflora. The main points of exploring were:

- Raw materials
- Accommodation with cooling
- Equipment
- Canning process
- Filling of cans
- Closing of cans
- Sterilization of closed cans
- Washing, cleaning and disinfections

CONCLUSIONS

Based on mentioned facts, we have got the next conclusions:

1. Every possible risk in meat processing of meat pastry and meat canned fragments has been explored and based on that have been identifiicated critical control points
2. Identification and analysis of risk has been provided by 5M method
3. Preventive measures have been proposed for every critical control point
4. Risk analysis and proper chosen preventive measures allowed us to implemented other from 7 principles of HACCP system.
5. Implementation of HACCP system is very good gerent that consumers can get safety food for consummation.

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