

APPLICATION OF THE HAZARD ANALYSIS CRITICAL CONTROL POINT (HACCP) SYSTEM IN MEAT SPLITTING ROOMS

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BACKGROUND

The General Directive of Food Health 93/43/EEC establishes that companies of the food sector, in which meat industries are obviously included, must develop a production self-control system based on the Hazard Analysis Critical Control Point (HACCP) system. The HACCP, defined as a preventive food control system aiming mainly at food safety or innocuousness, is directed to identify microbiological hazards existing in an industrial operation or process in order to identify critical control points (CCP) in which such hazards can be controlled and systems established based mainly on physical or chemical tests and on visual observations or evaluations by means of which control effectiveness can be monitored or supervised

OBJECTIVES

This work covers in a practical way the implantation of the HACCP system in the meat splitting rooms of Frimancha Meat Industry (beef, sheep and pork meat), located at Valdepeñas, Ciudad Real (Spain), and Madrigal, S.L. (poultry), located at Tomelloso, Ciudad Real (Spain). These rooms are defined as industrial wholesalers dedicated to carcass splitting, boning, slicing, filleting, mincing, canning and labelling and also including one or several species of market animals directed to direct consumption or to a different processing industry.

METHODOLOGY

In order to be able to apply correctly the principles of the HACCP system, the following tasks were performed: (1) creation of a multidisciplinary team, (2) complete description of products, (3) study of consumer's expected use, (4) description of the process or flow diagram, (5) several checkings of the process, (6) list of all biological, chemical or physical hazards which can be reasonably foreseen in each stage, (7) study of preventive measures, (8) determination of CCP, specifying the critical limit for each preventive measure, (9) supervision of measures or observations to demonstrate that a CCP is under control, (10) formulation of all corrective measures which are specific for each CCP of the system, (11) creation of procedures to verify that the HACCP system works properly and (12) development of the necessary actions to ensure that the HACCP system introduced is really efficient, allowing also system feedback in case of detection of deviations.

RESULTS AND DISCUSSION

This section presents the process or flow diagram, from raw material reception to issue of the final product, according to the field of study and basing always on the observations carried out in the mentioned meat industries. We also include a synoptic table showing the application process for each stage describing the main predictable hazards as well as the preventive measures to be considered to minimize or eliminate such hazard. The synoptic table reflects also the type of CCP, the critical limit for each preventive measure and the necessary supervision to demonstrate that a critical point is under control. Aiming at solving the possible deviations over or under the critical limits established, all corrective measures specific for each control point of the system have been clearly stated. Finally there is an enumeration of the necessary parameters (temperature control in chambers, water analysis, etc.), to provide data about what is happening in our industry at a specific moment.

FLOW DIAGRAM

1. Raw material reception ● CCP2 → 2. Raw material storage ○ CCP2 → 3. Splitting ● CCP2 →
 4. Waste disposal (Digester and fat melting) ● CCP2 → 5. Cuts storage (Refrigeration or freezing) ○ CCP2 →
 6. Issue of final product ○ CCP2

CCP1= Completely effective Critical Control Point; CCP2= Partially effective Critical Control Point.

● = Important contamination; ○ = Unimportant contamination



STAGE	HAZARDS	PREVENTIVE MEASURES	CCP	CRITICAL LIMIT	SUPERVISION	CORRECTIVE MEASURES	REGISTERS
1. Animal admission. Water supply.	* Microbiological contamination	* Adequate transport conditions (T°, hygiene). * Adequate potable water supply source.	2	* T° <7°C in refrigerated meat. * T° <-12°C frozen meat. * T° <4°C for poultry. * Satisfy drinkable water requirements (R.D. 1138/1990)	* Mean of transport control (T°, hygiene). * Satisfy purchase specifications. * Batch control: T° and organoleptic features. * Water physical-chemical and microbiological analysis and chlorine control.	* Unsuitable material turnaround. * Chlorine addition if necessary.	* Corrective measures. * Results from water analysis.
2. Raw material storage	* Microbiological contamination.	* Adequate storage conditions: time, T°. Store hygiene, stock rotation, air circulation in the chamber.	2	* T° <7°C in refrigerated meat. * T° <-12°C frozen meat. * T° <4°C for poultry. * Adequate storage time. * Satisfactory health conditions in store. * Appropriate storage conditions	* Raw material preservation state. * Temperature control. * Application of the cleaning and disinfection program.	* Correction of storage conditions (T°, time). * Unsuitable material turnaround. * Correction of the cleaning and disinfection program.	* Temperature register. * Corrective measures.
3. Carcass splitting	* Microbiological contamination	* Hygienic handling . * Appropriate T° during operations. * Cleaning and disinfection of tools and worktops. * Control of operations time. * Waste disposal.	2	* Satisfactory handling practice (SHP). * Satisfactory hygienic conditions. * Store T° under 12°C in the splitting room.	* Periodic visual inspection. * Correct application of the cleaning and disinfection program * Room temperature watching. * Correct waste disposal	* Correction of working conditions. * Correction of cleaning and disinfection program. * Proper preparation of implements and equipment.	* Corrective measures. * Temperature register in the splitting room.
4. Waste disposal to digester and fat melting	* Microbiological contamination.	* Cleaning and disinfection of transport containers of wastes and fats. * Immediate removal of containers as filled. * Storage at low temperatures (0-3°C).	2	* SHP. * Satisfactory hygienic conditions.	* Periodic visual inspection. * Correct application of the cleaning and disinfection program.	* Change the company responsible for waste disposal. * Correction of cleaning and disinfection program.	* Corrective measures. * Controls on the company contracted.
5. Cuts storage /refrigeration chamber or freezing tunnel)	* Product alteration * Accept faulty packs and containers.	* Hygienic conditions in store. * Adequate T°. Correct storage. * Eliminate faulty packs and containers.	2	* T° <7°C in refrigerated meat. * T° <-12°C frozen meat. * T° <4°C for poultry. * T° <3°C for wastes. * Appropriate storage and stowage conditions	* Periodic visual inspection. * Stock rotation. * State of packs and containers. * Correct application of the cleaning and disinfection program.	* Faulty product turnaround. * Correction of storage conditions. * Withdraw homologation from packs and containers supplier.	* Corrective measures. * T° register in the chamber.
6. Issue of final product.	* Microbiological contamination. * Inadequate transport.	* Hygienic handling. * T° control during transport. * Adequate stowage conditions.	2	* Transport T°. Adequate hygienic and stowage conditions. * Load incompatibility.	* Correct application of the cleaning and disinfection program. * Correct handling and stowage practice. * T° during issuance.	* Correction of hygienic and stowage conditions. * Correction of cleaning and disinfection program.	* Corrective measures. * T° in refrigerated vehicles.

Microorganism

Organism	CPS	Yersinia	Salmonella	Coliforms	E.coli	Other
Stomach	+	+	+	+	+	+
Tongue	+	+	+	+	+	+
Kidney	+	+	+	+	+	+
Liver	+	+	+	+	+	+
Heart	+	+	+	+	+	+