INTRODUCING HACCP IN SMALL AND MEDIUM SIZED MEAT INDUSTRIES

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Within the past decade expanding markets have led to an increasing concentration of production, processing and distribution within the meat industry. This has in turn led to quite a different set of demands on hygiene. Hygiene therefore needs to be rethought. At the same time changes in legislation, increasing customer demands and the introduction of a number of different quality systems have led to both confusion and frustration in many small and medium sized meat industries where resources are limited.

In - factory own controls in the meat processing trade have now been imposed by the EC (93/43/EEC) and in Norway (IK - MAT) to ensure that the food product directives are followed. These make the company itself responsible for introducing a system that ensures the safety and quality of food and the provision of correct information as to type of product, ingredients, characteristics, weight/volume, shelf - life and user-information.

A hazard is the potential to cause harm. In food, hazards can be physical, chemical or biological. Food safety means that the food must be free of foreign bodies (stones, glass, etc.), pathogenic microorganisms and/or their toxins and poisonous substances from the environment.

Good production hygiene is the prevention of contamination by implementation of satisfactory routines and treatments during processing. This is best done by first assessing which hazards are likely to threaten the actual food product, then prescribing measures to prevent, eliminate or minimise them.

Hazard Analysis Critical Control Point (HACCP) is a method for control of food products based on a systematic identification and assessment of hazards associated with all stages of food production. HACCP may be used as an independent system or as a means of finding the critical control points within an IK - MAT and/or ISO - 9000 system.

Critical Control Points (CCP) for health safety in food products may be divided into four general categories:

- Raw materials and ingredients in cases where subsequent processing does not eliminate or reduce the hazard to an acceptable level.
- Treatments that kill microorganisms e.g. thermal treatments such as pasteurization or sterilization (canning).
- Processes, additives and treatments that inhibit microbiological growth and/or activity (e.g. salting, fermentation, addition of preservatives, cooling).
- Treatments, conditions or methods that prevent infection during handling of raw materials, processing, storage and distribution (e.g. personal hygiene, satisfactory maintenance and working routines).

Having identified the critical control points, control measures are defined, the critical limits determined and a monitoring system is established for each CCP. Control measures at the CCP must be simple, practical, and easily monitored.

Getting started with HACCP:
When getting started with a HACCP analysis there are some important preliminary requirements that need to be taken into consideration:

1. Obtain Management Commitment
Work on HACCP engages the whole company and is therefore dependent upon support and encouragement from the management.

2. Hygiene check list
It is wise to begin with a revision of the total hygiene in the factory while at the same time ensuring that the legislative demands are taken care of. MATFORSK has constructed a hygiene check - list based on the Codex Alimentarius recommendations which is used when assessing the total hygiene in a factory.

3. Define the scope of the study
It is extremely important to limit the work involved and complete the first HACCP analysis successfully within a relatively short period of time (e.g. 3 months). It is advisable to select one product or group of products (e.g. cooked meat) and limit the hazard analysis (e.g. cross contamination after cooking) to the most sensitive part of the process (e.g. slicing and packing). The experience and knowledge obtained will make subsequent analyses quicker and easier.

4. Motivation and training

Introduction of HACCP is dependent on motivation and training. MATFORSK arranges courses in microbiology, hygiene and HACCP and also leads a HACCP - network for quality managers from small and medium-sized food companies. As IK - MAT is now obligatory, a short two day course was arranged at MATFORSK March 1996 entitled: "IK - MAT, HACCP, ISO 9000 -Three variations on the same theme ?" The course was designed to help small and medium-sized companies design their own in-factory control system and a short acount of the course is given below:

The food product directives and the theories behind IK - MAT and HACCP were first presented. Next the question as to whether an ISO-9000 series certificate satisfies the demands of IK - MAT was discussed. The conclusion was that an ISO-certified company should have satisfied the demands of IK-MAT, whereas a company that satisfies the demands of an IK - MAT system does not necessarily fulfil all the demands of an ISO 9000 system. HACCP provides detailed instructions for hazard analysis and determination of CCP and may therefore be used as a tool for these purposes within both ISO-9000 and IK - MAT systems.
Integration of the three systems was illustrated with practical examples by company representatives who described their own experiences in working with the three systems. It is wise to record ISO - 9000, IK - MAT and HACCP as separate documents. Integration may then be implemented by including the operator instructions from HACCP and IK-MAT in the ISO - documents and cross-referencing them i.e. referring to the appropriate paragraphs in the IK-MAT and/or HACCP dokuments. Instructions to operators will then be directed from the ISO - 9000 documents but at the same time satisfy the demands of both IK - MAT and HACCP. When revising e.g. HACCP, the appropiate posts in the ISO-9000 and IK-MAT dokuments are, if necessary, adjusted.

For the second part of the course, participants were divided into two streams. The first stream was for companies with limited experience with quality systems and who were now introducing IK - MAT into their enterprises and wished to concentrate on IK-MAT alone.
The second stream was for companies wanting to implement HACCP either as an independant system or as a tool for finding the CCP which need to be controlled to satisfy an IK-MAT or an ISO - 9000 system. The participants in this stream were divided into groups and presented with a flow diagram of a sausage-production in MATFORSK's own small sausage "factory". They were then presented with an exercise and invited to "take part" in a "live" production. The production was specially designed to present many of the problems associated with the limited resources and conditions small and medium-sized industries are typically faced with e.g. limited space, limited facilities for segregation, limited staff etc. In addition, extra "shortcomings", familiar "everyday" situations, were slyly introduced.

The exercise was as follows: "Imagine that you work in a small company that manufactures cooked sausages. Meat and other ingredients are purchased from other companies. The ready - cooked sausages are packaged and sold to chain - and grocery stores.

1. Number the provided flow chart and at each numbered stage of the process list the microbiological hazards which might threaten the safety of the product.

2. Name possible sources/causes for each hazard and suggest what measures can be taken to eliminate or to control that hazard

3. Find the critical control points (CCP) and list these. Suggest critical limits and methods for monitoring each CCP"

The results of the exercise were presented in plenum and discussed. To illustrate, a small extract of some of the results of the exercise is presented below.

HAZARD - ANALYSIS: COOKED SAUSAGE

No	Process step	Hazards	Problem	Possible causes	Control measures	CCP y/n ?
8	Cooking	Pathogenic bacteria	Unsatisfactory heat treatment	Temperature recording inaccurate Uneven temperature in cooking cabinet Instrument failure Operator failure	Calibrate instruments Record temperature variation Maintenance routines Instruction, fast routines,. monitoring	Yes

It is important to remember that there is no standard HACCP - plan. A HACCP - plan is the result of the company's own work and is the company's own property There will always be individual differences between companies e.g. lay - out of buildings, equipment, segregation routines etc. Evaluation of the course showed a unanimously positive response to this practical example. It also contributed to demonstrating that HACCP is essentially systematic common sense and is effective at operator - level and need not be the theoretical "paper mill" that many fear it to be.