Module 5

HYGIENE MANAGEMENT IN HACCP PREMISES

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• A Hygiene Management in reality
• Hygiene management, hygiene plans
• Case study on introduction risk analysis and control of hazards
• For the cleaner this means …
Hygiene Management Systems

What is a hygiene management system?

• A system that ensures compliance with the hygiene requirements in manufacturing of products

• A tool for identification, assessment and control of significant hazards

• A system that enables to react in the event of a critical situation

• A tool that describes critical levels and the measures taken in case of violation
Hygiene and HACCP

Hygiene management according to the EU Hygiene Package on the hygiene of foodstuffs

• According to Regulation (EC) No 852/2004, food business operators have to implement foods safety programs and procedures based on the HACCP principles

• The Regulation requires hazard analysis, risk assessment, and the introduction of critical control points into a food safety program. In the analysis, biological, chemical, and physical hazards will be evaluated.

• Guides to good hygiene practice are should be used

=> There is no such thing as the HACCP System, but only procedures based on the HACCP principles. Food business operators have to prove that their Hygiene management system is based on the HACCP principles
Prerequisites for HACCP

HACCP needs previously installed food hygiene regulations such as

- Infrastructural and equipment requirements
- Requirements on raw materials
- The safe handling of food (including packaging material)
- Food waste handling
- Pest control procedures
- Sanitation procedures (cleaning and disinfection)
- Water quality
- Maintenance of the cold chain
- The health of staff
- Personal hygiene
- Training
Hygiene management in food premises

HACCP according to Codex Alimentarius

- Management declaration on the goals with the introduction of risk analysis according to HACCP principles
- Description of the document system
- HACCP organisational plan
- Process analysis with a list of control points (CP) and critical control points (CCP)
- List of relevant hazards
- Parameters and critical limits for each critical control point
- Description of measuring, and data storing methods
- Description of auxiliary methods
- List of persons in charge for measurements and control of CCP monitoring data
- Hygiene plans
Hygiene management in reality

Implications of HACCP for Cleaning Enterprises
Module 5 - Hygiene Management in HACCP Premises
Hygiene management in reality

In the frame of establishing a HACCP system in a food-processing plant, a hygiene management system with these elements was developed:

1) Hygiene and health requirements for personnel
2) Cleaning, disinfection, and maintenance plans
3) Waste management plan
4) Desinfestation plan
5) Disaster plan
6) Hygiene training plans
7) Check lists
Hygiene management in reality

1) Personal hygiene

- Hand hygiene plan
- Nail hygiene plan
- Body and hair hygiene plan
- Operating instruction and wearing of work wear
- Rules on the health status of personnel
- Requirements on work wear garments
Hygiene management in reality

According to the premise’s hand hygiene plan it is necessary to wash hands

- Before working with foodstuffs
- After toilet use
- Before eating
- After every dirty work or after touching something infected

Hygienic hand washing

- Take off all jewellery, roll up your sleeves to your elbows
- Rinse your hands with warm running water
- Soap with liquid soap and rub for at least one minute, especially the fingertips, knuckles and fingers
- Afterwards rinse your hands with warm running water
- Wipe your hands with a paper towel
Hygiene management in reality

Nail care

Nails must be cut to fingertips. Nail polish is not permitted when working with foodstuffs. Microbes and parasite eggs are hidden in the dirt behind nails.

How to keep clean hands?

- Do not touch dirty and contaminated things with bare hands
- Use appropriate working tools for work
- Use appropriate gloves when conducting dirty work

Wash basins are present in all areas
Hygiene management in reality

Working cloth and footwear

- Should be clean! Special working cloth and footwear is required (trousers, shits, overalls, shoes, boots…)
- Use of head coverings (caps)
- Gloves
- Visitors are required to wear disposable plastic protective footwear
- Nose and mouth protection is necessary in some areas

Device for cleaning of boots

Working cloth and protective boots
Hygiene management in reality

**Protective Gloves**
are used for hand protection against dirt, harmful detergents, heat, cold, mechanical injuries, and pathogens.

**Coverings for hair**
is worn to prevent hair and dandruff falling into foodstuffs.

**Mouth covering**
in certain areas, mouth and nose covering has to be worn.

**Working cloth**
is mostly white and should be manufactured according to work wear hygiene quality standards, e.g. DIN 10524. Reusable working cloth should be laundered by professional textile care providers, applying a hygiene quality management system.
Hygiene management in reality

Health status of working personnel

All workers must be healthy in order to prevent a chain of infection.

In case of an epidemic, additional inspections in worker’s homes are necessary to determine potential germ carriers.

Working cloth

should be white, and should be manufactured according to work wear hygiene quality standards, e.g. DIN 10524. Reusable working cloth should be laundered by professional textile care providers, applying a hygiene quality management system.
Hygiene management in reality

2) Cleaning, disinfection, and maintenance plan

• Cleaning and disinfection is conducted according to the hygiene plan which gives answers to a number of questions

How often has to be cleaned?

• The system distinguishes between regular daily cleaning, thorough weekly cleaning, and special occasion cleaning (see slide no 19)

What is to be cleaned?

• Drain shafts, decant pits
• Working areas and surfaces in contact with foodstuffs
• Transportation belts, refrigerating chambers
• Reusable containers and barrels

• Transport trolleys, loading and unloading devices
• Machines and working tools
• Walls, floors, windows, doors
• Dressing rooms, toilets
• Access paths and entrances ...
Hygiene management in reality

How should cleaning be performed?

Tools for manual cleaning

- Brushes
- Brooms
- Buckets
- ...

Cleaning machines

- Dish washers
- Electrical water cleaners
- Pressure cleaners and foam cleaners
- ...

Chemicals

- List of cleaning and disinfecting agents
- Material safety data sheets
- Instruction manual
- Certificates

Dry ice cleaning
Hygiene management in reality

What cleaning technologies should be used?

Soil removal by mechanical means

- To remove dried dirt, rust and incrustations
- Application of powders, sand, paste powders, steel chips, rough rags and sponges. Description of intervals and intensity will be given
- Mechanical methods can be supported by the cleaning effect of chemical agents

Soil removal by chemical means

- Dissolve fats, cause protein swelling, degrade, whiten and remove limestone, moulds
- The choice depends on the type of dirt, the cleaned material (aluminium, wood, rust-resistant metal, ceramic tiles …)
- Instructions of the machines and chemical agents manufacturers’ must be followed
Hygiene management in reality

Disinfection

Depending on the type of area, different measures have to be performed

How to disinfect?

• Chemical agents
• Hot water (dish washers)
• UV-rays

What should be disinfected?

• Surfaces in contact with foodstuffs
• Equipment
• Working tools (knives, saws, etc)
• Accessories
• Hands
Visual inspection of machines and equipment

Trolley

Meat mincing machine

Hooks for conveying meat
Hygiene management in reality

How often should cleaning and maintenance be performed?

• Instant cleaning during work (instant removal of waste)

• Cleaning at the end of the procedure or working shift (cleaning of equipment, tools, machines and working areas after completed work)

• Weekly cleaning (cleaning harder accessible places, drawers, shelves, windows, light, doors, air pits, floors, walls and ceilings in refrigerating chambers)

• General cleaning at least once a year (maintenance work on walls, ceilings and floors, bleaching, plant surroundings, especially rubbish dumps and package dumps, sewage)
Hygiene management in reality

Control of the quality of cleaning and disinfection measures

- By visible inspection
- By microbial sampling, using swabs and determining the presence of microorganisms on surfaces, machines and hands

If the quality of cleaning is not achieved

- Ensure that cleaning has been performed according to cleaning plan. Are the check lists filled in and signed correctly? Are there indications, that time intervals, chemicals, and cleaning methods were different from the requirements of the hygiene management?
- Ensure whether the soil load wasn't unusually high. Check control points and CCP’s for indications of high soil loads or contaminations
- Perform extra cleaning measures as described in the HACCP System
3) Waster management plan

- Waste disposal directly after the end of each shift
- Is only allowed in closed containers and vessels => prevents germ spreading by varmints
- Waste containers are picked up on a daily basis

4) Desinfestation plan

The plan denotes

- The areas to be controlled
- Which varmints to be monitored => which traps have to be set up
- The preventive measure to be taken (against rats, insects, etc)
- How often controls should be performed
- The person in charge for controls
- What measures to be taken in case a critical limit is reached
Hygiene management in reality

5) A disaster plan

- Regulates the measures to be taken in case of an outbreak/epidemic
- Explains how to perform a product recall
- Defines how public relations will be handled
- Describes the duties towards local authorities (what type of information must be given, deadlines)
- Defines internal regulations (e.g. to remind on nondisclosure duties of employees and external personnel like cleaning businesses)

6) Hygiene training plans

- Contents of introductory and of refreshing training courses
- Documentation of conducted hygiene trainings
- List of participants
Hygiene management in reality

7) Checklist on cleaning and disinfection in slaughtering unit

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Cleaned by</th>
<th>Area</th>
<th>Evaluation</th>
<th>To be done until</th>
<th>Completed</th>
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</thead>
<tbody>
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</tbody>
</table>
Hygiene management in reality

7) Checklist for cleaning and disinfection in sausage production

<table>
<thead>
<tr>
<th>Place / object of cleaning</th>
<th>Frequency / time</th>
<th>Type of cleaning</th>
<th>Responsible person</th>
<th>Record</th>
<th>Checked by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working space</td>
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<tr>
<td>Working Machinery</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other machinery</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Refrigerator</td>
<td></td>
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<tr>
<td>Deep freezer</td>
<td></td>
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<tr>
<td>Cold-store</td>
<td></td>
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<tr>
<td>Storage – shelves</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trolleys, containers</td>
<td></td>
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<tr>
<td>Walls, windows</td>
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<tr>
<td>Small general cleaning</td>
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<tr>
<td>Major general cleaning</td>
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</tbody>
</table>
Case study - overview

Introduction of HACCP in manufacturing of meat and meat products

- Introduction of HACCP follows special HACCP guidelines, or the steps, given in the “Recommended International Code of Practice – General Principles of Food Hygiene”. Some of these steps are outlined on the following pages

1) Types of hazards and hazard analysis
2) Overview of manufacturing processes
3) Decision tree for CCP
4) Training of personnel
5) Hygiene management
6) QMS
7) Monitoring program
8) Integration of CCP in a QMS
Case study – hazard analysis

Possible types of hazards were

- **biological hazards**: *Salmonella, Proteus, E.coli*, sulphur-reducing *Clostridium*, staphylococci, *Campylobacter, Listeria*, moulds, parasites, rodents
- **chemical hazards**: additives, cleaning and disinfecting chemicals
- **physical hazards**: wood or metal abrasive particles

Chicken meat  Freshly chopped pork  Hygiene during meat processing
## Case study – list of hazards

<table>
<thead>
<tr>
<th>Type of hazard</th>
<th>Caused by</th>
<th>Hazard control required because otherwise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological</td>
<td><em>Escherichia coli</em>, <em>Salmonella</em>, <em>staphylococci</em>, <em>streptococci</em>, <em>Trichinella spiralis</em>, <em>Clostridium</em>, <em>Proteus</em></td>
<td>Nausea, vomiting, increasing body temperature, death</td>
</tr>
<tr>
<td>Chemical</td>
<td>Naturally present toxins, antibiotics, pesticides, growth hormones, preservatives</td>
<td>Allergies, nausea, tolerance to antibiotics, growth influence, gastritis</td>
</tr>
<tr>
<td>Physical</td>
<td>Metal particles (clips etc.), bone particles, plastics</td>
<td>Teeth injuries, cuts, suffocation</td>
</tr>
</tbody>
</table>
Case study - manufacturing processes

These processes were identified:

- Delivery
- Slaughtering
- Transportation
- Storage
- Transportation
- Cutting
- Processing
- Heating
- Cooling
- Packaging
- Cooling, freezing
- Shipping
Case study – hygiene training

Regular training on:

- Common hygiene measures of the food premise
- Hygiene and health status of personnel
- Organisms causing food infections and food intoxications
- Risk of infections for workers in the food industry
- How to use cleaning and disinfection agents
- Identification of meat non suitable for further processing
- Technical measures installed to achieve a hygienic production of foodstuffs
Case study - hygiene management

The hygiene management contained:

- Codes of practice of daily cleaning procedures (some are performed 2-3 times per day)
- Codes of practice of other periodical cleaning procedures (weekly, monthly, semi-annually etc.),
- Codes of practice to control cleaning efficiency: microbiological inspection of equipment and accessories (swabs)
- Organisation diagram with departments and persons in charge for controls
- Documentation on the efficiency of cleaning and disinfecting measures

Visible forms for documentation of daily cleaning activities are posted in every working area. Documents are filed for two years.
Case study – quality management (QM)

The following *quality controls* were conducted prior to installation of a HACCP:

- Control of the sanitary suitability of water for food production
- Hygiene controls of working areas, raw materials and ingredients, control of the efficiency of cleaning and disinfecting procedures, quality control of raw meat and foodstuffs, and quality control of intermediate products
- Regular calibration of measuring instruments like temperature loggers
- Visual inspection of insect traps
- Visual inspections of cleaning and disinfection
- Control of stamps from veterinary inspections
- Control of product labelling
Case study – documentation system

Data documentation was performed in certain areas

Slaughtering

• Type, number and origin of slaughtered animals
• Quantity of meat
• Date and results of internal hygiene controls
• Date and results of veterinary controls

Meat processing

• Quantity and origin of meat
• Use of additives
• Date and results of internal hygiene controls
• Delivery: customer, date of delivery, quantity and origin of meat
Case study – introduction of CCP

Which points are *critical control points* (CCP) according to HACCP principles?

- Heating of sausages?
- Packing of sausages?
- Individual hygiene?
Case study - determination of CCP

Modify process or product

Yes

Control necessary?

No

Have preventive measures been taken?

Yes

Was the step introduced to reduce a hazard to an acceptable level?

Yes

Can identified hazards reach an unacceptable level?

No

Are there further steps to reduce the hazard to an acceptable level?

No CCP

No

Yes

CCP
Case study – Hazard analysis and CCP

Process orientated analysis, list of control points, hazards to control, and critical values

Explanation of abbreviations (CCP, CP, B etc.) at the end of the table on slide no 40

<table>
<thead>
<tr>
<th>Processing step</th>
<th>Type of control point</th>
<th>Hazard analysis / critical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) DELIVERY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meat temperature</td>
<td>CCP_B</td>
<td>High temperatures indicate a risk for increased numbers of microorganisms. As toxins may not be destroyed by further processing, there are no following steps to reduce this risk. Critical value = value in °C</td>
</tr>
</tbody>
</table>
### Case study – Hazard analysis and CCP

<table>
<thead>
<tr>
<th>Visual and sensory properties</th>
<th>CCP&lt;sub&gt;B&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouldiness and &quot;green meat&quot; indicate a risk for increased numbers of microorganisms. Additional processing steps do not reduce the risk of toxins.</td>
<td></td>
</tr>
<tr>
<td><strong>Critical value</strong> = value for discoloration</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Slaughtering date</th>
<th>CCP&lt;sub&gt;B&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too old meat indicates a risk for increased numbers of microorganisms. Additional processing steps do not reduce the risk of toxins.</td>
<td></td>
</tr>
<tr>
<td><strong>Critical value</strong> = value in days</td>
<td></td>
</tr>
</tbody>
</table>

2) **PROCESSING**

<table>
<thead>
<tr>
<th>Temperature in working areas, chilling, and storage rooms</th>
<th>CCP&lt;sub&gt;B&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inappropriate temperature indicate a risk for increased numbers of microorganisms. Additional processing steps do not reduce the risk of toxins.</td>
<td></td>
</tr>
<tr>
<td><strong>Critical value</strong> = value in days</td>
<td></td>
</tr>
</tbody>
</table>
Case study – Hazard analysis and CCP

| Mincing, slicing, cutting, sausage stuffing, and filling in | CP

| Critical value = value in °C |

| Abrasion of machine parts may introduce sharp metal pieces into the foodstuffs. A metal detector reduces the risk of injuries for the consumer |

| Critical value = absence of metal pieces |

| Increased temperatures during cutting change the physical properties of the meat. Additional processing steps can not make the meat juicy again. |
### Case study – Hazard analysis and CCP

<table>
<thead>
<tr>
<th>Process</th>
<th>CCP</th>
<th>Description</th>
</tr>
</thead>
</table>
| Heating and warm smoking               | CCP<sub>B</sub> | A certain core temperature must be reached to reduce the number of microorganisms, otherwise microbial growth will continue. Additional processing steps do not reduce the risk of toxins.  

**Critical value = value in °C**

| Cooling                                | CCP<sub>B</sub> | Too slow cooling processes will allow microorganisms to grow again. Additional processing steps do not reduce the risk of toxins.  

**Critical value = value for the cooling down slope (°C per min)**

| Air removal during packing             | CP<sub>P</sub>  | Poor air removal makes sliced and packed sausage difficult to transport. The end consumer assumes air production by microorganisms. Repacking can reduce the risk of having a low quality product.  

**Critical value = value for vaulting**
### Case study – Hazard analysis and CCP

<table>
<thead>
<tr>
<th>Labelling with expiring dates</th>
<th>CPP&lt;sub&gt;B&lt;/sub&gt;</th>
<th>Wrong labelling with intended use and expiring date will lead to increase storage time. Long storage will lead to increased numbers of microorganisms. Additional processing steps do not reduce the risk of toxins.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer cleanliness of packaging material</td>
<td>CP</td>
<td>Only clean packages are acceptable, but pose no danger to the end customer.</td>
</tr>
<tr>
<td>Microbial load at intermediate and final controls</td>
<td>CP/CCP&lt;sub&gt;B&lt;/sub&gt;, P, C</td>
<td>Depending on where the samples are taken, there might be no further processing to reduce the risk form the presence of pathogenic bacteria.</td>
</tr>
</tbody>
</table>

Critical value = value in °C

Critical value = individually set values
## Case study – Hazard analysis and CCP

<table>
<thead>
<tr>
<th>Category</th>
<th>CCP</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of process water</td>
<td>CP&lt;sub&gt;B&lt;/sub&gt;</td>
<td>Pathogenic bacteria in process water may contaminate the product. Additional processing steps (i.e. heating) can control growth of pathogenic microorganisms.</td>
</tr>
</tbody>
</table>
| Cleaning and disinfection processes | CCP<sub>C, B</sub> | Contamination with cleaning agents by residuals may lead to discoloration or bad taste of the final product.  
*Critical value = Value for discoloration on cleaned surfaces, value for the taste of the final product* |
| Personal hygiene                 | CCP<sub>B</sub> | Risk of food contamination with microorganisms (in particular pathogenic organisms) due to lack of personal hygiene. Additional processing steps do not reduce the risk of toxins.  
*Critical value = No pathogenic germs per cm<sup>2</sup>* |
### Case study – Hazard analysis and CCP

<table>
<thead>
<tr>
<th>Final product control</th>
<th>CCP&lt;sub&gt;C,B&lt;/sub&gt;</th>
</tr>
</thead>
</table>
|                       | A batch will only be released when all monitoring results of OK, and if there are no reports on health issues with certain foodstuffs, e.g. fungal toxins in animal feed from national and EU authorities (z.B. EC Directorate – General for Health and Consumers).  
*Critical value = no internal deviation reports, no reports from food authorities* |

**CP = control point**  
**CCP = critical control point**

- **B** = risk caused by biological agents, i.e. microorganisms  
- **C** = risk caused by chemical agents  
- **P** = risk caused by physical objects
For the cleaner this means

- Cleaning and disinfection is part of the **food premises hygiene and quality management system (QM/HM)**
- You should ask for a description of cleaning and disinfection processes given in the companies **hygiene management system**
- Often, there are **different requirements** on the hygiene on **different areas**, see each process’ or area’s hygiene plan

Be aware that

- **Cleaning and disinfection** follows the companies given schedule
- **Approved** cleaning and disinfection **processes** must be used.
- There are high requirements on **documentation** of cleaning and disinfection, i.e. use of checklists
End of Module

All photographs were taken by Blanka Vombergar

The modules and additional information on this module can be obtained from

• www.hygiene-for-cleaners.eu

„Though I know a lot, I want to know everything."

J. W. v. Goethe (1748 – 1832)
※ ※ ※ ※ ※ ※ ※ ※ ※ ※ ※ ※ ※ ※ ※ ※
Further on with module 6!