

Chapter 9 HACCP¹

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¹ Hazard analysis and critical control point (HACCP)

9. Introduction

All food business operators are responsible for making sure that the food produced by their business is safe to eat (Regulation (EC) No 178/2002 Article 14.2). This means that it is neither injurious to health nor unfit for human consumption. To do this, Regulation (EC) 852/2004 Article 5 requires the operator to put in place, implement and maintain permanent procedures based on HACCP principles.

To produce safe food for consumers, all the important safety hazards that are associated with the production of food need to be prevented, eliminated or reduced to an acceptable level. These food safety hazards may be biological, physical or chemical – see chapter 1 ‘Introduction’.

9.1. HACCP principles

The seven hazard analysis and critical control point (HACCP) principles provide a systematic way of identifying food safety hazards, making sure that they are being managed responsibly and showing that this is being done continuously.

In short this involves the following steps:

- **Plan** – what needs to be done to maintain food safety and write it down.
- **Do** – what you planned to do to maintain food safety.
- **Check** – that you are doing what you planned to do to maintain food safety and write down what was checked and when.
- **Act** – to correct any food safety problems and write down what has been done about the problem and when.

The 7 HACCP principles are:

1. Identify any hazards that must be prevented, eliminated, or reduced to acceptable levels.
2. Identify the critical control points (CCPs) at the step or steps at which control is essential to prevent or eliminate a hazard or to reduce it to acceptable levels.
3. Establish critical limits at CCPs which separate acceptability from unacceptability for the prevention, elimination or reduction of identified hazards.
4. Establish and implement effective monitoring procedures at CCPs.
5. Establish corrective actions when monitoring indicates that a CCPs is not under control.
6. Establish procedures, which shall be carried out regularly, to verify that the above measures are working effectively.
7. Establish documents and records commensurate with the nature and size of the food business to demonstrate the effective application of the above measures.

EU food hygiene legislation requires food business operators to establish, implement and maintain a food safety management system based on the seven HACCP principles (Codex Alimentarius document CAC/RCP 1-1969, rev. 4-2003 available at: www.codexalimentarius.net).

Documentation is an important part of a HACCP-based system and may be kept in the 'Food safety management diary for meat producers' available from the FSA website at: <https://www.food.gov.uk/business-guidance/hazard-analysis-and-critical-control-point-system-in-meat-plants> and on the FSS website at: <http://www.foodstandards.gov.scot/publications-and-research/food-safety-management-fsm-diary-for-meat-producers>.

9.2. Flexibility in implementing HACCP principles (EC guidance 16/11/05)

In food businesses involving no preparation, manufacturing or processing of food (for example, grocery shops or the storage and transport of pre-packed food at ambient temperature), hazards may be controlled through good hygiene practices alone.

Where food is prepared, manufactured or processed operators can develop their own food safety management procedures by following a traditional HACCP, or by following guides to good practice, including generic HACCP guides.

Documentation is an important part of the HACCP process as it provides evidence of the operator's thinking and decisions that can be audited. However, flexibility includes the possibility of exception reporting of visual monitoring checks. This means making a record only when there is such a problem or something unusual happens and recording the corrective action taken as a result – see 'B8. to B9. Documentation'.

9.3. Good hygiene practices (GHP)

It is vital that food business operators have reliable hygiene procedures in place before starting to apply HACCP principles. Management of food safety is achieved by a combination of good hygiene practices (also called prerequisite procedures) and operational procedures based on HACCP principles. HACCP-based procedures for controlling hazards throughout food production will not be effective unless good hygiene practices are also being followed.

GHPs are set out in Regulation (EC) 852/2004 and are covered in chapters on 'Water supply', 'Maintenance', 'Temperature controls'², 'Cleaning', 'Traceability'³, 'Pest control', 'Wrapping, packaging and transport hygiene', 'Personal hygiene', 'Waste management' and 'Training'.

9.4. Generic HACCP guides

Meat production is similar enough across the industry to justify a generic approach for implementing HACCP principles. This approach helps to provide uniformity in training, implementation, and enforcement but cannot reflect the individual features of each plant and how it operates. Thus, if generic guidance is followed operators need to adapt it to reflect their own circumstances.

For further information and the 'Food safety management diary for meat producers' please see: www.food.gov.uk/business-industry/meat/haccpmeatplants.

² Temperature controls can also be CCPs (EC Guidance Annex II point 10).

³ Traceability can be considered to be a prerequisite (EC Guidance Annex II point 5).

9.5. Legal requirements for HACCP

The following sections set out the requirements of the hygiene regulations for applying HACCP principles to the slaughter and further processing of meat.

A. HACCP-based procedures

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Legal requirement

852/2004 Article 5 point 1

A1. Food businesses operators shall put in place, implement and maintain a permanent procedure or procedures based on the HACCP principles.

A1. Compliance regarding the HACCP-based procedures

- Put in place a permanent programme of procedures to minimise food safety hazards and produce food safely.

A1. Good practice

HACCP certification

There is no requirement for HACCP procedures to be certified (for example, under quality assurance schemes). Any such initiative is a business decision.

Management commitment

Successful implementation of HACCP-based procedures depends on the commitment of company management. It is important to have an individual at senior level with the authority and the determination to make sure the food safety management system is seen as fundamental to the success of the business and is properly implemented and maintained.

For more detailed information –see ‘B.’ and ‘C.’.

A1. Compliance regarding the HACCP plan

- Put in place a permanent programme of procedures to minimise food safety hazards and produce food safely.

A1. Good practice

While the HACCP plan is being produced consider:

- what the implementation timetable will be
- what daily hygiene practices, operating procedures and instructions are in place, and whether they need to be amended or written down
- what procedures and records for monitoring and corrective actions might be needed
- whether extra staff training is needed
- who will validate the plan before implementation and verify it after implementation, and how -

see '9.1.' at principle 6

Defining the scope of the HACCP plan⁴

Document the scope; a written summary describing what each plan is to cover:

- **Start and end points of the operation** – describe the start and end points of the plan, for example, from receiving of animals or raw materials to dispatch, and possibly transport, of the end product.
- **Type of hazards** – describe the type of hazards to be addressed in the plan; the biological and / or chemical and / or physical hazards – see 'B1. Hazard analysis'.
- **Product description** – describe the product, its nature (for example, moisture content, pH), composition (for example, raw materials, ingredients, additives) and required shelf life.
- **Intended use of the product** – describe the expected use(s) of the product by the customer and the target consumer group, for example, raw meat intended to be cooked before consumption.
- **Consumers including 'at risk' groups** – describe the suitability of the product for particular groups of consumers, such as institutional caterers and air travellers, and for vulnerable groups of the population that may have to be considered. People particularly at risk from food poisoning or food-related health problems include the elderly, people with low immunity levels or allergies, pregnant women and very young children.
- **Packaging, storage and distribution** – describe the packaging (for example, hermetic, vacuum, modified atmosphere) and conditions of storage and distribution of the product (for example, frozen, chilled below x°C or at ambient temperature).
- **Processing and safety information** – describe relevant food safety information, such as:
 - processing, for example, any heating, freezing, drying, salting and smoking, and to what extent
 - required shelf life, for example, 'use by' and 'best before' dates
 - instructions for use / customer information, for example, label instructions on handling to avoid contamination of ready-to-eat-food, cooking time / temperatures, cooling times, allergens
 - any microbiological or chemical criteria applicable

Review and amend this information if changes occur to the composition of the product, the operation, potential consumers, customer complaints, changes to legislation, or because of new information about hazards.

The scope provides the 'terms of reference' for the HACCP team. The team should take time to discuss, agree, and record the scope of the plan(s).

Common problems

- Technical information is not properly recorded or is incomplete or inaccurate.

⁴ Also known as the terms of reference.

- The scope may contain too much or too little detail to be useful – this may indicate that extra training or advice is needed.
- Inadequate food safety information or advice is given on or with the product for customers and consumers to handle and consume the food safely.

A1. Compliance regarding producing a flow diagram

- Put in place a permanent programme of procedures to minimise food safety hazards and produce food safely.

A1. Good practice

A plant slaughtering a single species, then cutting it and producing a single end product may cover all these operations in a single flow diagram and a single plan, or may choose to have three. Where operations are more complex and the resulting flow diagram becomes unduly complicated, separate plans are advisable.

The flow diagram is a step-by-step 'life story' of the production of a product as described by the scope. A step is each individual operation in the production of food, for example: stunning; sticking and bleeding (red meat slaughterhouses), immersion chilling (poultry plant), receiving and dispatch of meat (cutting plants).

It is important to include:

- all inputs, for example, packaging, labels, water
- intended delays during or between steps
- procedures that are operated differently by different work shifts
- the return of product to the process for re-work even if only occasionally
- all outputs, for example, by-products

Physically follow (walk through) the route that the product takes during production to confirm that each process step is properly shown on the flow diagram. Check whether procedures vary during different shifts or other situations. Correct any mistakes on the diagram.

For completeness, official ante mortem and post-mortem inspections should be included on a slaughterhouse flow diagram. However, as official controls these process steps need not be considered further in the operator's HACCP plan.

Complete a flow diagram (the description of the operation) by listing each step in the order that it is undertaken. The list of steps must be correct for the next stage of the HACCP, so check that the list is complete and in the right order. It is very easy to make assumptions and miss out process steps. Keep an accurate and dated flow diagram on the HACCP file⁵.

⁵ If the operation changes and the flow diagram needs to be redrawn, the HACCP plan will need to be reviewed – see 'C1'.

Common problems

- The flow diagram does not reflect the actual production operation, it leaves out some inputs and / or outputs, or it is out of date – this may mean potential hazards have not been taken into account and company hygiene procedures need review.
- The flow diagram is confusing – make the chart as easy to follow as possible.

A1. Compliance regarding preliminary steps

- Put in place good hygiene practices before establishing any HACCP-based procedures.

A1. Good practice

Before any HACCP-based procedures can be established make sure good hygiene practices are in place (see '9.3. '), then:

- set up a HACCP team
- decide the scope of the HACCP plan
- produce a flow diagram
- collect technical data

HACCP team members

A HACCP team is a group of people who, between them, have knowledge of all aspects of the product, production, hygiene procedures and food safety management. Try to have a mix of management and operational staff.

The HACCP team leader needs knowledge of HACCP principles, the determination and authority to complete the HACCP plan, and preferably team leadership and project management skills.

Include relevant specialists with a knowledge of:

- the company's products from raw materials to consumption
- the potential biological, chemical and physical hazards connected with the particular food product, for example, microbiology / food technology / quality assurance / engineering
- the production steps including manufacture, storage, and distribution
- the operation of the plant and equipment, for example, production staff
- the application of HACCP principles

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HACCP team - One person may cover more than one of these specialist roles, provided all relevant information is available to the team. A business with few staff may have an in-house team of only two people. Where in-house expertise is not available, obtain advice from guides or other sources.

Technical production data

Collect information to inform the work of the HACCP team, such as:

- a floor plan of production and ancillary work areas within the curtilage of the premises, identifying 'clean' and 'dirty' areas or high / low risk areas
- equipment layout and characteristics
- staff and vehicle flows, potential areas for cross-contamination, reworking of product, any variations between different shifts
- processing criteria, such as time and temperature requirements
- timing and management of cleaning and disinfection procedures
- personal hygiene practices
- other hygiene practices
- product storage and distribution conditions

Keep this technical information about the product on the HACCP file.

Common problems include: technical information is out of date, incomplete, has too much or too little detail to be useful.

A1. Compliance regarding HACCP documentation

- Document the application of the seven HACCP principles.
- From the start, keep a HACCP file or folder.

A1. Good practice

Document the application of the seven HACCP principles, including:

- the hazard analysis that identifies all significant food hazards associated with each production step
- the good hygiene practices and operational hygiene procedures that are the control measures that prevent, eliminate or reduce the hazards
- the planned monitoring and corrective action procedures, records and responsibilities
- the way in which the plan is to be validated, verified and reviewed to confirm that procedures will work and are working to produce food safely



Guides - Operators may choose to implement HACCP principles by following industry guides adapted to reflect company conditions.

The HACCP file or folder should contain:

- a list of HACCP team members and their area(s) of expertise

- the documents noted in each section below
- key decisions made, by whom and on which date

This information will demonstrate that all necessary steps have been followed and the thinking behind decisions and the arrangements that are in place.

B. Application of HACCP principles

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Legal requirement

852/2004 Article 5 point 2⁶

B1. The HACCP principles referred to in paragraph 1 consist of the following:

- a) identifying any hazards that must be prevented, eliminated, or reduced to acceptable levels.

B1. Compliance regarding hazard analysis

- All sizes of business need to carry out a hazard analysis.
- List all potential biological, chemical or physical hazards that may be reasonably expected to occur at each step of the operation.

B1. Good practice

Hazard analysis has two elements:

- identify hazards and assess their importance
- identify control measures

All sizes of business need to carry out a hazard analysis, as hazards vary with the type of operation not with size. The analysis will help the operator understand the hazards associated with their production process and the best points in the process where control can be applied. However, although all control measures must meet the legal requirements, they will be applied differently in each food business.

List all potential biological, chemical or physical hazards that may be reasonably expected to occur at each step of the operation:

- Identify the food safety hazards that are present at each step using the flow diagram as a guide – these hazards must therefore be prevented, eliminated or reduced to acceptable levels.
- Assess the significance of the hazards, in terms of likelihood and severity.
- Record all the conclusions reached and the reasoning behind them.

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Guidance - generic HACCP plans may be used as long as they are adapted to reflect every businesses operations and procedures.

B1. Compliance regarding identifying hazards and assessing their importance

⁶ HACCP principle 1: Identifying hazards (the hazard analysis).

- The HACCP team needs to deliberate and note down the hazards at each step of fresh meat production.
- Assess the significance of each hazard based upon the set criteria.

B1. Good practice

The main hazards in fresh meat production are biological (mainly food poisoning bacteria, chemical (for example, oil), physical hazards (for example, metal, plastic) and allergens should also be considered in the analysis. See chapter 1 'Introduction'.

The HACCP team needs to deliberate and note down the issues at each step. This is to consider the possibility of:

- the contamination or recontamination of raw materials, intermediate products, or final products by biological, chemical or physical hazards
- the multiplication or survival of food poisoning bacteria
- the source or cause of the hazard
- the production or persistence in foods of:
 - toxins
 - other undesirable products of microbial metabolism
 - chemicals
 - physical agents
 - allergens
- the significance of these hazards

Working through this hazard analysis will identify and focus attention on the important food safety hazards that need to be controlled.

TIP



Hazard analysis – Company / industry experience, including audit reports / customer complaints, may also be taken into account. The microbiological criteria set in Regulation (EC) 2073/2005 may inform the setting of acceptable levels for the reduction of microbiological hazards.

Significance of hazards

A significant hazard is one that would cause a serious adverse health effect and is reasonably likely to occur. Significance may be assessed by considering:

- the likelihood that the hazard will actually occur – the risk
- the level of potential harm that the hazard would do to consumers if they were to be exposed to it – the severity

Common problems

- Not all steps, or inputs, are considered (perhaps because the flow diagram is incomplete or inaccurate).
- Generic guidance is followed without considering the individual nature of the company's suppliers, raw materials, ingredients, customers, hygiene procedures or production.
- Not all potential biological, chemical or physical hazards or conditions of food that are likely to occur at each step are considered.
- Unrealistic hazards are selected for control (those very unlikely to occur or which have negligible impact on consumers) or significant hazards are neglected.
- Conclusions and reasons are not recorded so the justification for decisions is unknown.

B1. Compliance regarding identifying control measures

- Consider which control measures (good hygiene practices and operational hygiene procedures) will control each identified hazard.
- Make sure that the control measures are documented.

B1. Good practice

Control measures control specific hazards effectively. More than one control measure may be needed to control an identified hazard; alternatively, one control measure may control more than one hazard. For example, pasteurisation may provide sufficient assurance of reduction of the level of both Salmonella and Listeria.

Most control measures are good hygiene practices and many are required by the hygiene regulations – see '9.3'.

Control measure example: evisceration of red meat carcasses⁷

- **Hazard** – contamination of carcasses by food poisoning bacteria (for example, Salmonella) due to leakage or ruptured stomach / intestine contents.
- **Control measures** – effective sealing of the rectum and oesophagus (weasand) to minimise gut spillage during evisceration. Follow work instructions for evisceration to minimise the possibility of gut spillage.

⁷ The regulation requires that red meat carcasses do not contain visible faecal contamination and that, if present, it is trimmed without delay.

Control measure example: receipt, storage, cutting and transport of poultry meat⁸

- **Hazard** – the growth of food poisoning bacteria (for example, Salmonella) due to inadequate temperature control.
- **Control measure** – chill and maintain poultry meat at 4°C or below. Follow work instructions for maintenance of the cold chain.

Make sure that the equipment used is working properly and the control measures are documented, for example in: policy documents; performance standards / specifications and staff instructions, such as cleaning schedules; and carcase dressing procedures or heat treatment specifications. It may be necessary to confirm that specifications achieve the necessary control by reference to scientific literature or by practical trial and error.

Details of control measure specifications, standards or staff instructions do not have to be repeated in the HACCP plan. Instead simply refer to these documents, for example, by a unique number or description.

Common problems

- Control measures do not control the hazard.
- Control measures are confused with corrective actions – control measures are preventative and are implemented to maintain control, while corrective actions are taken if there are indications that control is being lost.
- Control measures in the plan do not reflect the real workplace situation.
- References to company documents about control measures are inaccurate or out of date – the documents may no longer exist.
- Unnecessary detail about the control measure is included in the HACCP plan instead of referring to other company documentation.

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Legal requirement

852/2004 Article 5 point 2⁹

B2. The HACCP principles referred to in paragraph 1 consist of the following:

b) identifying the critical control points at the step or steps at which control is essential to prevent or eliminate a hazard or to reduce it to acceptable levels.

B2. Compliance regarding critical control points (CCPs)

- Select control points that are critical to food safety (CCPs).

⁸ The regulations set specific temperature requirements for meat and general requirements for maintaining and monitoring food storage temperatures.

⁹ HACCP principle 2: Identifying critical control points

- Document all conclusions so that the information is available for validation, verification, audit and review.
- Take each step in order, using the flow diagram as a guide, and applying the knowledge of the product and operations gathered at the start of the HACCP.

B2. Good practice

Decide if control of each significant hazard identified is essential to prevent or eliminate a hazard or reduce it to an acceptable level, and / or to meet legal requirements. Each CCP will need at least one critical limit that will show the hazard is being controlled; plus monitoring and corrective action procedures that ensure that potentially unsafe food is not placed on the market.

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CCPs – While businesses may determine CCPs for their own operations, there are steps in meat production at which legal requirements are laid down to control hazards, notably:

- animals admitted are clean and healthy, with dressing procedures adapted as necessary – see chapter 11 on ‘Acceptance and slaughter of animals’
- dressing, particularly hide/fleece/pelt/skin/feather removal, and that evisceration is carried out hygienically and carcasses are free from visible contamination – see chapter 12 on ‘Dressing of carcasses’
- temperature requirements for meat are complied with – see chapter 10 on ‘Temperature controls’

At each of these control points, legal limits, monitoring procedures, corrective actions and records must be established.

Using a CCP decision tree

The determination of CCPs can be helped by use of a decision tree (see ‘Annex. 1.’) or by answering the questions below. Training may be needed to ensure that the chosen method is used correctly and that the selection of CCPs and control points is soundly based, avoiding, for example, unnecessary critical points:

- **Question 1** – does this step prevent, eliminate or reduce contamination to an acceptable level?

If yes, this step is a CCP. If no, move on to question 2.

- **Question 2** – could contamination of the product occur in excess of acceptable levels or increase to unacceptable levels if control is lost?

If yes, move on to question 3. If no, this step is not a CCP.

- **Question 3** – will a subsequent step prevent, eliminate or reduce contamination to an acceptable level?

If yes, this step is not a CCP. If no, this step is a CCP.

Uncontrolled hazards

Valid control measures need to be identified for each CCP and control points required by the regulations. If a significant hazard is identified at a step where control is necessary to reduce that hazard to an acceptable level, but no control measure exists at that step or at a subsequent step, then the product or operation must be modified to remove or control the hazard.

Common problems

- Failure to identify that a particular step is a CCP because a hazard is not dealt with at a subsequent step in the operation under the operator's control.
- Failure to identify that a particular step is not a CCP because a hazard is dealt with at a subsequent step in the operation under the operator's control.
- Inappropriate CCPs are identified through lack of training or knowledge about the hazards, or incorrect use of decision trees or questionnaires.

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Legal requirement

852/2004 Article 5 points 1, 2 and 3¹⁰

B3. The HACCP principles referred to in paragraph 1 consist of the following:

c) establishing critical limits at critical control points which separate acceptability from unacceptability for the prevention, elimination or reduction of identified hazards.

B3. Compliance regarding critical limits¹⁰

- Decide on at least one critical limit for each control measure at each CCP.
- Limits must be capable of being monitored.
- Document this information in the HACCP plan.

B3. Good practice

Critical limits separate acceptability from unacceptability or safe from unsafe food. Critical limits must be at least as strict as any legal limits that apply at that step.

Nature of limits

Use limits based on legislation or on evidence that they will result in safe food production (the values are valid) using, for example, guides to good manufacturing practice, reference books, research or academic studies.

Limits must be capable of being monitored; measured or observed and so be clear to staff whether the operation is under control or is moving out of control. Examples include time / temperature combinations, pH, moisture content, additive, preservative or salt level, and sensory parameters

¹⁰ HACCP principle 3: Establishing critical limits

such as visual appearance (for example, freedom from visible faecal contamination).

Legal limits – values set out in legislation, for example, 7°C is the temperature below which red meat is to be chilled.

Microbiological criteria – where regulations set food safety criteria, HACCP procedures should ensure that these are met – see chapter 13 on 'Microbiological criteria'.

Target levels – in some cases (for example, chilling) a stricter target level may be set as an early warning so that action is taken before a critical and / or legal limit is reached.

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Limits – It is not always necessary to fix a numerical value that requires measurement; where monitoring procedures are based on visual observation (for example, the faecal contamination of carcasses in a slaughter-house, the boiling temperature of liquid food, the change of physical properties of food during processing such as cooking in a restaurant).

Common problems

- Critical limits are inappropriate (for example, do not relate to the hazard to be controlled and do not separate safe from unsafe food).
- Limits are difficult to measure or observe.

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Legal requirement

852/2004 Article 5 points 1, 2 and 3¹¹

B4. The HACCP principles referred to in paragraph 1 consist of the following:

d) establishing and implementing effective monitoring procedures at critical control points.

B4. Compliance regarding monitoring procedures

- Set out a monitoring procedure for each CCP.
- Include monitoring procedure information in the HACCP plan.
- Monitor target levels if used.
- Make sure staff responsible for monitoring and for recording results have clear instructions and understand what they must do if there is a problem.
- Record the measures or observations in a diary / other record at the time a check is made.

¹¹ HACCP principle 4: Monitoring procedures

B4. Good practice

Decide:

- how the monitoring of critical limits will be done
- when and how often the checks will be done
- who will monitor (staff should not normally check their own work)
- what and where information is to be recorded
- who will check that monitoring is being carried out properly and where and
- how this check is to be recorded

If used, target levels must be monitored too.

It may become obvious from looking at a series of results (for example, temperature records, microbiological test results) that action will soon be needed to avoid a critical limit being breached.

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Monitoring – Monitoring may be a simple procedure, for example, a regular visual check of the temperature of cooling/freezing facilities using a calibrated thermometer.

Automated monitoring

If possible, monitoring should be carried out automatically and continuously, for example, temperature monitoring. Carry out regular checks on control equipment (for example, calibration of thermometers) to have confidence in its accuracy.

Non-automated checks

Where monitoring is not continuous, decide on a realistic frequency at which checks are carried out, for example, 3 x daily; hourly; each carcass. It is better to plan and to do one check an hour than to plan four checks an hour and only do one.

The interval between a check that was satisfactory and the next check where a critical limit is found to have been breached, will dictate the amount of product (which may be an entire batch) that may have to be checked, reworked, disposed of or recalled.

Common problems

- Monitoring checks are not carried out as often as planned. This may be because the monitoring frequency is unrealistic or because staff have not been given the correct or clear instructions.
- Monitoring records are incomplete or inaccurate. This may be because staff are relying on memory rather than recording results at the time of the check.
- Monitoring checks are confused with control measures.



Legal requirement

852/2004 Article 5 point 2¹²

B5. The HACCP principles referred to in paragraph 1 consist of the following:

e) establishing corrective actions when monitoring indicates that a critical control point is not under control.

B5. Compliance regarding corrective actions

- For each CCP, anticipate any problems that could occur and decide on corrective actions in each case.
- Where a control point is required by the regulations, decide on the corrective actions needed at each point to ensure compliance.
- Include all corrective action information in the HACCP plan.
- Make sure staff responsible for corrective actions have clear instructions and understand what they must do if there is a problem so that corrective action can be taken without delay.
- The manager / supervisor / designated member of staff should record in a diary / other records the corrective action that has been taken and sign that it has been carried out correctly.

B5. Good practice

Prompt corrective action is evidence of operator responsibility. Decide:

- what corrective actions are to be taken to:
 - restore control
 - deal with affected product produced while out of control
 - investigate the cause to avoid a repetition of the problem
- then who is responsible for carrying out all the corrective actions
- what information is to be recorded, where and by whom
- who will check that corrective action is being carried out properly and where and how this check is to be recorded

Corrective action example: CCP – chilling of carcasses

- **Critical** – maintain carcass temperature at or below 7°C (red meat), 3°C (offal) or 4°C (white meat). Add a timetable for these temperatures to be reached.
- **Monitoring** – air and carcass temperatures.
- **Corrective action** – required when monitoring shows the limit has been breached. Corrective actions may include:

¹² HACCP principle 5: Corrective action procedure

- Reduce chiller temperature further; move product to another chiller.
- Hold the product while waiting for the results of a critical evaluation of batch involved, which may include microbiological sampling.
- Investigate, identify and rectify the cause of the failure to prevent it happening again.

Repeated corrective actions

If corrective actions have to be taken repeatedly there is something wrong with the company's food safety management system. This requires urgent investigation of possible causes, for example, unclear staff instructions, failing or difficult to use equipment, insufficient training.

Common problems

- Corrective actions focus on technical matters, for example, repairing the refrigeration units and not on the disposition of the potentially unsafe food.
- Corrective action is not taken or is deliberately postponed – when control is lost and corrective action is not taken, food safety is endangered and potentially unsafe product may reach the customer / consumer – inactivity is unacceptable.
- Corrective action is delayed – this may be due to confusion between line staff, supervisors and management as to who is responsible for which element of the necessary corrective action or what that action should be. A review of instructions and / or training may be needed.
- Corrective action records are not kept or are incomplete or inaccurate – this may give management a false impression that there are no problems. It is in the interests of all parties that the operator should understand the pressures on food safety and how these may be better managed.
- Corrective action is initiated but not completed.
- Corrective actions occur repeatedly, suggesting that food safety management procedures and / or the HACCP plan are seriously flawed.



Legal requirement

852/2004 Article 5 points 1, 2 and 3¹³

B6. The HACCP principles referred to in paragraph 1 consist of the following:

f) establishing procedures, which shall be carried out regularly, to verify that the measures outlined in subparagraphs (a) to (e) are working effectively.

178/2002 Article 17¹¹

B7. Food ... business operators at all stages of production, processing, and distribution within the businesses under their control shall ensure that foods satisfy the requirements of food law which are relevant to their activities and shall verify that such requirements are met.

B6. and B7. Compliance regarding verification procedures

- Validate and verify the HACCP plan.
- Record the validation and verification checks carried out in a diary or other records.

B6. and B7. Good practice

Carry out checks of the HACCP-based procedures either:

- firstly, before the plan is implemented – validation
- secondly, after implementation – verification

Decide:

- what validation and verification checks are to be performed and when
- who is responsible for carrying them out
- what information is to be recorded, where and by whom and
- who will check that validation and verification has been carried out properly and where and how this check is to be recorded

Record the validation and verification checks carried out in a diary or other records. The manager / supervisor should sign that the checks have been carried out correctly. See www.food.gov.uk/business-industry/meat/haccpmeatplants for validation and verification checklists.

Common problems

- Validation and / or verification checks are not carried out or are not carried out properly. This may be because staff do not know what to do or how to do it.

¹³ HACCP principle 6: Verification procedures

- Training or expert advice may be needed, as a result, the operator may think that food safety hazards are being controlled when they are not.

B6. and B7. Compliance regarding validation

- Validate the HACCP plan.
- Record the validation checks carried out in a diary or other records.

B6. and B7. Good practice

Validation of the HACCP plan should take place before its implementation, and should be repeated before each change to a HACCP plan is implemented.

Validation checks

To validate the accuracy and completeness of the plan, check the scope, technical data, flow diagram, hazard analysis, and the effectiveness of control measures (hygiene practices such as cleaning, training) in eliminating food safety hazards or controlling them to an acceptable level, and that control point identification, critical / legal limits, monitoring and corrective action plans are appropriate and effective.

It is recommended that, after the team has carried out its own validation checks, an independent expert is involved to provide an objective view.

Scientific validation

Production may involve complex technical issues, such as the chilling of large quantities of meat or heat treatment, where time / temperature or other parameters must be established and applied accurately to achieve a safe result.

To confirm that the operation is safe it may be enough to apply relevant legal limits or refer to industry guides to manufacturing or to scientific publications. Where the procedure or product is unusual, it may be necessary to get specialist scientific advice.

B6. and B7. Compliance regarding verification

- Verify the HACCP plan.
- Record the verification checks carried out in a diary or other records.

B6. and B7. Good practice

Verification checks should be carried out often enough to maintain confidence in the HACCP-based procedures. The frequency of verification will depend on factors such as the nature of the food safety hazards, throughput, monitoring frequency, end-use, the competence of staff, and the number of times critical / legal limits have been breached. Microbiological test results or customer complaints may also trigger verification checks.

Microbiological criteria can be used in the validation and verification of HACCP-based procedures, including control measures based on good hygiene practices – see chapter 13 on 'Microbiological criteria'.

People responsible for carrying out monitoring and corrective actions should not also verify the plan, unless there is no option. HACCP trained and / or experienced people should be used. External advisers can be used if sufficient in-house expertise is not available. HACCP verification is also carried out by auditors by or on behalf of customers, the competent authority or other third parties, such as assurance bodies.

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Verification – As a minimum, if there have been no serious problems, the whole of the HACCP-based system should be verified once a year, but note that all aspects do not have to be checked at the same time.

Coverage checks

To verify all aspects of a HACCP-based system:

- Determine whether the HACCP plan appears likely to be effective and to provide a basis for checking the procedures that are actually being operated, by checking the adequacy of:
 - the documentation, scope, flow, hazard analysis, control measures, determination of control points, monitoring procedures, corrective action procedures, validation and verification procedures
 - hygiene procedures and records, for example, cleaning, maintenance, staff training
 - monitoring and corrective action records
 - validation and verification records
 - calibration records of instruments used for monitoring
- See where problems with the hygiene procedures may have arisen and any management action taken, by analysing:
 - microbiological results and trends
 - customer complaints
 - third party audit reports
 - occasions when critical limits were breached and corrective actions taken
- Physically inspect (walk-through) the production to:
 - check if the hygiene procedures and management checks referred to in the plan are being carried out, especially at control points
 - check whether the flow diagram is correct
 - carry out random or targeted checks on a sample of product before, during and after production, which may include visual inspection, temperature measurements, microbiological tests, and traceability and label checks on products on sale
 - check that monitoring instruments have been calibrated

- Assess:
 - the appropriateness of staff instructions relating to the hygiene procedures, control measures, monitoring and corrective actions set out in HACCP-based procedures
 - the competency of the staff responsible for monitoring and corrective actions (by observation and questioning of staff)

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Legal requirement

852/2004 Article 5 points 1, 2 and 3¹⁴

B8. The HACCP principles referred to in paragraph 1 consist of the following:

g) establishing documents and records commensurate with the nature and size of the food business to demonstrate the effective application of the measures outlined in sub- paragraphs (a) to (f).

852/2004 Article 5 points 4 and 5¹⁴

B9. FBOS shall:

- a) provide the competent authority with evidence of their compliance with paragraph 1 in the manner that the competent authority requires, taking account of the nature and size of the food business
- b) ensure that any documents describing the procedures developed in accordance with this Article are up-to date at all times
- c) retain any other documents and records for an appropriate period

B8. and B9. Compliance regarding documentation¹⁴

- Document the company's HACCP-based system checks and actions.
- All documents should be signed off by a responsible company official.

B8. and B9. Good practice

Keeping food safety management documentation is a legal requirement and should be appropriate to the size and nature of the business.

The company's HACCP-based system checks provide written evidence for the operator, customers, and officials. Records of these check should identify the persons who complete them and the paperwork should be easy to complete and keep up-to-date.

Smaller businesses should use the food safety management diary for meat producers' if they do not have alternative arrangements in place. Large and / or complicated businesses need more sophisticated systems.

¹⁴ HACCP principle 7: Documentation

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Exception reporting – In the case of visual monitoring procedures, it can be acceptable to record results only when there is a problem or something out of the ordinary happens with the corrective action that has been taken. A diary can be a suitable method of record keeping.

To be sure that the plan, policy documents and record forms being used are up to date, control documents by dating each amended version and preferably by giving each one a unique version number. Give responsibility for HACCP-based documents, issuing authorised versions and keeping a full set of current HACCP-based documents on file to a named person or persons.

- **HACCP documents** –include the HACCP plan(s), the HACCP team notes and conclusions concerning the scope, flow diagram, hazard analysis, control point and critical / legal limit decisions, arrangements for monitoring, corrective actions, validation, verification review and any changes.
- **Policy documents** –include the company's good hygiene policies, procedures and staff instructions, and should include instructions for staff to complete monitoring and corrective action records.
- **Records** – include monitoring results (for example, temperature readings), corrective actions; validation, verification checks and the review, as well as calibration results, microbiological test results, customer complaints and audit reports.

Model documents and records may be used as long as they are properly adapted to reflect the circumstances of each individual business.

Access to records

Documents and records can be created, recorded and kept on computer, but will need to be available for reference either on screen or in printed form. Policy documents and HACCP-based system documents can be kept in ring binders. Records of checks and actions can be kept in a diary.

Retention of documents and records

Documents and records must be kept for a sufficient time to allow the operator to verify the HACCP-based system and the competent authority to audit it.

- Keep HACCP-based plans and documents and records relating to previous policies, systems and procedures and records supporting them (for example, validation, verification and review records), at least until the next official audit and for as long as the food that was produced under those arrangements is still for sale or potentially in storage.
- Keep the daily records of monitoring and corrective actions at least until the next official audit and so the information is available in case of a food safety alert that can be traced back to the food in question, for example, two months after the date of consumption. This period should be extended for food that consumers may freeze. If these records are kept in a diary, keep the completed diary for at least two years after the last entry.

Exception reporting

When checks are carried out once or a few times a day (for example, manual checks on chiller temperature) record the result of each specific check (temperature readings).

When daily checks are more frequent (for example, observation of carcase contamination) the results only need to be written down when there is a problem or something out of the ordinary happens, with a record of the corrective action taken – this is called exception reporting.

Common problems

- HACCP-based paperwork is too complicated for staff to complete or for auditors to verify.
- Documents are not properly managed, dated or numbered, so it is not clear which are the current versions that should be used or checked.
- Records are ignored, forgotten or not completed properly or too late after the check or action taken. This may be due to lack of training, poor instruction, misunderstandings, mistakes, or deliberate actions. At worst it provides misleading information that may be relied on by management and may lead to incorrect action or no action being taken to the detriment of food safety and / or non-compliance with legal requirements. Records should be reviewed and signed by a supervisor or manager.

C. Review of HACCP-based procedures

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Legal requirement

852/2004 Article 5 point 2

C1. The HACCP principles referred to in paragraph 1 consist of the following; when any modification is made in the product, or any step, food business operators shall review the procedure and make the necessary changes to it.

C1. Compliance regarding review of HACCP-based procedures

- Review the HACCP-based system at least once a year or when there are changes.
- Keep the procedure and records with the HACCP plan.

C1. Good practice

If there are changes to the HACCP-based system, it is necessary to review it to make sure that it is, or will be, valid and food safety procedures remain effective. The review may indicate that aspects of the HACCP plan need to be changed, such as, the scope, the flow diagram, the technical data, and hazard analysis, control measures, decisions on control points, critical / legal limits, monitoring checks, corrective actions and records. The food safety management diary has a review checklist.

Changes that would lead to a review of the HACCP-based system include:

- changes in raw material or in product

- changes in processing conditions (factory layout and environment, equipment, cleaning and disinfection programme)
- changes in packaging, storage or distribution conditions
- changes in consumer use
- new information on an existing hazard or information on a new hazard
- changes in relevant legislation

The HACCP team must be made aware of changes that would trigger a review so they can consider the potential impact on food safety and the HACCP plan. All staff need to be made aware of any changes that affect them, of revised staff instructions and, if necessary, be retrained to operate revised procedures.

Common problems

- Reviews do not take place, are delayed or are limited in scope. The food safety procedures that are in place may not be effective if there have been significant changes to the product and production arrangements, and these have not been reflected in the HACCP-based procedures.
- New procedures are not communicated to everyone who needs to know or who needs to be re-trained.

D. HACCP training

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Legal requirement

852/2004 Annex II Training: Chapter XII point 2

D1. That those responsible for the development and maintenance of the procedure referred to in Article 5 (1) of this Regulation or for the operation of relevant guides have received adequate training in the application of the HACCP principles.

D1. Compliance regarding training

- As a minimum, one person in the business must have adequate training in the application of HACCP principles or in the use of generic guides if these are used by the business.
- Record training and any qualifications obtained by individuals.

D1. Good practice

Ideally, all staff working on the HACCP plans should have training in the application of HACCP principles – see chapter 7 on ‘Training’. Supervisors and staff responsible for day to day checking and / or taking corrective action should have some training to better understand the importance of their work in maintaining HACCP-based hygiene procedures and the hazards that these procedures are aiming to control.

Training is available from local colleges, food safety training companies and consultants, or may be provided in-house. Training is more effective if it is related to meat production. The ‘FSA meat plant HACCP manual’ includes a syllabus for a two day training course.

The Intermediate Certificate in HACCP Practice (meat plant) is awarded on successful completion of a course. For more information, contact the Meat Training Council at: <https://www.foodtraining.org.uk>, or the Food Training Council at: www.fdq.org.uk.

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Training – Training does not necessarily involve attendance at formal courses. Training can also be achieved through trade or professional organisations or from the competent authorities and guides to good practice.

Common problems

- HACCP training is general and not related to meat plant operations.
- Potentially unsafe decisions on how to manage food safety are made because no-one has enough knowledge or understanding to apply HACCP procedures correctly.

9.6. Official control requirements

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Legal requirement

854/2004 Article 4

Audits of HACCP-based procedures shall verify that food business operators apply such procedures continuously and properly, having particular regard to ensuring that the procedures provide the guarantees specified in Section II of Annex II to Regulation 853/2004.

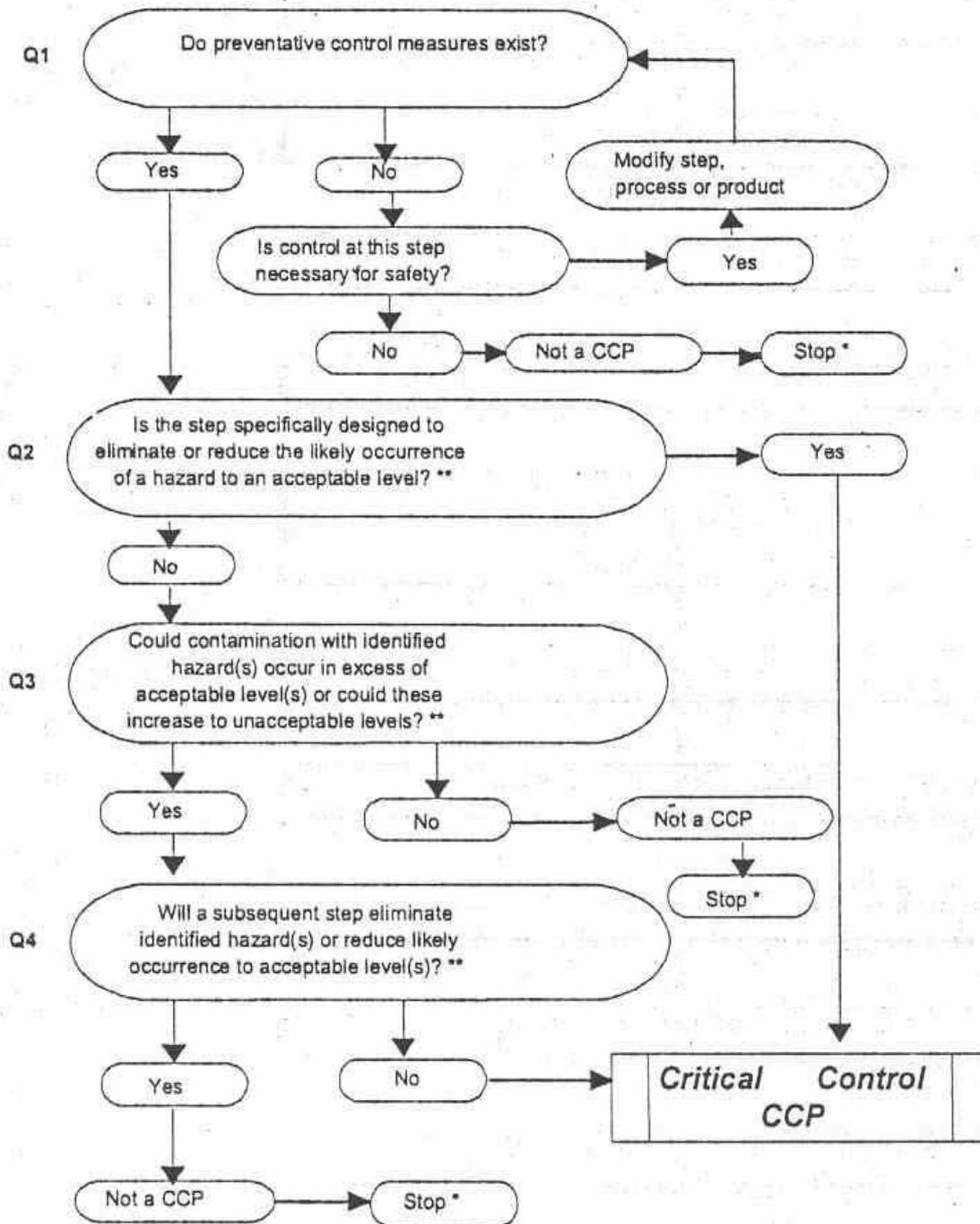
They shall, in particular, determine whether the procedures guarantee, to the extent possible, that products of animal origin:

- (a) comply with microbiological criteria laid down under community legislation
- (b) comply with community legislation on residues, contaminants and prohibited substances; and
- (c) do not contain physical hazards, such as foreign bodies

When, in accordance with Article 5 of Regulation 852/2004, a food business operator uses procedures set out in guides to the application of HACCP principles rather than establishing its own specific procedures, the audit shall cover the correct use of these guides.

Annex 1. CCP decision tree example

The questions must be answered in sequence.



* Proceed to the next identified hazard in the described process

** Acceptable and unacceptable levels need to be determined within the overall objectives in identifying the CCPs of the HACCP plan