

Guidelines for Food Safety Control in European Restaurants

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Summary

Catering establishments have been frequently associated with outbreaks of food poisoning. In order to reduce the incidence of such catering associated illness, contamination of food with hazards such as *Salmonella*, *Campylobacter* and *Listeria monocytogenes* must be prevented, reduced and / or eliminated. This can be achieved through the implementation of effective food safety practices. Food safety programmes may be subdivided into prerequisite activities such as maintenance, cleaning, personal hygiene, etc. and hazard analysis and critical control point (HACCP).

An international conference entitled "Catering Food Safety: A Responsibility Ignored?" was organised as part of the European Union Risk Analysis Information Network (EU-RAIN) concerted action project (Project Number: QLK1-CT-2002-02178) in Budapest, Hungary in November 2003. This document focuses on catering HACCP as discussed at that conference. However, before HACCP can be implemented it is important that an effective prerequisite programme be in operation. Hence, the general prerequisite requirements are also discussed. The seven principles of HACCP are then introduced and the development of a HACCP system is divided into fifteen steps, which may be followed in the development of catering HACCP plans. These include HACCP team building, product and process analysis, hazard identification, risk assessment and critical control point development. To facilitate this process, a summary flow diagram, decision tree and the structure of a *Hazard Control Plan* are provided and their use explained. Potential critical control points (CCPs) are then discussed, including critical limits, monitoring and corrective actions. The document is completed by an explanation of verification and documentation activities.

Introduction

An international conference, "Catering Food Safety: A Responsibility Ignored?", held in Budapest, Hungary in November 2003 as part of the European Union Risk Analysis Information Network (EU-RAIN) concerted action project (Project Number: QLK1-CT-2002-02178), brought scientists, chefs, consumer representatives and food safety agencies together to discuss the issue of catering food safety. (Meeting report available at <http://www.eu-rain.com/publications>).

Several conference speakers highlighted the factors contributing to restaurant associated food poisoning including:

- contaminated raw materials
- inadequate handling leading to cross-contamination
- improper chilling and chilled storage
- incorrect thawing practices
- inadequate cooking
- poor personal hygiene
- infected food handler(s)
- poor hygiene of premises and utensils
- multipurpose dishcloths / sponges
- food prepared too long in advance
- storage at ambient temperatures
- delayed serving

This document is a guide to food safety management in the food services sector and will address the control of these factors. It describes how food safety hazards should be controlled in a busy catering kitchen to facilitate the development and implementation of effective food safety control and to ensure legal requirements are satisfied for the benefit of the business and the health of its customers. It does not cover post-kitchen food handling and distribution and to gain the full benefit of this guide, the reader should have a basic understanding of hazard analysis and critical control point (HACCP) and related terminology (see Glossary, page 23).

Food service proprietors are responsible for ensuring the safety of the food they produce. At present, food safety in the catering sector is covered primarily by Council Directive 93/43/EEC on the hygiene of foodstuffs and by Council Directive 89/397/EEC on the

official control of foodstuffs. 93/43/EEC requires that food business operators shall handle food in a hygienic way and under hygienic conditions and that they shall:

"identify any step in their activities which is critical to ensuring food safety and ensure that adequate safety procedures are identified, implemented, maintained and reviewed on the basis of the following principles, used to develop the system of HACCP (Hazard analysis and critical control points)"

The HACCP principles in 93/43/EEC have proved challenging to both caterers and regulators, with the European Commission Food and Veterinary Office reporting low enforcement and implementation. However, the EU remains committed to HACCP. Future hygiene regulations, as outlined in the General Food Law Regulation (178/2002), are certain to contain all 7 principles of HACCP.

Prerequisites

To prevent, reduce or eliminate contamination of food during storage and preparation, every aspect of catering should be controlled. Control is achieved using prerequisite procedures and a HACCP plan. The prerequisites provide the foundation for effective HACCP implementation and should be in operation before HACCP. Once this has been achieved, the HACCP plan may be developed and implemented. At this stage there is often confusion about which hazards should be controlled by the prerequisites and which should come under the HACCP plan. As a general rule the prerequisites should be used to control hazards associated with the food service environment (premises and structures, services, personnel, plant and equipment), while HACCP should be used to control hazards associated directly with food processes (storage and preparation) that are deemed to be significant by risk assessment (Figure 1). Significance may be defined as follows:

significance = likelihood of occurrence x severity of consequences

For a hazard to be deemed as significant, it must be reasonably likely to occur and the consequences should be relatively serious. The prerequisite procedures for the food services sector will now be summarised.

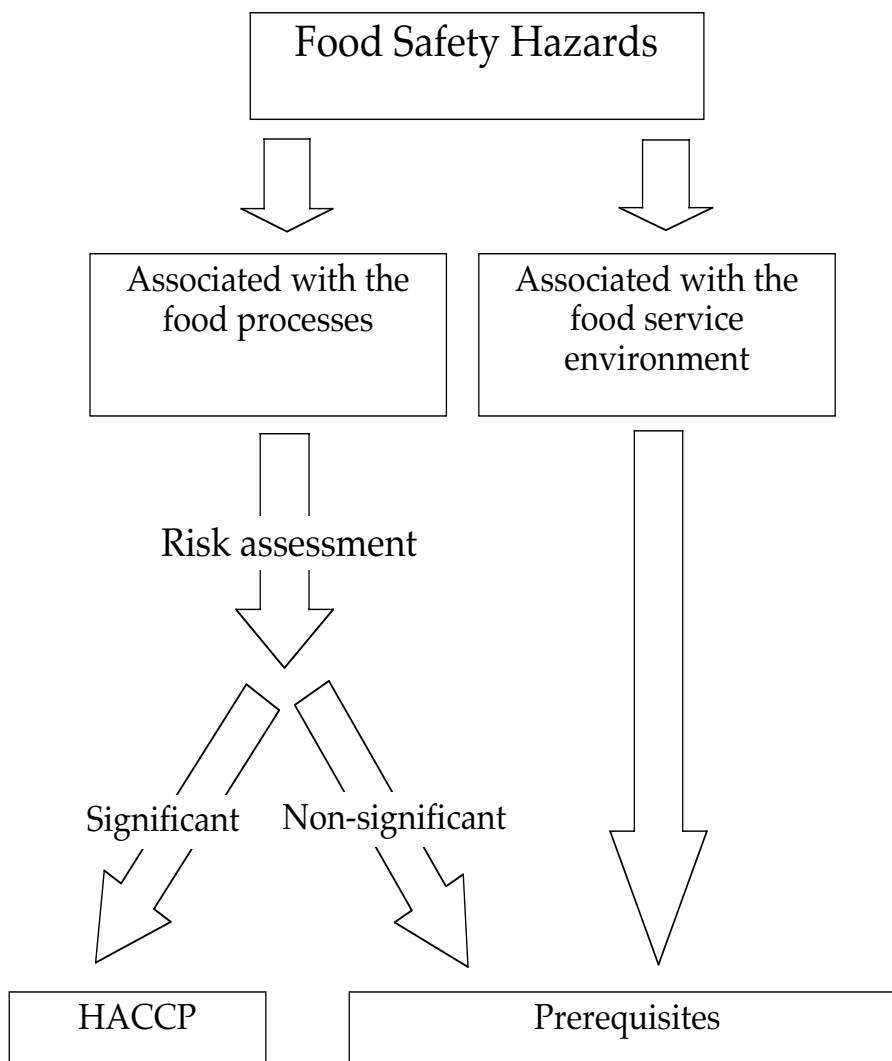


Figure 1: Differentiating significant from non-significant hazards and deciding whether to control these under the prerequisite procedures or HACCP plan.

Premises and structures

Walls should be made from durable, water resistant materials which are scratch proof, impact resistant and heat resistant behind cookers. They should be easy to clean and free from contaminants including moulds, condensation and cobwebs. All junctions (wall-to-wall, wall-to-floor and wall-to-ceiling) should be closed and cracks should be sealed. Floors should be constructed of durable, water and sanitizer resistant material without cracks, gaps or holes. The ceilings should be smooth, clean and free of dirt, condensation and moulds. Doors, windows, window frames and roof lights should be clean, well maintained.

Plant and equipment

Surfaces should be smooth, impervious, non-toxic, non-absorbent, corrosion and sanitizer resistant. Fixed equipment on floors or walls should be easily removed, or at a sufficient height above the floor and sufficient distance away from the wall to allow for cleaning. Fridges and freezers should have sufficient capacity to maintain food at the correct temperature and a temperature monitoring device. Thermometers should not contain mercury and all temperature measuring and recording equipment should be checked and calibrated at least twice per year.

Hygiene of Personnel

Personnel are a potential source of food poisoning agents especially bacteria such as *Staphylococcus aureus* and *Escherichia coli*. To minimise this risk all staff should receive food safety and personal hygiene training. New employees should complete a medical questionnaire and employees suffering from food poisoning, boils, sores, diarrhoea or other illnesses should not be permitted to work in the food preparation area. Cuts should be covered with waterproof, high visibility dressings and the establishment should have a policy regarding staff out sick for 3 days or more if their sickness could in any way impinge on the safety of the food they handle. Jewellery, nail varnish and smoking should not be permitted in areas where food is stored, handled, prepared and served.

Protective clothing should be worn over personal clothing and should not be worn outside the catering area. Staff facilities should

include changing room(s), at least one designated wash hand basin, with hot & cold water, soap and hygienic hand drying facilities and a sufficient number of toilets which are well ventilated and located away from the food preparation area.

Services

The water should comply with the relevant national and EC legislation for drinking water. Storage tanks for water should be covered and drinking water taps should be clearly identified. The flow of clean air and the removal of steam should be achieved using mechanical ventilation systems. The light provided should be adequate for the tasks being performed in a given area and light filaments should be of the food safety type in all food rooms. Fluorescent lighting tubes should be enclosed in shatter proof diffusers.

Lidded containers (bins) should be provided at appropriate locations within establishments for the collection of waste and should be emptied at least daily into covered bins or skips in a designated area, physically separated from the food storage and food preparation areas. The latter should be emptied at least once per week.

Cleaning

Data presented at the conference demonstrated inadequate cleaning of cutting boards, knives, worktops, fridges and tap handles in restaurants. Furthermore, the need for greater attention to sanitation of stainless steel and other surfaces was highlighted. Equipment, utensils, containers, crockery, cutlery, temperature probes, etc. should therefore be cleaned after use, prior to use for preparing ready-to-eat food or daily, as appropriate. Cleaning instructions and a cleaning schedule would facilitate this process. Dish cloths should be disinfected on an ongoing basis or disposed of after use. A large sink should be available for washing pots and other loose pieces of equipment. Detergents, disinfectants and cleaning chemicals should be clearly labelled and stored outside the food area.

Storage

All food storage accommodation should be clean, dry, adequately illuminated and well ventilated. Foods should be segregated

during storage, unless adequately packaged, to prevent cross contamination. Perishable, high risk or ready-to-eat foods should be stored refrigerated or frozen. Cooked and ready-to-eat foods should be stored in a separate refrigerator to that being used for raw foods. Stock should be rotated on a 'first in - first out' basis, taking into account the "best before" and "use by" dates.

Zoning

Food storage, handling and preparation should be carried out in separate areas and / or at separate times so as to prevent cross contamination. There should be separate designated areas for pastry preparation, vegetable peeling and washing (including a designated sink), raw poultry and meat preparation (including a designated sink for washing), cooking, plating out and washing up, each with designated equipment, knives, forks, cutting boards, etc. This is best achieved by using colour coding of equipment, utensils, cutting boards, etc. For example, cutting boards should be different colours to differentiate between those used for different food types as follows; raw fish (blue), raw meat (red), salads and fruits (green), dairy and bakery products (white), cooked meats (yellow) and vegetables (brown).

Pest control

Rodents, birds, insects and animals should be excluded from the catering environment. If the kitchen has an insectocutor for flies, this should be located away from natural light, free from draughts and away from food. Fly sprays should not be used in an area where food is prepared, stored and / or cooked. All opening windows and skylights should be covered by a suitable insect screen. These should be fitted so that the back of the screen and area behind the screen can be cleaned. External doors should be rodent proof and personnel doors must be fitted with self-closers. External doors should not be left open. Detailed inspections of the premises should be carried out by a competent person at least every three months for evidence of infestation by insects or rodents. Pesticides should only be used in such a way as to prevent the contamination of food and should not resemble a food product. They should also be stored in a separate cupboard away from the food storage area. There should be an effective rodent management programme.

Supplier control

Only ingredients from reputable suppliers should be used. These may be third party approved or have quality assurance certificates. The producers and suppliers should also have a food safety management system(s) which may be subject to audit and each ingredient should be fully traceable.

Delivery controls

The establishment should have a checklist for deliveries (including suitability of vehicle, hygiene of delivery person, a check of food for "best before" or "use by" dates, a check for damage to packaging and a check of the temperature of the food).

Management and records

Management should carry out internal audits and maintain appropriate documents to demonstrate compliance with their legal requirements. Where a non-compliance is found, it is the responsibility of management to record this non-compliance and document the actions taken to rectify the situation.

Hazard Analysis and Critical Control Point

There are 7 principles of HACCP each of which must be addressed when a HACCP plan is being developed and implemented (Anon, 1997):

1. Conduct a hazard analysis, i.e. prepare a list of steps in the process where significant hazards may occur and describe the control measures.
2. Determine the critical control points (CCPs) or steps at which control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level.
3. Establish critical limits, which are the maximum or minimum value(s) to which a hazard must be controlled at a CCP to prevent, eliminate and / or reduce to an acceptable level the occurrence of the identified food safety hazard.
4. Establish monitoring procedures to assess whether a CCP is under control and to produce an accurate record for future use in verification.
5. Establish corrective actions to be followed when a deviation occurs, which is a failure to meet a critical limit.
6. Establish verification procedures to determine if the HACCP plan is operating as intended.
7. Establish record-keeping and documentation procedures.

The application of these principles may be divided into 15 steps as follows:

1. Determine the objectives, strategies and resources required
2. Assemble a HACCP team
3. Assemble product data
4. Prepare process data
5. Source and review hazard data
6. Identify the hazards associated with each step
7. Risk assessment
8. List potential control measures
9. Determine critical control points (CCPs)
10. Establish critical limits
11. Establish monitoring procedures
12. Establish corrective actions
13. Compile a *Hazard Control Plan*
14. Document the HACCP system
15. Verification of the system

1. Determine the objectives, strategies and resources required

HACCP is management's responsibility and the objectives should include: (1) to systematically examine products & processes and list known hazards; (2) to determine CCPs at which these may be controlled; (3) to evaluate the existing level of control; (4) to document the above in a *Hazard Control Plan*; (5) to agree a project plan (target dates, resources, etc.); and (6) to appoint a project manager.

2. Assemble a HACCP team

The HACCP team should be multidisciplinary and include those with knowledge of the product(s) / dish(es) and expertise in the processes used. In the food services establishment the team should include the chef, management, the support staff and, if required, a food safety consultant.

3. Assemble product data

The HACCP team should gather information about the product including ingredients, preservation factors, packaging and storage conditions. Despite the relatively large number of products (dishes), which may be prepared in a restaurant or other food services establishment, this information should be readily available from suppliers and in product literature.

4. Prepare process data

If possible, the HACCP team should develop detailed flow diagrams for each process. In the restaurant this would require a different flow diagram for each type of dish prepared. Alternatively, a summary flow diagram may be applied as shown in Figure 2, if this covers all of the processes within the catering establishment.

5. Source and review hazard data

Food safety hazards, which may occur in the catering kitchen, should be identified. Information about hazards may be found in the scientific literature, in the regulatory guidelines, from consumer complaints, from internal audits, etc. The following is a summary of the potential hazards, which may occur in the catering environment.

Biological hazards

The biological hazards are primarily bacterial pathogens but

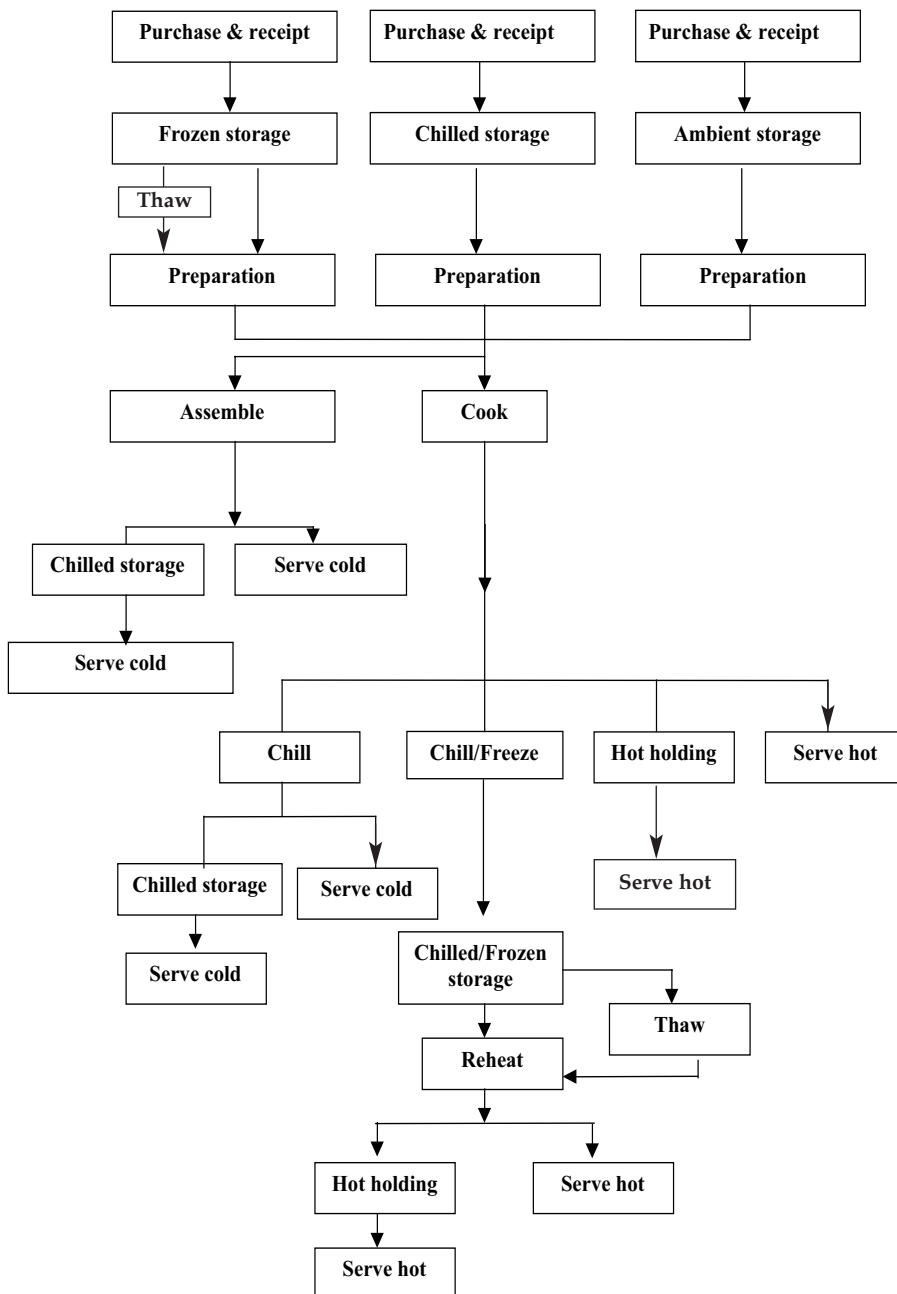


Figure 2: An illustrative summary flow diagram of the food processes in a restaurant.

viruses and parasites should also be considered. Bacterial pathogens including *Salmonella*, *Campylobacter*, *Listeria monocytogenes*, *Yersinia enterocolitica*, *Staphylococcus aureus* and *Escherichia coli* are present in the catering kitchen environment and have been isolated in ready-to-eat foods. *Clostridium perfringens* and *Bacillus cereus* are also worthy of mention as both may become a major problem if cooked foods are held at an incorrect temperature.

Chemical hazards

Chemical residues may occur in food and in the food service environment. Residues present in food ingredients cannot be removed at this stage in the food chain and their control is reliant on the implementation of suitable chemical residue control programmes at the primary and / or processing stages prior to delivery. Management should seek written assurance from their suppliers that the use of chemicals in meat, fruit and vegetable production was in compliance with the regulations. Residues from packaging may be avoided by ensuring suppliers use recommended packaging materials and that the packaging or container has not been damaged. Residues from cleaning agents, sanitisers, etc. used in the kitchen are prevented from entering the food through proper storage and application, which is controlled as part of the prerequisites.

In recent years there has been a steady increase in serious reactions to food allergens, e.g. peanuts and other nuts. Every establishment should be aware of the potential presence of allergens in ingredients and these should be stored, prepared and displayed in a separate area so as to prevent cross contamination. Customers should be informed of the potential presence, trace or otherwise, of these substances.

Physical hazards

Most complaints in restaurants relate to physical hazards. Foreign objects in food, such as metal, glass, plastics, knife blades, hairs, etc. are all examples of physical hazards. The prerequisites in the kitchen should prevent physical hazards contaminating the food. Preventing such hazards in the raw ingredients is reliant on the food safety control system(s) in supplier operations.

6. Identifying the hazards associated with each step

Once the potential hazards have been identified, the source of these hazards should be determined. Potential sources of hazards include the raw ingredients (raw meat, poultry, vegetables, spices, etc.), the environment (air, water, etc.), personnel (*S. aureus*, *E. coli*, etc.), cleaning agents, pests, etc. Furthermore, any step which could contribute to increased contamination or cross contamination should also be identified. For example, storage at ambient (room) temperature would facilitate the multiplication of bacterial pathogens or storing raw meat above cooked ready-to-eat food could result in cross contamination.

7. Risk assessment

Having identified the hazards and potential sources, it is important to determine whether these are significant or non-significant (see Figure 1, page 4). Significance was previously defined as *likelihood of occurrence x severity of consequences* and any hazard which is both likely to occur and would result in serious consequences should be deemed as significant.

8. List potential control measures

Control measures should be identified for the hazards identified in step 6 and deemed as significant in step 7 (if non-significant these hazards would be controlled under the prerequisite procedures). A control measure is a factor which may be used to control an identified hazard by preventing, eliminating and / or reducing it to an acceptable level.

9. Determine the critical control points (CCPs)

A CCP is a step, point or procedure in a food process where control may be applied in order to prevent, eliminate and / or reduce a food safety hazard to an acceptable level. CCPs are used to control the hazards deemed to be significant in step 7. When deciding if a particular step, point or procedure is suitable to control one of these significant hazards, a decision tree (such as that illustrated in Figure 3), may be used.

10. Establish critical limits

Critical limits are criteria, which must be met if control is to be

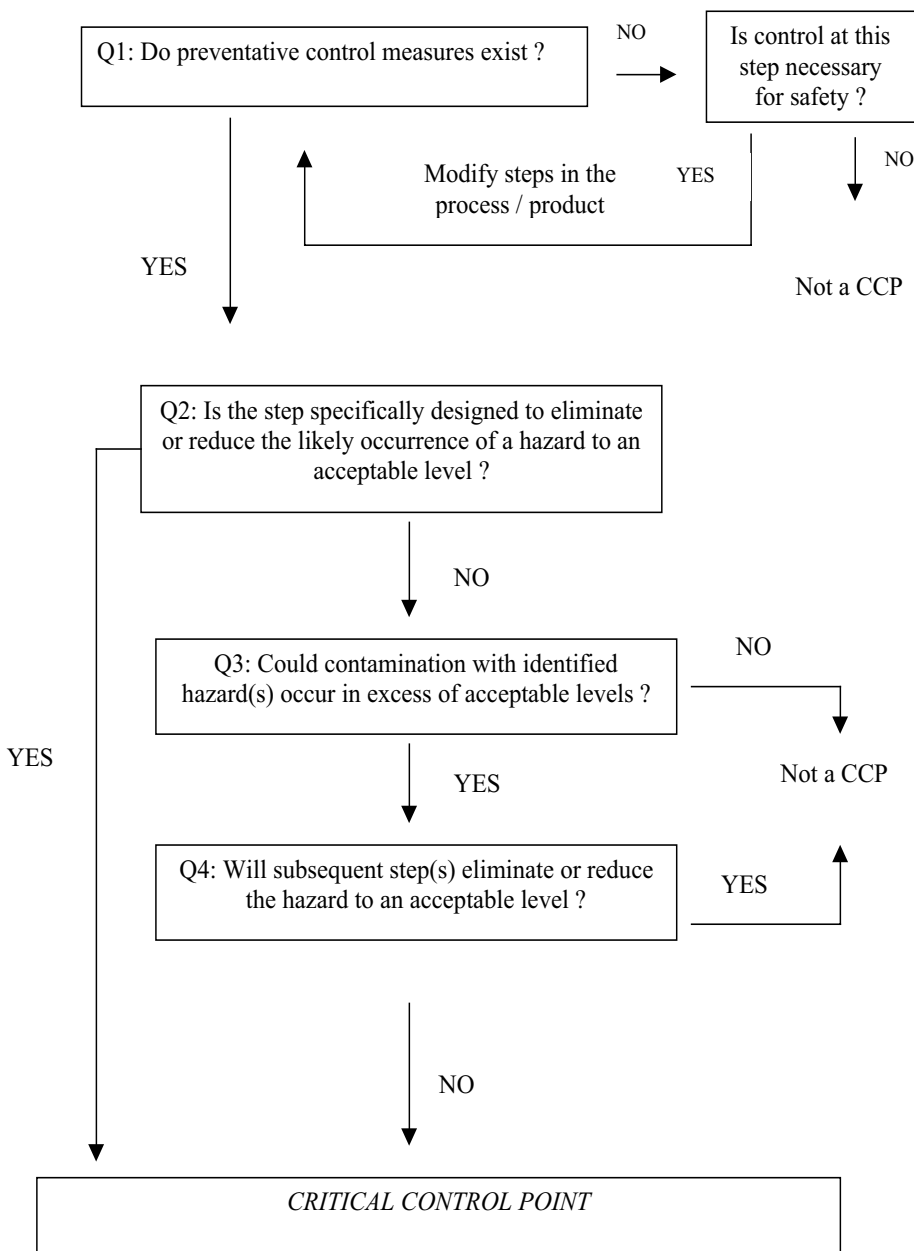


Figure 3: A decision tree which may be used to determine whether or not a particular stop, point or procedure in a food process or preparation may be used as a CCP (Anon., 1997).

achieved. These are based on experience, regulations, literature searches, microbiological data, etc. A good catering example would be cooking to the core temperature and for the required time to ensure the destruction of pathogenic bacteria such as *E. coli* O157. This might be cooking to 'at least 70°C (core temperature) for at least 2 minutes' as is currently recommended for beef burgers. If this critical limit is not achieved, the destruction of *E. coli* O157 is not assured.

11. Establish monitoring procedures

Monitoring is a planned sequence of observations to assess whether a control point is under control and to produce accurate records for future verification.

12. Establish corrective actions

Actions taken in response to a deviation from the critical limits are referred to as 'corrective actions' and should be determined for each CCP.

13. Compile a Hazard Control Plan

All the elements discussed so far should be compiled into a formal plan called the *Hazard Control Plan*. This structure of this plan is shown as Table 1.

14. Document the HACCP system

Having completed the *Hazard Control Plan*, standard operating procedures (SOP) for each CCP should be written. When this is completed, the HACCP system is ready for implementation. This document, associated documents (including product data, process flow charts, etc.), monitoring records, corrective action records and verification records make up the documentation of the HACCP system.

15. Verification of the system

It is necessary to verify that the system outlined in the HACCP plan is being implemented and to test its effectiveness. This may be achieved through audits (internal and external), record review, performance standards review, etc.

Table 1. The structure of the Hazard Control Plan

Step	Hazard Control Plan		Product		Author		Date: Revision date:			
	CCP number	Hazard (source)	Control measure	Critical limits	Frequency	Monitoring	Method	By whom	Corrective action	Document reference

Potential Critical Control Points

This section will discuss potential CCPs in the catering kitchen including critical limits, monitoring and corrective actions. It is not envisaged that every CCP should be applied in a catering HACCP plan but that a given establishment selects those CCPs necessary to control the significant hazards which arise in their establishment and which are not dealt with under the prerequisite programme.

Chilling

Cooked foods should be chilled immediately using a blast chiller. If the latter is unavailable, the product should be placed in chilled storage within 90 minutes of the completion of cooking. Dividing the cooked food into smaller portions will facilitate faster cooling. Chilling or cooling devices should be capable of reducing the core temperature to 10°C or less within 150 minutes. Failure to achieve the target temperature within this time frame would allow bacteria like *Salmonella* and *S. aureus*, which are present in catering kitchens, to multiply and in the case of the latter, to produce toxins. As with all CCPs where the temperature is being monitored, care should be taken to ensure that the temperature probe is clean and disinfected between samples.

CCP	Critical limit	Monitoring	Corrective actions
Chilling	food should be placed in chilled storage within 90 minutes of cooking less than 10°C within 150 minutes	time between cooking and chilling core temperature	discard the food investigate the cause and rectify accordingly

Chilled storage

Perishable foods such as meat and dairy products and cooked foods that are not for immediate consumption should be stored between -1°C and 5°C in a fridge, cold room or other chilling device. These temperature limits are important. *L. monocytogenes* and *Y. enterocolitica*, which may be present in a low percentage of restaurant chillers, will grow and multiply if these temperatures are not maintained. If the chilling is consistently in breach of the critical limits, this may be the result of over stacking. The air in the chilling

unit should circulate freely around the produce so care should be taken when storing food to prevent the development of warm spots.

CCP	Critical limit	Monitoring	Corrective actions
Chilled storage	-1°C to 5°C	check the core and surface temperature of the food in chilled storage at least twice per day (preferably at a busy time of the day)	<p>re chill (if the surface temperature of the food has not reached 10°C or higher)</p> <p>discard the food (if the surface temperature of the food has reached 10°C or higher)</p> <p>high risk deserts: discard the food if the exposure time to temperatures above 5°C exceeds 90 minutes</p> <p>high risk sauces: discard the food if the exposure time to temperatures above 5°C exceeds 150 minutes</p> <p>investigate the cause and rectify accordingly</p>

Frozen storage

Perishable foods may also be maintained at temperatures of -12°C or below. Freezing and frozen food storage may be considered to be a CCP as freezing also prevents growth, multiplication and toxin production by bacterial contaminants.

CCP	Critical limit	Monitoring	Corrective actions
Frozen storage	at or less than -12°C	check the surface temperature of the food in the freezer at least once per day	<p>place in chilled storage or use immediately (if the surface temperature of the food has not reached 10°C or higher)</p> <p>discard the food (if the surface temperature of the food has reached 10°C or higher)</p> <p>investigate the cause and rectify accordingly</p>

Thawing

Frozen foods should be thawed in the chilling device or if necessary using the defrost cycle in a microwave oven. Thawing should never be performed at room temperature as any bacterial pathogens on the surface of the food will have an opportunity to grow, multiply

and may produce toxins. In addition, care should be taken to ensure that the core of the food is fully thawed as a frozen centre may not receive sufficient heat in any subsequent cooking process to ensure the destruction of dangerous pathogens. Thawed foods should be cooked or consumed within 24 hours. This CCP may be defined as follows:

CCP	Critical limit	Monitoring	Corrective actions
Thawing	2°C to 5°C 24 hours or less time between thawing and cooking	core temperature time between thawing and cooking	continue thawing (if the core temperature is less than 2°C) discard the food (if the surface temperature of the food has reached 10°C or higher) investigate the cause and rectify accordingly

Cooking

Cooking is a reliable method of ensuring the safety of food. The scientific literature would suggest that cooking to a core temperature of [1] at least 70°C for at least 2 minutes (Mackey et al., 1990) or [2] achieving at least 75°C (core temperature) are sufficient to destroy bacteria like *Salmonella*, *Campylobacter*, *L. monocytogenes* and *Y. enterocolitica*. Lower cooking temperatures are permissible for gourmet dishes. However, the time-temperature combinations used should be validated to ensure the destruction of bacterial pathogens and these dishes should be consumed within 30 minutes of cooking, unless maintained at 63°C or higher.

CCP	Critical limit	Monitoring	Corrective actions
Cooking	70°C or higher for at least 2 minutes (core temperature) 75°C or higher (core temperature) the use of lower temperatures is permissible if validated & the food is consumed within 30 minutes or held at 63°C or higher	core temperature of each batch (this frequency may be reduced if data has been accumulated which demonstrates that cooking at a given oven / grill / other setting for a defined period of time consistently achieves the critical limits)	continue to cook until the critical limit is achieved discard the product investigate the cause and rectify accordingly

Hot holding

Hot holding is a temporary measure and should be applied for as short a period as possible. Food should be placed in the bain marie or other hot holding device before the temperature decreases to below 63°C and held at this temperature or higher. Failure to comply with these limits will facilitate the growth and toxin production by bacteria like *S. aureus*, *C. perfringens* and *B. cereus*.

CCP	Critical limit	Monitoring	Corrective actions
Hot holding	63°C or higher	core temperature (of each batch) at least once per hour (this frequency may be reduced if data has been accumulated which demonstrates that the hot holding device at a particular setting achieves the critical limits)	increase the temperature of the hot holding device discard the food investigate the cause and rectify accordingly

Reheating

Pre-cooked foods that are not served at chilled temperatures should be heated immediately after removal from chilled storage to a core temperature of not less than 70°C, should not be reheated more than once and should be served within 30 minutes. While reheating will destroy most bacterial cells, pre-formed toxins may remain. Thus, this CCP should be used in conjunction with other CCPs such as chilling and/or hot holding. This CCP is summarised as follows:

CCP	Critical limit	Monitoring	Corrective actions
Reheating food	70°C or above (core temperature) to be achieved immediately serve within 30 minutes or less	core temperature of each batch (this frequency may be reduced if data has been accumulated which demonstrates that reheating at a given oven / other setting for a defined period of time consistently achieves the critical limits)	increase the temperature until the critical limit is reached discard the food investigate the cause and rectify accordingly

Verification

Prerequisites

Verification that the prerequisites are being performed effectively should be achieved through internal audit and microbial checks. The audit should include a review of all records relating to the prerequisite procedures including cleaning records, delivery check records, etc. For the microbial checks, total viable count (TVC) should be performed at least once per year to validate cleaning. TVCs in excess of 1 colony forming unit per square centimetre are unacceptable and if obtained, cleaning procedures and schedules should be reviewed.

Hazard Analysis and Critical Control Point

Verification procedures for HACCP are divided into 3 distinct areas:

1. Each CCP should be validated, as part of verification, to ensure that the CCP, when operated within the defined critical limits, actually achieves the prevention, reduction or elimination of hazards stated in the HACCP plan. This is best achieved in the catering situation by reference to current research data, scientific and technical publications, codes of practice, etc.
2. The records generated as a result of monitoring each CCP should be checked to ensure that each CCP was operating within its defined critical limits for a given period of time. In catering this should be an ongoing process with a record review at least once per week of all records generated since the last review. This should be supplemented by audits of monitoring activities as they are being performed.
3. Internal audits should be performed on a bi-monthly basis. This should include a review of all records relating to the food safety control system(s) including monitoring, corrective action and training records.

Record keeping

Prerequisites

Under the prerequisite programme there should be records for:

1. **Cleaning:** there should be cleaning records, which clearly demonstrate that the cleaning has been performed as per the cleaning schedule.
2. **Delivery inspection:** there should be records for the inspection of food deliveries demonstrating that the required checks were performed and giving the results for checks carried out before goods were accepted by the establishment.

All records should be signed and dated by the person(s) doing the monitoring and by the person responsible for supervising monitoring (e.g. head chef or catering manager) and should be held for at least 2 years or as advised by the national regulatory authority.

Hazard Analysis and Critical Control Point

One of the main requirements of any HACCP plan is accurate record keeping in order to prove that the HACCP plan is being effectively implemented. This applies to monitoring, corrective actions and verification. All of these steps require accurate records, which can be used to assess the efficient working of the system but can also be used to determine important decisions such as frequency of monitoring, verification requirements or to identify changes that could improve the HACCP plan.

Under the catering HACCP plan, there should be records for monitoring, corrective actions and verification of the CCPs.

All records and documents associated with monitoring CCPs should be signed by the person(s) doing the monitoring and by the person responsible for supervising monitoring (head chef or catering manager). HACCP procedures should also be documented, signed and kept by the HACCP team. Documentation examples include hazard analysis, CCP determination and critical limit determination (Anon., 1997). All records should be legible, clearly identified, signed and dated and CCP monitoring records should be held for at least 2 years or as advised by the national regulatory authority. Correspondence, documents or records of inspection, which relate to food safety, from the catering establishment or regulatory authorities should also be held for at least 3 years or as advised by the national regulatory authority.

Glossary

Hazard: A biological, chemical or physical agent with the potential to cause an adverse health effect.

Cross contamination: The direct or indirect transfer of biological, chemical or physical contaminants from raw food or other sources to other food that may cause them to be unsafe for human consumption.

Hygiene: All measures necessary to ensure the safety and quality of food at all stages in the food chain.

Hazard Analysis and Critical Control Point (HACCP): A system which identifies, evaluates and controls hazards which are significant for food safety.

HACCP Plan: A document prepared in accordance with the principles of HACCP to ensure control of hazards which are significant for food safety in the segment of the food chain under consideration.

Decision tree: A sequence of questions which can be applied to identify which process steps are CCPs.

Critical Control Point (CCP): A step at which control can be applied and is essential to prevent or eliminate a food safety hazard or to reduce it to an acceptable level.

Critical limit: A criterion or value which separates acceptability from unacceptability.

Monitoring: A planned sequence of observations or measurements of CCP control measures. The records of monitoring provide evidence for future use in verification that the CCP is under control.

Corrective action: Any action to be taken when the results of monitoring at the CCP indicate a loss of control or trend towards loss of control.

Validation: Obtaining evidence that the elements of the HACCP plan are effective.

Verification: The application of methods, procedures, tests and other evaluations, in addition to monitoring, to determine compliance with the HACCP plan.

Standard Operating Procedure (SOP): A document which defines all the necessary actions that should be followed to ensure that an activity is carried out in a controlled manner.

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Further Advice

Further advice on all aspects of catering food safety and HACCP is available by contacting Dr. Declan Bolton at +353 (0)1 8059523 or by e-mail: dbolton@nfc.teagasc.ie.

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