



Food and Agriculture Organization
of the United Nations

HACCP – STEP 7, PRINCIPLE 2

**DETERMINE CRITICAL
CONTROL
POINTS**

FAO Good Hygiene Practices (GHP) and
Hazard Analysis and Critical Control Point
(HACCP) Toolbox for Food Safety

HACCP – STEP 7, PRINCIPLE 2

DETERMINE CRITICAL CONTROL POINTS

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Technical note for readers

This PDF file has been designed for use of handheld mobile devices in horizontal view.

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DETERMINE CRITICAL CONTROL POINTS

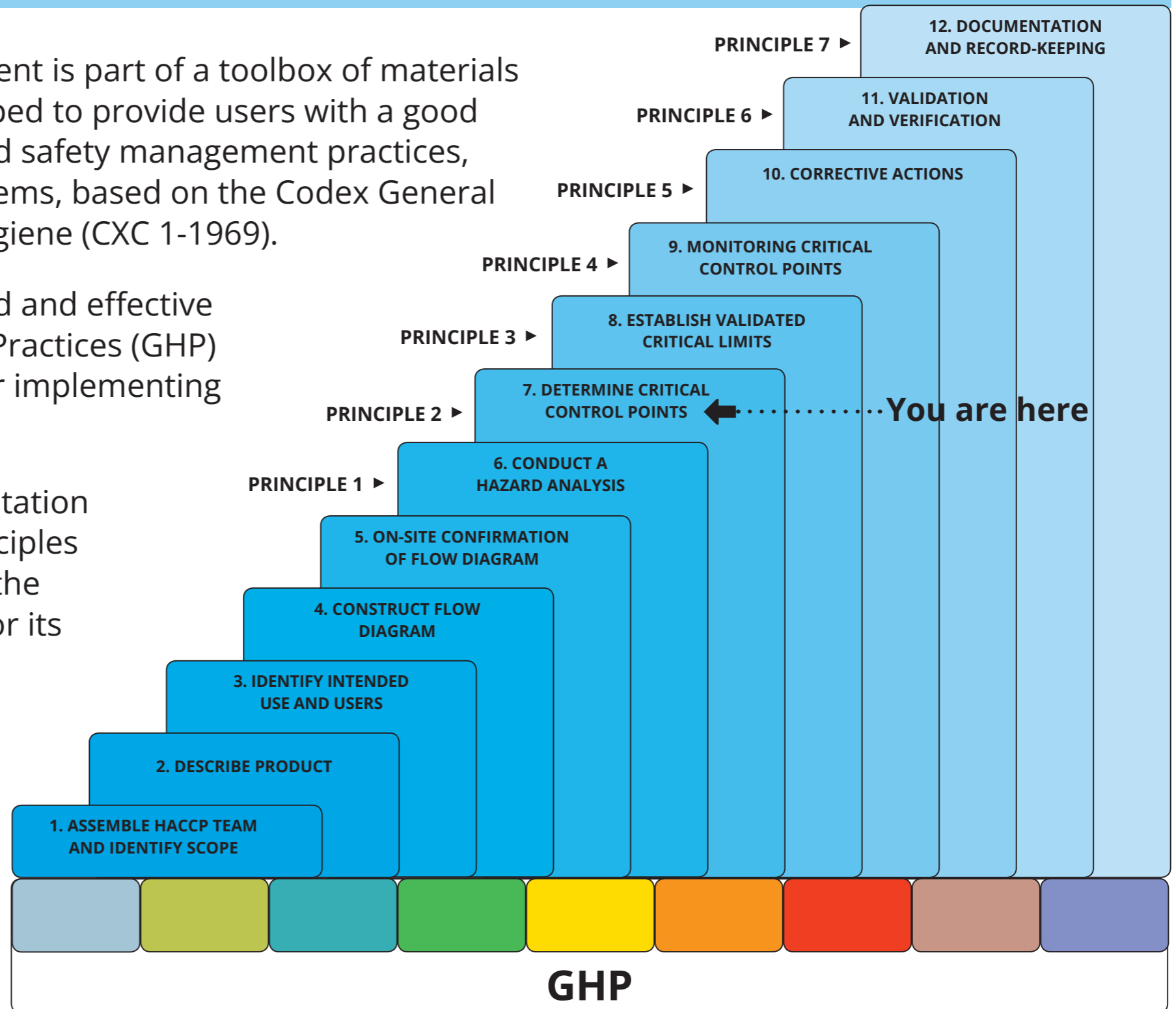
INTRODUCTION

This guidance document is part of a toolbox of materials and has been developed to provide users with a good understanding of food safety management practices, including HACCP systems, based on the Codex General Principles of Food Hygiene (CXC 1-1969).



Well established and effective Good Hygiene Practices (GHP) set the foundation for implementing a HACCP system.

This graphic representation shows the seven principles of HACCP along with the 12 successive steps for its application.



CONTEXT

A **Critical Control Point, or CCP**, is a step at which control can be applied. It is essential to preventing or eliminating a food safety hazard or reducing it to an acceptable level. When trying to determine a CCP, it can be useful to use a decision tree, such as the one included in the Codex General Principles of Food Hygiene (CXC 1-1969). As part of the process of identifying CCPs, all operational process steps should be reviewed since some of them might be fully controlled by applying the prerequisite GHP programmes.

CCPs should be monitored and documented carefully to ensure that hazards can be effectively controlled.

Learning objectives

This document provides guidance on how to:

- understand how to identify a CCP;
- use a decision tree to identify CCPs in a food production process; and



- **document this step as part of the HACCP plan.**

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Principle 2: Determine the Critical Control Points (CCPs)

Codex definitions:

Critical Control Point (CCP): A step at which a control measure or control measures, essential to control a significant hazard, is/ are applied in a HACCP system.

Significant hazard: A hazard identified by a hazard analysis, as reasonably likely to occur at an unacceptable level in the absence of control, and for which control is essential given the intended use of the food.



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A CCP is a step in the process in which one or more control measures are needed to control or eliminate food safety hazards or reduce them to acceptable levels.

Once the controls measures required to prevent food safety hazards or reduce them to acceptable levels have been identified as part of Step 6, they should be further assessed to determine which, if any, should be applied at a CCP. Some hazards are lower risk than others or can be fully controlled by GMPs or prerequisite programmes. Only those steps in a process that are not fully controlled by GMPs and are critical to the safety of the finished product should be considered to determine whether they are CCPs or not. Food business operators should determine whether their process contains one or multiple CCPs that should be controlled.

The expertise, knowledge and judgment of the HACCP team play an important role in CCP identification, given that the team should determine if the measures implemented in each step of the process are sufficient to keep the food safe, or if further controls are needed. If indeed further controls are needed, this step in the process should be considered a CCP.

TIP

Prior to determining CCPs, the hazard analysis completed in Step 6 should be carefully reviewed.



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Things to consider

- Identifying CCPs will only help to ensure food safety if the process of identifying them is based on a sound hazard analysis.
- Wrongly identified CCPs can lead to a false sense of security or to a focus on low-priority controls that will not enhance food safety.
- Identifying CCPs should enable a business to focus on establishing elevated controls at key points in the process.
- The HACCP team should understand that having more CCPs does not necessarily imply that a process is safer. Indeed, it may indicate that the rationale behind the HACCP system has not been well understood or implemented correctly.

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Decision tree for CCP determination

One strategy for CCP identification is to use a decision tree. There are different versions of HACCP CCP determination decision trees available as the format has been adapted to meet the needs and contexts of different sectors within the food industry (e.g. production, slaughter, storage). The CCP decision tree provided below is the format proposed by Codex and should be applied to each step in the process where a specified **significant hazard** is identified. Other similar decision tree formats can be used as long as the general requirements of Step 7 have been met. Other approaches, such as expert consultation, may be used in addition to the decision tree in order to identify CCPs.

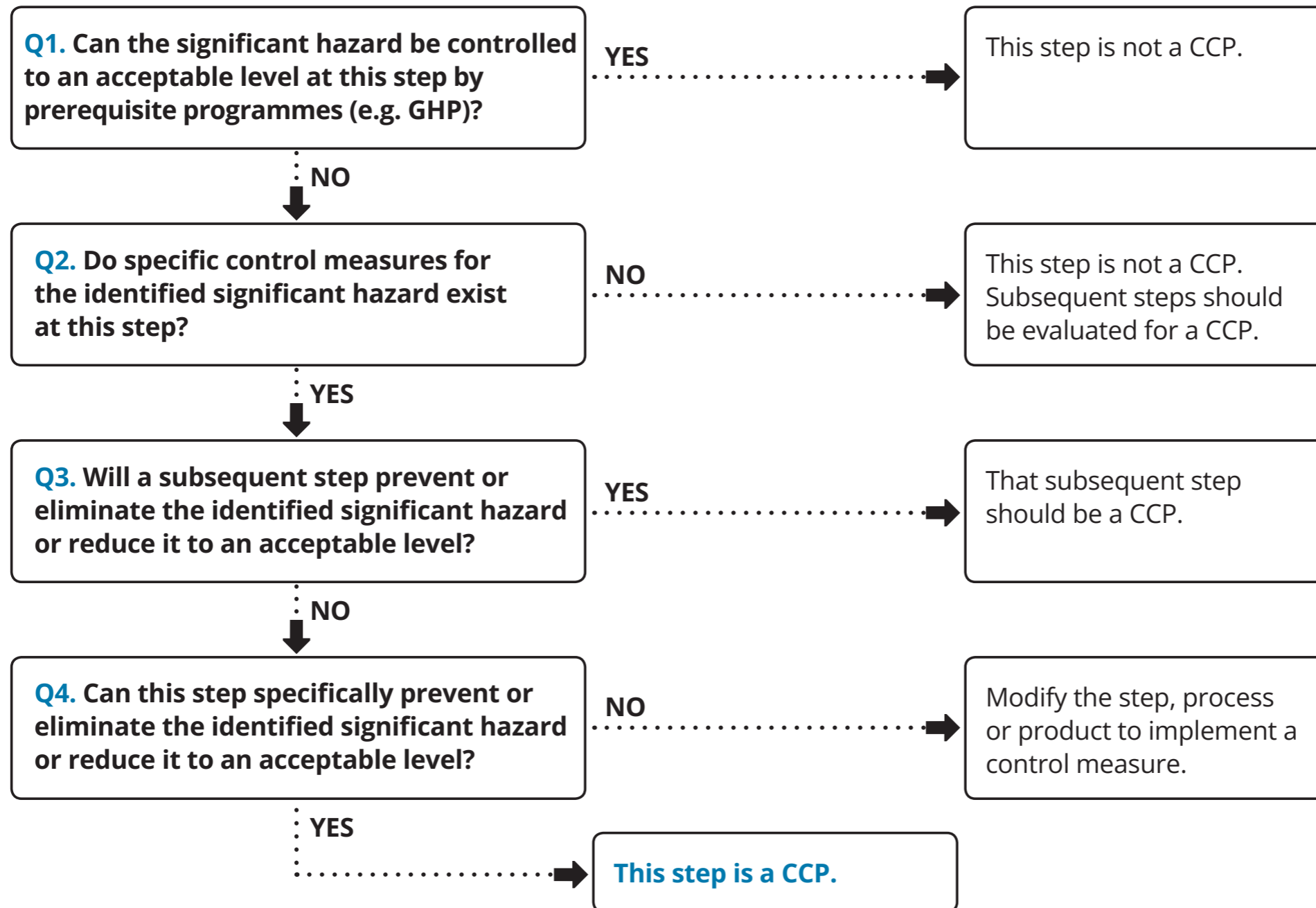
To use this decision tree, the HACCP team should answer the questions in sequence, following the arrows according to the answers. All decisions should be captured in a CCP determination worksheet such as following example provided by Codex.



See Supporting documents for templates and examples.

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Decision tree for CCP determination



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Example of a CCP determination worksheet

(Apply to each step where a specified significant hazard is identified)

Process step	Significant hazards	Q.1 Can the significant hazard be controlled to an acceptable level at this step by prerequisite programmes (e.g. GHP)?*	Q2. Do specific control measures for the identified significant hazard exist at this step?	Q3. Will a subsequent step prevent or eliminate the identified significant hazard or reduce it to an acceptable level?	Q4. Can this step specifically prevent or eliminate the identified significant hazard or reduce it to an acceptable level?***	CCP number
<i>Identify process step</i>	<i>Describe hazard and cause</i>	<i>If yes, this step is not a CCP. If no, proceed to Q2.</i>	<i>If yes, proceed to Q3. If no, this step is not a CCP. Subsequent steps should be evaluated for a CCP.**</i>	<i>If yes, that subsequent step should be a CCP. If no, proceed to Q4.</i>	<i>If yes, this step is a CCP. If no, modify the step, process or product to implement a control measure.****</i>	<i>Number the CCP and include in HACCP worksheet.</i>

cont.

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- * Consider the significance of the hazard (i.e. the likelihood of occurrence in the absence of control and the severity of impact of the hazard) and whether it could be sufficiently controlled by prerequisite programmes such as GHP. GHP could be routine GHP or GHP that require greater attention to control the hazard (e.g. monitoring and recording).
- ** If a CCP is not identified at questions 2-4, the process or product should be modified to implement a control measure and a new hazard analysis should be conducted.
- *** Consider whether the control measure at this step works in combination with a control measure at another step to control the same hazard, in which case both steps should be considered as CCPs.
- **** Return to the beginning of the decision tree after a new hazard analysis.

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Determine CCPs

Regardless the approach used to identify CCPs, it is necessary to determine whether the control measure can be used at the process step being analysed.

- ➔ **If the control measure cannot be used at this step, then this step should not be considered a CCP for the significant hazard.**
- ➔ **If the control measure can be used at the step, but can also be used later in the process to control the same hazard, or there is another control measure for the same hazard at another step, the step being analysed should not be considered a CCP.**

Additionally, if a control measure at a step in the process is used in combination with a control measure at another step to control the same hazard, both steps should be considered CCPs.

There may be more than one CCP in a process at which controls are applied to address the same hazard. (For example, the cooking step may be the CCP for killing the vegetative cells of a pathogenic spore former, and the cooling step may be the CCP to prevent spore germination and growth.) Similarly, a single CCP may control more than one hazard. (For example, cooking can be a CCP for addressing several microbial pathogens.)

If no control measure exists at any step for an identified significant hazard, then the product or process should be modified and the unaddressed hazard should be documented.

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Documenting CCPs

The CCPs identified can be summarized in a table, as well as noted in the appropriate hazard identification form or process step in the flow diagram from Steps 4, 5 and 6.

CCPs could be identified numerically with a category qualifier B, P or C for biological, physical or chemical. For example, if the first CCP identified will control a biological hazard, it can be recorded as CCP-1 (B). If the second CCP identified will control a chemical hazard, it can be recorded as CCP-2 (C). If the fifth CCP will control both a biological and a chemical hazard at the same processing operation, it can be recorded as CCP-5 (BC). This identification protocol allow CCPs to be identified sequentially, and readily allows the user of the HACCP plan to see which type(s) of hazard need(s) to be controlled at a particular process operation.



How the CCP was identified and where it is placed in the process should be documented in the HACCP plan. **See Supporting documents for templates and examples.**

HACCP STEP 7

Unaddressed hazards

At times, hazards are identified during the hazard analysis for which no processing step exists to prevent or eliminate them, even if the process is redesigned. An example would be the presence of chemical hazards (such as veterinary drugs) in meat, which cannot be eliminated by any process along the value chain. If it is probable that foods will contain residues of veterinary drugs or other chemical hazards above safe limits, hazard control will rely solely on sourcing safe raw materials. In this case, the HACCP team might decide to elevate the sourcing of raw materials to CCP level in order to lower the risk of the presence of chemical hazards in the final product.

Higher levels of control require sufficient resources

The higher levels of control necessary for CCPs may require additional technological and human resources (such as measuring equipment and personnel to oversee processes at CCPs). Should such resources not be available, there may be insufficient control at CCPs, jeopardizing food safety. As such, CCPs should be identified with care and food businesses should design controls in such a way that they can be carried out as required with the resources available.

Each set of CCPs is unique to a specific food and food process and should never be copied as is for use in another food or food process, even if the two are similar.

HACCP STEP 7

The following are examples of possible significant hazards at different points along the food chain that require heightened controls and that should be considered CCPs.

Processing step	Examples of possible CCPs
Raw materials and primary production	<ul style="list-style-type: none"> • antibiotic use: Are the antibiotics approved for use and timing / withdrawal periods • pesticide use: Are the pesticides approved for use and timing / preharvest intervals
Ingredient receiving and handling	<ul style="list-style-type: none"> • storage and handling of sensitive raw materials • verifying certificates of analysis • bulk receiving systems
Processing	<ul style="list-style-type: none"> • product formulation (pH, a_w, nitrites) • the reintroduction of rework (allergens) • labelling of work in progress or finished products (allergens) • thermal processes (cooking) • critical processing steps (chilling, freezing, salting, ageing)
Packaging	<ul style="list-style-type: none"> • technologies to extend shelf life (modified atmosphere packaging, or MAP) • metal detection • tamper-evident packaging • labelling (allergens, cooking instructions)
Distribution	<ul style="list-style-type: none"> • time and temperature (at loading and during transport)
Sale and consumption	<ul style="list-style-type: none"> • storage (temperature and time) • preparation (cooking)

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Processes operations with no CCPs

In some cases, no CCPs are identified. There are a number of reasons why this may occur:

- CCPs were missed due to insufficient hazard analysis.
- The process is low risk and the product undergoes very little processing.
- All hazards are controlled by GMPs or prerequisite programmes.

If the HACCP team correctly determines that there are no CCPs in a given process this does not mean that the HACCP process was conducted in vain nor that the HACCP team should be disbanded.


The absence of CCPs means that HACCP Principles 3 through 5 and HACCP steps 8, 9 and 10 (Critical Limit, Monitoring CCPs and Corrective Actions) do not need to be considered, and the HACCP team can move directly to Principle 6/Step 11 which covers the validation and verification of the HACCP system. Despite the absence of CCPs, the food business should capture the assessment of the hazards, the decisions made and their rationale on the CCP determination worksheet.



It is important to document the CCPs and review them frequently. Any changes in the process requires a review of the HACCP system and may require the introduction of new CCPs.

DETERMINE CRITICAL CONTROL POINTS

EXERCISE: FOOD SAFETY FOR THOUGHT

<p>This is the little “game” we created. This will apply to all HACCP steps, except the intro.</p>	<p>GHP PROGRAMMES </p> <ul style="list-style-type: none"> <li data-bbox="990 615 1511 711">1. INTRODUCTION AND CONTROL OF FOOD HAZARDS <input type="checkbox"/> <li data-bbox="990 748 1511 844">2. PRIMARY PRODUCTION <input type="checkbox"/> <li data-bbox="990 880 1511 977">3. ESTABLISHMENT - DESIGN OF FACILITIES AND EQUIPMENT <input type="checkbox"/> <li data-bbox="990 1013 1511 1109">4. TRAINING AND COMPETENCE <input type="checkbox"/> <li data-bbox="990 1146 1511 1242">5. ESTABLISHMENT MAINTENANCE, DISINFECTION, AND PEST CONTROL <input type="checkbox"/> <li data-bbox="990 1279 1511 1375">6. PERSONAL HYGIENE <input type="checkbox"/> <li data-bbox="990 1412 1511 1508">7. CONTROL OF OPERATION <input type="checkbox"/> <li data-bbox="990 1545 1511 1641">8. PRODUCT INFORMATION AND CONSUMER AWARENESS <input type="checkbox"/> <li data-bbox="990 1678 1511 1774">9. TRANSPORTATION <input type="checkbox"/> 	<p>Please explain your choices.</p>
<p>7. DETERMINE CRITICAL CONTROL POINTS</p>		
<p>GHP are fundamental to the successful application of HACCP.</p> <p>Think of a food operation that you are familiar with, and select those GHP elements that you feel are most relevant for the application of HACCP step 7.</p>		

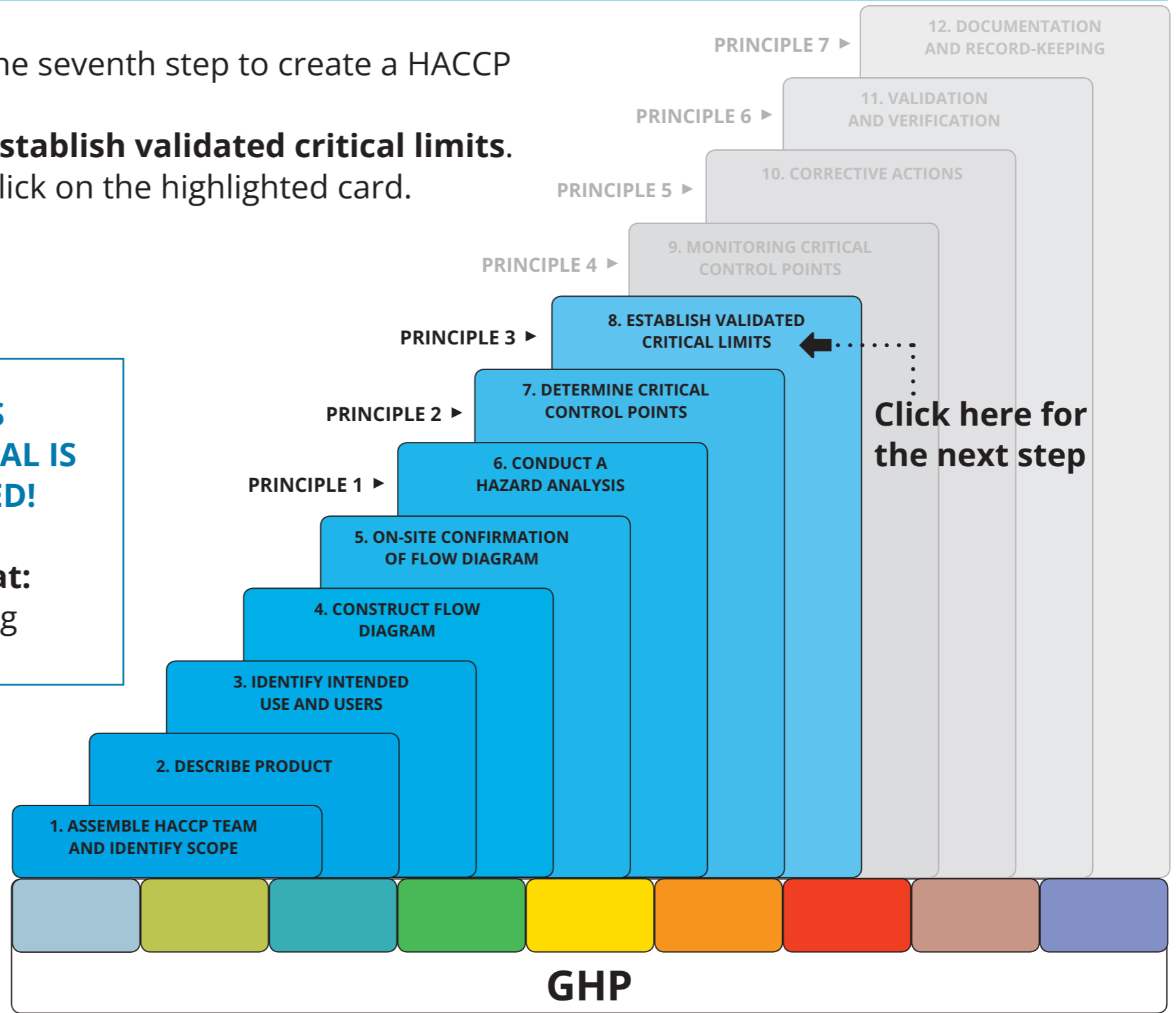
DETERMINE CRITICAL CONTROL POINTS

KEEP READING

You have completed the seventh step to create a HACCP system.
The next step will be **Establish validated critical limits**.
To continue reading, click on the highlighted card.

FEEDBACK ON THIS GUIDANCE MATERIAL IS ALWAYS WELCOMED!

Please contact us at:
food-quality@fao.org



KEEP READING

[GHP and HACCP Toolbox for Food Safety](http://www.fao.org/good-hygiene-practices-haccp-toolbox)

www.fao.org/good-hygiene-practices-haccp-toolbox

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