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|  | **PRINCIPLES OF HACCP**In order to enhance food safety, every stage of the food production (from purchasing, receiving, transportation, storage, preparation, handling, cooking to serving) should be carried out and monitored scrupulously. The HACCP system is a scientific and systematic approach to identify, assess and control of hazards in the food production process. With the HACCP system, food safety control is integrated into the design of the process rather than relied on end-product testing. Therefore HACCP system provides a preventive and thus cost-effective approach in food safety. The seven principles of a HACCP System are-

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| 1. | [Analyze hazards](http://www.cfs.gov.hk/english/programme/programme_haccp/programme_haccp_7requirement.html#p1) |
| 2. | [Determine critical control points](http://www.cfs.gov.hk/english/programme/programme_haccp/programme_haccp_7requirement.html#p2) |
| 3. | [Establish limits for critical control points](http://www.cfs.gov.hk/english/programme/programme_haccp/programme_haccp_7requirement.html#p3) |
| 4. | [Establish monitoring procedures for critical control points](http://www.cfs.gov.hk/english/programme/programme_haccp/programme_haccp_7requirement.html#p4) |
| 5. | [Establish corrective actions](http://www.cfs.gov.hk/english/programme/programme_haccp/programme_haccp_7requirement.html#p5) |
| 6. | [Establish verification procedures](http://www.cfs.gov.hk/english/programme/programme_haccp/programme_haccp_7requirement.html#p6) |
| 7. | [Establish a record system](http://www.cfs.gov.hk/english/programme/programme_haccp/programme_haccp_7requirement.html#p7) |

**Principle 1 – Conduct a Hazard Analysis**Effective hazard identification and hazard analysis are essential to the development of a successful **HACCP plan**.Firstly, the HACCP Team must think about the product and process to identify all hazards (biological, physical and chemical) that may be reasonably expected to occur at each step in the production process. A “hazard” is anything which may cause harm to your customers. There are three types of hazards: biological, chemical and physical. a. **Biological Hazards** Biological hazards include food poisoning bacteria such as Salmonella, E. coli and Bacillus cereus, which are hazardous because they can:- • survive inadequate cooking • multiply to harmful levels in food given the right conditions • spread from raw foods to ready to eat foods (cross contamination) b**. Chemical Hazards** Chemical hazards may be present on certain foods in the form of pesticides or cleaning residues. Chemical hazards may also arise from incorrect storage and misuse of cleaning chemicals or rodent bait. Not using food grade equipment may also contaminate the food. c. **Physical Hazards** Physical hazards include contamination from foreign bodies like glass, wood, metal, hair, flies etc. To identify all the hazards associated within your business, you may wish to consider what process steps are applicable to your business. You will then need to think about the three hazards at each stage/process step of food preparation. Process steps: this is a stage in the business operation to produce certain foods. You will need to think what stages are applicable to specific food preparation. For example;- · purchase/receipt/collect, delivery, storage, preparation, cooking, cooling, storage, packaging, service etc.**When identifying hazards it is necessary to consider:**· Hazards introduced by inputs at each step· Hazards introduced as a consequence of applying the process step itself (e.g. metal fragments from processing equipment)· Hazards carried over in the product from the previous step· Adverse impacts of process steps on existing hazards (e.g. growth of microorganisms).Secondly, the HACCP Team must carry out a hazard analysis to identify for the HACCP plan which hazards are of such a nature that their elimination or reduction to acceptable levels is essential to the production of safe food.Thirdly, the HACCP Team must consider what control measure(s), if any, exist which can be applied for each hazard.**Principle 2 – Determine the Critical Control Points (CCPs)**A Critical Control Point (CCP) is a step at which control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level.The HACCP team must evaluate whether there are any CCPs in the process and whether there is more than one CCP for controlling hazards. It is imperative that CCPs are determined logically and carefully as this is the most important principle of HACCP.As well as the HACCP team's professional judgments, expertise and knowledge of the process, a CCP Decision Tree can be used to help determine if a process control measure is a CCP.**For example**: Critical limit for the storage of foods in a fridge. * 0 < > 5oC this is good practice but the food stored at this temperature is not critical
* 8oC this is the critical limit
* 10oC this has exceeded the critical limit and is potentially unsafe

**Principle 3 – Establish Critical Limit(s) for Each CCP**Critical Limits are criterion which separates acceptability from unacceptability at a CCP.The HACCP Team must define and justify critical limits for each CCP. In some processes, more than one critical limit may be needed at a particular step. Setting critical limits (or the amount of acceptable deviation for each CCP) allows evaluation of when a CCP is out of control and when product safety is compromised.Critical limits must be measurable and they should be parameters that can be effectively monitored on an on-going basis. Common parameters used for critical limits include measurements of temperature, time, moisture level, pH, water activity, available chlorine and sensory parameters such as visual appearance and texture.**Principle 4 – Establish a System to Monitor Control of Each CCP**Each CCP must be monitored to confirm that critical limits at each CCP are being met and food safety ensured. Monitoring methods must be able to quickly detect a loss of control at a CCP in order to enable corrective actions to be taken immediately. Common CCP monitoring procedures involve visual observations, aroma, and measurements of temperature, time, pH and moisture.If monitoring is not continuous, the monitoring frequency chosen must be sufficient to ensure the adequate and consistent control of each CCP.**Principle 5 – Establish the Corrective Action to be Taken when Monitoring Indicates that a Particular CCP is Not Under Control**Specific procedures must be developed for each CCP to describe what corrective action will be taken if monitoring indicates that critical limits are not being met and a CCP in not under control.Corrective action procedures should include the following information:· Person responsible for taking corrective action· How to regain control at a CCP· What to do with the product produced during the period of loss of control· Action to prevent the problem from happening again· Escalating response if preventative action fails· Records to be kept.For example: the fridge temperature is 10oC. Your corrective action may state to; Re-monitor in one hour, relocate the food to another fridge operating at or below 8oC, call the manager/owner, call the fridge engineer. **Principle 6 – Establish Procedures for Verification to Confirm that the HACCP System is Working Effectively**Verification is the application of methods, procedures, tests and other evaluations, in addition to monitoring to determine compliance with the HACCP plan.Verification procedures must be established to check that the **HACCP system** is working effectively. The frequency of verification should be sufficient to confirm that the HACCP system is working correctly and consistently.HACCP system verification activities include:* .Review of the HACCP system and its records
* Observation of operations at CCPs
* Asking employees questions, especially those that monitor CCP
* Routine checks of monitoring procedures and equipment
* Review of critical limit deviations and non-conforming product handling and dispositions
* Internal auditing of the HACCP system
* External 3rd party auditing of the HACCP system
* Microbiological sampling of product contact surfaces
* Microbiological sampling of the product
* Official evaluation of the product.

**Principle 7 – Establish Documentation Concerning all Procedures and Records Appropriate to these Principles and their Application**Accurate documentation and records must be developed as they are an essential part of HACCP. Hand written and computer records are equally acceptable, but documentation and record keeping does need to be appropriate to the nature and size of the operation.Examples of documentation and records are:* Original HACCP study (e.g. HACCP Team, product description, hazard analysis, CCP determination, identification and selection of critical limits etc.)
* CCP monitoring activities
* Critical limit deviations and the associated corrective actions taken
* Verification procedures
* Internal and external audits
* HACCP system reviews and modifications.

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