Step by step instructions for completing your HACCP Study

Please note, there are many ways present information in a HACCP study. This is just a guide and explains one way to achieve this.

All examples included are in red type, these are examples, no attempt has been made to validate the accuracy of information supplied. Examples provided are not complete, they are just a guide.

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Foreword

- This is a GUIDE as to how to complete your study.
- It provides useful information and tables you may wish to use, especially formats and table layouts etc
- Your study DOES NOT have to be presented in this way, it may be that you wish to follow the corporate layout for your company, but it may still provide some useful information.
- The examples provided are just that.
    - The examples provided are not complete or detailed enough, it is a good idea to include explanations in your study, even if just as an appendix.
    - It may be that they are not technically correct for your process, just because I have put them in doesn't mean they are necessarily right for you.
    - Remember I don't work for your company and don't know your process.
- You need to base your decisions on fact.
    - Use complaint analysis
    - Use technical information regarding bacteria
    - Look at the PHLS guidelines regarding bacteria
    - Use textbooks
    - Ask me –I know about HACCP and Food Safety, but may not know your process and therefore your hazards in depth, I may be able to guide you as to where to find out though.

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HACCP STUDY: (*name of product/product types in here*)

First of all we look at the terms of reference – really this is just an introduction – it sets the scene. I have given you the headings in bold, you need to put the stuff in italics into your own words and expand a little!

1. Introduction/Terms of reference

Describe the product	• *Common name* • *Brief description (a bit like you would see on the label of products)* • *Shelf life* • *Storage conditions – (ambient, chilled, frozen)*
Intended Market	*Outline any at risk groups or just say for sale thropugh retail oulets to the general public etc.*
Hazards Considered	*Microbiological, physical and chemical hazards which may cause harm or illness will be considered throughout the study, spoilage organisms are not considered in this study*
Intended distribution	*Explain in here where the product is going i.e into retail outlets or international, supermarkets or both*
Scope of the plan	*In here put in start and end points – where you are going to judge the product as being safe, for example start at purchase and end at receipt at shops*
HACCP team	*Names and what they do in here*
Type of study	*Due to the nature of this product it has been determined to adopt a process led/ product led (delete as required) approach in order to make the study more manageable, particularly with respect to implementation.*
Pre-requisites **The company already has in place a number of generic controls as outlined opposite, these are in place at all steps and to avoid repetition they have been taken out of the plan.**	• *Pest control* • *Suitability of design* • *Routine planned preventative maintenance (ppm)* • *Cleaning schedules and routines* • *Personal hygiene policy inc hand wash, reporting illness, uniform etc* • *Waste management* • *Glass policy* • *Training* • *Meeting requirements under the relevant legislation* • *Any other you think of!* ***** you need to explain a little about each one*****

Next you need to develop your flow chart

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Flow of Food through the process

- Make sure you show each step and include any checks like metal detection, optical scanning and X-ray but not other monitoring at this stage
- Don't go too fast – we are doing this in a logical sequence, as the study progresses it almost layers onto itself – you need to show that you are looking objectively and aren't jumping to conclusions with regard to controls, monitoring and especially what should or shouldn't be a CCP.
- Flow charts are often easier to do if you have a central spine for the main processes (if you are lucky enough to have Microsoft Visio, use the basic flowchart model), otherwise excel isn't bad.
- Remember all steps including holding steps and although you shouldn't be too specific with temps etc. do say if they are hot, chill or frozen
- Remember re-work loops
- Is it correct for all occasions? What about nightshift and breakdowns etc?
- Some useful 'process' words

intake	store	assemble	bake
cook	cool	despatch	mix
purchase	pack	prepare	hold
chill	freeze		

None of these are difficult, you may use other terms in your business, but for some reason people struggle with wording, so here are some examples to help you.

Now you need a statement in to say you have verified that the flow is correct by 'walking the line'

Hazard Analysis

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List all the steps you have identified and identify all the hazards that could reasonably happen. (you may need technical/scientific advice here with regard to likely bacteria and how they act to cause food poisoning).
Again don't jump too far ahead and make this too detailed or make assumptions
When you have gone through each step you need to add on any effects process delays may have (they are not actually steps, but may affect the safety of the product)
Don't even start to decide if they are critical yet – it's really hard to go slowly I know, but it is important.

Example:

Step	**Micro Hazards** **C = Contamination** **M = Multiplication** **S = Survival (if we have tried to destroy them, for example possibility of spores surviving)**
Intake of raw ingredients	*Salmonella/Campylobacter in raw diced chicken(C)* *Food not put into chill unit immediately (G)* *Incorrect storage – damaged packaging, in wrong chill unit (C)*
	Physical Hazards
	Ingress of pests due to damaged packaging *Packaging materials falling into product when decanted* *Chicken bone* *Feathers*
	Chemical Hazards
	from cleaning chemicals *excess antibiotic*

You need to do this for each step – it is the part that is likely to take the longest and can seem very repetitive, but it is important you don't miss something out.

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Controls

Now you need to add to the table and put in the controls (often this and the step before are done together, but whilst you are still learning it's easier to split them)

For every hazard you have identified you need to put in controls – again don't be tempted to decide if they are critical or not yet. The chances are they will be CP's (Control points, rather than CCPs)

It is important that every hazard identified has some sort of control –if it hasn't you need to look at your processes again and build them in.

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Step	Micro Hazards C = contamination M=Multiplication S = survival (if we have tried to destroy them, for example possibility of spores surviving)	Controls
Intake of raw ingredients	*Salmonella/Campylobacter in raw diced chicken(C)* *Food not put into chill unit immediately (G)* *Incorrect storage – damaged packaging, in wrong chill unit (C)*	*Purchase from reputable supplier* *Specifications on contamination levels of raw chicken and antibiotic levels (cert of conformity)* *Temperature of product not to exceed 8C* *Designated time slots for deliveries, food into chill within 30 minutes* *Designated chill unit for raw meat*
	Physical Hazards	
	Ingress of pests due to damaged packaging *Packaging materials falling into product when decanted* *Chicken bone* *Feathers*	*Visual check of packaging and for pests* *Visual check for bone/feathers* *Specified packaging (highly visible) to ensure easily detected if it falls into product*
	Chemical Hazards	
	from cleaning chemicals *excess antibiotic*	*Storage away from chemicals* *Rinsing after cleaning*

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Determining Significance

OK, once you have done that it's time to decide if the hazard is significant or not – if you don't do this then you could end up with something very trivial becoming a critical control point. No matter how many scientific and mathematical you try to be it's the point where people often start to disagree!
What may not be important one day may be the next especially if there are new scientific findings etc. For example 10 years ago we wouldn't really be bothered about E.coli, but now strains such as 0157 and 0104 cause significant concern. This is one reason why we need to review often.

Factors to consider:

	High	Medium	Low	Score
Identified Market & no of people likely to be affected	3 high risk groups international/ National distribution	2 No identified specific high risk groups International/national distribution	1 No identified specific high risk groups Local / limited distribution	
Severity if hazard does become realised (info gained through complaints, national reports, comparisons with other similar industries scientific knowledge)	3 death, severe illness	2 Food poisoning, injury	1 complaint but no injury illness	
Likelihood of it occurring (info gained through complaints, national reports, comparisons with other similar industries scientific knowledge)	3 very likely	2 moderately likely	1 unlikely	

Score by **multiplying** together and if above 3 then it is significant .
When you have scored them you put this information onto your chart. Its definitely worth keeping a record and justification of the decisions you have made how you determined significance.

	Micro Hazards C = contamination M = multiplication S = survival (if we have tried to destroy them, for example possibility of spores surviving)	Controls	Risk rating Score	Significant?
Intake of raw ingredients	*Salmonella/Campylobacter in raw diced chicken(C)* *Food not put into chill unit immediately (M)* *Incorrect storage – damaged packaging, in wrong chill unit (C)*	*Purchase from reputable supplier* *Specifications on contamination levels of raw chicken and antibiotic levels (cert of conformity)* *Temperature of product not to exceed 8C* *Designated time slots for deliveries, food into chill within 30 minutes* *Designated chill unit for raw meat*		*Y*
	Physical Hazards			
	Ingress of pests due to damaged packaging *Packaging materials falling into product when decanted* *Chicken bone* *Feathers*	*Visual check of packaging and for pests* *Visual check for bone/feathers* *Specified packaging (highly visible) to ensure easily detected if it falls into product*		*Y*
	Chemical Hazards			
	from cleaning chemicals *excess antibiotic*	*Storage away from chemicals* *Rinsing after cleaning*		*N*

Finally its time to determine whether a step is critical or not.

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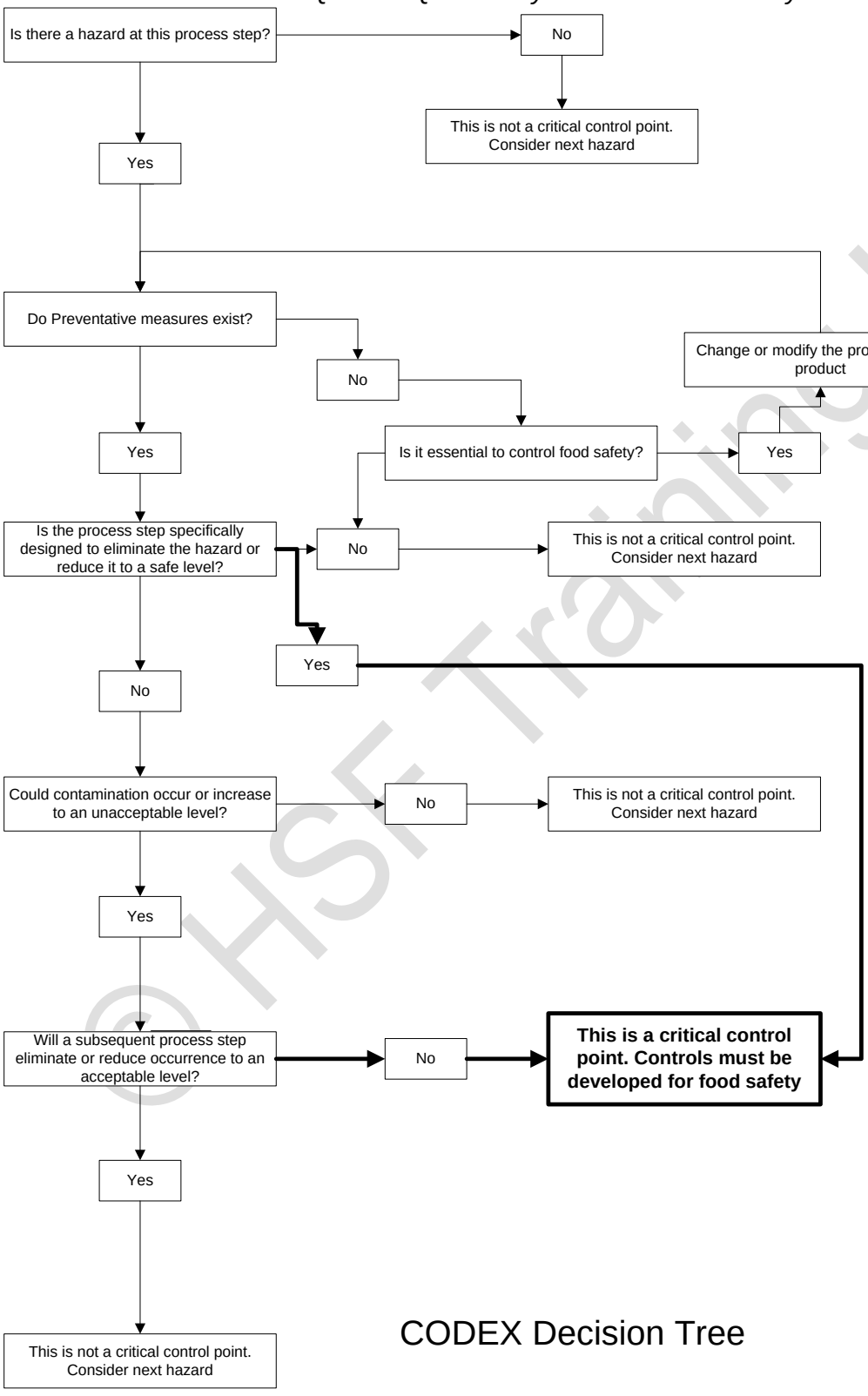
Determining Critical Controls

- *Here you ONLY consider those hazards you have determined to be Significant, leave the others behind!!!*
- *Say you are using the chart identified below*
    - *The answer to Q1 AND Q2 will be yes as we have already worked this out!*



CODEX Decision Tree

For Example:

STEP	HAZARD	Q1	Q2	Q3	Q4	CCP?
	Microbial Hazards					
Intake of raw ingredients	*Salmonella/Campylobacter in raw diced chicken(C)* *Food not put into chill unit immediately (M)* *Incorrect storage – damaged packaging, in wrong chill unit (C)*	***Y***	***Y***	***Y***	***-***	***N***
	Physical Hazards					
	Ingress of pests due to damaged packaging *Packaging materials falling into product when decanted* *Chicken bone* *Feathers*	***Y***	***Y***	***Y***	***-***	***N***

STEP	HAZARD	Q1	Q2	Q3	Q4	CCP?
	Microbial Hazards					
Cooking	*Survival of Bacteria due to incorrect processing*	***Y***	***Y***	***N***	***Y***	***CCP***

NB – if the answer to Q3 is yes and the answer to Q4 is EVER no then it is not acceptable as you may be producing an unsafe product and so you need to alter the production method, there are no ifs or buts about this, you **MUST** change the process to make it safe.

Establishing Critical Controls and Parameters

- For each CCP we need tight limits and controls, if you can't control the CCP then you need to change the process!
- A critical limit is a value that can be met for each control measure, when a limit is met you need a corrective action
- This means critical limits must be measurable – for example time, temp, pH, you could also use colour (so long as there is something to judge against, or texture etc.
- Although sampling and swabbing is useful we don't use it for monitoring often as it takes a while to get the results back. (if it is used it is on products which are not 'just in time' i.e. frozen or those which can be held safely until positively released)

Step	Control & Limit
Cook **CCP**	*Thermal death point of likely pathogens achieved* *- temperature rise to 72^{o}C for 2 minutes* *Decant cooked food into clean container, using clean utensils (max ATP count 100)*
Cool **CCP**	*Minimum time in 'danger zone'* *- cooled to below 15^{o}C in 1.5 hours* *Clean environment (max ATP count 35)* *Separation from raw foods (no contact)*
Portion **CCP**	*Controlled personnel and hand wash (1 x hourly)* *Clean utensils (max ATP count 100)* *Separation from raw foods (no contact)*
Store **CCP**	*Cold storage at 8^{o}C or below* *No food beyond date mark* *Chillers clean (max ATP count 100)* *Dedicated chillers – separation from raw food*
Display **CCP**	*Cold display at 8^{o}C or below* *Maximum 48 hours post cooking* *Chillers clean (max ATP count 50)* *Maximum amount on display 1 2kk display container – no 'topping up'* *Separation from raw food (no contact)*

That seems great BUT we really don't want production to run close to the Critical limit all the time, as when we reach this the process is out of control and the likelihood is that we will have to reject the product.

To avoid this we put in some 'targets'. If you like, these are the controls are a bit like traffic lights:

- → Hit the target = **green** for go, carry on producing
- → Exceed the target = **amber**, take some action to avoid having a problem
- → Hit the Critical Limit = **red**, stop! Process out of control – it's often too late now, product may be unsafe

What happens here is that it gives you a chance to sort things out before the critical limit is met. For example if a chiller is running at 6 or 7 you have time to turn it down before food goes into temperatures which are not acceptable.

Step	Target	Critical Limit
Cook **CCP**	*75C for 2 mins* *ATP <30*	*Thermal death point of likely pathogens achieved* *- temperature of 72°C for 2 minutes* *Decant cooked food into clean container, using clean utensils (max ATP count 35)*
Cool **CCP**	*Cool to below 8C in in 1.5 hours* *ATP < 25*	*Minimum time in 'danger zone'* *- cooled to below 15°C in 1.5 hours* *Clean environment (max ATP count 100)* *Separation from raw foods (no contact)*
Portion **CCP**	*ATP < 30*	*Controlled personnel and hand wash (1 x hourly)* *Clean utensils (max ATP count 100)* *Separation from raw foods (no contact)*
Store **CCP**	*Cold storage < 5C* *ATP < 20*	*Cold storage at 8°C or below* *No food beyond date mark* *Chillers clean (max ATP count 100)* *Dedicated chillers – separation from raw food*
Display **CCP**	*Cold Display <5C* *24 hours post cooking* *ATP <20*	*Cold display at 8°C or below* *Maximum 48 hours post cooking* *Chillers clean (max ATP count 50)* *Maximum amount on display 1 2kk display container – no 'topping up'* *Separation from raw food (no contact)*

Establishing monitoring

- We do this to:
  1. confirm a CCP is under control
  2. trigger corrective actions
  3. generate a record to help prove due diligence if necessary
- May be continuous or set frequencies
- Remember often the equipment needed to measure needs to be calibrated
- In order to be effective we need to include:
  1. What the critical limit is
  2. Describe the monitoring including calibration
  3. Where the monitoring is (i.e. the step)
  4. Who should carry out the monitoring
  5. When it needs to be monitored – frequency, etc.

After that we need to:

Establish Corrective Actions

(Not too much more to do now I promise!)

- If it has all gone wrong we need to do something!!
- We have 2 kinds of corrective action:
  - Product – what we do with the product now everything has gone wrong
  - Process – what we do to make sure it doesn't happen again!
- We also need to identify who should carry out the corrective action

For examples see next two charts.

CCP	STEP	CONTROL	TARGET	CRITICAL LIMIT	MONITORING	RESPONSIBLE FOR MONITORING	FREQUENCY
CCP 4	*Meat Cook*	*Follow recipes Product cooked under pressure to 92C Regular cleaning to ensure no old product left in cooking vessel (rinsed after 5 batches, full clean after 11 batches, deep clean 2 x weekly)*	*92C for 30 mins*	*85C for 30 mins*	*Temperature gauge calibrated PC Recipe selection checked*	*Technical department Operator*	*Weekly Each cook*
CCP 5	*Meat Cool*	*Regular cleaning to ensure no old product left in cooking vessel (rinsed after 5 batches, full clean after 11 batches, deep clean 2 x weekly) ATP testing Cool to 15°C in 2.5 hours*	*15°C within 1.5 hours ATP<25*	*15°C within 2.5hours . ATP < 50*	*Temperature of cool unit display – auto system Used in specified parameters ATP*	*Technical Department Engineering contractors Hygiene team*	*Automated monitoring each batch Calibrated internally weekly, externally 6 monthly After each clean*

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CCP	STEP	CONTROL	TARGET	CRITICAL LIMIT	MONITORING	RESPONSIBLE FOR MONITORING	FREQUENCY	CORRECTIVE ACTION/ PROCEDURE	RESPOSIBILITY FOR CORRECTIVE ACTION
CCP 4	*Meat Cook*	*Follow recipes Product cooked under pressure to 92C Regular cleaning to ensure no old product left in cooking vessel (rinsed after 5 batches, full clean after 11 batches, deep clean 2 x weekly)*	*92C for 30 mins*	*85C for 30 mins*	*Temperature gauge calibrated PC Recipe selection checked*	*Technical department Operator*	*Weekly Each cook*	*Retest Reject product/ inform technical regarding re-clean*	*Technical Department*
CCP 5	*Meat Cool*	*Regular cleaning to ensure no old product left in cooking vessel (rinsed after 5 batches, full clean after 11 batches, deep clean 2 x weekly) ATP testing Cool to 15°C in 2.5 hours*	*15°C within 1.5 hours ATP<25*	*15°C within 2.5hours . ATP < 50*	*Temperature of cool unit display – auto system Used in specified parameters ATP*	*Technical Department Engineering contractors Hygiene team*	*Automated monitoring each batch Calibrated internally weekly, externally 6 monthly After each clean*	*Continue to cool in unit up to 3 hours discharge and Quarantine / investigate / release /reject*	*Technical Department*

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Establish Documentation

- All records & documents associated with CCPs need to be signed by the person doing the check
- The documentation will include:
- If you are considering or have a quality standard you need to make sure you design the documentation in line with ISO9000:2000 philosophies (document, section, issue no. Authorised by, date etc)
- Make sure you try the documentation out before fully implementing it! Test it on someone, so often a form designed in the office makes no sense to the operative, or the box isn't the right size etc, this causes frustration and is almost a disincentive to completion.
- Make sure as well as recording something there is also room for signatures, if required checked by's and also space to record any corrective action taken if things are out of limits (this helps no end with your due diligence!)
- In general keep the records for at least 12 months.

For your assignment I need a list of the documentation and an explanation of how it works to record monitoring, examples here and there are useful as well.

CCP	*STEP*	Monitoring Documentation	How it monitors CCP/ Info included
CCP 1 Micro	*Purchase of cooked High Risk Products*	*Certificate of conformity – ingredient specification* *Microbiological sampling plan*	
CCP 2 Micro	*Intake of Cooked High Risk Products*	*Daily Delivery sheet* *Delivery audit checklist* *Goods in report*	
CCP3 Micro	*Cold Storage of Cooked High Risk Products*	*Temperature monitoring sheet*	
CCP 4 Micro	*Meat Cook*	*Microbiological sampling plan*	
CCP 5 Micro	*Meat Cool*	*Via Giusti system control* *Plant release form* *Cooked filling record sheet*	
CCP 6 Chemical	*Meat cook/cool*	*Parts per million (ppm) record* *Plant release form* *Large cooker valve check/small cooker valve check*	
CCP 3 Micro	*Storage of cook/chill product*	*Cooked fill record sheet*	
CCP 7 Micro	*Glaze*	*Egg glaze check sheet* *Microbiological sampling plan*	
CCP 8 Physical	*Metal Detection*	*Metal detection check sheet* *Metal detection monitoring sheet*	

Verification and Review

Verification/Validation and Review

Verification:
Verification is the process of ensuring that the HACCP plan is accurate, being implemented and is effective.

Tell me how you would go about it and any considerations you would make, for example what about especially busy times, night shift, etc

Validation:
Validation is the process of ensuring that the data used in decision making in the study, especially the decisions regarding significance and criticality, are based on the latest, sound, scientific evidence.

Review:

Put in here when you would review the study

That's it – not that painful really if you look at it logically.