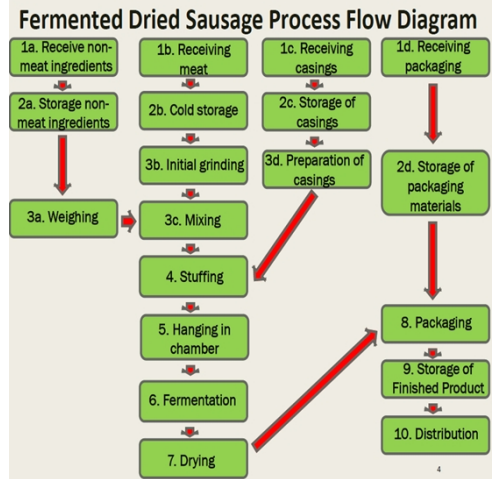


APPLICATION OF HACCP PRINCIPLES FOR THE MEAT INDUSTRY

GUIDANCE SHEET NO: 8

PROCESS FLOW DIAGRAMS PRELIMINARIES FOR HACCP



PROCESS FLOW DIAGRAMS

A process flow diagram shows all the steps involved in the process outlined in the scope of the study (see guidance sheet 7). The HACCP team or the person leading the development of the HACCP study should construct a process flow diagram. Whatever format you choose, all steps in the process outlined in the scope of the study should be included.

You may wish to use a schematic layout of the factory to help you. Knowledge of what actually occurs in your processes is essential.

LISTING THE STEPS IN THE PRODUCTION PROCESS

List each step in the process or module. You should consider what happens all the way from receiving the raw materials, through to at least the point of despatch or up to the point of final consumption of the product.

Think about:

- Preparation
- Packing
- Storage
- Distribution

You could also consider the following:

- Raw material addition (including water)
- Services (air, water, steam)
- Any temporary product storage or hold periods (particularly during peak production times)
- Recycle or rework loops
- Process delays

LINEAR OR MODULAR APPROACH

You can use a linear or modular format for your process flow diagrams. This might depend on how complex your processes are, and whether parts of a process are the same for several products.

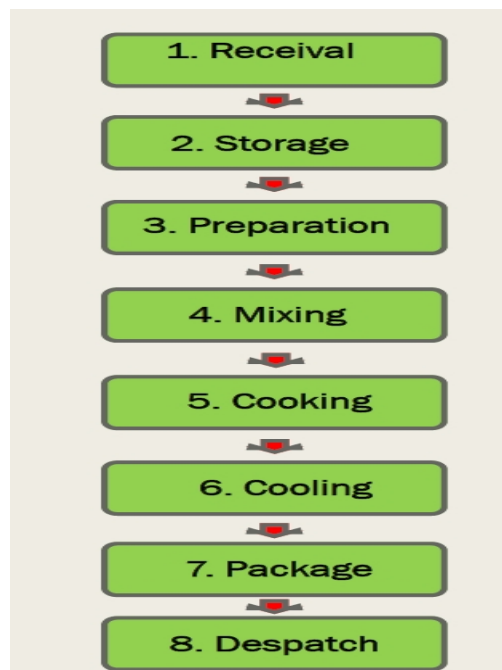
Draw a rough paper sketch of the product flow. Consider how the process is managed and what could realistically happen while it's in progress. For example, consider optional and intermittent activities.

LINEAR PROCESS FLOW DIAGRAMS

The simplest form of process flow diagram is linear. The key steps in the process are identified, laid out step by step, and subsequently verified by the HACCP team.

The diagram shows a simple 8-step process, where one step follows another in order.

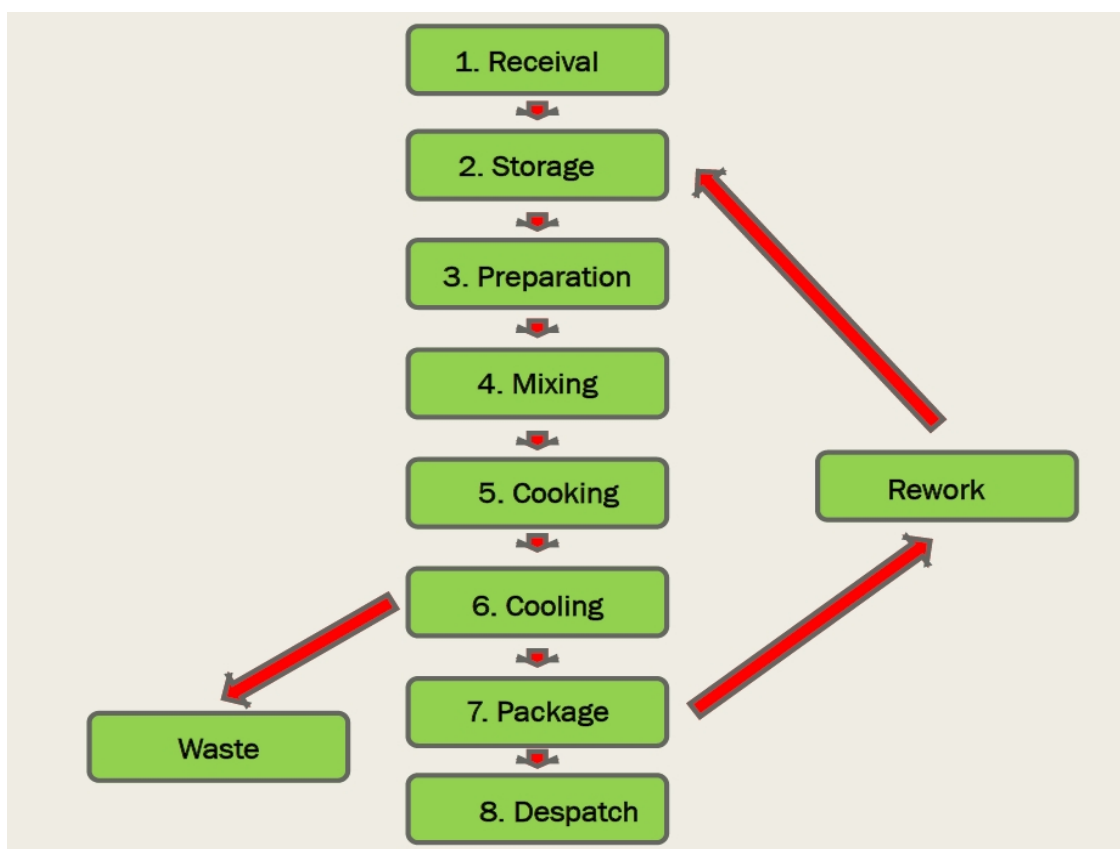
Additional steps may be identified during the verification process these should be added into the process flow diagram



The diagram below shows the same process but with two new options added.

From step 6, which is “Cooling”, the process could proceed to “Waste”, instead of to Step 7, Packaging.

From Step 7, Packaging, the process could move to a new “Rework” step and then go back to Step 2, Receipt/Storage, instead of moving on to Step 8, Despatch.

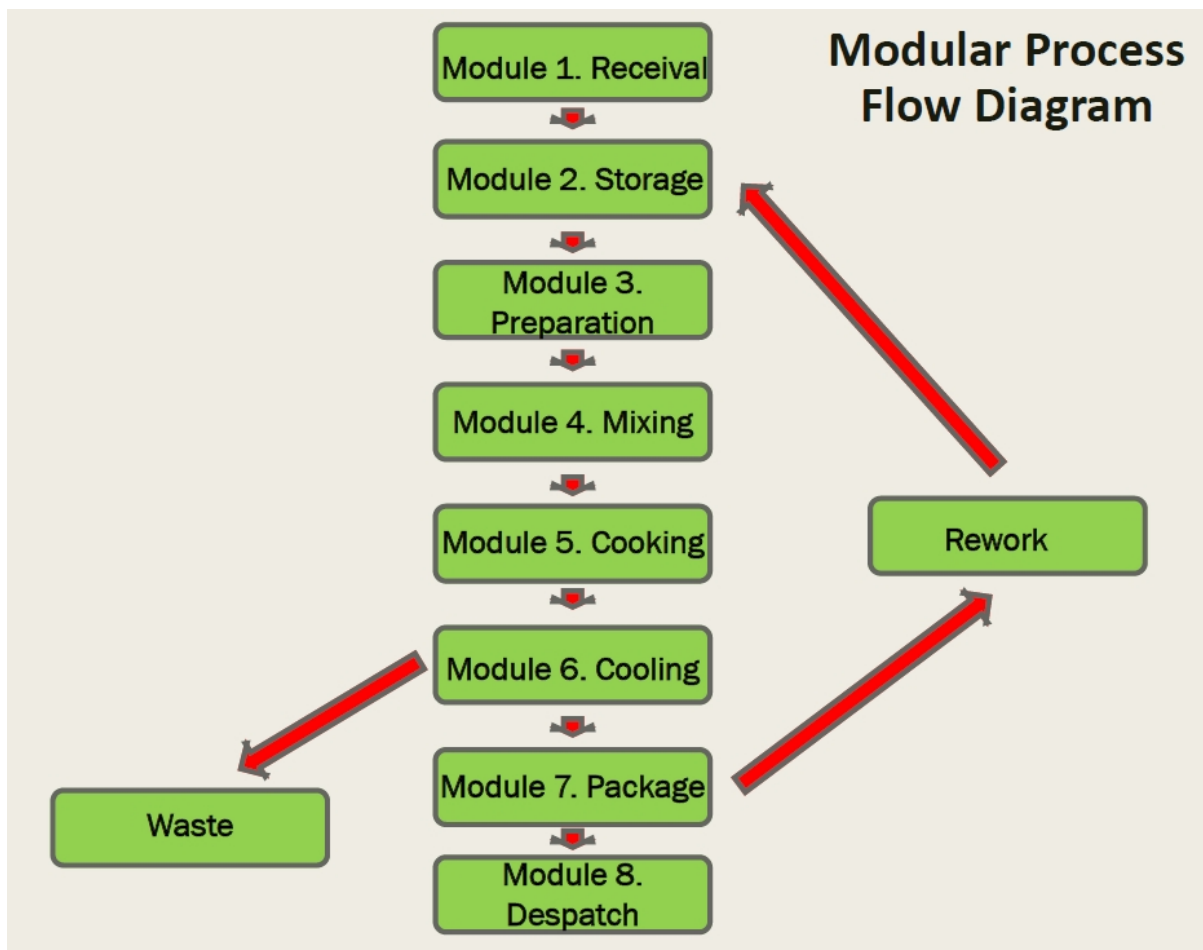


MODULAR PROCESS FLOW DIAGRAMS

When setting These can be used for more complex food operations or in situations where several different foods are produced by the same business which share certain parts of the production process. You would create a diagram showing the modules in your overall process, and then additional diagrams showing the steps of the process within each module.

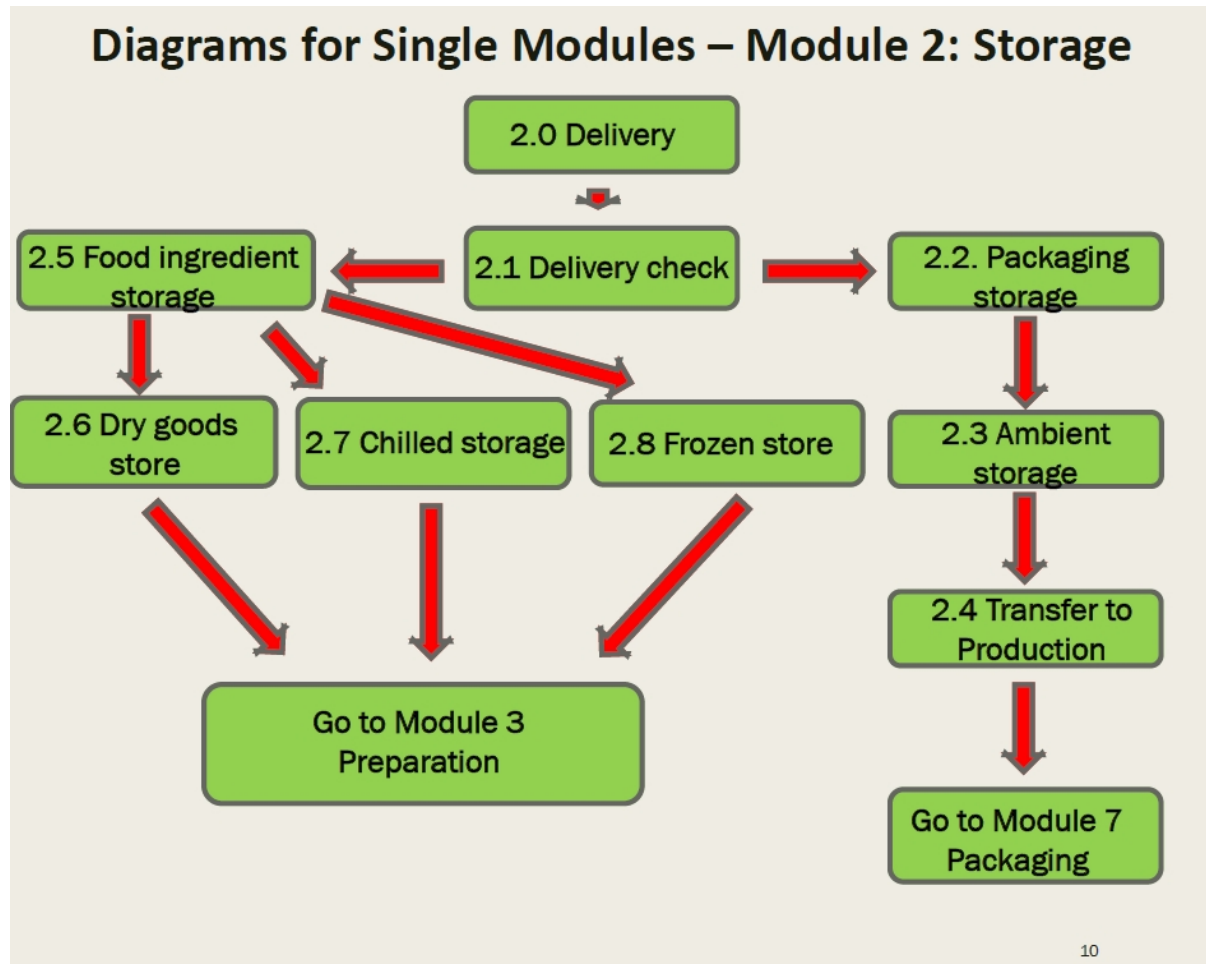
The next diagram looks the same as the previous one, showing the linear process with “Rework” and “Waste” options added, except that the boxes are marked as Modules rather than Steps. This indicates that each module, such as Module 1: Purchase or Module 5: Cooking, would have a diagram showing the steps of that process.

If you have multiple products, and some of the processes you go through with different products work in the same way (for example, if you package or store several different products in the same way) you can refer to one shared diagram for the module, rather than making different ones. That way, you don’t have to update several different plans or diagrams if something in the shared process changes.



DIAGRAMS FOR SINGLE MODULES

In a complex modular production process, you may wish to have detailed process flow diagrams for single modules. The diagram below shows a single module diagram for module 2 “storage” taken from the modular process shown above.



An example of a completed process flow diagram for the production of a fermented dried shelf-stable sausage product is given in guidance sheet 13.

INCLUDING TECHNICAL DATA

The inclusion of relevant technical data will depend on the complexity of the operation. This data is useful at the Critical Control Points that you will identify later (see guidance sheets 12 & 13).

Technical data could include:

- Time for process or process element (e.g. fry for 2 minutes at 190°C or cool to <5°C in 4 hours)
- Temperature at different parts of the process (e.g. fry at 190°C for 2 minutes or cool to <5°C in four hours)
- Line speed
- Floor plan, equipment and services layout
- Segregation of low/high risk operations
- Flow conditions for liquids and solids (psi=pounds per square inch or temperature in °C)
- Waste flows
- Movement routes for raw materials/ingredients

A piece of equipment may have several functions (e.g. a bottle filling machine including rinsing, volumetric/gravity/vacuum/hot fill and capping functions). All functions should either be included in the description at the process step OR each function entered as a different process step.

ON-SITE CONFIRMATION OF PROCESS FLOW DIAGRAMS

The flow diagram must be checked to verify that it is correct and shows all steps involved in the process as outlined in the Scope of the study. The flow diagram should be confirmed as being correct. It is recommended that this is carried out by someone not familiar with the process in addition to members of the HACCP team. The advantage of having someone not familiar with the process to check the diagram is that “they are a fresh pair of eyes”, and may identify a step that has been overlooked.

You may wish to consider the following:

Ensure the process flow diagram is a current and accurate representation of the process/module;

Ascertain if practices are the same for all shift patterns, differing staff levels, seasonal variations, all production patterns (e.g. high and low production volumes).

DOCUMENTATION, RECORDS AND REVIEW

Record that the flow diagram has been confirmed as being correct

Record the date it was confirmed as correct

Record who confirmed the flow diagram as being correct

Records of out-of-date flow diagrams must be kept.

Review The flow diagram shall be subject to review and should be current and accurate at all times. Amend the flow diagram if your production process changes.

COMMON PROBLEMS WITH PROCESS FLOW DIAGRAMS

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.