APPENDIX: THE IMPLEMENTATION STEPS OF AN HACCP PLAN

1. Assemble a HACCP team

Form a small multi-disciplinary team that will that will have responsibility for establishing, developing, maintaining and reviewing the HACCP system. This team shall have access to multidisciplinary knowledge and practical experience in feed safety systems. It is vital this group has the full support of the operator's senior management and ideally a management representative should lead the team. The team should include people who are very familiar with the HACCP technique, products, processes and associated risks.

2. Construct a diagram of the process flow

Draw up a process flow diagram for each product group, for the process of handling and storing of agribulk commodities.

Make the diagram as simple as possible, with clear diagrams and unambiguous terms.

3. **Confirm the accuracy of the process flow diagram *in situ***

Always make sure that the diagram is accurate by checking it against actual operating process in your facility. This will help make sure you don't miss any steps. *(or rather that the actual steps differs from the drawings!)*

4. Identify and analyze the hazards

Use the diagram to identify potential hazards at each process step from the perspective of:

a. Chemical
b. Biological
c. Physical

You must consider the chemical, biological and physical hazards associated with each material you're bringing on site. Potential chemical, biological and physical hazards must be considered for each subsequent step in the process, in each case taking the particular circumstances of the step into account.

5. Determine the CCP and control measure/s

After hazard identification it is important to evaluate whether a hazard is a risk or not. If a hazard needs a specific control and there is no point further down stream in the process that can reduce or eliminate it, it is a Critical Control Point (CCP). If it's not a CCP then no control or the correct application of your prerequisite program will suffice. Useful questions to ask yourself when you're establishing CCPs are:

i. If I don't control this risk, is the safety of the end user compromised?
ii. If I don't apply controls to this hazard at this step, are there other controls further on in the process that will ensure consumer safety?

There are two recognized guidance methods to apply.

One is using a decision matrix, that will help you decide how severe the potential risk is and how likely it is to occur. It is based in the concept

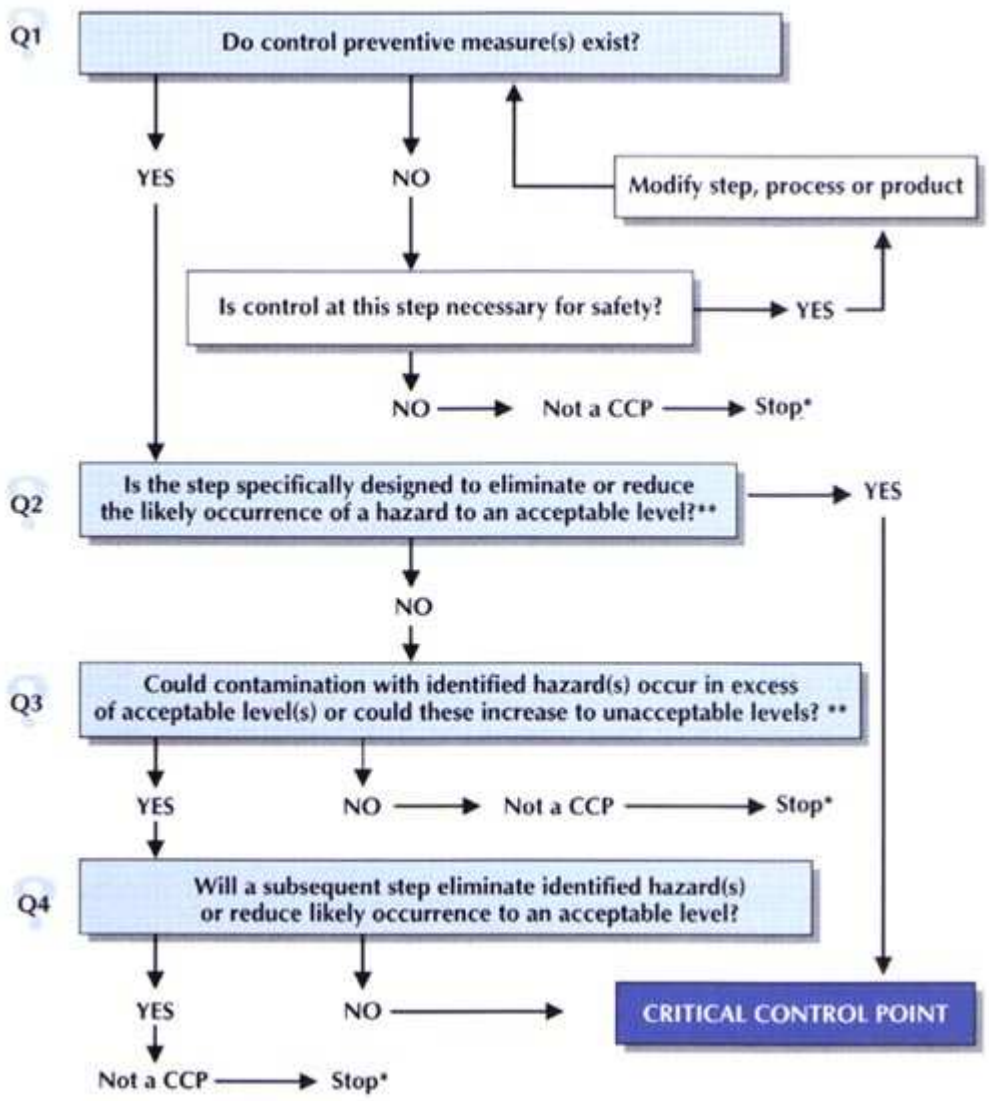
that the risk level is the result of the probability that a hazard will occur and the severity if it occurs.

Severity ↓			
Large	3	4	4
Moderate	2	3	4
Small	1	2	3
Risk → of occurrence	Small	Moderate	Large

Risk level 1: no need for measures
Risk level 2: once-only periodical measures
Risk level 3: general control measures, control of points of attention
Risk level 4: use the decision tree to indentify a CCP at this step

Four risk levels can be determined with the risk evaluation model. In the event of risk level 1, no measures are necessary. In the event of risk level 2, periodic measures – often activities to be performed just once - have to be carried out. Risk level 3 requires general control measures, such as hygiene programs, maintenance and calibration, purchasing procedures, etc. In the event of risk level 4, specific control measures are necessary for that particular situation.

The determination of a CCP in the HACCP system can also be facilitated by the application of a decision tree (see figure below), which indicates, by means of four questions, a logic reasoning approach.



The number of CCPs you have will depend on your system but try and keep the total number as low as possible. You can monitor a few key CCPs much more effectively than a vast array

Once you have identified a hazard that needs a specific control you must identify the process step that will carry the control measure. Keep in mind that control must be possible and measurable, the control must eliminate or reduce the risk to an acceptable level, and if a CCP is out of control immediate corrective action must be possible.

6. Determine the target values and critical limits for the CCP

Establish a target value you expect as an average and a critical limit that will divide the acceptable from the unacceptable. These limits must comply with all legislative obligations but if there are no legal limits one's own research; analytical and bibliographic, and experience (either your own or a consultant's) should be used to strike the right balance between safety and operability.

7. Construct monitoring procedures for the CCP

Monitoring of a CCP is a planned measurement of the process parameters to establish if a CCP is under control. It must have a schedule, limits as defined above, a written procedure, responsible employees with appropriate training and a written record of the measurements/observations/results.

8. Determine corrective actions

These are the decisions and actions that must be taken once a critical limit has been breached. For example, a faulty raw material or finished good may be placed on hold, reworked, destroyed etc. A written procedure must be in place that details how this process should be undertaken and someone must have responsibility for this process.
Example:

Step	Hazard	Category	CCP	Monitoring				Critical limit	Corrective action	Record & verification
				What	How	When	Who			
Reception of goods in warehouse	Any form of physical or microbiological contamination	Physical Microbiological	3 (3rd in process)	Warehouse	Inspected to ensure it is clean, dry and free of pests	Every time cargo is to be received in warehouse	Maintenance Dept.	mere presence of moisture remainders of previous cargo are visible Vermins are seen	Dry manually and ventilate. Sweep by mechanical means if necessary Fumigate taking into account customers needs	Results of monitoring and corrective action

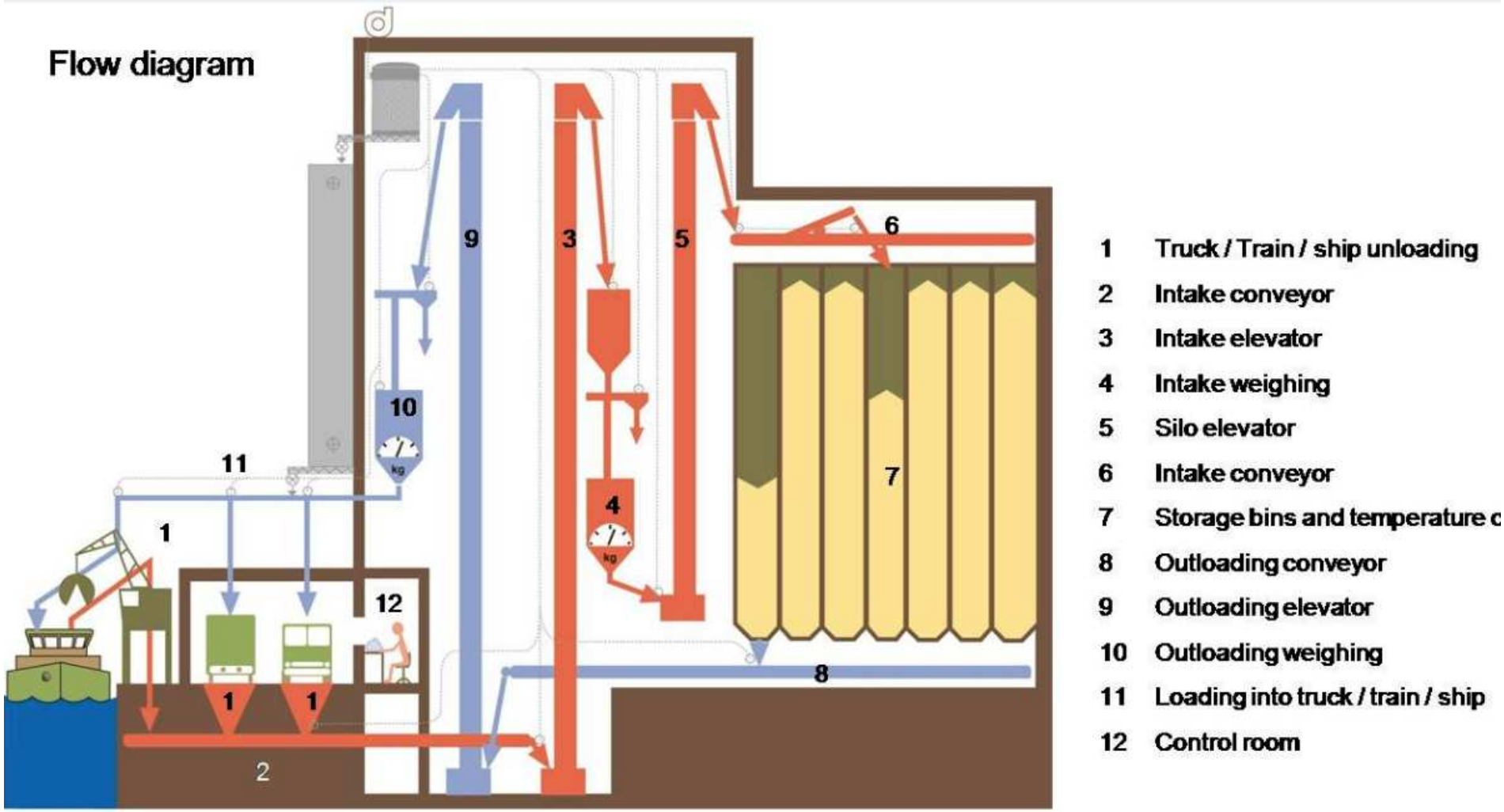
9. Verify the system

The system must be verified periodically to ensure it is effective and up to date. This review should cover all aspects of the HACCP system including the prerequisites, deviations and customer complaints. All records of this review should be in writing and ideally be part of the company's internal audit schedule.

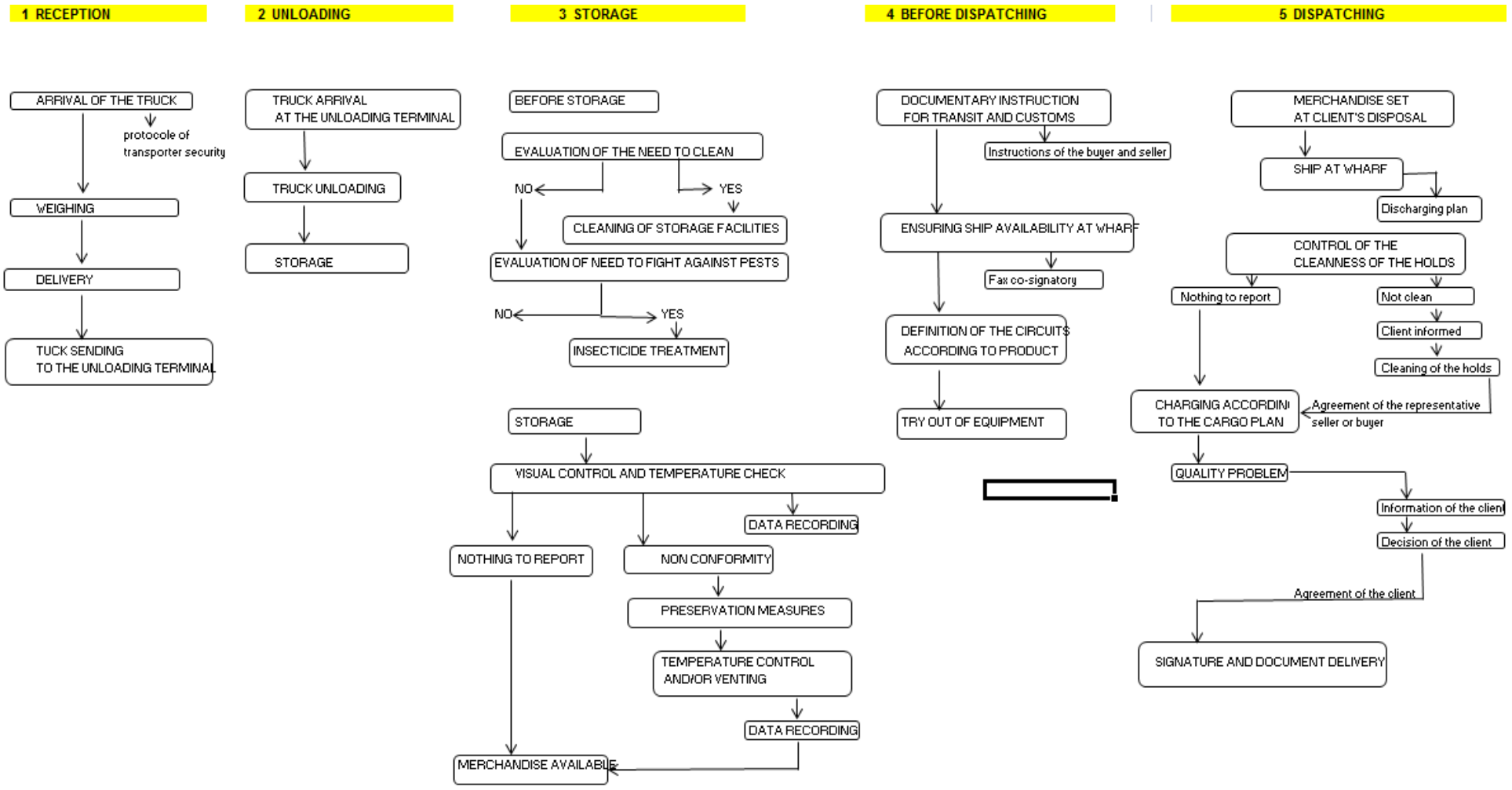
10. Draw up the necessary documentation

There are a number of documents that will be necessary as part of your HACCP system. A minimal list is prescribed here:

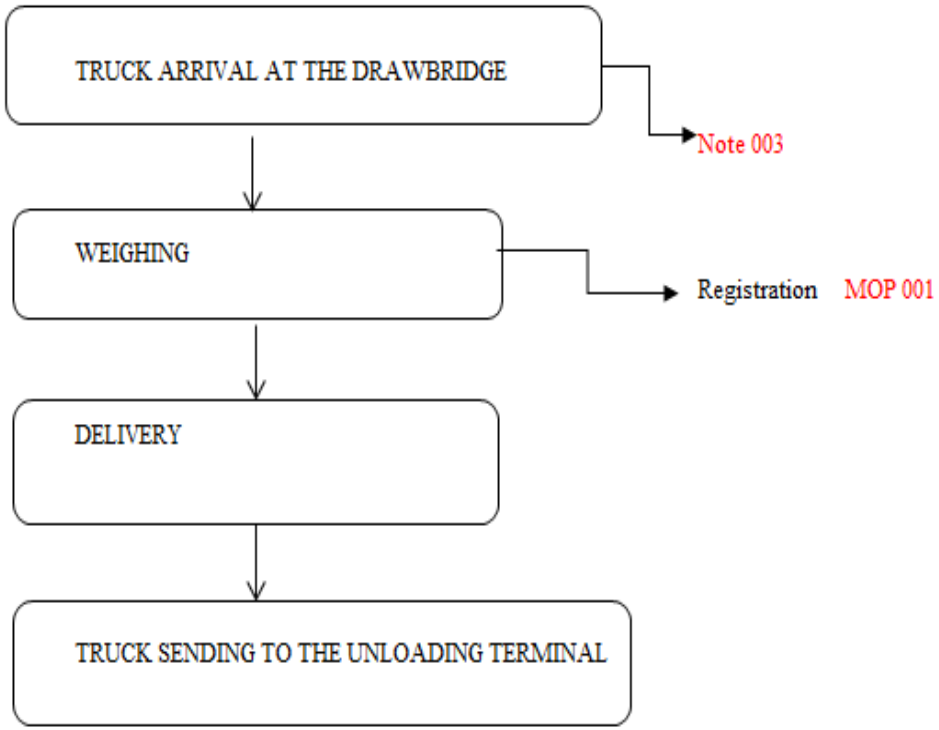
- HACCP team (members and expertise).
- End product specifications.
- Process diagrams.
- Prerequisites.
- Risk analysis tables.
- Operating procedures for CCP's.
- Corrective actions and associated documents.
- Verification procedures and results for all of the above.


Flow diagram
9
3
5
6
10
11
1
4
7
12
8
1
1
2
1 Truck / Train / ship unloading
2 Intake conveyor
3 Intake elevator
4 Intake weighing
5 Silo elevator
6 Intake conveyor
7 Storage bins and temperature c
8 Outloading conveyor
9 Outloading elevator
10 Outloading weighing
11 Loading into truck / train / ship
12 Control room

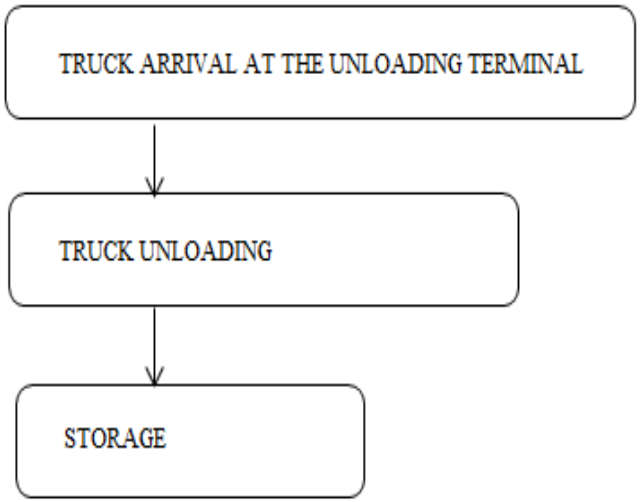
HACCP PLAN


1 RECEPTION
ARRIVAL OF THE TRUCK
protocole of transporter security
WEIGHING
DELIVERY
TUCK SENDING TO THE UNLOADING TERMINAL
2 UNLOADING
TRUCK ARRIVAL AT THE UNLOADING TERMINAL
TRUCK UNLOADING
STORAGE
3 STORAGE
BEFORE STORAGE
EVALUATION OF THE NEED TO CLEAN
NO
YES
CLEANING OF STORAGE FACILITIES
EVALUATION OF NEED TO FIGHT AGAINST PESTS
NO
YES
INSECTICIDE TREATMENT
STORAGE
VISUAL CONTROL AND TEMPERATURE CHECK
DATA RECORDING
NOTHING TO REPORT
NON CONFORMITY
PRESERVATION MEASURES
TEMPERATURE CONTROL AND/OR VENTING
DATA RECORDING
MERCHANDISE AVAILABLE
4 BEFORE DISPATCHING
DOCUMENTARY INSTRUCTION FOR TRANSIT AND CUSTOMS
Instructions of the buyer and seller
ENSURING SHIP AVAILABILITY AT WHARF
Fax co-signatory
DEFINITION OF THE CIRCUITS ACCORDING TO PRODUCT
TRY OUT OF EQUIPMENT
5 DISPATCHING
MERCHANDISE SET AT CLIENT'S DISPOSAL
SHIP AT WHARF
Discharging plan
CONTROL OF THE CLEANNESS OF THE HOLDS
Nothing to report
Not clean
Client informed
Cleaning of the holds
CHARGING ACCORDIN TO THE CARGO PLAN
Agreement of the representative seller or buyer
QUALITY PROBLEM
Information of the client
Decision of the client
Agreement of the client
SIGNATURE AND DOCUMENT DELIVERY

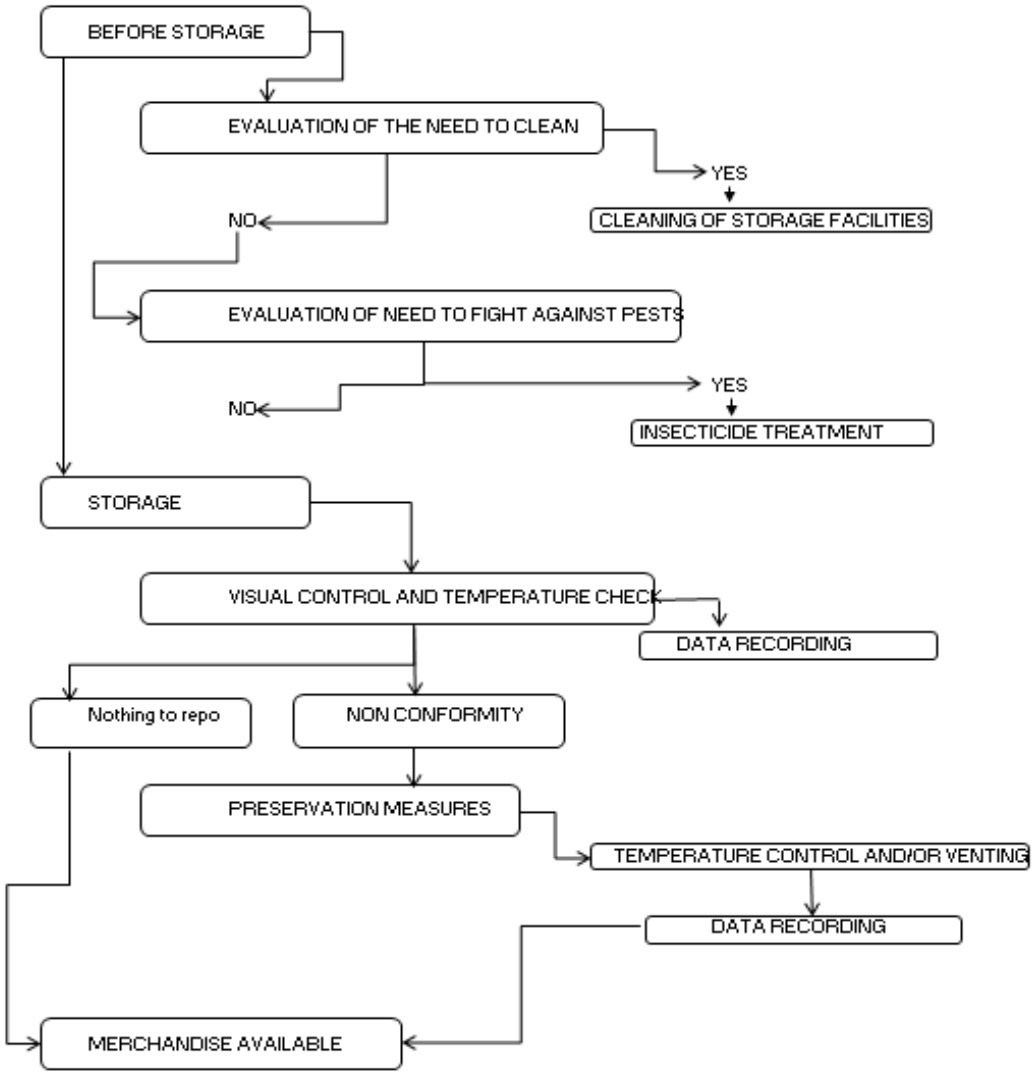
1. RECEPTION


TRUCK ARRIVAL AT THE DRAWBRIDGE
Note 003
WEIGHING
Registration MOP 001
DELIVERY
TRUCK SENDING TO THE UNLOADING TERMINAL

2. UNLOADING


TRUCK ARRIVAL AT THE UNLOADING TERMINAL
TRUCK UNLOADING
STORAGE

3. STORAGE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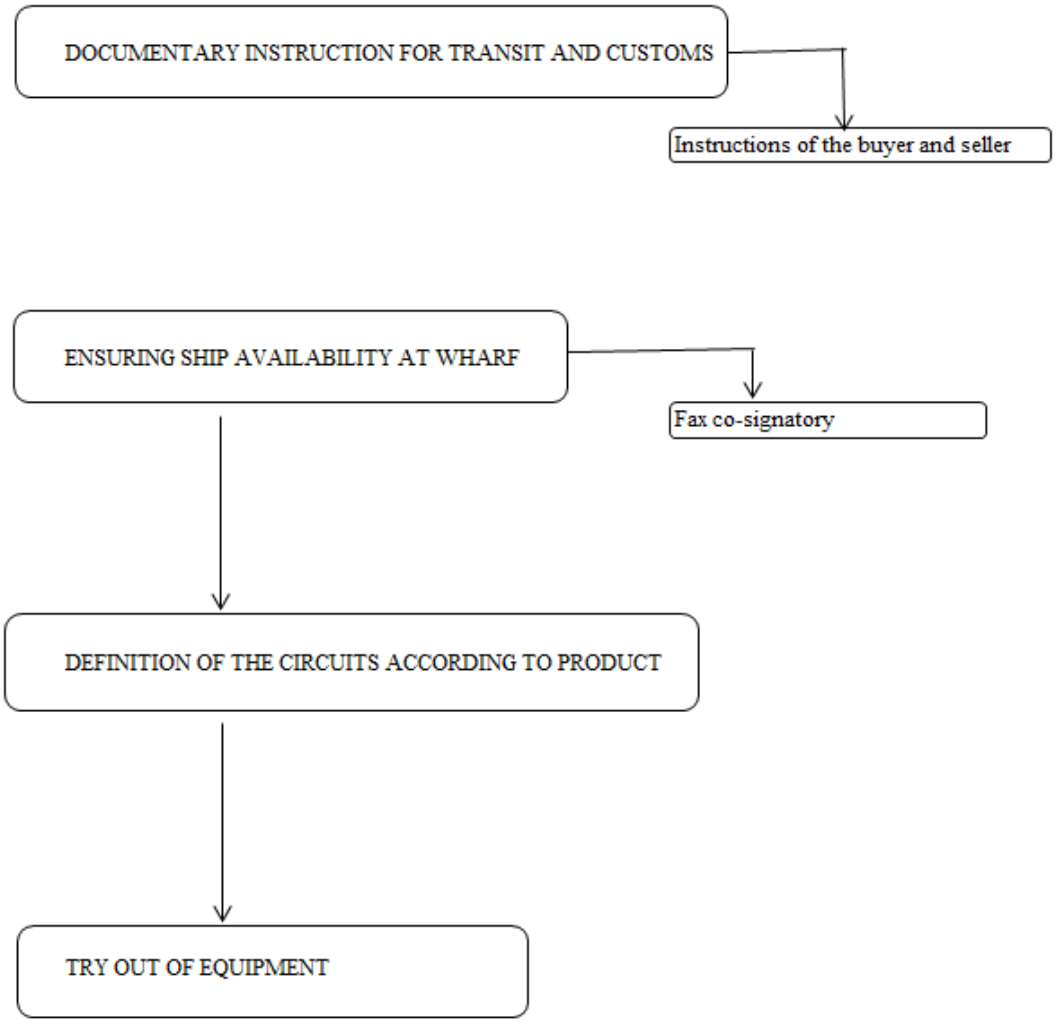
4. BEFORE DISPATCHING



5. DISPATCHING