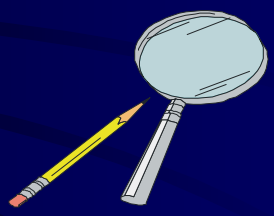
Traceability



Traceability is the ability to trace the history, application or location of an entity by means of recorded information
(ISO 84402:1994) .

Traceability can be considered in four distinct contexts and in each it has a slightly different application:

- ***for products***: it creates a link between materials, their origin and processing, distribution and location after delivery.

- ***for data***: it relates the calculations and data generated through a quality loop and may link these back to the requirements for quality.

- ***in calibration***: it relates measuring equipment to national, international or primary standards, to basic physical constants or properties or to reference materials.

- ***in programming***: it relates design and implementation processes back to the requirements for a system.

Within a production chain it is possible to identify at least two levels of traceability:

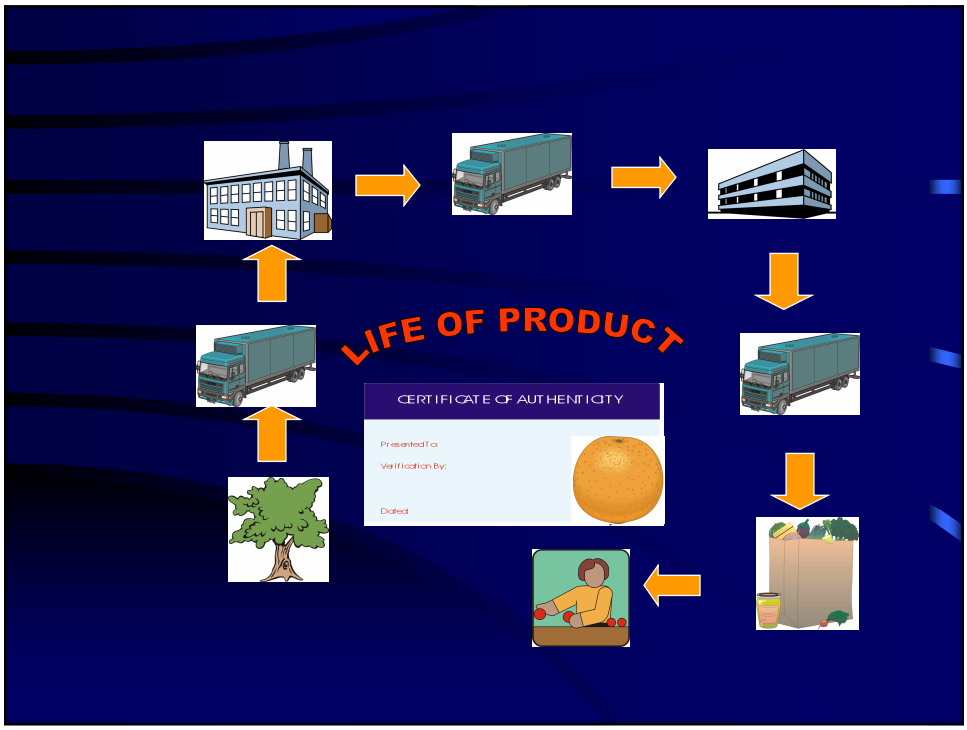
- **Internal traceabiity** (traceability within one link or business within the chain), allows data about raw materials and processes within the business to be linked to the final product separately in each stage of production ,processing or distribution.

- **Chain traceability** (traceability between links in the chain), the focus is on information which accompanies the product from one link in the chain to the next to extend traceability for any product though all stages of production, processing and distribution.

What is traceability in the food chain?

Means the ability to trace and follow a food, feed, food-producing animal or substance through all stages of production and distribution.

Stages of production and distribution means any stage including import, from and incluiding the primary production of food, up to and including its sale or supply to the final consumer and, where relevant to food safety, the production, the manufacture and distribution of feed.



LEGISLATION

The EU General Food Law Regulationn (178/2002)
contains clear requiriments for traceability

1. The traceability of food, feed, food-producing animals, and any other substance intended to be, or expected to be, incorporated into a food or feed shall be established at all stages of production, processing and distribution.

2 Food and feed business operators shall be able to identify any person from whom they have been supplied with a food, a feed, a food-producing animal, or any substance intended to be, or expected to be, incorporated into a food or feed. To this end, such operators shall have in place systems and procedures which allow for this information to be made available to the competent authorities on demand.

LEGISLATION

3. Food and feed business operators shall have in places systems and procedures to identify the other businesses to which the products have been supplied. This information shall be made available to the competent authorities on demand.

4. Food or feed which is placed on the market or is likely to be placed on the market in the Community shall be adequately labelled or identified to facilitate its traceability, through relevant documentation or information in accordance with the relevant requirements of more specific provisions.

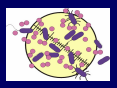
This general traceability requirement is non-prescriptive but encompasses all food and feed business operators including primary producers. Retailers of goods to the final consumer are exempt from the requirements of forward traceability.

This legislation include any requirement for records to be kept identifying how batches are split and combined within businesses to create particular products. It will also not be possible to identify the bulking up of ingredients from a number of suppliers or the origin of the components of any batch. The legislation relies on a one up, one down approach between businesses to create chain traceability; the robustness of such a system has not been tested.

GMOs

There are currently on-going discussions in Brussels on EU Commission proposals to extend the authorisation and labelling rules for GM food and feed and to require traceability and labelling of GMOs and products derived from them.

Traceability is proposed both to facilitate full product labelling and to enable withdrawal if adverse health effects are identified. This proposal would extend the general requirements for traceability in the General Food Law Regulation by requiring the transmission of specific information whit the product along the food chain.



INTERESTS OF STAKEHOLDERS

Consumers

Traceability systems are of interest to consumers, as part of systems which:

- Protect food safety by effective product recall, in the case of an emergency.
- Enable avoidance of specific foods and food ingredients easily, whether because of allergenicity, food intolerance or lifestyle choice.
- Enable real choice to be exercised between food produced in different ways.

Government

Traceability systems are of interest to government as part of systems which:

- Protect public health through the withdrawal of food product from sale
- Help to prevent fraud where analysis cannot be used for authenticity.
- Control zoonotic disease e.g. tuberculosis, salmonellosis, bovine spongiform encephalopathy

Government

- Enable control with regard to human and animal health in emergencies *e.g.* contamination of land or raw material.
- Control epizootic and enzootic livestock diseases through the rapid identification of disease sources and dangerous contacts.
- Monitor /control livestock numbers for subsidy claims.

Industry

Traceability systems are part of systems which enable industry:

- To comply with relevant legislation.
- To be able to take prompt action to remove products from sale and protect brand reputation.
- To minimise the size of any withdrawal and hence the costs incurred in recovering, disposing or reconditioning products already placed on the market.

Industry

- To diagnose problems in production and pass on liability where relevant.
- To create identity preserved non-GM sources of soya and other ingredients.
- To minimise the spread of any contagious disease amongst livestock.

Industry

- To protect the food chain against the effects of animal disease.
- To assure meat and meat products and maintain markets and consumer confidence.
- To create differentiated products in the market place because of the way they have been produced.

CHARACTERISTICS OF TRACEABILITY SYSTEMS

- The basic characteristics of traceability systems, *i.e.* identification, information and the links between, are common in all systems independent of the type of product, production and control system that are served.
- The traceability of products is based on the ability to identify them uniquely at any point in the supply chain.

The manufacturer or importer determines the size of a batch, which is identified uniquely.

CHARACTERISTICS OF TRACEABILITY SYSTEMS

•In the simplest systems, the only information carried is that showing the linked path along which products can be identified through the chain of manufacture, distribution and retail *(i.e.* information on the identity of the components, where they have been and when).

CHARACTERISTICS OF TRACEABILITY SYSTEMS

•Additional information may be carried *e.g.* information enabling processing efficiencies to be calculated for manufacturing systems, information concerning ingredient quality or origin.

•The amount and type of information can be extended as required by the system, and it may be carried for only part of, or throughout the whole, food chain.

IDENTIFICATION

The basis of all supply chain technology is the ability to identify the things that move:pallets, packages, and units of product.

The simplest type of identification is a label with a name or number written on it. However, machine readable labels are being rapidly developed by the industry so that goods can be scanned in and out of suppliers, warehouses, and customers in order to:

- Speed up handling and reduce errors introduced through paper records or manual data entry.
- Track movements and improve logistics
- Reconcile orders and shipments without excessive paperwork and/or manual data entry into computer systems
- Set up electronic ordering and payment systems which reduce errors and increase efficiency

TYPES METHODS IDENTIFICATION

Optical systems:

- **Bar codes** are optical, machine-readable systems using a simple coding system with different thicknesses of bars and spaces.

•**EAN/13** The reader converts the four different thicknesses of bar and space into a 13 digit code that a computer looks up against a database.

Radio frequency Identification systems

Radio frequency identification (RFID) covers a range of data carrying technologies,for which transfer of data from the identifier to the reader is achieved by a radio-frequency link

Passive systems are activated by a remote energy source.

Active systems contain their own energy source. When they are activated by a remote signal, the internal power source then used to broadcast the stored information.

Feature identification systems

Feature identification relies on collecting intrinsic data about an item from its natural features or properties, which can be used to provide a unique (or near unique) form of identification.

The vascular pattern of the retina is present from birth to death and unique to each animal.

DNA samples can be collected from animals at any point during their life cycle from blood, meat, hair, saliva etc.

Linking identification and information

Product withdrawal and recall systems only require traceability in part of the chain from the production step to the consumer.

The problem stems from the raw material, traceability back to the supplier improves the possibility of correcting fault, avoiding recurrence and/or placing the responsibility (and liability) there.

So traceability usually functions both forwards and backwards through the chain.

DOCUMENTATION AND RECORDS

• Records of processing, production and distribution should be kept and retained for a period that exceedes the shelf-life of the product.

• Errors or changes should be identified in a manner such that the original record is clear, e.g struck out with a single stroke and initialed near the correction or change. Each entry on a record should be made by the responsible person at the event occurs.

•Records hould be retained for a period of two or three times the self life of the product or, in the absence of an expiration date, for two years after the date of sale.

THE ADEQUATE IDENTIFICATION & TRACEABILITY IS A ESSENTIAL STEP TO ASSURE EFFECTIVE RECALL PROCEDURES

RECALL PROCEDURES

Managers should ensure that effective procedures are in place to deal with any food safety hazard and to enable the complete, rapid recall of any implicated lot of the finished food from the market.

RECALL PROCEDURES should include:

• The responsible person or persons, e.g. recall coordinator(s).
•The roles and responsibilities for coordination and implementation of a recall.
•Methods to identify, locate and control recalled product.
•A procedure for monitoring the effectiveness of the recall.

Recall information should include the following:

•Amount of product produced in inventory and distributed.
•Name, size, code or lot numbers of food recalled.
•Area of distribution of product, e.g. local, national, international.
•Reason for the recall.
•Final disposition of the product (rework,discharge, etc.)

Product code identification

All pre-packaged foods should have permanent, legible code marks or lot numbers and, where required, expiration or “best before” dates on the packages.

Code marks used and the exact meaning of the codes should be available.

Recall capability

The manufacturers should be capable of producing accurate information on a timely basis to verify that all affected product can be rapidly identified and removed from the marketplace.

This can be demonstrated by the manufacturers as follows:

- Records of customer names, addresses and telephone numbers available for the lot tested.
- Records of production, inventory and distribution by lot available for the lot tested.

- Periodic testing to verify the capability of the procedure to rapidly identify and control a code lot of potentially affected product;to reconcile the amount of product produced, both in inventory and in distribution, and to identify and correct any deficiencies in the recall procedure.

Distribution records

Distribution records should contain sufficient information to permit traceability to a particular code or lot number.

The following minimum information should be required for distribution records:

- Product identification and size,
- Lot number or code,
- Quantity, and
- Customer's names, addresses and telephone numbers to the initial level of product distribution.