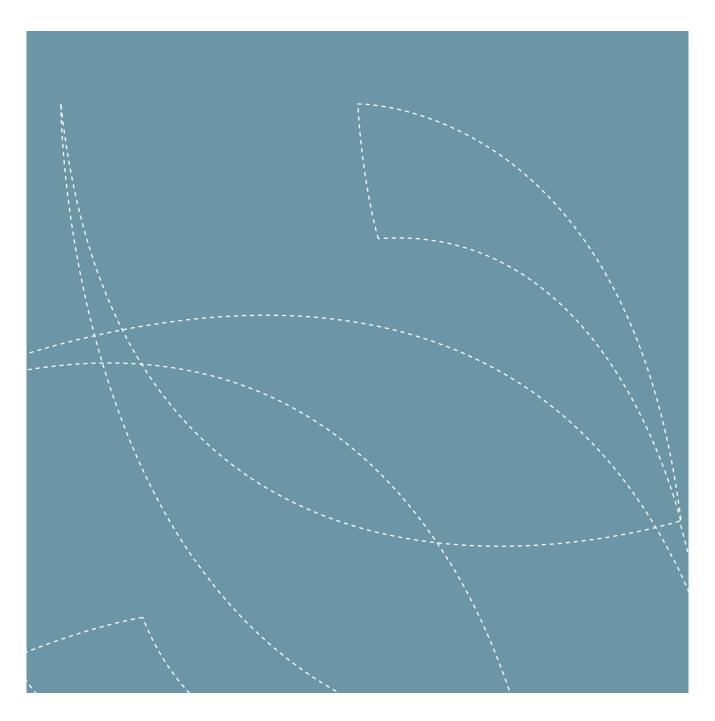# Traceability of Soya Beans

Specifications for the information to be recorded in the soya bean farming, handling (elevator) and processing establishments and other links in the soya bean product distribution chain

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*Summary:*

There are increasing demands for detailed information on the nature and origin of food products. Traceability is becoming a legal and commercial necessity. This 'ad hoc' standard has been created as part of the EU project – Trace the origin of food (TRACE) and cooperation with the Iowa Grain Quality Initiative. TRACE aims to develop generic and sector-specific traceability systems for use in the food industry. This standard is a specification of the information to be recorded in 3 links of the soya bean production chain: at the farmer, at the elevator handling bulk soya beans and at the processor in order to achieve effective traceability. The soya bean processing link refers to meal and oil processing (solvent extraction). This study has a special focus on the traceability needs of intercontinental trade particularly that between the USA and Europe currently and in the coming years this will be a vital area for new research with regards to internal and chain traceability mechanisms.

# Preface

This 'ad-hoc' standard has been created as part of the EU project – Trace the origin of food (TRACE) and cooperation with the Iowa Grain Quality Initiative. TRACE aims to develop generic and sector-specific traceability systems for use in the food industry (see also Donnelly et al., 2008b, Donnelly et al., 2009). This standard is a specification of the information to be recorded in 3 links of the soya bean production chain: at the farmer, at the elevator handling bulk soya beans and at the processor in order to achieve effective traceability. The soya bean processing link refers to meal and oil processing (solvent extraction).

This study has a special focus on the traceability need of intercontinental trade particularly that between the USA and Europe currently and in the coming years this will be a vital area for new research with regards to internal and chain traceability mechanisms.

The authors would like to acknowledge that the text in sections 3.2, 4.1, 4.2 and Annexes A and B is heavily based on and in some cases the same as that developed in The Two CEN 'TraceFish' standards (CEN14659, 2003, CEN14660, 2003) and previous 'ad hoc' standards (Donnelly et al., 2008a).

# Table of contents

# 1    Introduction

There are increasing demands for detailed information on the nature and origin of food products. Traceability is becoming a legal and commercial necessity. Transmission of all the required (by law or market forces) information physically with the products would in many instances be impracticable and so the use of information technology is preferable (FSA, 2002, Moe, 1998).

The use of information technology is particularly necessary when considering the situation of imports to the United States of America. The Bioterrorism Act of 2002 (Anon, 2002a) requires that all domestic and foreign food facilities that manufacture/process, pack or hold food for human or animal consumption in the USA must register with Food and Drug Administration. It also requires that FDA receives prior electronic notification and provides confirmation for imported foods. Prior notification must be provided no less than two hours before arrival by road, four hours before by air or rail and eight hours before by water.

The International Standardization Organization (ISO) definition of traceability concerns the ability to trace the history, application and location of that which is under consideration, and for products this can include the origin of materials and parts and processing history (ISO, 1994). Traceability includes not only the principal requirement to be able to physically trace products through the distribution chain, from origin to destination and vice versa, but also to be able to provide information on what they are made of and what has happened to them. These further aspects of traceability are important in relation to food safety, quality and labelling.

This document is an information specification for the three links in soya bean and soya bean product processing chain; farmer, elevator and meal and oil processor. The oil is used for human consumption while the meal for animal feed production. The document defines what (with regards to traceability) information should be generated and how it should be stored by each link in the soya bean chain (ad-hoc standard).

The key to the operation of the scheme is the labelling of each unit of goods traded, for example soya beans, meal and oil with a unique identification (ID). This is to be done by the business that creates each unit. Businesses that transform units, such as soya bean processors, who convert the units of soya bean received into the products dispatched, create new units and must give them new IDs.

Each of the businesses that create or physically trade those units, throughout the distribution chains from the soya bean farmer through to retailer or caterer, are to generate and hold the information necessary for traceability. The information is to be held electronically keyed to the unit IDs.

The information remains in the ownership of the business that generated it but is available when required by law for the purposes of traceability (in the event of a food safety problem) or by commercial agreement between businesses. The means of communicating the information is standardised so that it can be readily accessed from business to business through the distribution chains, when required.

This is a development beyond the European Union legal requirement (General Food Law) (Anon, 2002b), which came into force January 1$^{st}$. 2005, and beyond the Bioterrorism

Preparedness and Response Act (Anon, 2002a) that came into force in USA in 2002 requiring each food business to independently record sources of supplies and destinations of foods, but builds on that basis.

The method of identifying the units of goods traded is based on the Global Solution One (GS1) system that is already in use throughout the world. The information is keyed to unique IDs given to the individual trade units (e.g. truckload/railcar of soya beans) but the scheme also accommodates trade in logistic units made up of numbers of trade units (e.g. pallets of boxes). Businesses that create logistic units have to label them with a logistic unit ID and also record the IDs of the component trade units.

The scheme does not demand one to one traceability, i.e. that a particular retail product should be traceable back to a batch of origin, or vice versa from origin to destination. Pragmatically it is recognised that mixing of units is likely to occur at a number of stages in the distribution chains, e.g. in the production of soya bean oil. Where such mixing occurs, the business is transforming the trade units. The requirement for traceability is that the business records the IDs of the received trade units that may be input to each created trade unit, and vice versa. The particular product is then traceable back to a definite number of batches.

The information itemised in the specifications (Denton, 2003) for recording by the food businesses includes:

- the fundamental information necessary to identify and physically trace the products, that **shall** be recorded;

- specific information that is required by law in relation to food safety, quality and labelling, together with important elements of commercially desirable information related to those matters, that **should** be recorded

- further specific and commercial information considered to be of sufficient relevance to be included in the specifications, that **may** be recorded

Given the enormous variety of legal requirements of soya bean product, the information specifications cannot itemise all the information that may possibly be required in every situation. The specifications provide a generic basis for traceability. Flexibility is allowed for businesses to record further information, in their own non-standardised formats, but keyed to the unit IDs.

Although virtually every distribution chain is different, they all appear to be made up of a number of characteristic components or *building blocks*. The types of business identified in this document which have inputs or outputs from soya bean product processing are:

→ Soya bean farmers

→ Soya bean handlers (elevators)

→ Soya bean meal and oil processors

→ Wholesalers/retailers/supermarket

Any given soya bean product distribution chain may be made up of some or all of these components. There may also be others which are not included here but amendments may be made to this document at a later stage in order to include those components.

These specifications will provide a basis for Information Technology (IT) service providers to develop business solutions (applications) for the trade. The information specifications do not preclude the use of paper systems, although the obvious benefits of business efficiency, including rapid communication, will be lost.

Further information on the background to the development of the scheme and on its philosophy is given in informative annexes A and B.

## 2 Scope

Soya bean meal and oil products are a product of soya bean meal and oil processing using solvent extraction. This document is applicable to the distribution of soya bean oil for human consumption and meal for animal consumption (to be used in animal feed) including the steps of farming, handling (elevator), solvent extraction of oil and meal processing.

# 3    Terms and definitions

For the purposes of this document, the following terms and definitions apply:


## 3.1    Soya bean product

The main attributes of soya bean product are moisture, protein and oil content.

Quality is judged by moisture, test weight, oil and protein contents as major components. For soya bean product, protein and oil contents are important for final oil and meal processing. Soya beans are graded based on their moisture, test weight, foreign material and damaged material contents and traded accordingly.

Soya beans in the US are primarily grown in the northern midwestern states from Ohio to Kansas and South Dakota, in states along the Mississippi river, and in the southeastern states. After harvest, the farmers sell their crop to the grain elevators that handle and sell the grain marketed against generic grade standards (grade standards established by Unites State Department of Agriculture). Soya beans are transported by truck, rail, barge or ship to the processors. Soya beans are loaded, unloaded, conveyed, and blended several times while on the way from the field to processing. Bulk handling is most common in soya bean chain.

Soya bean product contains on average 11% moisture, 37.9% protein, 17.8% fat, 4.7% fiber and 4.5% ash.


## 3.2    Traceability

The International Standardization Organization (ISO) defines traceability as (ISO, 1994):

- Ability to trace the history, application or location of that which is under consideration
- NOTE when considering products, traceability can relate to
    - → the origin of materials and parts
    - → the processing history


## 3.3    Symbols and abbreviations

*Table 1      Symbols and abbreviations*

| | |
|---|---|
| AI | Application Identifier (GS1 system) |
| GLN | Global Location Number (GS1 system) |
| GMP | Good Manufacturing Practice |
| GS1 | Global Solution 1 |
| GS1 system | Unique global identification system |
| GTIN | Global Trade Item Number (GS1 system) |
| GTIN+ | GTIN plus a further number to uniquely identify each particular trade unit (e.g. the production batch and serial number or the date and time of production). |
| ID | Identification |
| ISO | The International Organization for Standardization |
| n2 or n14, etc | GS1 identifier numbers consisting of 2 or 14, etc digits |
| SGTIN | SGTIN is a method of identifying unique items at the unit or retail level as well as at the case and carton levels. It is a GTIN combined with a Serial Number |
| SSCC | Serial Shipping Container Code (GS1 system) |

# 4 Requirements

## 4.1 Identification of the units traded

Soya bean product shall be traded as uniquely identified and labelled units.

Businesses that create trade units shall identify and label each of them with a GTIN+ / SGTIN+.

Businesses that create logistic units, made up of numbers of separately identified trade units, shall identify and label each logistic unit with a SSCC.

## 4.2 Recording of information

Businesses that physically trade in soya bean products shall generate and hold the required information, appropriate to the type of business, for each of the units traded.

Table 2-4 gives a detailed recommendation of data to be recorded by soya bean farmers, elevators and processors. The other tables (for transporters, retailers and catering establishments) included here are a skeleton for a recommendation standard for the respective previous links. In order to complete these tables a full sector-wide investigation and subsequent hearing process must take place.

The detailed information requirements are tabulated below as follows:

Businesses that carry out the functions of more than one of the categories listed above shall record the information relevant to each of the functions carried out.

The data elements in the following tables categorised as **shall** are considered to be fundamental information necessary to identify and physically trace the products. These elements must be recorded.

The data elements in the following tables categorised as **should** are specific information required by law in relation to food safety, quality and labelling together with important elements of commercially desirable information related to those matters. It is recommended that these elements are recorded.

The data elements in the following tables categorised as **may** are further specific information required by law and commercially desirable information, considered to be of sufficient relevance to be included in the document. Businesses may choose to record these elements.

In these tabulations there is no repetition of the information originally recorded to describe the units created and their history, although businesses receiving those units later in the distribution chain will often need some of that information. The information is keyed to the unit IDs and can be supplied by commercial agreement between the businesses without having to re-input the data.

### 4.2.1  Soya Bean Farmers

*Table 2       Information to be recorded by Soya Bean Farmers*

| Data element | | Description | Examples | Categorisation | | |
|---|---|---|---|---|---|---|
| | | | | Shall | Should | May |
| **SOYA BEAN PRODUCT FARMERS** | | | | | | |
| SBF01 | Soya bean product farmer ID | Name and address or GLN of soya bean farmer | The Famrer Co, 13 farmer Street, Des Moines, IA , USA 50309 or n3+n13 | X | | |
| SBF02 | GMP certification | Names of quality or food safety GMP schemes by which soya bean farmer  is certified | | | | X |
| SBF03 | Laboratory certification | Names of laboratory certification | | | | X |
| **FOR EACH UNIT OF SOYA BEAN PRODUCT** | | | | | | |
| **Identities** | | | | | | |
| SBF04 | Unit ID | SSCC if received as a logistic unit or GTIN+ if received as a separate trade unit | n2+n18 or n2+n14+AI's | X | | |
| SBF05 | Trade unit IDs in logistic unit | List of GTIN+s of the trade units that make up the logistic unit (if received as a logistic unit) | List of n2+n14+AIs | X | | |
| **Source** | | | | | | |
| SBF06 | Transporter ID | Name and address or GLN of transporter from whom the unit was received | The Transporters Company, 12 George Street, Des Moines, IA 50309 or  n3+n13 | X | | |
| SBF07 | Date and time of reception | Date and time of transfer from transporter | 2005-06-28T08:30 | X | | |
| **Control checks** (related to the logistic or separate trade units, as appropriate) | | | | | | |
| SBF08 | Further quality control checks | Records of further quality control checks, each in the form of description of measurement and value, are available in electronic form, on paper or not available | Paper | | | X |
| **Transformation information** (for each trade unit) | | | | | | |
| SBF09 | Related created trade unit IDs | List of the GTIN+s of the created trade units that may incorporate part of the received trade unit | List of n2+n14+Ais | X | | |
| **FOR EACH TRADE UNIT CREATED** | | | | | | |
| **Identity** | | | | | | |
| SBF10 | Trade unit ID | GTIN+ (n2+n14+AI's) | (01) 07012345000001 (10) 0000000125 | X | | |
| **Description** | | | | | | |
| SBF11 | Type of unit | Description of physical type of unit (bags of seed) | Three Bag | X | | |
| SBF12 | Grams | Pounds or kilogram of product (lb/kg) | 1000 lb | X | | |
| SBF13 | Name/type of product | Descriptive name of product (Soya bean seeds) | Soya bean seeds | X | | |
| SBF14 | Product specification | Records of further details of product specification (quality and size grades, etc) are available in electronic form, on paper or not available | Paper | | | X |
| SBF15 | Composition | List of names | Nutrients Protein Carbohydrates fat | X | | |
| SBF16 | Date of durability | Best before or sell by date, as appropriate | Sell by 2008-06-30 | | X | |

| Data element | | Description | Examples | Categorisation | | |
|---|---|---|---|---|---|---|
| | | | | Shall | Should | May |
| **Production history** | | | | | | |
| SBF17 | Seed variety | Name and ID of seed variety | | | | X |
| SBF18 | Seed Supplier | Name and address of seed supplier | XYZ Seed Company, 123 Grand Ave, Des Moines, IA 50309 | | | X |
| SBF19 | Date of seed purchase | Date of purchase | | | X | |
| SBF20 | Metalaxyl | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF21 | Mefenoxam | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF22 | Azoxystrobin + Metalaxyl | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF23 | Many formulations Captan | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF24 | Captan + PCNB + thiabendazole | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF25 | Captan + PCNB + metalaxyl | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF26 | Carboxin + thiram | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF27 | Carboxin + thiram + metalaxyl | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF28 | Carboxin + captan | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF29 | Fludioxonil | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF30 | Fludioxonil + mefenoxam | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF31 | PCNB + ethazole | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF32 | Thiram | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF33 | Cruiser | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF34 | Gaucho | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF35 | Pesticides: | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF36 | Polychlorinated Biphenyls (PCB?s) | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF37 | Dioxins | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF38 | Polycyclic Aromatic Hydrocarbons (PAH's) | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF39 | Arsenic | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF40 | Lead | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF41 | Cadmium | Name and ID of supplier GTIN+ of trade unit | | | | X |
| SBF42 | Fluorine | Name and ID of supplier GTIN+ of trade unit | | | | X |

| Data element | | Description | Examples | Categorisation | | |
|---|---|---|---|---|---|---|
| | | | | Shall | Should | May |
| SBF43 | Mmycotoxins | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF44 | Deoxynivalenol (DON) | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF45 | Nitrogen fertilizer | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF46 | Ammonium sulfate | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF47 | Urea | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF48 | Phosphate fertilizer | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF49 | Potash fertilizer | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF50 | Micronutrient fertilizers | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF51 | Boron | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF52 | Copper | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF53 | Manganese | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF54 | Zinc | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF55 | Molybdate | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF56 | Herbicides | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF57 | Dimethylamine) | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF58 | Butoxyethyl ester) | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF59 | Acid and butoxy ethylester) | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF60 | Butoxyethyl ester) | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBF61 | Glyphoste | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| **Transformation information** | | | | | | |
| SBF62 | Related received trade unit IDs | List of the GTIN+s of the received trade units that may be input to the created trade unit | List of n2+n14+AIs | X | | |
| **FOR EACH LOGISTIC UNIT CREATED** | | | | | | |
| **Identities** | | | | | | |
| SBF63 | Logistic unit ID | SSCC | n2+n18 | X | | |
| SBF64 | Trade unit IDs in logistic unit | List of GTIN+s of the trade units that make up the logistic unit | List of n2+n14+AIs | X | | |
| **FOR EACH UNIT DISPATCHED** (either as a logistic unit or a separate trade unit) | | | | | | |
| **Identity** | | | | | | |
| SBF65 | Unit ID | SSCC if dispatched as a logistic unit or GTIN+ if dispatched as a trade unit | n2+n18<br>or n2+n14+AI's | X | | |

| Data element | | Description | Examples | Categorisation | | |
|---|---|---|---|---|---|---|
| | | | | Shall | Should | May |
| **Destination** | | | | | | |
| SBF66 | Transporter ID | Name and address or GLN of the transporter to whom the unit is dispatched | The Transporters Company, 12 George Street, London, NW3 4TU, England or n3+n13 | X | | |
| SBF67 | Date and time of dispatch | Date and time of transfer to transporter | 2005-06-29T16:00 | X | | |

\* note about data element codes

### 4.2.2 Soya Bean Elevator

*Table 3     Information to be recorded at Soya Bean Elevators*

| Data element | | Description | Examples | Categorisation | | |
|---|---|---|---|---|---|---|
| | | | | Shall | Should | May |
| **SOYA BEAN PRODUCT ELEVATOR** | | | | | | |
| SBE1 | Soya bean elevator ID | Name and address or GLN of Elevator that handles bulk soya beans | The Farmer Co, 13 Grain Street, Des Moines, IA 50309 or n3+n13 | X | | |
| SBE2 | GMP certification | Names of quality or food safety GMP schemes by which the elevator is certified | | | | X |
| SBE3 | Laboratory certification | Names of laboratory certification | | | | X |
| **FOR EACH UNIT OF SOYA BEAN PRODUCT** | | | | | | |
| **Identities** | | | | | | |
| SBE4 | Unit ID | SSCC if received as a logistic unit or GTIN+ if received as a separate trade unit | n2+n18 or n2+n14+AI's | X | | |
| SBE5 | Trade unit IDs in logistic unit | List of GTIN+s of the trade units that make up the logistic unit (if received as a logistic unit) | List of n2+n14+AIs | X | | |
| **Source** | | | | | | |
| SBE6 | Transporter ID | Name and address or GLN of transporter from whom the unit was received | The Transporters Company, 12 George Street, Des Moines, IA 50309 or n3+n13 | X | | |
| SBE7 | Date and time of reception | Date and time of transfer from transporter | 2005-06-28T08:30 | X | | |
| **Control checks** (related to the logistic or separate trade units, as appropriate) | | | | | | |
| SBE8 | Further quality control checks | Records of further quality control checks, each in the form of description of measurement and value, are available in electronic form, on paper or not available | Paper | | | X |
| **Transformation information** (for each trade unit) | | | | | | |
| SBE9 | Related created trade unit IDs | List of the GTIN+s of the created trade units that may incorporate part of the received trade unit | List of n2+n14+Ais | X | | |
| **FOR EACH TRADE UNIT CREATED** | | | | | | |
| **Identity** | | | | | | |
| SBE10 | Trade unit ID | GTIN+ (n2+n14+AI's) | (01) 07012345000001 (10) 0000000125 | X | | |
| Description | | | | | | |
| SBE11 | Type of unit | Description of physical type of unit (truckload) | A truckload | X | | |
| SBE12 | Bushels | Bushels of product (Bu) | 950 Bu | X | | |
| SBE13 | Name/type of product | Descriptive name of product (Soya bean) | Soya bean | X | | |
| SBE14 | Product specification | Records of further details of product specification (quality and size grades, etc) are available in electronic form, on paper or not available | Paper | | | X |

| Data element | | Description | Examples | Categorisation | | |
|---|---|---|---|---|---|---|
| | | | | **Shall** | **Should** | **May** |
| SBE15 | Composition | List of names | Moisture<br>Test Weight<br>Foreign Material<br>Damaged Material | X | | |
| **Production history** | | | | | | |
| SBE16 | Moisture | Moisture content of soya beans | 13% | | | X |
| SBE17 | Test Weight | Test weight of soya beans | 59 lb/bu | | | X |
| SBE18 | Foreign material | Foreign material in soya beans | 2% | | | X |
| SBE19 | Damaged material | Damaged material in soya beans | 1.5% | | | X |
| SBE20 | Heat damaged | Heat damaged soya beans | 0.5% | | | X |
| SBE21 | Total damaged | Total damage in soya beans | 2.2% | | | X |
| SBE22 | Splits | Moisture content of soya beans | 3% | | | X |
| SBE23 | Beans of other colors | Soya beans of other colors | 0.2% | | | X |
| SBE24 | Mycotoxins | Mycotoxins level in soya beans | 2 ppm | | | X |
| SBE25 | Deoxynivalenol (DON) | Deoxynivalenol level in soya beans | 2 ppm | | | X |
| SBE26 | Zearalenon | Zearalenon level in soya beans | 1 ppm | | | X |
| **Transformation information** | | | | | | |
| SBE27 | Related received trade unit IDs | List of the GTIN+s of the received trade units that may be input to the created trade unit | List of n2+n14+AIs | X | | |
| **FOR EACH LOGISTIC UNIT CREATED** | | | | | | |
| **Identities** | | | | | | |
| SBF28 | Logistic unit ID | SSCC | n2+n18 | X | | |
| SBF29 | Trade unit IDs in logistic unit | List of GTIN+s of the trade units that make up the logistic unit | List of n2+n14+AIs | X | | |
| **FOR EACH UNIT DISPATCHED** (either as a logistic unit or a separate trade unit) | | | | | | |
| **Identity** | | | | | | |
| SBF30 | Unit ID | SSCC if dispatched as a logistic unit or GTIN+ if dispatched as a trade unit | n2+n18<br>or n2+n14+AI's | X | | |
| **Destination** | | | | | | |
| SBF31 | Transporter ID | Name and address or GLN of the transporter to whom the unit is dispatched | The Transporters Company, 12 George Street, Des Moines, IA 50309<br>or  n3+n13 | X | | |
| SBF32 | Date and time of dispatch | Date and time of transfer to transporter | 2005-06-29T16:00 | X | | |

\* note about data element codes

### 4.2.3   Soya Bean processors

*Table 4      Information to be recorded by Soya Bean Processors*

| Data element | | Description | Examples | Categorisation Shall | Categorisation Should | Categorisation May |
|---|---|---|---|---|---|---|
| **SOYA BEAN PRODUCT PROCESSOR** | | | | | | |
| SBP1 | Soya bean product processor ID | Name and address or GLN of Soya bean processor that operates processing establishment | The Famrer Co, 13 Grrain Street, Des Moines, IA 50309 or n3+n13 | X | | |
| SBP2 | GMP certification | Names of quality or food safety GMP schemes by which the soya bean processor  is certified | | | | X |
| SBP3 | Laboratory certification | Names of laboratory certification | | | | X |
| **FOR EACH UNIT OF SOYA BEAN PRODUCT** | | | | | | |
| **Identities** | | | | | | |
| SBP4 | Unit ID | SSCC if received as a logistic unit or GTIN+ if received as a separate trade unit | n2+n18 or n2+n14+AI's | X | | |
| SBP5 | Trade unit IDs in logistic unit | List of GTIN+s of the trade units that make up the logistic unit (if received as a logistic unit) | List of n2+n14+Als | X | | |
| **Source** | | | | | | |
| SBP6 | Transporter ID | Name and address or GLN of transporter from whom the unit was received | The Transporters Company, 12 George Street, London, NW3 4TU, England or  n3+n13 | X | | |
| SBP7 | Date and time of reception | Date and time of transfer from transporter | 2005-06-28T08:30 | X | | |
| **Control checks** (related to the logistic or separate trade units, as appropriate) | | | | | | |
| SBP8 | Further quality control checks | Records of further quality control checks, each in the form of description of measurement and value, are available in electronic form, on paper or not available | Paper | | | X |
| **Transformation information** (for each trade unit) | | | | | | |
| SBP9 | Related created trade unit IDs | List of the GTIN+s of the created trade units that may incorporate part of the received trade unit | List of n2+n14+Ais | X | | |
| **FOR EACH TRADE UNIT CREATED** | | | | | | |
| *Identity* | | | | | | |
| SBP10 | Trade unit ID | GTIN+ (n2+n14+AI's) | (01) 07012345000001 (10) 0000000125 | X | | |
| *Description* | | | | | | |
| SBP11 | Type of unit | Description of physical type of unit (number of glass jar/squeezers) | Six-pack | X | | |
| SBP12 | grams | Grams of product (g) | 425g | X | | |
| SBP13 | Name/type of product | Descriptive name of product (Soya bean oil/ Meal) | Soya bean oil/ Meal | X | | |
| SBP14 | Product specification | Records of further details of product specification (quality and size grades, etc) are available in electronic form, on paper or not available | Paper | | | X |
| SBP15 | Composition | List of names | Protein Oil | X | | |
| SBP16 | Date of durability | Best before or sell by date, as appropriate | Sell by 2008-06-30 | | X | |
| **Production history** | | | | | | |
| | Solvent | Name and ID of solvent supplier GTIN+ of trade unit | | | | X |
| SBP17 | Dimethylbutanes | Level in oil (quality check) | | | | X |
| SBP18 | Normal hexane | Level in oil (quality check) | | | | X |
| SBP19 | Methylcyclopentane | Level in oil (quality check) | | | | X |

| Data element | | Description | Examples | Categorisation | | |
|---|---|---|---|---|---|---|
| | | | | Shall | Should | May |
| SBP20 | Methylpentanes | Level in oil (quality check) | | | | X |
| SBP21 | Sulphur content | Level in oil (quality check) | | | | X |
| SBP22 | Bromine number | Level in oil (quality check) | | | | X |
| SBP23 | Nonvolatile matter | Level in oil (quality check) | | | | X |
| SBP24 | Color | Level in oil (quality check) | | | | X |
| SBP25 | Acidity of distillation residue | Level in oil (quality check) | | | | X |
| SBP26 | Doctor test | Level in oil (quality check) | | | | X |
| SBP27 | Kauri-Butanol value | Level in oil (quality check) | | | | X |
| SBP28 | Aniline point | Level in oil (quality check) | | | | X |
| SBP29 | Benzene content | Level in oil (quality check) | | | | X |
| SBP30 | Copper corrosion | Level in oil (quality check) | | | | X |
| SBP31 | Crude oil quality | Level in oil (quality check) | | | | X |
| SBP32 | Total gums/phosphatides | Level in oil (quality check) | | | | X |
| SBP33 | Nonhydratable  phosphatides | Level in oil (quality check) | | | | X |
| SBP34 | Oxidation products | Level in oil (quality check) | | | | X |
| SBP35 | Iron/meal content | Level in oil (quality check) | | | | X |
| SBP36 | Pigments | Level in oil (quality check) | | | | X |
| Crude oil properties | Moisture | Level in oil (quality check) | | | | X |
| SBP37 | Volatile matter | Level in oil (quality check) | | | | X |
| SBP38 | Color | Level in oil (quality check) | | | | X |
| SBP39 | Neutral oil loss | Level in oil (quality check) | | | | X |
| SBP40 | Unsaponifiable matter (excluding moisture and insoluble impurities) | Level in oil (quality check) | | | | X |
| SBP41 | Flash point | Level in oil (quality check) | | | | X |
| SBP42 | Unsaponifiable matter | Level in oil (quality check) | | | | X |
| SBP43 | Free Fatty Acids | Level in oil (quality check) | | | | X |
| SBP44 | Moisture | Level in oil (quality check) | | | | X |
| SBP45 | Volatile matter | Level in oil (quality check) | | | | X |
| SBP46 | Insoluble impurities | Level in oil (quality check) | | | | X |
| SBP47 | Flash point | Level in oil (quality check) | | | | X |
| SBP48 | Phosphorus | Level in oil (quality check) | | | | X |
| SBP49 | Calcium content | Level in oil (quality check) | | | | X |
| SBP50 | Magnesium content | Level in oil (quality check) | | | | X |
| SBP51 | NHP Content (Sodium Hydroxide Concentration) | Level in oil (quality check) | | | | X |
| SBP52 | Centrifuges for oil refining | | | | | X |
| SBP53 | Which centrifuge is used | Name and ID of centrifuge | | | | X |
| SBP54 | Supplier | Name and ID of supplier GTIN+ of trade unit | | X | | |
| SBP55 | Quality of once refined oil | | | | | X |
| SBP56 | FFA | Level in oil (quality check) | | | | X |
| SBP57 | Phosphorus | Level in oil (quality check) | | | | X |
| SBP58 | Soap | Level in oil (quality check) | | | | X |
| SBP59 | Peroxide value | Level in oil (quality check) | | | | X |
| | Bleached oil | | | | | X |
| SBP60 | Peroxide value | Level in oil (quality check) | | | | X |
| SBP61 | Bleaching product used | Name and ID of bleaching product | | | | X |
| SBP62 | Acid-activated earths | Name and ID of supplier GTIN+ of trade unit | | | | X |

| Data element | | Description | Examples | Categorisation | | |
|---|---|---|---|---|---|---|
| | | | | Shall | Should | May |
| SBP63 | Activated carbon | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBP64 | Silicates | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBP65 | Bleaching clay | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| SBP66 | Bleaching product supplier | Name and ID of supplier<br>GTIN+ of trade unit | | | | X |
| | Bleaching product properties | | | | | X |
| SBP67 | Total acidity<br>(titratable acidity) | Level in oil (quality check) | | | | X |
| SBP68 | pH | Level in oil (quality check) | | | | X |
| SBP69 | Moisture | Level in oil (quality check) | | | | X |
| SBP70 | Bulk density | Level in oil (quality check) | | | | X |
| SBP71 | Effective surface area (particle size) | Level in oil (quality check) | | | | X |
| SBP72 | Average particle diameter | Level in oil (quality check) | | | | X |
| SBP73 | Oil retention | Level in oil (quality check) | | | | X |
| | Hydrogenated oil | | | | | X |
| SBP74 | Hydrogenation feedstock quality | Level in oil (quality check) | | | | X |
| SBP75 | FFA | Level in oil (quality check) | | | | X |
| SBP76 | Phosphorus | Level in oil (quality check) | | | | X |
| SBP77 | Soap | Level in oil (quality check) | | | | X |
| SBP78 | Color | Level in oil (quality check) | | | | X |
| SBP79 | Peroxide value | Level in oil (quality check) | | | | X |
| SBP80 | Iodine value | Level in oil (quality check) | | | | X |
| SBP81 | Moisture | Level in oil (quality check) | | | | X |
| | Soya bean meal | | | | | X |
| SBP82 | Moisture | Level in meal (quality check) | | | | X |
| SBP83 | Protein | Level in meal (quality check) | | | | X |
| SBP84 | Oil | Level in meal (quality check) | | | | X |
| SBP85 | Fiber | Level in meal (quality check) | | | | X |
| SBP86 | Carbohydrate | Level in meal (quality check) | | | | X |
| SBP87 | Ash | Level in meal (quality check) | | | | X |
| SBP88 | Granulation – particle size | Level in meal (quality check) | | | | X |
| SBP89 | Amino acid composition | Level in meal (quality check) | | | | X |
| SBP90 | Amino acid digestibility | Level in meal (quality check) | | | | X |
| SBP91 | Trypsin inhibitor activity | Level in meal (quality check) | | | | X |
| SBP92 | Urease activity | Level in meal (quality check) | | | | X |
| SBP93 | NSI (Nitrogen Solubility Index) | Level in meal (quality check) | | | | X |
| SBP94 | PDI (Protein Digestibility Index) | Level in meal (quality check) | | | | X |
| **Transformation information** | | | | | | |
| SBP95 | Related received trade unit IDs | List of the GTIN+s of the received trade units that may be input to the created trade unit | List of n2+n14+AIs | X | | |
| **FOR EACH LOGISTIC UNIT CREATED** | | | | | | |
| **Identities** | | | | | | |
| SBP96 | Logistic unit ID | SSCC | n2+n18 | X | | |
| SBP97 | Trade unit IDs in logistic unit | List of GTIN+s of the trade units that make up the logistic unit | List of n2+n14+AIs | X | | |

| Data element | | Description | Examples | Categorisation | | |
|---|---|---|---|---|---|---|
| | | | | Shall | Should | May |
| **FOR EACH UNIT DISPATCHED** (either as a logistic unit or a separate trade unit) | | | | | | |
| **Identity** | | | | | | |
| SBP98 | Unit ID | SSCC if dispatched as a logistic unit or GTIN+ if dispatched as a trade unit | n2+n18 or n2+n14+AI's | X | | |
| **Destination** | | | | | | |
| SBP99 | Transporter ID | Name and address or GLN of the transporter to whom the unit is dispatched | The Transporters Company, 12 George Street, Des Moines, IA 50309 or n3+n13 | X | | |
| SBP100 | Date and time of dispatch | Date and time of transfer to transporter | 2005-06-29T16:00 | X | | |

\* note about data element codes

### 4.2.4  Transporters and Stores

These tables contain the information that should be recorded in each of the respective previous links. These tables can serve as a skeleton for a recommendation / ad-hoc standard for the respective previous links, but then a proper sector-wide investigation and subsequent hearing process must take place, and that was beyond the scope of this project.

For the purposes of this document, transporters and storage holders are considered to be businesses that provide the service of transporting or storing goods. They may operate at various stages in distribution chains, transporting or storing raw materials or products. Transport may be by land, sea or air.

Transporters and storage holders do not break down or create trade units but may break down or create logistic units.

*Table 5     Information to be recorded by Transporters and Stores*

| Data element | | Description | Examples | Categorisation | | |
|---|---|---|---|---|---|---|
| | | | | Shall | Should | May |
| **TRANSPORTER OR STORER** | | | | | | |
| SBT01 | trasporter business ID | Name and address or GLN of food business that operates transport vehicle or storage establishment | The Transporters Company, 12 George Street, London, NW3 4TU, England or  n3+n13 | X | | |
| SBT02 | Transport vehicle or storage establishment ID | Nationality, name (if applicable) and registration number of vehicle or name, address and registration number of establishment, or GLN | The Transporters Company, 12 George Street, London, NW3 4TU, England or n3+n13 | X | | |
| **FOR EACH UNIT RECEIVED** | | | | | | |
| **Identities** | | | | | | |
| SBT03 | Unit ID | SSCC if collected or received as a logistic unit or GTIN+ if received as a separate trade unit | n2+n18 or n2+n14+AI's | X | | |
| SBT04 | Trade unit IDs in logistic unit | List of GTIN+s of the trade units that make up the logistic unit (required only if received as a logistic unit and it is to be broken down or transformed by the transporter or storer) | List of n2+n14+AIs | X | | |
| **Source** | | | | | | |
| SBT05 | Previous food business ID | Name and address or GLN of food business from whom the unit was received (pre-form producers, cap producers, processors, etc.) | The Famrer Co, 13 Grain Street, Des Moines, MA14 2LP, England or  n3+n13 | X | | |
| SBT06 | Date and time of reception | Date and time of transfer from previous food business | 2005-07-29T16:00 | X | | |
| SBT07 | Place of collection | Name and address or GLN (this is required only for transporters) | The Famrer Co, 13 Grain Street, Des Moines, MA14 2LP, England or n3+n13 | X | | |
| **FOR EACH NEW LOGISTIC UNIT PRODUCED BY TRANSPORTER OR STORER** | | | | | | |
| **Identities** | | | | | | |
| SBT08 | Logistic unit ID | SSCC | n2+n18 | X | | |
| SBT09 | Trade unit IDs in logistic unit | List of GTIN+s of the trade units that make up the logistic unit | List of n2+n14+AIs | X | | |

| Data element | | Description | Examples | Categorisation | | |
|---|---|---|---|---|---|---|
| | | | | Shall | Should | May |
| **FOR EACH UNIT DISPATCHED** (either as a logistic unit or a separate trade unit) | | | | | | |
| **Identity** | | | | | | |
| SBT10 | Unit ID | SSCC if dispatched as a logistic unit or GTIN+ if dispatched as a trade unit | n2+n18<br>or n2+n14+AI's | X | | |
| **Destination** | | | | | | |
| SBT11 | Next food business ID | Name and address or GLN of the food business to whom the unit is dispatched (transporter or processor, etc.) | Gilespie and Sons Ltd, High Street, Sheffield, SH1 5GF, England<br>or n3+n13 | X | | |
| SBT12 | Date and time of dispatch | Date and time of transfer to next food business | 2005-07-29T20:00 | X | | |
| SBT13 | Place of delivery | Name and address or GLN (this is required only for transporters) | Gilespie and Sons Ltd, High Street, Sheffield, SH1 5GF, England<br>or n3+n13 | X | | |
| **INCOMPLETE** | | | | | | |

\* note about data element codes

### 4.2.5 Wholesalers/Retailers/Supermarkets

These tables contain the information that should be recorded in each of the respective previous links. These tables can serve as a skeleton for a recommendation / ad-hoc standard for the respective previous links, but then a proper sector-wide investigation and subsequent hearing process must take place, and that was beyond the scope of this project.

For the purposes of this document, retailers and caterers are considered to be suppliers to the public, not to other businesses. Retailers and caterers are encouraged to record information on their sales but the scope of this document does not extend to sale to the public.

*Table 6     Information to be recorded by wholesalers/retailers/supermarkets*

| Data element | | Description | Examples | Categorisation | | |
|---|---|---|---|---|---|---|
| | | | | Shall | Should | May |
| **RETAILER OR CATERER** | | | | | | |
| SBRC01 | Food business ID | Name and address or GLN of food business that operates retail or catering establishment | G Grocer and Sons Ltd, High Street, Sheffield, SH1 5GF, England or n3+n13 | X | | |
| SBRC02 | Retail or caterer establishment ID | Name, address and registration number or GLN of retail or catering establishment | F. Monger and Sons Ltd, High Street, Sheffield, SH1 5GF, England or n3+n13 | X | | |
| **FOR EACH UNIT RECEIVED** | | | | | | |
| **Identities** | | | | | | |
| SBRC03 | Unit ID | SSCC if received as a logistic unit or GTIN+ if received as a separate trade unit | n2+n18 or n2+n14+AI's | X | | |
| SBRC04 | Trade unit IDs in logistic unit | List of GTIN+s of the trade units that make up the logistic unit | List of n2+n14+AIs | X | | |
| **Source** | | | | | | |
| SBRC05 | Previous food business ID | Name and address or GLN of food business from whom the unit was received (Processor, transporter, etc.) | The Transporters Company, 12 George Street, London, NW3 4TU, England or  n3+n13 | X | | |
| SBRC06 | Date and time of reception | Date and time of transfer from previous food business | 2005-07-30T07:00 | X | | |
| **INCOMPLETE** | | | | | | |

\* note about data element codes

## 4.3    Note about the data element codes

The data element codes such as SBRC are representative of an intended unique code that would be used once the standards are mapped against Electronic Product Code Information Services or other relevant software standards.

## 4.4    Comments regarding the soya bean product table

The list of codes in the standard that refer to the production history are parameters which have been selected for this purpose. These parameters have been forwarded to various soya bean handling establishments in order to get their input with regards to the appropriateness of the suggested parameters we have received some responses and included there input

where appropriate. It would be important to get greater industry consensus about this before using the as hoc standard in any other context. The list is extensive and includes all possible parameters even though many soya bean farmers, elevators and processors may only record some of the elements it was thought necessary to include all.

# 5    References

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# Annex A
# (informative)

# The background to the development of the ad-hoc scheme

## The need for traceability

There are increasing demands for traceability throughout the food chain. The root causes of many of the recent food safety problems have been found in the primary production sector, although the problems are manifested at the other end of the food chain in the products sold to consumers. Hence there are needs to trace back through the chain to determine the causes of the problems and then, in taking remedial action, to trace forward from those causes to withdraw or recall all the unsafe products produced. With chain traceability in place, these tasks can be done efficiently and with the minimum of commercial disturbance. Without chain traceability, whole sectors of the food industry may have to be closed down on a precautionary basis and the costs can be ruinous.

Legislators are now acting on traceability in order to protect the public. Food businesses, particularly the large retailers and those producing branded goods, are increasingly demanding traceability to assure their standards and to protect their businesses.

## The legal requirements for traceability

The EU Regulation on the General Principles and Requirements of Food Law came into effect 1$^{st}$ January 2005. Related EU food legislation will have to be adapted to these requirements by 1$^{st}$ January 2007 at latest.

In the US, the Bioterrorism Act of 2002 requires all food and feed companies to self-register with FDA and record all information about their suppliers and customers based on one-up and one-down. FDA also requires that in case of a food related emergency, a food/feed company must be able to produce requested records within a 24 hour time period.

In its article 3 this Regulation provides its own definition of traceability, in Article 18 it specifies traceability requirements and in Article 19 it specifies related product recall requirements:

### Article 3

#### Other Definitions

(15) 'traceability' means the ability to trace and follow a food, feed, food-producing animal or substance intended to be, or expected to be incorporated into a food or feed, through all stages of production, processing and distribution;

### Article 18

**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.

3. Food and feed business operators shall have in place systems and procedures to identify the other businesses to which their 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.
5. Provisions for the purpose of applying the requirements of this Article in respect of specific sectors may be adopted in accordance with the procedures laid down in Article 58(2).

## Article 19

**Responsibilities for food: food business operators**

1. If a food business operator considers or suspects that a food which it has imported, produced, processed, manufactured or distributed is not in compliance with the food safety requirements, it shall immediately initiate procedures to withdraw the food in question from the market and inform the competent authorities thereof. Where the product may have reached the consumer, the operator shall effectively and accurately inform the consumers of the reason for its withdrawal, and if necessary, recall from consumers products already supplied to them when other measures are not sufficient to achieve a high level of health protection.
2. A food business operator responsible for retail or distribution activities which do not affect the packaging, labelling, safety or integrity of the food shall, within the limits of its respective activities, initiate procedures to withdraw from the market products not in compliance with the food-safety requirements and shall participate in contributing to the safety of the food by passing on relevant information necessary to trace a food, cooperating in the action taken by producers, processors, manufacturers and/or the competent authorities.

The Regulation demands a one up, one down traceability system to be operated throughout food distribution chains. It requires the identification of food at all stages, not merely the lot marking after processing required by current legislation. Chain traceability, product withdrawal and recall are based on the sequential interrogation of the food businesses up or down the chain and are dependent on them responding and providing the necessary information to track the materials involved.

# Annex B
## (informative)

# The philosophy of the ad-hoc scheme

### The concept of traceability

ISO defines traceability as the ability to trace the history, application or location of that which is under consideration, and notes that when considering products this can relate to the origin of materials and parts and the processing history.

This is a more extensive definition than is stated in the EU General Food Law, with implications beyond that law's fundamental requirement to be able to trace the food through the various food businesses that handle it in the distribution chain. The information required may therefore include what the food is and what has happened to it, as well as where it has come from and who was responsible for it. These further aspects of traceability are important in relation to food safety, quality and labelling.

Traceability concerns only the *ability* to trace things, which means that the necessary information must be available when required. It does not mean that the information must at all times be *visible* by being labelled on the food or being with it.

### The types of information required and their prioritisation

The types of information that may be required can be broadly categorised into:

– fundamental traceability information;

– specifically required information;

– and commercially desirable information.

*Fundamental traceability information* is information required to identify the food and trace its physical movement through the distribution chains. Essential parts of this information concerning the suppliers and destinations of food will, under the EU General Food Law, have to be held by each producer or food business and be made available to the competent authorities and to other producer or food business operators for the purpose of product withdrawal or recall. For each producer or food business, the fundamental information includes:

their own ID and location;

the quantities, nature and unit IDs of the food (including materials to be incorporated in food) received by the business;

the ID's of the previous producer / food businesses (from whom those units were received);

the dates/times and places of reception;

the quantities, nature and unit IDs of the food dispatched by the business;

the ID's of the next businesses (to whom those units are dispatched);

the dates/times and places of dispatch;

and the 'mapping' relationships between the units received and dispatched (when units are transformed by the business).

Note that when units are transformed by a business, the mapping relationship between the units received and the units dispatched need not be simple and direct. For example, a honey processor may use many units of glass jars, perhaps from different suppliers, to produce units of product. Each unit of product may possibly be associated with a number of units of glass jars, and vice versa. Traceability requires that the mapping relationship is known, not that it should be a simple 1:1 relationship.

*Specifically required information* is particular information on the nature of the food and on the circumstances of its production that is required by law for particular purposes, and which must be made available to the appropriate authorities or persons for those purposes. These requirements vary with national legislation and the type of food and food business.

Examples of specifically required information include:

– the results of chemical and bacterial analyses, etc, that are specifically required under food safety legislation or under the general obligation for the monitoring of critical control points, which must be held by the food businesses and be accessible by the food authority (and be directly supplied to the food authority in some instances);

– customs and excise and trading (financial) information that must be held by businesses and be supplied to the appropriate authorities for purposes such as taxation, etc.

*Commercially desirable information* is information on the nature of the food and on the circumstances of its production, which is sought by food businesses for a variety of reasons. These include maximising the efficiency of their own operations, limiting their own liabilities under product liability and safety legislation, assuring the safety and quality of their products, enabling accurate labelling and substantiating their marketing claims, etc. The requirements for this information do, of course, vary from business to business.

Examples of commercially desirable information include much of that already listed above and:

– details of raw materials, products, processes and controls that are required for reasons of business efficiency, product labelling and to ensure product safety and quality;

– information on the GMP status of the food businesses involved in the chain that is required to ensure product safety and quality, etc.

Clearly there is a huge range of information of potential interest. Given the differences between countries in their specific legal requirements, the information specifications cannot itemise all the information that may possibly be required in every situation. Hence there is a need for prioritisation, with the aim of providing a generic basis for traceability. For this purpose, the information itemised in the documents is categorised as:

– fundamental information necessary to identify and physically trace the products, that shall be recorded;

–    specific information that is required by law in relation to food safety, quality and labelling, together with important elements of commercially desirable information related to those matters, that should be recorded;

–    further specific and commercial information considered to be of sufficient relevance to be included in the documents, that may be recorded.

Some areas of relevant information, such as the HACCP analyses and checks carried out by a business, are complex data sets that are individual to each product, process and business and so are difficult to standardise. To account for this, some flexibility is allowed in the specifications for businesses to record further information in their own non-standardised files but keyed to the units of food produced.

## The units to be identified and traced

The physical units traded are those to be identified and traced.

An ID system that applies to the trade in goods of all types is already in operation throughout the world, under the auspices of Global Solutions One (GS1). This system is widely used in the food industry.

The GS1 system defines a trade unit as any item (product or service) upon which there is a need to retrieve pre-defined information and that may be priced or ordered or invoiced at any point in the supply chain, and adds this definition covers raw materials through to the end-user products and also includes services, all of them having pre-defined characteristics.

Trade units are marked with a *Global Trade Identification Number* (GTIN) which incorporates a code allocated by GS1 to uniquely identify the company and another code allocated by the company to denote the item (usually indicating product type ). Further data can be attributed to the item using *Application Identifiers* (AI's), commonly used to further describe the product (e.g. date of minimum durability) and to uniquely identify each particular trade unit. The production batch and item serial numbers, or simply the date and time of production, are often used to uniquely identify each trade unit. A further GS1 code, the *Global Location Number* (GLN), can be allocated by the company to identify particular locations.

However, goods are also transported or stored as *logistic units*, such as pallets, which contain a number of separately identified trade units. The trade units within a logistic unit may all be similar in type or they may be different, for example in a pallet of mixed products assembled by wholesaler to send to a retailer. Each logistic unit is marked with a *Serial Shipping Container Code* (SSCC) which uniquely identifies the company and the particular logistic unit.

These various GS1 identifiers are usually expressed as standardised bar code labels on the units.

To achieve chain traceability, the business that creates each trade unit, whatever its form, must uniquely identify it with a GTIN plus a particular unit code (i.e. a GTIN+ in the terminology of this document). Businesses that transform trade units, such as processors who convert the units of raw materials received into the products dispatched, create new units and must give them new IDs. The relevant information for the traceability of the units is recorded by their creator and by the businesses that subsequently trade them physically through the distribution chain.

Similarly, businesses that assemble logistic units must identify each logistic unit with a SSCC and record the IDs of the trade units that make up each logistic unit. Businesses that transport, store or trade intact logistic units merely have to record the limited information related to those logistic units rather than their component trade units. However, distributors often transform logistic units or break them down to the separate trade units prior to dispatch. These businesses must also record the relationships mapping the trade units between the logistic units received and the units dispatched.

## Dealing with the security, rights of access and supply of information

Clearly the businesses will not wish to make all this traceability information publicly available, particularly not to their competitors or even in many instances to their own suppliers and outlets. Even the fundamental traceability information has considerable commercial value, as open access to it would reveal a business's suppliers, markets and trading patterns. Therefore, there is a need to consider the rights to information and the control of access to it.

The rights of the various authorities to the fundamental traceability and specifically required information are prescribed in law. Business operators have a right to some of the specifically required information that the law requires to be passed on. They will also have a legal right to relevant fundamental traceability information when engaged in withdrawal or recall procedures, but not otherwise. There are no rights to the commercially desirable information other than those agreed or contracted between trading partners.

However, in practice there is considerable and increasing commercial pressure to provide information. Trade with much of the corporate food industry is now subject to suppliers and distributors agreeing to quality assurance standards and traceability requirements, including the holding or the supply of the associated information. Multiple retailers even share relevant on-line sales information with major suppliers to facilitate just-in-time stock replenishment.

To achieve commercial acceptance, the information specifications are for the generation and holding of information, not for the dissemination of that information. The businesses remain, in effect, the owners of their information. The passing on of information, other than that prescribed by law, remains a matter of commercial policy or commercial agreement between businesses. The establishment of the information specifications will, of course, ensure that the necessary information is available, and the technical specification will facilitate the communication of the information when required.

The business solutions built on the specifications will require secure business to business handshaking protocols to ensure that only those with a legitimate reason can gain access, and then only to the particular information on the particular units to which they have a right.

A consequence of this is that the information desired by the trade to be visible at the various transaction points in the distribution chains will not necessarily be available, unless there are commercial arrangements for that information to be passed on through the chains from the businesses that generated it. It is strongly recommended that such arrangements are made, but that is not part of the scheme.