



TDSEXPOSURE

Total Diet Study Exposure

Grant Agreement number 289108
Collaborative project
FP7-KBBE-2011-5

Deliverable D5.1 – Report European TDS Vocabulary

WP 5 – Development and implementation of quality standard framework for TDS Centres in Europe

Due month of deliverable: 6
Actual submission month: 9

Deliverable leader: IFR

Document status: Final version

Creation date: 31/07/2012

Final submission date: 09/10/2012

Project co-funded by the European Commission within the Seventh Framework Dissemination Level		
PU	Public	
PP	Restricted to other programme participants (including the	X
RE	Restricted to a group specified by the consortium (including the	
CO	Confidential, only for members of the consortium (including the	

Deliverable 5.1

European TDS Vocabulary

Authors:

Hannah Pinchen, IFR, Partner 2

Marina Rocha Pité, INSA, Partner 16

Paul Finglas, IFR, Partner 2

Luisa Oliveira, INSA, Partner 16

Isabel Castanheira, INSA, Partner 16

Paula Alvito, INSA, Partner 16

Mark Roe, IFR, Partner 2

Authors on behalf of WP5:

Veronique Sirot, Anses, Partner 1

Karine Vin, Anses, Partner 1

Alexandra Papdopoulos, Anses, Partner 1

Liesbeth Geraets, RIVM, Partner 4

Aida Turrini, INRAN, Partner 6

Isabelle Sioen, UGent, Partner 10

Darja Sokolić, HAH, Partner 11

Martina Jurković, HAH, Partner 11

Dace Vilcāne, PVD, Partner 12

Helle Meltzer, NIPH/FHI, Partner 17

Ólafur Reykdal, MATIS, Partner 18

Sophie Jensen, MATIS, Partner 18

Hrönn Ólína Jörundsdóttir, MATIS, Partner 18

Francesco Cubadda, ISS, Partner 20

Stefan Voorspoels, VITO, Partner 23

Per Ola Darnerud, NFA, Partner 24

Table of Contents

European TDS Vocabulary	4
EFQM Vocabulary	30
References	33
Abbreviations	38

European TDS Vocabulary

Acceptable Daily Intake / Tolerable Daily Intake (ADI/TDI)

Estimated (maximum) amount of an agent, expressed on a body mass basis, to which a subject may be exposed daily over his lifetime without appreciable health risk (Organisation for Economic Co-operation and Development, 2002 *in Renwick et al., 2003*).

Accreditation (of laboratories)

Procedure where an independent authority body acknowledges that an organisation or a person is competent to carry out specified tasks. Accreditation relies on criteria or procedures to assess the technical competencies and acknowledges the conformity of the quality system as well as the competencies of the staff (Norman glossary).

Accuracy

Closeness of agreement between a measured quantity value and a true quantity value of a measurement (JCGM 200:2012, 2012).

Acute dietary exposure assessment

Dietary exposure assessment conducted based on short-term exposure duration; a single meal or over a whole day. In the early 1990s, it became apparent that in some cases, residues of a chemical substance could pose risks resulting from a single exposure or at most a few days of exposure (FAO/WHO, 2005).

Additive

Any substance not normally consumed as a food by itself and not normally used as a typical ingredient of the food, whether or not it has nutritive value, the intentional addition of which the food has a technological (including organoleptic) purpose in the manufacture, processing, preparation, treatment, packing, packaging, transport or holding of such food results, or may be reasonably expected to result, (directly or indirectly) in it or its by-products becoming a component of or otherwise affecting the characteristics of such foods. The term does not include "contaminants" or substances added to food for maintaining or improving nutritional qualities (Codex Alimentarius Commission, 2005).

Aggregated results

When producing a distribution curve for a contaminant in food, aggregated results are combined data from different sources, e.g. both individual and aggregated results from different countries. Aggregated results are used when individual data are not available in sufficient quantities (or quality) to generate a full distribution curve and permit calculation of a mean contamination level (Adapted from WHO, 2000).

Aggregated sample

See Pooled sample

Analysis

The separation of any material or substance into its constituent elements, usually by chemical means, for the study and identification of each component. Qualitative analysis determines what components are present. Quantitative analysis determines the amount of each component.

Applicability

The analytes, matrices, and concentrations for which a method of analysis may be used satisfactorily (Codex Alimentarius Commission, 2009).

Background dietary population exposure

Exposure of a population to a substance through the diet, generally without taking into account particular situations of contamination of the foods such as local contamination (due to accidents or local pollution for instance), and without taking into account particular dietary patterns, that could significantly modify the exposure for the individuals concerned.

Benchmark Dose (BMD)

An exposure due to a dose of a substance associated with a specified low incidence of risk, generally in the range of 1% to 10%, of a health effect; or the dose associated with a specified measure or change of a biological effect (U.S Environmental Protection Agency, 2000).

Benchmark Dose Limit

The lower limit of a one-sided 95% confidence interval on the BMD (U.S Environmental Protection Agency, 2000).

Bias

The difference between the expectation of the test result or measurement result and the true value (ISO Standard 3534-2, 1993).

Central TDS Laboratory

A specialised central TDS laboratory carrying out the majority of the analytical work related to TDS analysis.

Certified Reference Material (CRM)

Reference material, accompanied by documentation issued by an authoritative body and providing one or more specified property values with associated uncertainties and traceabilities, using valid procedures (JCGM 200:2012, 2012).

Chemical residues

Potentially harmful chemicals that may remain on or in food after their deliberate application during cultivation (e.g. pesticides). The levels of these residues in foods are often stipulated by regulatory bodies in many countries and tightly regulated. Many of these chemical residues, especially derivatives of chlorinated pesticides, exhibit bioaccumulation which could build up to harmful levels in the body as well as in the environment. Persistent chemicals can be magnified through the food chain, and have been detected in products

ranging from meat, poultry, and fish, to vegetable oils, nuts, and various fruits and vegetables (adapted from European Commission, 2008).

Chemical substance

A matter of constant composition best characterised by the entities (molecules, formula units, atoms) it is composed of. Physical properties such as density, refractive index, electric conductivity, melting point, etc. characterise the chemical substance (IUPAC Compendium of Chemical Technology, The Gold Book).

Chronic dietary exposure assessment

An assessment which covers the average daily exposure over several years or an entire lifetime (EFSA, 2011 a).

Codex Alimentarius Commission

The Codex Alimentarius Commission implements the Joint FAO/WHO Food Standards Programme, the purpose of which is to protect the health of consumers and to ensure fair practices in the food trade. The *Codex Alimentarius* (Latin, meaning Food Law or Code) is a collection of internationally adopted food standards presented in a uniform manner. It also includes provisions of an advisory nature in the form of codes of practice, guidelines and other recommended measures to assist in achieving the purposes of the Codex Alimentarius (Codex Alimentarius Commission, 2003).

Codex Alimentarius based standards

A collection of internationally recognised standards, codes of practice, guidelines and other recommendations relating to foods, food production and food safety.

Collection report

A report document containing useful data collected by inspectors or purchasers on individual food items when samples are bought. It should contain: food identification, product type, brand and batch number; expiry date, sample size, sample condition at time of purchase, date, location and retail type of purchase, packaging type when purchased, packaging and conditioning for transport, and costs of the samples (EFSA/FAO/WHO, 2011).

Combined standard measurement uncertainty (or combined standard uncertainty)

Standard measurement uncertainty that is obtained using the individual standard measurement uncertainties associated with the input quantities in a measurement model (JCGM 200:2012, 2012).

Common food

Food widely available or consumed in a certain geographic area.

Composite dish

A dish containing more than one distinct ingredient that has a recipe behind it (adapted from EFSA, 2011 b).

Concentration data

Concentration of a substance measured or estimated in a sample based on a product that has been prepared to reflect normal consumption. Concentration data in a TDS are not based on historical composition data, and processing factors for raw food commodities (FAO/WHO, 1997) do not need to be applied, because estimated dietary exposures are based on the edible portions of the food — for example, bananas are peeled and the skin discarded along with any associated chemical residues. A TDS also incorporates the impact of cooking on less stable chemicals and on the formation of new ones (FAO/WHO, 2009).

Confidence Interval

Estimated range of values which is likely to include an unknown population parameter where the estimated range is calculated from a given set of sample data. If independent samples are taken repeatedly from the same population, and a confidence interval calculated for each sample, then a certain percentage (confidence level) of the intervals will include the unknown population parameter. Confidence intervals are usually calculated so that this percentage is 95% (Easton and McColl, 1997).

Contaminant

Any substance not intentionally added to food, which is present in such food as a result of the production (including operations carried out in crop husbandry, animal husbandry and veterinary medicine), manufacture, processing, preparation, treatment, packaging, transport or holding of such food or as a result of environmental contamination. The term does not include insect fragments, rodent hairs and other extraneous matter (Codex Standard 193-1995, 2008).

Contingency samples

Extra samples acquired/saved for any future loss or event.

Core foods

Foods most commonly consumed and consumed in the largest quantities by a population (Pennington, 2000).

Corrective actions

Specific actions to be developed for each Critical Control Point (CCP) in the Hazard Analysis and Critical Control Point (HACCP) system in order to deal with deviations when they occur. The actions must ensure that the CCP has been brought under control. Deviation and product disposition procedures must be documented in the HACCP record-keeping.

Coverage factor

Number larger than one by which a combined standard measurement uncertainty is multiplied to obtain an expanded measurement uncertainty (JCGM 200:2012, 2012).

Critical Control Point (CCP)

A point, step, or procedure at which control can be applied and a food safety hazard can be prevented, eliminated, or reduced to acceptable levels.

Critical value (L_c)

The minimum result which can be reliably discriminated from a blank (for example, with a 99% confidence level).

Data exchange

The EFSA's '*Guidance on Data Exchange*' prescribes procedures to efficiently transmit and exchange data between Member States and EFSA including specific file formats for data transmission (e.g. XML, Microsoft[®] Excel, etc.) and specific data transmission protocols to support electronic data exchange (EFSA, 2010).

Deterministic estimate

In exposure assessment, an estimate that is based on a single value for each model input and a corresponding individual value for a model output, without quantification of the cumulative probability or, in some cases, plausibility of the estimate with respect to the real-world system being modelled. This term is also used to refer to a model for which the output is uniquely specified based on selected single value for each of its inputs (FAO/WHO, 2009).

Diet history

Used to assess an individual's usual dietary intake over an extended period of time, such as the past month or year. The process involves an interview about usual eating patterns and a 3-day food record (Lee and Nieman, 2007).

Dietary habit

Habitual decisions an individual or culture makes when choosing what foods to eat.

Dietary exposure

For the purposes of food and feed risk assessment, the amount of a substance (including nutrients) ingested by a person or an animal as part of its diet (via food, beverages, drinking water and food supplements). This term does not refer to whole foods. The 'intake' of whole foods is termed 'food consumption' (FAO/WHO, 2009).

Dietary exposure assessment

The qualitative and/or quantitative evaluation of the likely intake of chemical substances (including nutrients) via food, beverage, drinking-water and food supplements. *Synonymous* with: Intake assessment (FAO/WHO, 2009).

Dietary modelling

A scientific systematic method for estimating the amounts of food chemicals a person or population may be consuming. To estimate dietary exposure to food chemicals, food consumption data are combined with food chemical concentration data.

Dilution / smoothing effect

This effect arises from combining a food item that contains a high concentration of nutrients/contaminants with several less concentrated/contaminated foods. This results in pooled samples having little or no measurable contamination (adapted from EFSA/FAO/WHO, 2011).

Duplicate diets / duplicate portion study

A method for estimating dietary intakes that involves collection and analysis of identical portions of foods and beverages consumed by an individual (FAO/WHO, 2009).

Edibility criteria

Objective measures defined to decide if the food items are suitable for sample preparation and analysis. They consist of sensory parameters specific for each food group and should take account of normal national consumption practices (EFSA/FAO/WHO, 2011).

Edible portion

The edible material remaining after the inedible waste (e.g. bones, stones, and peel) has been trimmed away (Reinivuo and Laitinen, 2007).

EFQM Excellence model

A quality tool/framework created by EFQM (formerly known as the European Foundation for Quality Management) to improve performance in any organisation (adapted from EFQM, 2012).

Environmental contaminants

Chemicals that accidentally or deliberately enter the environment, often, but not always, as a result of human activities. Some of these contaminants may have been manufactured for industrial use and because they are very stable, they do not break down easily. If released to the environment, these contaminants may enter the food chain. Other environmental contaminants are naturally-occurring chemicals, but industrial activity may increase their mobility or increase the amount available to circulate in the environment, allowing them to enter the food chain at higher levels than would otherwise occur. A wide variety of environmental contaminants have been detected in foods. These range from metals and "ionic" species like perchlorate to organic (carbon-based) substances, including the so-called "persistent organic pollutants" or POPs (named for their ability to exist in the environment for prolonged periods without breaking down) (Health Canada, 2009).

Epidemiological studies

The study of the distribution and determinants of health related states in specified populations, and the application of this study to the control of health problems.

Exposure

The concentration or amount of a particular agent that reaches a target organism, system or (sub) population in a specific frequency for a defined duration, via a specific or several routes (adapted from FAO/WHO, 2009).

Exposure assessment

The determination of the emissions, pathways and rates of movement of a substance and its transformation or degradation, in order to estimate the concentrations/doses to which human populations or environmental spheres (water, soil and air) are or may be exposed (Commission Regulation (EC) No 1488/94, 1994).

Expanded measurement uncertainty (or expanded uncertainty)

A product of a combined standard measurement uncertainty and a factor larger than the number one. The factor depends upon the type of probability distribution of the output quantity in a measurement model and on the selected coverage probability. The term “factor” in this definition refers to a coverage factor (JCGM 200:2012, 2012).

Fitness for purpose

Degree to which data produced by a measurement process enables a user to make technically and administratively correct decisions for a stated purpose (Codex Alimentarius Commission, 2009).

Food

In the Codex Alimentarius Commission context, any substance, whether processed, semi-processed or raw, that is intended for human consumption. It includes drinks, chewing gum and any substance that has been used in the manufacture, preparation or treatment of food, but it does not include cosmetics, tobacco or substances used only as drugs (FAO/WHO, 2009).

Food accounts

Measurement of dietary intake within households and institutions where congregate feeding is practiced. The method accounts for all food on hand in the home or institution at the beginning of the survey period, all that is purchased or grown throughout the period, and all that remains by the end of the survey (Lee and Nieman, 2007).

Food analysis

The discipline dealing with the development, application and study of analytical procedures intended for characterising the properties of foods and their constituents. These analytical procedures are used to provide information about a wide variety of different characteristics of foods, including their composition, structure, physiochemical properties and sensory attributes.

Food as consumed

Food described in the state it is consumed, i.e. food without the inedible portions and cooked if applicable (FAO, 2011).

Food as purchased

Food in the state it is bought, i.e. generally including the inedible part and raw, for example, banana including peel (FAO, 2011).

Food balance sheets

Method for indirectly estimating the amounts of food consumed by a country's population at a certain time. It is calculated on food disappearance rather than actual food consumption (Lee and Nieman, 2007).

Food basket

An assortment of foods representative for relevant aspects of a population diet.

Food category

A group containing foods which are linked by common characteristics (facets). The level of detail (wider/narrower e.g., dessert vs. cake, see Tuorila et al., 1998) depends on the viewpoint/characteristics, linked to the aims and/or constraints of the study.

Food classification system

This system tends to group or aggregate foods with similar characteristics; it is a tool for the "end-user" of data. Food classification systems are often standardised, as they may be based on legal documents, the most standardised being "vocabularies". Examples include Codex Alimentarius Food Standards, CIAA Food Categorization System, Eurocode-2 Food Coding System (Ireland and Moller, 2000) and FoodEx.

Food codification

A system to identify every food item in a TDS from purchase to sample preparation (Adapted from EFSA/FAO/WHO, 2011).

Food consumption data

Reflects what either individuals or groups consume in terms of solid foods, beverages, including drinking water, and supplements (EFSA, 2009).

Food consumption can be estimated through food consumption surveys at an individual or household level or approximated through food production statistics (FAO/WHO, 2009).

Food control monitoring

Compliance checking of the adherence to prescribed legal limits for individual product testing. Results from TDS are not appropriate for compliance checking of the adherence to prescribed legal limits, since a TDS includes food as consumed, as well as pooling of samples and not individual product testing. For these reasons countries should ideally conduct food control monitoring as well as TDS (EFSA/FAO/WHO, 2011).

Food control system

System to protect consumers from fraud or malicious practices (EFSA/FAO/WHO, 2011).

Food data

Data identifying and describing properties of foods (CEN/TC 387, 2009).

Food dataset

Identified, structured collection of records of food data that can be stored or exchanged (CEN/TC 387, 2009).

Food description system

Method for systematic description of food as a combination of characteristics. It defines a set of aspects to be described and a set of food descriptors for each aspect and may include procedures for capturing and retrieval of information about the food (CEN/TC 387, 2009).

Food descriptor

A single term in a controlled vocabulary for food description (CEN/TC 387, 2009).

Food Frequency Questionnaire (FFQ)

Questionnaire consisting of maximum 150 individual foods or food groups that represent important contributors to the population's intake of energy and nutrients. Respondents indicate how many times a day, week, month or year that they usually consume the foods (adapted from Lee and Nieman, 2007).

Food group

A collection of food items not commonly being considered to be variants of the same food, but sharing important characteristics in terms of nature, source or use (e.g. bread and rolls) (EFSA, 2011 b).

Food grouping

A group of food items with similar characteristics within a hierarchical structure at a level below food group: e.g. Fruit and fruit products (Food group), citrus fruit (Food-sub group), Grapefruit (Food item) (EFSA/FAO/WHO, 2011).

Food item

A food commonly considered as a single food or a collection of very similar variants of the same food (e.g. orange) (EFSA, 2011 b).

Food ingredient

A food that is used in production of, and still present in, another food. According to Codex Alimentarius, "ingredient" means any substance, including a food additive, used in the manufacture or preparation of a food and present in the final product although possibly in a modified form (CEN/TC 387, 2009).

Food legislation

Legislation designed to prevent the sale of unsafe or unwholesome food.

Food matrix

Food system or material surrounding the component/components (analyte/s) to be analysed (Nielson, 2003).

Food property

A qualitative or quantitative characteristic of a food that can be measured, calculated or estimated, e.g. vitamins, minerals, allergens and micro-organisms as well as physico-chemical properties such as pH and specific gravity (CEN/TC 387, 2009)

Food received check list

A list with specific acceptance criteria that any incoming dispatch should be checked against for compliance (adapted from EFSA/FAO/WHO, 2011).

Food / diary record

In this method, the respondent records, at the time of consumption, the identity and amounts of all foods and beverages consumed for a period of time, usually ranging from one to seven days. Consumption can be quantified by estimating portion sizes, using household measures, or weighing the food or beverage on scales (Lee and Nieman, 2007).

Food safety

A scientific discipline describing handling, preparation, and storage of food in ways that prevent potential health hazards and assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use (Codex Alimentarius Commission, 2003).

Food safety agencies

Agencies that evaluate and communicate the risks associated to the food chain at national or international level.

Food sample

A portion of a food that is assumed to represent the food (CEN/TC 387, 2009).

Food sample registration

After checking for compliance, food samples should be registered considering specified information in food sample registration forms.

Food sampling

Procedure for the selection, withdrawal, preservation, transportation and preparation of the portions to be removed from a population as samples (CEN/TC 387, 2009).

Food shopping list

A detailed list of food products to be purchased by food item and that will form a representative sample of the total diet in a specific population group according to the TDS Food List. The food shopping list should indicate, as appropriate, type, variety, brand, number of items, and amount in grams, places, time, frequency, and seasonality.

Food supply data

Data based on agricultural production information (e.g. FAOSTAT, EUROSTAT or GEMS/Food cluster diets). These do not allow any

differentiation of food consumption patterns by age, sex, region or season, and also need to be transformed to 'as consumed' (e.g. by applying edible portion and yield factors) (EFSA/FAO/WHO, 2011).

Food surveillance and monitoring program

The on-going systematic collection, collation and analysis of data on physical, chemical and microbiological contamination in food to evaluate their compliance with existing legislation (adapted from EFSA/FAO/WHO, 2011).

Fortified / spiked samples

Materials or solutions which have been fortified with the analyte(s) of interest. The fortification is usually made by spiking and enables an increased response to the analyte to be measured and calculated in terms of the amount added (assuming 100% recovery), even though the absolute amounts of analyte present before and after the fortification are not known (adapted from Eurachem Guide, 1998).

Geographic variation

Variability in consumption, contamination or exposure data for instance, that can be linked to geographical aspects (soil nature, climate, supply, cultivation conditions, cultural differences, etc.).

Guidance document

Publication of general principles, rules and requirements for the completion of certain tasks.

Hazards in the food supply

A biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect (Codex Alimentarius Commission, 2005).

Hazard identification

The identification of biological, chemical, and physical agents capable of causing adverse health effects which may be present in a particular food or group of foods (Codex Alimentarius Commission, 2005).

Hazard characterisation

The qualitative and/or quantitative evaluation of the nature of the adverse health effects associated with biological, chemical and physical agents which may be present in food. For chemical agents, a dose-response assessment should be performed. For biological or physical agents, a dose-response assessment should be performed if the data are obtainable (Codex Alimentarius Commission, 2005).

Health-Based Guidance Value (HBGV)

A numerical value derived by dividing a point of departure (a NOAEL, BMD or BMDL) by a composite uncertainty factor to determine a level that can be consumed (including ingestion and inhalation) over a defined time period (e.g. lifetime or 24 h) without appreciable health risk (FAO/WHO, 2009).

Heavy metals

Heavy metals include the inorganic trace elements Cd, Pb, Hg and As since these are known to be toxic to humans in low concentrations and are non-essential.

High percentile consumers

High percentile consumers specifically refer to those individuals who consistently consume high amounts of specific foods. The respective exposure estimates obtained with the TDS approach should not be confused with acute exposure situations (EFSA/FAO/WHO, 2011). This definition is crucial to the outcome of the risk assessment because, in practice, it determines the proportion of the population that would have to exceed a health based limit value before action is considered necessary to reduce dietary exposure. High percentiles (95th, 97.5th, 99th and even 99.9th) are often used to identify high-level consumers (EFSA/FAO/WHO, 2011).

Household Budget Surveys (HBS)

National surveys mainly focusing on consumption expenditure. They are conducted in all EU Member States and their primary aim (especially at national level) is to calculate weights for the Consumer Price Index (EFSA, 2009).

HBS data include foods 'as purchased' and have to be transformed to foods 'as consumed' for use in TDS (through prices, and edible and yield factors, e.g. see EFSA, 2009). No age-sex differentiation can be achieved, although regional and seasonal differences can be determined. HBS data exclude foods consumed outside the household (which could be a significant amount of food in some countries) and every consumed food is treated as if it was consumed by all members of the household (which might not be the case, e.g. beer or infant formula) (adapted from EFSA/FAO/WHO, 2011).

Household Consumption Surveys (HCS)

Carried out at the household level, a household consumption survey allows an examination of food consumption patterns within geographical regions, by income strata and by social class. This information allows a much more precise formulation of food security problems and, as a result, of appropriate policy responses (FAO, 1998).

Individual Dietary Surveys (IDS)

Food consumption can be estimated through food consumption surveys at an individual level (EFSA, 2009). Methodologies include retrospective (24-hour or other short term recalls, food frequencies, diet histories), prospective (food diaries, food records, or duplicate portions) or a combination (Rees and Watson, 2000).

The quality of data from food consumption surveys depends on the survey design, the method and tools used, the motivation and memory of the respondents, the statistical treatment and the presentation (foods as purchased versus as consumed) of the data (FAO/WHO, 2009).

In contrast to Food Balance Sheets (FBSs) and household surveys, data from individual surveys provide information on average food and nutrient intake

and their distribution over various well-defined groups of individuals. These data more closely reflect actual consumption (Kroes, 2002).

Individual Food Approach

Mixing of individual food items into pooled samples containing foods of the same type before being analysed (e.g. a fruit sample comprising of 10 different varieties of apples). It can also refer to different forms of the same food such as different varieties, seasons, regions or brands or the food prepared with different cooking methods being merged into one food sample (EFSA/FAO/WHO, 2011).

Ingredient

Any substance, including additives used in the manufacture or preparation of a foodstuff which is present in the finished product, even if in an altered form. Contaminants and adulterants are not considered to be ingredients. Ingredient also refers to a foodstuff which is a component or constituent part of a recipe (adapted from Commission Directive 2000/13/EC, 2000).

Intake assessment

See dietary exposure assessment.

Laboratory quality profile

Quality profiles of each laboratory, e.g. accreditation, method validation and participation in proficiency schemes (PTs) for the analytes in question taking into consideration any national or European Directives that should be met.

Left censored data

A statistical term used to describe data which is known to be below a certain value but it is not known by how much, for instance, data below the LOD or LOQ (EFSA/FAO/WHO, 2011).

Limit of Detection (LOD)

The limit of detection, expressed as the concentration cL , or the quantity qL , is derived from the smallest measure xL , that can be detected with reasonable certainty for a given analytical procedure. The value of xL is given by the equation:

$$xL = xbl + ksbl$$

Where xbl is the mean of the blank measures and sb the standard deviation of the blank measures, and k is a numerical factor chosen according to the confidence level desired (IUPAC Compendium of Chemical Technology, The Gold Book).

Limit of Quantification (LOQ)

The minimum concentration of a component that can be determined quantitatively in a sample with acceptable accuracy and consistency. It often approximates to a value of 3 times the limit of detection (FAO/WHO, 2009).

Linearity

The ability of a method of analysis, within a certain range, to provide an instrumental response or results proportional to the quantity of analyte to be

determined in the laboratory sample. This proportionality is expressed by an a priori defined mathematical expression. The linearity limits are the experimental limits of concentrations between which a linear calibration model can be applied with a known confidence level (generally taken to be equal to 1%) (Codex Alimentarius Commission, 2005).

Lower bound approach

Substitution method used to manage the left-censored data, to assess food concentration. In general, for chemicals likely to be present in the food (e.g. naturally occurring contaminants, nutrients and mycotoxins), both lower and upper bounds should be calculated for the mean food concentration. The middle bound approach may also be calculated. A decision is made between these three possibilities (LB, MB and UB) depending on the substance of interest and then these values are used to estimate dietary exposure.

The lower bound is obtained by assigning a zero value to those samples in which the chemical was non-detected (below the detection limit) or non-quantified (below the quantification limit), or a zero value to those samples in which the chemical was detected but non-quantified (FAO/WHO, 2009).

Macronutrient

Macronutrients include dietary lipids, proteins and carbohydrates, their sub-components and macronutrient substitutes. The terms sub-components and macronutrients refer to molecular size but derives from the fact that they are present in the food/diet in substantial quantities (Renwick, 2003).

Market basket

An approach to sampling for surveys in which a wide range of food items are collected from consumer points of sale and in proportions approximating consumption patterns in the local or national population. Samples are prepared for analysis according to various methodologies, such as the Codex guidelines i.e. minimal preparation. This approach is distinctly different to that of a TDS in that the samples are analysed as purchased, as opposed to as consumed (adapted from IUPAC) (EFSA/FAO/WHO, 2011).

Maximum Level (ML)

For contaminants, naturally occurring toxicants and nutrients, the maximum concentration of a substance recommended by the Codex Alimentarius Commission to be legally permitted in a given commodity. For food additives, the ML is the level of permission of use given in food standards for the additive in that food or food category (FAO/WHO, 2009).

Maximum Residue Level (MRL)

The maximum permitted level of residues of certain substances such as pesticides or veterinary medical products, in foodstuffs (InterActive Terminology for Europe).

Measurement uncertainty

Non-negative parameter characterising the dispersion of the quantity values being attributed to a measurement, based on the information used (Codex Alimentarius Commission, 2009).

Metadata

Metadata is structured information that describes, explains, locates, or otherwise makes it easier to retrieve, use, or manage an information resource. It is often called data about data (NISO, 2004).

Micronutrient

Micronutrients comprise vitamins and minerals that are essential for normal growth, and physiological and biochemical functioning (Renwick, 2003).

Middle bound approach

Substitution method used to manage left-censored data when assessing food concentration (adapted from FAO/WHO, 2009). The middle bound is obtained by assigning half the LOD to all samples with non-detect results.

Mixed food approach (also known as food group approach)

Mixing of individual food items into pooled samples containing different types of foods of the same food group, before being analysed (e.g. a fruit sample comprising of 10 different types of fruits such as apple, pear, banana...) (EFSA/FAO/WHO, 2011).

Monitoring / surveillance programmes

Continuous or repeated observation, measurement, and evaluation of health and/or environmental or technical data for defined purposes. These are performed according to prearranged schedules in space and time, using comparable methods for sensing and data collection. Evaluation requires comparison with appropriate reference values based on knowledge of the probable relationship between ambient exposure and adverse effects (IUPAC, 1993).

Monte Carlo Risk Assessment (MCRA)

A tool to calculate the exposure of chemicals in the diet by combining information on food consumption with information on concentrations of chemicals in food (Wageningen UR, 2011).

Multi-Criteria Analysis (MCA)

A tool developed for complex multi criteria problem(s) within decision making.

Mycotoxins

Secondary metabolites of fungi, which can cause acute toxic, carcinogenic, mutagenic, teratogenic, immunotoxic and oestrogenic effects in humans, depending on the level of exposure. Biological conversion products of mycotoxins are also referred to as mycotoxins (adapted from van Egmond, 2004).

Natural components

Components present in or produced by nature.

Naturally occurring toxins

Harmful organic compounds of natural origin which can be divided into five main categories: mycotoxins (toxins produced by fungi), bacterial toxins (toxins produced by bacteria), phycotoxins (toxins produced by algae), phytotoxins (toxins produced by edible plant species) and zootoxins (toxins produced by animals). The first three mentioned categories are bio-contaminants (produced by microorganisms and may contaminate food and food products) and the last two categories are inherent components of plants or animals (van Egmond, 2004).

Non-regulated chemical substances

Chemical substances for which there are no legal limits for their presence in food.

Nutrient

Any element or compound necessary for or contributing to an organism's metabolism, growth or other function. Six nutrient groups exist, classifiable as those that provide energy and those that otherwise support metabolic processes in the body. Some of them are essential because they cannot be synthesised in the body and must be obtained from a food source (FAO/WHO, 2009).

Pan-European TDS

A best practice TDS containing standardised methods and SOPs (Standard Operating Procedures) which are used by European countries to ensure data quality and to allow for data comparison.

Performance criteria

Requirements for a performance characteristic according to which it can be judged that the analytical method is fit for the purpose and generates reliable results (Commission Decision, 2002).

Where no specific methods for the determination of chemicals in foodstuffs are prescribed at community level, laboratories may select any validated method of analysis (where possible, the validation shall include a certified reference material) provided the selected method meets the specific performance criteria (Commission Regulation, 2007). The performance criteria involve the evaluation of the method regarding several parameters such as linearity, LOD, LOQ, precision, trueness, specificity and working range.

Pesticide

Any substance or mixture of substances intended for preventing, destroying or controlling any pest. These include vectors of human or animal disease, unwanted species of plants or animals causing harm during or otherwise interfering with the production, processing, storage, transport or marketing of food, agricultural commodities, wood and wood products or animal feedstuffs, as well as substances that may be administered to animals for the control of insects, arachnids or other pests in or on their bodies. The term also includes substances intended for use as a plant growth regulator, defoliant, desiccant or agent for thinning fruit or preventing the premature fall of fruit, and

substances applied to crops either before or after harvest to protect the commodity from deterioration during storage or transport (FAO/WHO, 2009)

Pesticide residue

Any specified substances in food, agricultural commodities, or animal feed resulting from the use of a pesticide. The term includes any derivatives of a pesticide, such as conversion products, metabolites, reaction products, and impurities considered to be of toxicological significance. (Note: The term "pesticide residue" includes residues from unknown or unavoidable sources (e.g., environmental), as well as known uses of the chemical) (Codex Alimentarius Glossary of Terms).

Pilot study

A small scale preliminary study conducted in order to evaluate feasibility, time, cost, adverse events, and effect size (statistical variability) in an attempt to predict an appropriate sample size and improve the study design prior to performance of a full-scale research project (Hulley, 2007).

Plant protection products

A substance or preparation that contains one or more 'active' ingredients which are intended to: protect plants or plant products against all harmful organisms or prevent the action of those organisms; influence the processes of plants, other than as a nutrient (e.g. to regulate growth); preserve plant products (except for substances or products which are controlled under European Union law on preservatives); destroy unwanted plants; or destroy parts of plants or control or prevent the undesired growth of plants (Defra, 2006).

Pooled sample

Representative mixture of samples of an individual food or several different food items, from which a laboratory sample is taken. It may be a combination of the same food or combinations of different brands or cultivars (e.g. 10 apples or 10 yoghurts) or of several food sub-group items (e.g. 10 different fruits; also known as aggregated sample) (EFSA/FAO/WHO, 2011).

Population dietary exposure

The amount of each chemical substance that is being consumed by a specific population as part of their typical diet. It is calculated by use of the food group contaminant level and food consumption data (EFSA/FAO/WHO, 2011).

Precision

The closeness of agreement between independent test/measurement results obtained under stipulated conditions. Precision is normally expressed in terms of standard deviation (ISO Standard 5725-3, 1994).

Process contaminants

A group of unrelated compounds formed in the production of finished food products (AOCS Resources).

Proficiency testing

The evaluation of a laboratory/organisation/individual performance against pre-established criteria by means of inter-laboratory comparisons (Eurachem, 2011).

Public health

The science and art of preventing disease, prolonging life, and promoting physical health and efficiency through organised community efforts (Winslow, 1920).

Quality assurance

A set of activities whose purpose is to ensure that an entity meets all quality requirements. These activities are carried out along with all stages of the study including design, implementation and reporting, ensuring that both customers and managers meet the quality requirements (adapted from FAO/WHO, 2009).

Quality control

A set of activities or techniques, providing routine and consistent checks, whose final purpose is to ensure that all quality requirements are met. In order to achieve this purpose, processes are monitored and performance problems are solved (adapted from FAO/WHO, 2009).

Qualitative risk assessment

A risk assessment based on data which permits risk ranking or separation into descriptive categories of risk. This type of assessment is an inadequate basis for numerical risk estimations (adapted from FAO, 1999).

Quantitative risk assessment

A risk assessment that provides numerical expressions of risk and indication of the attendant uncertainties (FAO, 1999).

Radionuclides

A nuclide that is radioactive (IUPAC Compendium of Chemical Terminology - the Gold Book).

Raw agricultural commodity

The agricultural product before it has undergone any form of processing; it is the raw part (or parts) of the plant or animal as moving in trade (EFSA/FAO/WHO, 2011).

Recall method (24 or 48 hour)

A method to record individual consumption data. The subject is asked to recall and describe the kinds and amounts of all foods and beverages ingested during the immediate past 24- or 48-hours. Dietary recalls may be administered in person or by telephone interview by a trained interviewer. Food quantities are usually assessed by using household measures, food models, or photographs (Kroes et al., 2002).

Recipe

Instructions for how to produce or prepare a food from a set of food ingredients (CEN/TC 387, 2009).

Recommended Dietary Allowance (RDA)

The levels of intake of essential nutrients that are adequate to meet the known nutrient needs of practically all healthy persons (Subcommittee on the 10th Edition of the RDAs et al., 1989).

Recovery

The fraction of analyte added to a test sample (fortified or spiked sample) prior to analysis, the unfortified and fortified samples, percentage recovery (%R) is calculated as follows:

$$\%R = [(CF-CU)/CA] \times 100$$

Where CF is the concentration of analyte measured in the fortified sample; CU is the concentration of analyte measured in the unfortified sample; CA is the concentration of analyte added (measured value, not determined by method) in fortified sample (Eurachem Guide, 1998).

Reference diet

A detailed list of food categories, characterising the average diet of a specified population, which is used to aggregate food.

Reference Material (RM)

Material, sufficiently homogeneous and stable with reference to specified properties, and which has been established to be fit for its intended use in measurement or in examination of nominal properties (JCGM 200:2012, 2012).

Refined dietary exposure assessment (probabilistic distributional analyses)

A refined dietary exposure assessment is carried out if the existence of a safety concern cannot be ruled out on the basis of dietary exposure assessed at the initial steps. Refinements could include more defined information about the foods that are concerned (less conservative assumptions about the amounts consumed, the concentrations of the chemicals in the foods, impact of processing and food preparation etc.) or more complex exposure assessment models can be employed that allow more realistic simulation of consumer practices (FAO/WHO, 2009).

Regulated chemical substances

In the European Union, regulated chemical substances are substances upon which there is a legislative act that becomes immediately enforceable as law in all member states simultaneously.

Relative Standard Deviation (RSDR)

A measure of precision, calculated as the standard deviation of a set of values divided by the average, and usually multiplied by 100 to be expressed as a percentage (EPA Glossary of Terms).

Relative standard measurement uncertainty

Standard measurement uncertainty divided by the absolute value of the measured quantity value (JCGM 200:2012, 2012).

Repeatability

Precision under repeatability conditions (ISO Standard 3534-1, 2006).

Repeatability conditions

Conditions where independent test results are obtained with the same method on identical test material in the same laboratory by the same operator using the same equipment within short intervals of time (ISO Standard 3534-1, 2006).

Representative food groups

Groups containing similar foods representing the usual diet of a population, based on consumption or food purchasing data.

Reproducibility

Precision under reproducibility conditions (ISO 3534-1, 2006).

Reproducibility conditions

Conditions where test results are obtained with the same method on identical test items in different laboratories with different operators using different equipment (ISO 3534-1, 2006).

Risk

A function of the probability of an adverse health effect and the severity of that effect, consequential to a hazard(s) in food (Codex Alimentarius Commission, 2005).

Risk analysis

A process consisting of three components: risk assessment, risk management and risk communication (Codex Alimentarius Commission, 2005).

Risk assessment

A process of evaluation including identification of the attendant uncertainties, of the likelihood and severity of an adverse effect(s)/event(s) occurring to man or the environment following exposure under defined conditions to a risk source(s) (European Commission, 2000). The process consists of the following steps: (I) hazard identification, (ii) hazard characterisation, (iii) exposure assessment, and (iv) risk characterisation (Codex Alimentarius Commission, 2005).

Risk characterisation

The quantitative or semi-quantitative estimate, including attendant uncertainties, of the probability of occurrence and severity of adverse effect(s)/event(s) in a given population under defined conditions based on hazard identification, hazard characterisation and exposure assessment (European Commission, 2000).

Risk communication

The interactive exchange of information and opinions throughout the risk analysis process concerning risk, risk-related factors and risk perceptions, among risk assessors, risk managers, consumers, industry, the academic community and other interested parties, including the explanation of risk assessment findings and the basis of risk management decisions (Codex Alimentarius Commission, 2005).

Risk estimate

Output of risk characterisation (FAO, 1999).

Risk management

The process of weighing policy alternatives in the light of the results of risk assessment and, if required, selecting and implementing appropriate control options (including, where appropriate, monitoring/surveillance activities) (European Commission, 2000).

Robustness (ruggedness)

A measure of the method capacity to remain unaffected by small, but deliberate variations in its parameters and provides an indication of its reliability during normal usage (Eurachem Guide, 1998).

Sample acceptance criteria

Before registering the food at the receiving kitchen, any incoming dispatch should be checked for compliance with specific acceptance criteria following a "Food Receipt Check List" as detailed in a SOP (EFSA/FAO/WHO, 2011).

Sample bias

The difference between the expectation of the test result or measurement result of a sample and the true value.

Sample preparation

All the steps from the purchasing of foodstuffs to the analysis of a sample (edible portion extraction, seasoning if any, cooking, pooling, milling, homogenising, batching, etc.). Sample preparation can be carried out either in a specific total diet kitchen (as in the Czech Republic and Spain) or in an existing kitchen adapted for the purpose (Leblanc et al., 2005a and 2005b; Egan, 2002a). Besides cooking facilities, the kitchen must have specific equipment such as special blenders or homogenisers (adequate to prevent contamination and substance loss, e.g. tinted glassware for light labile vitamins) (EFSA/FAO/WHO, 2011).

Sampling food list

A list of foods made up with aggregations of items from the TDS food list (from the food consumption survey) that corresponds to samples analysed in a TDS. This list includes, as appropriate, region or season/date.

Sampling plan

A detailed plan including all steps required to produce the required sizes and frequencies of samples to be taken as part of a study (EFSA/FAO/WHO, 2011).

Seasonal sample collection

Food samples collected during particular seasons (EFSA/FAO/WHO, 2011).

Seasonal variation

A characteristic of a time series in which the data experiences regular and predictable changes which recur every calendar year. Any predictable change or pattern in a time series that recurs or repeats over a one-year period can be said to be seasonal. This may also include food characteristics, distribution and consumption.

Security infrastructure

A database containing contacts and relevant information of users who have access to a database in order to implement a flexible and effective access policy (EFA/FAO/WHO, 2011).

Selectivity

The extent to which a method can determine particular analyte(s) in a mixture(s), matrix or matrices, without interferences from other components of similar behaviour (adapted from Codex Alimentarius Commission, 2009).

Sensitivity

Quotient of the change in the indication of a measuring system and the corresponding change in the value of the quantity being measured (Codex Alimentarius Commission, 2009).

Specificity

The ability to assess unequivocally the analyte in the presence of components which may be expected to be present. Typically these might include impurities, degradants, matrix, etc. (Eurachem Guide, 1998).

Stand-alone screening tool

A tool to solely monitor one set of substances such as contaminants. Other screening tools may also monitor nutrients.

Standard Operating Procedure (SOP)

A set of written instructions that document a routine or repetitive activity followed by an organisation. The development and use of SOPs are an integral part of a successful quality system as it provides individuals with the information to perform a job properly, and facilitates consistency in the quality and integrity of a product or end-result (EPA, 2007).

Standard measurement uncertainty (standard uncertainty of measurement or standard uncertainty)

Measurement uncertainty expressed as a standard deviation (JCGM 200:2012, 2012).

Steering committee

A committee, formed of stakeholders and experts, which advises on issues and problems, and monitors and steers projects to reach the final targets.

Sub-population

A part or subdivision of a population, especially one originating from some other population (www.thefreedictionary.com/subpopulation). In a TDS this may be a subgroup deemed to be at higher risk than the general population.

Substance activity (CMR)

The level at which chemicals susceptible to provoke cancer, change genetic information or harm reproduction cause an effect to an organism. These chemicals are called CMR (Carcinogenic, Mutagenic or toxic for Reproduction) substances.

SWOT analysis

A strategic planning method used to evaluate the **Strengths**, **Weaknesses/Limitations**, **Opportunities**, and **Threats** involved in a project.

Targeted sampling

Sampling designed to study or monitor problematic areas or special food groups. The occurrence data collected for certain substances do not always reflect the situation for the whole diet (adapted from EFSA/FAO/WHO, 2011).

Target measurement uncertainty (or target uncertainty)

Measurement uncertainty specified as an upper limit and decided on the basis of the intended use of measurement results (JCGM 200:2012, 2012).

TDS food list

A list of foods based on consumption patterns from national food consumption surveys that represent the average diet of a population of interest (70-95% of the total diet). Each food in the list is associated to a pooled sample, as defined for the particular population of interest. This list allows for production of a sampling plan and food shopping list (adapted from EFSA/FAO/WHO, 2011).

TDS-like studies

Study mainly based on the methodology of TDS but not investigating the total diet of the population, or of the population groups of interest, or the foods are not processed as for consumption before analysis. These TDS-like studies are in some countries referred to as 'market basket studies'.

TDS method

Protocol of a TDS, including selection of the substances, sampling method (food list, pooling method, cooking instructions, sample preparation, etc.), analytical methods for all the substances considered and exposure calculation method (including left-censorship management) for the different population groups.

TDS quality framework

The TDS framework provides quality tools including SOPs to ensure data reliability and comparability across Europe as well as over time.

TDS used as a screening tool

TDS based on a limited number of samples to represent the whole diet (e.g. 20 to 30 pooled samples). Use of the TDS as a screening tool does not allow identification of major contributors to overall exposure at individual food or food group level beyond the broad pooling used. If screening work indicates high exposures, further evaluation should be performed to identify the source. This may involve another TDS, or if food samples that went into the pooled samples were retained, these could be analysed further (EFSA/FAO/WHO, 2011).

TDS used as a tool for refined dietary exposure assessment

TDS based on a more detailed list of foods in order to identify those foods contributing to dietary exposure (e.g. 200 to 300 pooled samples) (EFSA/FAO/WHO, 2011).

Theoretical Maximum Daily Intake (TMDI)

The TMDI is calculated by multiplying the average per capita daily food consumption for each foodstuff or food group by the legal maximum use level of the additive established by Codex standards or by national regulations and by summing up the figures. The TMDI gives only a rough indication of the dietary intake of a food additive source since it does not take into consideration the food habits of special population groups (Codex Alimentarius Commission, 1989).

Top level category

See Food Group.

Total diet kitchen

Specialised kitchen containing specific equipment such as special blenders, homogenisers and others which are adequate to prevent contamination and substance loss, e.g. tinted glassware for light labile vitamins (adapted from EFSA/FAO/WHO, 2011).

Total Diet Study (TDS)

A TDS consists of selecting, collecting and analysing commonly consumed food purchased at retail level, processing the food as for consumption, pooling the prepared food items into representative food groups, homogenising the pooled samples, and analysing them for harmful and/or beneficial chemical substances, as defined for each study. TDS are designed to cover the whole

diet and to measure the amount of each chemical substance ingested by the population living in a country, ideally using average and high-level consumption data for final exposure calculations or the consumption distribution to estimate the proportion of the population with inadequate nutrient intake levels (EFSA/FAO/WHO, 2011).

Total Quality Management (TQM)

Integrative philosophy of management for continuously improving the quality of products and processes.

Trace elements

Chemical elements taken up at trace levels from the diet. They include essential and non-essential elements. Essential trace elements (ETEs) are dietary minerals needed in very minute quantities for the proper growth, development, and physiology of the organism (e.g. iron, copper, zinc, iodine, selenium, molybdenum).

Trend analysis

Using past TDS results, this analysis aims to predict the future contaminant concentrations in food and food groups.

Typical diet

Hypothetical diet prepared to represent a population in which the quantitative intake of food commodities is similar based on data derived from national food consumption surveys (adapted from WHO, 1997).

Uncertainty

In risk assessment, uncertainty is an imperfect knowledge concerning the present or future state of an organism, system or (sub) population under consideration. In exposure assessment, it is a lack of knowledge regarding the “true” value of a quantity, a lack of knowledge regarding which of several alternative model representations best describes a system of interest or a lack of knowledge regarding which probability distribution function and its specification should represent a quantity of interest (FAO/WHO, 2009).

Upper bound approach

Substitution method used to manage the left-censored data, to assess food concentration. An upper bound is estimated by assigning the LOD to all samples with non-detect results and the LOQ to all samples with less than the LOQ but more than the LOD. In some cases, the LOD may equal the LOQ (FAO/WHO, 2009).

Validation

Verification, where the specified requirements are adequate for an intended use (JCGM 200:2012, 2012).

Variability

Heterogeneity of values over time, space or different members of a population. Variability implies real differences among members of that population. For example, in exposure assessment, different individual persons

have different intake and susceptibility. In relation to human exposure assessment, differences over time for a given individual are referred to as intra-individual variability; differences over members of a population at a given time are referred to as inter-individual variability (EFSA/FAO/WHO, 2011).

Veterinary drug

Substance applied or administered to any food producing animal, such as meat or milk producing animals, poultry, fish or bees, whether used for therapeutic, prophylactic or diagnostic purposes or for modification of physiological functions or behaviour (Codex Alimentarius Commission, 2005). Veterinary drugs (e.g. hormones, antibiotics), may only be applied after authorisation for a specified application. Although the use of illegal growth promoters (e.g. clenbuterol) occurs, the absence or presence of these chemicals in food depends mainly on their correct use.

Veterinary drug residues

Residues of veterinary drugs include the parent compounds and/or their metabolites in any edible portion of the animal product, and include residues of associated impurities of the veterinary drug concerned. (Codex Alimentarius Glossary of Terms)

Whole diet representation

The percentage of the whole typical diet of a population represented by a selection of foods based on food consumption.

Wiki document

A website which allows its users to add, modify, or delete its content via a web browser usually using a simplified markup language or a rich-text editor (<http://en.wikipedia.org/wiki/Wiki>).

Working group of experts

A group of stakeholders and experts that can provide knowledge and experience to the task in hand.

Yield factor

The percentage weight change in foods and recipes due to cooking (EFSA/FAO/WHO, 2011).

EFQM Vocabulary

Benchmark

A measured achievement used for comparison with other TDS Centres or similar organisations and target setting purposes.

Benchmarking

A systematic comparison of approaches with other relevant organisations (TDS Centres, or other) that gains insights that will help the TDS Centre to take action to improve its performance.

Change management

The approach during which changes within a TDS Centre are implemented in a controlled manner, by following a pre-defined framework or processes to support the achievement of the strategic goals. Change management enables the transition from a current state into a desired future state.

Continual improvement

The on-going improvement of processes, which leads to the achievement of higher performance levels through incremental change.

Core competence

A well performed internal activity or capability that is central to the TDS Centre competitiveness, profitability or efficiency.

Creativity

The generation of ideas for new or improved products, services, processes, systems or social interactions.

Critical success factors

Limited number (usually between 3 to 8) of characteristics, conditions, or variables that have a direct impact on the effectiveness, efficiency and viability of a TDS Centre.

Customer

The recipient of products or services provided by the TDS Centre.

Customer results

Measures and results that indicate the level of customer satisfaction and loyalty. Includes actual perceptions of the customer, which may be obtained through external surveys, etc., and also measures and results that will tend to predict trends or influence customer satisfaction and loyalty such as complaints levels, late deliveries, cancelled orders, etc.

Empowerment

The process by which people or teams are able to take decision making responsibilities, and operate with a degree of autonomy in their actions.

Fundamental concepts of excellence

The set of key and proven principles upon which the EFQM Excellence Model framework is based.

Innovation

The practical translation of ideas into new products, services, processes, systems or social interactions.

Key processes

The processes that are of the utmost importance for the TDS Centre since they deliver and support the strategy and drive the value chain.

Key results

Overall strategic operational results of the TDS Centre. Key financial and non-financial outcomes which demonstrate the success of the organisation's deployment of their strategy, such as productivity, return on investment, performance of key processes, etc.

Leaders

The people who coordinate and balance the interests and activities of all who have a stake in a TDS Centre.

Management system

The framework of processes, related performance/result indicators and process management and improvement systems used to ensure that the TDS Centre can fulfil its Mission and Vision.

Mission

A statement that describes the purpose or "raison d'être" of a TDS Centre, confirmed by its stakeholders. The Mission specifies why the TDS Centre exists.

Partner

An external party the TDS Centre strategically chooses to work with, in order to achieve common objectives and sustained mutual benefit.

People

All individuals employed by the TDS Centre (full time, part-time, including volunteers), including leaders on all levels.

People results

Trends and satisfaction levels of all employees of the TDS Centre. It includes both the perceptions of the people, which may be obtained through surveys, focus groups, etc., and internal measures and results that will tend to predict or influence people satisfaction.

Perception

The opinion stakeholders have of the TDS Centre.

Process

A set of activities that interact with one another because the output from one activity becomes the input for another activity. Processes add value by transforming inputs into outputs, using resources.

Product

A distributed good which is an outcome of a production process that passes through a distribution channel before being used.

Radar logic

A dynamic assessment framework and powerful management tool that provides a structured approach to questioning the performance of an organisation.

Society

The social infrastructure outside the TDS Centre that can be affected by the TDS Centre.

Stakeholder

Person, group or organisation that has direct or indirect stake or interest in the TDS Centre because it can affect it or it can be affected by the TDS Centre. Examples for external stakeholders are owners (stakeholders), customers, suppliers, partners, governmental agencies and representatives of the community or the society. Examples for internal stakeholders are people or groups of people.

Strategy

A high level plan describing the tactics by which a TDS Centre intends to achieve its Mission and Vision.

Values

Operating philosophies or principles that guide a TDS Centre's internal conduct as well as its relationship with the external world. Values provide guidance for people on what is good or desirable and what is not. They exert major influence on the behaviour of individuals and teams and serve as broad guidelines in all situations.

Vision

Description of what the TDS Centre attempts to achieve in the long-term future. It is intended to serve as a clear guide for choosing current and future courses of action, and along with the Mission it is the basis for strategies and policies.

References

AOCS Resources.
(<http://www.aocs.org/Resources/content.cfm?ItemNumber=1011>).

CEN/TC 387 (2009) Food data – data structure.

Codex Alimentarius Commission (2003) Basic texts on food hygiene, 3rd edition
(ftp://ftp.fao.org/codex/Publications/Booklets/Hygiene/FoodHygiene_2003e.pdf).

Codex Alimentarius Commission (1989) Guidelines for Simple Evaluation of Food Additive Intake. Reference: CAC/GL 03-1989.

Codex Alimentarius Commission (2009) Guidelines on analytical terminology. Reference: CAC/GL 72-2009.

Codex Alimentarius Commission (2005) Procedural Manual, 15th edition. Joint FAO/WHO Food Standards Programme. Rome, 166 pp.

Codex Alimentarius Glossary of Terms: pesticide residues in food and feed. (<http://www.codexalimentarius.org/pestres/Glossary>).

Codex Alimentarius Glossary of Terms: veterinary drug residues in food. (<http://www.codexalimentarius.net/vetdrugs/data/reference/glossary.html>)

Codex Standard 193-1995 (2008) Codex General Standard for contaminants and toxins in food and feed.

Commission Decision 2002/657/EC (2002) Implementing Council Directive 96/23/EC concerning the performance of analytical methods and the interpretation of results. Official Journal of the European Communities, 17.8.2002.

Commission Directive 2000/13/EC (2000) Official Journal of the European Communities, 20 March 2000 on the approximation of the laws of the Member States relating to the labelling, presentation and advertising of foodstuffs. L 109/29.

Commission Regulation (EC) No 1488/94 (1994) Laying down the principles for the assessment of risks to man and the environment of existing substances in accordance with Council Regulation (EEC) No 793/93. Official journal NO. L 161, document 394R1488, p3-11.

Commission Regulation (EC) No 333/2007 (2007) Laying down the methods of sampling and analysis for the official control of the levels of lead, cadmium, mercury, inorganic tin, 3-MCPD and benzo(a)pyrene in foodstuffs. L 88/29.

Defra (2006) Pesticides: Code of practice for using plant protection products.

Easton, V. & McColl, J. (1997) Statistics Glossary v1.1.
(<http://www.stats.gla.ac.uk/steps/glossary/>).

EFSA (2009) General principles for the collection of national food consumption data in the view of a pan-European dietary survey. The EFSA Journal, 27(12):1435-1486.

a EFSA (2011) Overview of the procedures currently used at EFSA for the assessment of dietary exposure to different chemical substances. EFSA Journal, 9(12): 2490.

b EFSA (2011) Report on the development of a Food Classification and Description System for exposure assessment and guidance on its implementation and use. EFSA Journal, 9 (12): 2489.

EFSA (2010) Guidance on Data Exchange. EFSA Journal 8(11): 1895.

EFSA, FAO and WHO (2011) Towards a harmonised Total Diet Study approach: a guidance document. EFSA Journal, 9(11): 2450.

EFQM (2012) The EFQM Excellence Model
(<http://www.efqm.org/en/tabid/132/default.aspx>).

EPA Glossary of Terms. (<http://www.epa.gov/radon/glossary.html>).

EPA (2007) Guidance for preparing standard operating procedures. EPA QA/G-6.

Eurachem (2011) Selection, use and interpretation of proficiency testing (PT) schemes, 2nd edition
(http://www.eurachem.org/images/stories/Guides/pdf/Eurachem_PT_Guide_201.pdf).

Eurachem Guide (1998) The fitness for purpose of analytical methods: a laboratory guide to method validation and related topics
(<http://www.eurachem.org/images/stories/Guides/pdf/valid.pdf>).

European Commission (2008) Fact sheet: New rules on pesticide residues in food
(http://ec.europa.eu/food/plant/protection/pesticides/explanation_pesticide_residues.pdf).

European Commission (2000) First Report on the Harmonisation of Risk Assessment Procedures, part 2: appendices
(http://ec.europa.eu/food/fs/sc/ssc/out84_en.pdf).

FAO (1998) Implications of economic policy for food security: a training manual. FAO Corporate Document Repository
(<http://www.fao.org/DOCREP/004/X3936E/X3936E04.htm>).

FAO (2011) Charrondiere UR, Burlingame B, Berman S and Elmadfa I. Food Composition Study Guide – Answers to questions and exercises (volume 2). Updated edition. FAO, Rome, 216 pp.
(http://www.fao.org/infoods/publications_en.stm)

FAO (1999) Principles and guidelines for the conduct of microbiological risk assessment *In: Basic texts on food hygiene*, 3rd edition. FAO Corporate Document Repository.

FAO/WHO (2005) Dietary exposure assessment of chemicals in food. Report of a joint FAO/WHO consultation. Annapolis, Maryland, USA, 2-6 May.

FAO/WHO (2009) Principles and methods for the risk assessment of chemicals in food. IPCS. Environmental health criteria 240
(http://whqlibdoc.who.int/ehc/WHO_EHC_240_9_eng_Chapter6.pdf).

FAO/WHO (1997) Risk management and food safety. Report of a Joint FAO/WHO Consultation. Rome, Italy, 27-31 Jan 1997.

Gems/food Consultations and workshops (2002) Total diet studies. Report of the 2nd international workshop on total diet studies, Brisbane, Australia, 4 – 15 February 2002.

Health Canada (2009) Environmental contaminants. (<http://hc-sc.gc.ca/fn-an/securit/chem-chim/environ/index-eng.php>).

Hulley, S.B (2007) Designing clinical research, 3rd edition. Lippincott Williams & Wilkins, 168-169.

InterActive Terminology for Europe
(<http://iate.europa.eu/iatediff/SearchByQueryEdit.do>).

Ireland, J. and Moller, A. (2000) Review of International Food Classification and Description. Journal of Food Composition and Analysis (13), 529-538.

ISO Standard 5725-3 (1994) Accuracy (trueness and precision) of measurement methods and results. Part 3: Intermediate measures of the precision of a standard measurement method. Reference: ISO 5725-3:1994.

ISO Standard 3534-1 (2006) Statistics. Vocabulary and symbols. Part 1: General statistical terms and terms used in probability. Reference: ISO 3534-1:2006.

ISO Standard 3534-2 (1993) Statistics. Vocabulary and symbols. Part 2: Statistical quality control. Reference ISO 3534-2:1993.

IUPAC Compendium of Chemical Terminology – The Gold Book,
<http://goldbook.iupac.org/L03433.htm>.

IUPAC - Glossary for chemists of terms uses in toxicology (IUPAC Recommendations 1993). In: Pure & Appl. Chem, Vol 65, No. 9, p 2003-2122, 1993 (<http://sis.nlm.nih.gov/main.htm>)

JCGM 200:2012 (2012) International vocabulary of metrology – basic and general concepts and associated terms (VIM). 3rd edition, 2008 with minor corrections.

Kroes R, Müller D, Lambe J, Löwik, MRH, van Klaveren J, Kleiner J, Massey R, Mayer S, Urieta I, Verger P and Visconti A (2002) Assessment of intake from the diet. *Food and Chemical Toxicology*, 40 (2-3), 327-385.

Lee, R. and Nieman, D. (2007) Chapter 3: Measuring diet In: Nutritional Assessment, 4th edition. McGraw-Hill, New York.

Nielsen, S. (2003) Food Analysis, third edition. Kluwer Academic/Plenum Publishers, New York.

NISO (2004) Understanding metadata.
(<http://www.niso.org/publications/press/UnderstandingMetadata.pdf>).

Norman Glossary (<http://www.norman-network.net/index.php.php?module=public/others/glossary>).

Pennington J. (2000) Study review: Total diet studies - experiences in the United States. *Journal of Food Composition and Analysis* 13 (4), 539-544.

Rees, N. and Watson, D. (2000) International Standards for Food Safety. Aspen Publishers, USA.

Reinivuo H and K Laitinen (2007) Proposal for the harmonization of recipe calculation procedures. WP2.2 Composite Foods, EuroFIR.
(<http://www.eurofir.net>).

Renwick AG, Barlow SM, Hertz-Pannier I, Boobis AR, Dybing E, Edler L, Eisenbrand G, Grieg JB, Kleiner J, Lambe J, Müller DJG, Smith MR, Tritscher A, Tuijtelaars S, Van den Brandt PA, Walker R and Kroes R (2003) Risk characterisation of chemicals in food and diet. *Food and Chemical Toxicology*, 41, 1211-1271.

Subcommittee on the 10th Edition of the RDAs, Food Nutrition Board, Commission on Life Sciences & National Research Council (1989) Recommended Dietary Allowances. National Academy Press, Washington, D.C.

Tuorila H, Meiselman H, Cardello A, & Lesher L (1998): Effect of expectations and the definition of product category on the acceptance of unfamiliar food. *Food Quality and Preference*. 9(6): 421-430.

U.S. Environmental Protection Agency (2000) Benchmark dose technical guidance document, preliminary draft.
(http://www.epa.gov/ncea/pdfs/bmds/BMD-External_10_13_2000.pdf).

van Egmond, H.P. (2004) Natural toxins: risks, regulations and the analytical situation in Europe. *Anal Bioanal Chem*, 378, 1152-1160.

Wageningen UR (2011) Monte Carlo Risk Assessment - Probabilistic modelling of chemical intake from food. (<http://www.biometris.wur.nl/UK/Software/MCRA+Monte+Carlo+Risk+Assessment/>).

WHO (1997) Guidelines for predicting dietary intake of pesticide residues. Programme of Food Safety and Food Aid. GEMS/Food.

WHO (2000). Methodology for exposure assessment of contaminants and toxins in food. Food Safety Programme CH-1211 Geneva 27 Switzerland.

Winslow, C.E. (1920) The untilited fields of public health. *Science*, 23-33.

<http://en.wikipedia.org/wiki/Wiki>

www.thefreedictionary.com/subpopulation

Abbreviations

ADI: Acceptable Daily Intake
AESAN: Spanish Agency for Food Safety and Nutrition
AFFSA/ANSES: French Food Safety Agency
BMD: Benchmark Dose
CCP: Critical Control Point
CMR: Substance activity (WP2.3.1)
CRL: Central Reference Laboratory
CRM: Certified Reference Material
EFSA: European Food Safety Authority
FAO: Food and Agriculture Organization of the United Nations
FAPAS: Food Analysis Performance Assessment Scheme
FCD: Food Composition Data
FCDB: Food Consumption Databases
FFQ: Food Frequency Questionnaire
FOSIE: Food Safety in Europe: Risk Assessment of Chemicals in Food
GEMS: Global Environment Monitoring System
GLP: Good Laboratory Practice
HACCP: Hazard Analysis and Critical Control Point
HBGV: Health Based Guidance Values
HBS: Household Budget Survey
HCS: Household Consumption Survey
IDS: Individual Dietary Survey
INFOSAN: International Food Safety Authorities Network
IPCS: International Program on Chemical Safety
IRMM: Institute for Reference Materials and Measurements
IUPAC: International Union for Pure and Applied Chemistry
JECFA: Joint FAO/WHO Expert Committee on Food Additives
JMPR: Joint FAO/WHO Meeting on Pesticides Residues
JRC: Joint Research Centre
LanguaL: Langua alimentaria (language of foods)
LB: Lower Bound
Lc: Critical value
LOD: Limit Of Detection
LOQ: Limit Of Quantification
MB: Middle Bound
MCA: Multi-Criteria Analysis
ML: Maximum Level
NOAEL: No Observable Adverse Effect Level
POP: Persistent Organic Pollutant
QA/QC: Quality Assurance / Quality Control
RAC: Raw Agricultural Commodities
RM: Reference Material
SC: Steering Committee
SOPs: Standard Operating Procedures
SPS Agreement: Agreement on the Application of Sanitary and Phytosanitary Measures
TDI: Total Dietary Intake
TDS: Total Diet Studies

TE: Trace Element

TMDI: Theoretical Maximum Daily Intake

TQM: Total Quality Management

UB: Upper Bound

WHO: World Health Organization