

# EHEDG Glossary

Version 2004/04.G01

*This document replaces the “Definitions of expressions relevant to hygienic processing and plant design” dated May 1991, amended Dec 1993 and Dec 2003.*

*The definitions are presented to provide uniform general interpretation of the terms, phrases and expressions used in EHEDG guideline documents and publications. Where relevant, definitions established by official standards bodies have been adopted. Some of these definitions may be qualified for use in specific guideline documents.*

## **A**

### **Aseptic equipment**

Hygienically designed equipment that is sterilisable and is impermeable to micro-organisms to maintain its aseptic status.

### **Aseptic process**

A process using equipment sterilized before use, and which, in running conditions, is protected against recontamination by micro-organisms.

*See also **Ultra-clean process***

**Accessible** (see **Easily accessible**)

## **B**

### **Bioaerosol**

Dispersed biological agents in a gaseous environment. (BS EN ISO 14698-1:2003)

### **Biocontamination**

Contamination of materials, devices, individuals, surfaces, liquids, gases or air with viable particles. (BS EN ISO 14698-1:2003)

### **Biofilms**

A microbial consortium adhering to a surface.

*NOTE: these are frequently but not in every case embedded in extra-cellular polymeric substances.*

## **C**

### **CCP (critical control point)**

A step at which control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level. (Codex)

### **CIP (cleaning-in-place)**

Automated wet cleaning system of a line and/or individual equipment in a closed circuit without dismantling.

*NOTE: CIP efficiency depends on 5T's – time, temperature, titration, turbulence and technology. CIP can be done in a dry area, the aim being that the design precludes any water passing into the environment.*

### **Cleanability**

The suitability of equipment to be freed from soil easily.

See also **Comparative cleanability**

### **Cleaning**

The removal of soil, food residues, dirt, grease or other objectionable matter. (Codex)

### **Cleanroom**

Room in which the concentration of airborne particles is controlled, and which is constructed and used in a manner to minimize the introduction, generation, and retention of particles inside the room, and in which other relevant parameters e.g. temperature, humidity, and pressure, are controlled as necessary. (BS EN ISO 14698-1 :2003)

### **Coatings**

The result of a process where a different material is deposited to create a new surface. (3-A)

### **Commercial sterilization (see Sterilization )**

### **Comparative cleanability**

The cleanability of equipment relative to a reference.

### **Conditions for intended use**

**- in relation to equipment and parts or other elements e.g. of building, and not in the context of product and consumer**

All normal or reasonably anticipated operating conditions, including those of cleaning. These should set limits for variables such as time, temperature and concentration

## **Contaminant**

Any biological or chemical agent, foreign matter or other substance not intentionally added to food, which may compromise food safety or suitability. (Codex)

## **Contamination**

The introduction or occurrence of a contaminant in food or food environment.

## **Controlled environment (see Zoning)**

## **Control measure**

Any action and activity that can be used to prevent or eliminate a food safety hazard or reduce it to an acceptable level. (Codex)

*NOTE: In a broader sense, should also cover measures to have under control points necessary for assuring non-safety attributes are maintained at an acceptable level. (see also **preventive action**)*

## **COP (cleaning-out-of-place) – (see also Wet cleaning)**

Manual cleaning of dismantled equipment.

*NOTE: The main part of the installation may remain fixed in a position but parts may be removed to another point for cleaning.*

## **Corrective action**

Any action to be taken when the results of monitoring at the CCP indicate a loss of control. (Codex)

*NOTE: Action taken to eliminate or reduce the causes of nonconformity, defect or other undesirable situation after a deviation has been detected, in order to minimize or prevent its recurrence. Every control point in a Quality Monitoring system must include the corrective action to be taken in case of deviation.*

## **Crevice**

A crack with an opening accessible to contaminants.

*For example a narrow opening or fissure either in the bulk of a material or between two closely fitting components, such as a flange and its gasket. Typically, a crevice has a depth more than 20 times the width of its opening. Crevices may not only harbour soils and micro-organisms and be inaccessible to cleaning agents, but may also cause accelerated corrosion of the bulk material, rapidly increasing the size of the crevice.*

## **D**

### **Diaphragm**

A thin sheet of material forming a non-porous partition, such as between a pressurized medium and the measuring sensor.

## **Disinfectant**

A chemical that is used after cleaning for killing a certain proportion/type of viable micro-organisms remaining on the surface.

*NOTE: A disinfectant is not expected to kill all micro-organisms of any type, including spores (see also **sterilization**). Nevertheless in the USA it is defined as an agent that will kill 100% of infectious fungi and vegetative bacteria although it will not necessarily kill bacterial spores on inanimate surfaces.*

## **Disinfection**

The reduction, by means of chemical agents and/or physical methods, of the number of micro-organisms in the environment, to a level that does not compromise food safety or suitability. (Codex)

*NOTE: disinfection according to BSI 5283: the destruction of micro-organisms, but not usually bacterial spores. Disinfection does not necessarily kill all micro-organisms, but reduces them to a level acceptable for a defined purpose e.g. a level which is harmful neither to health nor to the quality of perishable food. Specifically in USA, the terms sanitizer and sanitization are more commonly used in the food industry (see **sanitizer/sanitization**)*

## **Dry-cleaning**

Cleaning which does not involve any use of water, a technique which can be used as a preventive measure to reduce risks of microbial development in equipment and in the environment. It also reduces risk of contamination with e.g. residues of aged or modified product. Mostly done manually using brushes and/or vacuum cleaners.

## **E**

### **Easily or Readily Accessible**

A location that can be safely reached by a personnel from the floor, platform, or other permanent work area. (3-A)

### **Easily or Readily removable**

Quickly separated from the equipment with the use of simple hand tools if necessary. The latter are implements normally used by fitters, operating and cleaning personnel such as a screwdriver, a wrench or hammer. (3-A)

## **F**

### **Food hygiene**

All conditions and measures necessary to ensure the safety and suitability of food at all stages of the food chain. (Codex)

### **Food safety**

Assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use. (Codex)

## **Food suitability**

Assurance that food is acceptable for human consumption according to its intended use. (Codex)

*NOTE: This word is now more and more preferred to 'wholesomeness'.*

## **G**

### **GHP (Good hygiene practices)**

Measures applicable throughout the food chain (including primary production through to the final consumer), to achieve the goal of ensuring that food is safe and suitable for human consumption. GHPs are a subset of GMPs.

### **GLP (Good laboratory practices)**

The means by which laboratory work is planned, performed, monitored and recorded to ensure accuracy and reliability of results, safety and efficiency in the laboratory.

### **GMP (Good manufacturing practices)**

All procedures, processes, practices and activities aimed at ensuring that the quality and safety objectives are met consistently. GMP's should apply throughout the supply chain for food. Application of GMP is a prerequisite for any HACCP study. (see **HACCP**)

*NOTE: GHPs are a subset of GMPs.*

## **H**

### **HACCP (Hazard Analysis Critical Control Point)**

A system which identifies, evaluates and controls hazards that are significant for food safety. (Codex)

*NOTE: A HACCP study must be performed during the development of new products and processes, covering thus new equipment, and when changes are made on existing lines or to products. All CCP's identified must be monitored and corrective action taken in case of deviation.*

### **Hazard**

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

## **Hazard analysis**

The process of collecting and evaluating information on hazards and conditions leading to their presence to decide which are significant for food safety and therefore should be addressed in the HACCP plan. (Codex)

*NOTE: Hazard analysis is a crucial step in the implementation of an HACCP plan. Must not be confused with risk analysis.*

## **High care areas (see Zoning)**

## **Hollow body**

Void spaces, inaccessible to cleaning, which may become sources of contamination

## **Hygiene (see Food hygiene)**

## **Hygiene areas – low, medium and high (see Zoning)**

## **Hygienic equipment class I**

Equipment that can be cleaned in-place and can be freed from soil without dismantling.

## **Hygienic equipment class II**

Equipment that is cleanable after dismantling and can be freed from soil after reassembly.

## **Hygienic Integration**

The process of combining or arranging two or more entities to work together for a hygienic purpose.

## **I**

## **Intended conditions of Use (see Conditions for intended use)**

## **In-place cleanability (see also CIP)**

The suitability to be easily cleaned without dismantling.

## **L**

## **Low (Basic) care areas (see Zoning)**

## **M**

### **Manual cleaning**

Removal of soil when the equipment is partially or totally disassembled.

### **Mechanical cleaning**

Shall denote cleaning, solely by circulation and/or flowing chemical detergent solutions and water rinses onto and over the surfaces to be cleaned, by mechanical means.

### **Medium care areas (see Zoning)**

### **Membrane**

A thin, flexible sheet of material forming a porous partition which may allow the slow transfer of a liquid through it, such as cell-wall of a micro-organism.

### **Microbial impermeability**

The ability of equipment to prevent the ingress of bacteria, yeasts and moulds from the outside (environment) to the inside (product area).

### **Micro-organisms (pathogenic)**

Micro-organisms that can cause disease/illness in humans and animals.

*NOTE: Distinguish from indicator micro-organisms, whose presence indicate a failure of a GHP. The number present is assumed to be related to the probability of contamination of a product with a pathogen.*

See also **Relevant micro-organisms**

### **Monitoring**

The act of conducting a planned sequence of observations or measurements of control parameters to assess whether a CCP is under control.

## **N**

### **Non-absorbent materials**

Materials which, under the intended conditions of use, do not internally retain substances with which they come into contact.

### **Non-product contact surfaces**

(See also **Product contact surfaces**)

All exposed surfaces other than those in contact – or potential – contact with product.

## **Non-toxic construction materials**

Materials which, under intended conditions of use, do not release toxic substances.

## **P**

### **Pasteurization**

A microbiocidal heat treatment aimed at reducing the number of any harmful micro-organisms, if present, to a level at which they do not constitute a significant health hazard.

*NOTE: pasteurization applies to equipment as well as to food.*

### **Product contact surfaces**

All equipment surfaces that intentionally or unintentionally (e.g. due to splashing) come in contact with the product, or from which product or condensate may drain, drop or be drawn into the main product or container, including surfaces (e.g. unsterilised packaging) that may indirectly cross-contaminate product contact surfaces or containers.

*NOTE: A risk analysis can help to define areas of potential cross-contamination.*

## **R**

### **Relevant micro-organisms**

Micro-organisms able to contaminate, multiply or survive in the product and be harmful to the consumer or product quality

### **Removable (see Easily or Readily removable)**

### **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)

Risk is 'the potential for the occurrence of unacceptable food safety deviations' but may be extended to cover quality deviations.

*NOTE: In Codex terminology 'risk' pertains to public health issues. It relates to safety and not to quality related matters.*

### **Risk analysis**

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

***NOTE: Whereas Hazard analysis is under the responsibility of food manufacturers, Risk analysis is a public health matter.***

## **Risk Assessment**

Risk assessment is the scientific part of the risk analysis process in which the hazards and risk factors are identified and the risk is calculated.

Apart from an end point calculation of risk, the risk model developed can be of value in determining the parts of the chain which contribute most to risk or to investigate the effect of changes in practices or processes throughout the chain on the risk level.

Risk assessment contains 4 elements:

- hazard identification which identifies particular hazards or contaminants in a product or process
- exposure assessment which estimates the intake/exposure of the hazard by the consumer
- hazard characterization which relates exposure to the hazard with a public health effect (illness/ death) frequently by assessing the dose-response relationship
- risk characterization which calculates the risk from the exposure (intake) and dose-response estimate (effect).

## **Risk Management**

Risk management is an evaluation of the acceptability of the risk posed and the implementation of measures to reduce this risk if necessary.

## **Risk Communication**

Risk communication involves transparent communication between the risk assessors (scientists) and the risk managers (regulators, industry, government agencies etc.). The results of risk assessment and risk management should be communicated more widely to the relevant stakeholders, including consumers.

## **Risk zone (see Zoning)**

## **S**

### **Sanitation (USA)**

Equivalent to **hygiene** in general terminology for the food industry.

### **Sanitizing or Sanitization (USA)**

A process applied to a cleaned surface capable of reducing the numbers of the most resistant human pathogens by at least 5 log<sub>10</sub> reductions (99.999%) to 7 log<sub>10</sub> reductions (99.99999%) by applying accumulated hot water, hot air, or steam, or by applying an EPA-registered sanitizer according to label directions. Sanitizing may be effected by mechanical or manual methods using hot water, steam, or an approved sanitizer.

## **Sanitizer (USA)**

A substance that reduces the microbial contaminants on inanimate surfaces to levels that are considered safe for public health. According to the official food contact surface sanitizer test, a sanitizer is a chemical that reduces the microbial contamination of two standard organisms, *Staphylococcus aureus* and *Escherichia coli*, by 99.999% or 5 logs in 30 seconds, at 25°C. Non-food contact sanitizers must reduce contamination by 99.9% or 3 logs in 5 minutes.

## **Soil**

Any remaining, undesirable material in the equipment or process environment. It may or may not contain micro-organisms.

## **Solutions**

Water and/or those homogeneous mixtures of cleaning agents and/or disinfectants and water used for flushing, cleaning, rinsing and disinfection

## **Splash contact surfaces**

Non-product contact surfaces that during normal use are subject to accumulation of soil and which require routine cleaning to avoid soil to drop or to be drawn into the main product or container.

## **Sterilization**

A process aimed at removing or killing all forms of micro-organisms, including bacterial spores.

*NOTE 1: In the US, commercial sterilization refers to the inactivation of all organisms of significance to public health and the absence of spoilage under normal conditions of storage.*

*NOTE 2: In the UK, still used to denote disinfection.*

*NOTE 3: Sterilization can equally apply to treatment of food.*

## **Sterilization-in-Place**

Sterilization without dismantling

## **Surface rupture**

Breaking or tearing of a surface commonly the result of impact from a shot- or bead-blasting medium. Under magnification the damage to the surface will generally appear like fish scales, the openings under which face forwards the source of the shot or beads. These areas can harbour soils and micro-organisms and be difficult to clean.

## Surface treatment

A process whereby chemical or mechanical properties of the existing surface are altered.

## U

### Ultra-clean process

A process using equipment disinfected before use, and which, in running conditions, is protected against recontamination by micro-organisms that may harm the safety and suitability of the specific product that is made.

*NOTE: Measures for initial reduction of microbial load and against recontamination can be less stringent than those applied for an aseptic process. **Ultra clean or Aseptic** refers more to the **process line** and not the environment.*

## V

### Validation

Obtaining evidence that the elements of the HACCP plan are effective. (Codex)

The obtaining of evidence that the food hygiene control measures selected to control a specific hazard(s) in a specific food(s) are capable of controlling the hazard to the level specified. (provisional Codex)

*NOTE: In the context of ISO 9000-2000, this process is named qualification. Validation is used in a much broader sense e.g. for validation of cleaning. Validation, in general, intends to establish documented evidence, that a specific process will consistently meet its predetermined objectives  
In the case of a cleaning process: the objective is that the next batch of product, which will be processed in the cleaned equipment, does not become contaminated from any microbiological and chemical sources, foreign material or environmental residues, having potential affect on the food contact surfaces*

### Verification

The application of methods, procedures, tests and other evaluations, in addition to monitoring to determine compliance with the HACCP plan. (Codex)

*NOTE: In the context of ISO 9000-2000, this process is named validation, a situation that may lead to some confusion.  
In a wider sense can represent: Activities, including auditing, reviewing, inspecting, challenging, testing, checking etc., that demonstrate whether items, processes, services or documents conform to specified requirements for quality, especially food safety e.g. as seen in the HACCP plan.*

## W

### **Wet cleaning**

**(Cleaning-out-of-place as opposed to CIP – see specifically CIP)**

Can refer to cleaning of equipment or processing environment. Cleaning procedure carried out only when product is not exposed and using methods that limit amount of water applied and its spread. The main aim of wet cleaning is to remove soil that may or may not contain micro-organisms.

*NOTE: The objectives are basically to use as little water as possible and to be as dry as possible rapidly after cleaning. This is a procedure specifically intended to reduce risks of build-up of environmental Listeria monocytogenes populations in ice cream, cheese and refrigerated product process areas.*

*Also referred to as **Controlled wet cleaning**.*

## Z

### **Zoning**

The physical or visual division of the plant into sub-areas, leading to the segregation of different activities with different hygiene levels.

**Related terms and explanations.** The following are proposals for use in EHEDG.

**Controlled environment** refers to all zoning but may relate more to the high hygiene case.

Zoning cannot be defined for all plants and processes in black and white as there will always be local influences that play a role. Most important is that zoning fits into the overall plan of prevention with respect requirements of process and safety of consumers.

**High hygiene** = high care or high risk

IDF states: a critical hygienic area within the plant where products and ingredients vulnerable to contamination and/or microbial growth are processed, treated, handled or stored.

An area within a plant's zoning plan where the following products and ingredients are processed or stored – either those destined for a highly susceptible consumer group, being instant in nature or ready for consumption, or those which will be handled in a refrigerated supply chain and which are susceptible to growth of pathogenic micro-organisms such as *Listeria monocytogenes*.

**Note:** The term “**high risk area**” could also be used for a zone where there is a high concentration of pathogens e.g. in fresh meat and chicken, raw cocoa bean, fresh raw milk and vegetable areas. These areas present a high risk for other process areas and there should be adequate barriers to stop spread of pathogens.

**High hygiene** is equivalent for food to **clean room**.

**Medium hygiene** = medium care or medium risk

Can be a process area for products, susceptible to contamination but where the consumer group is not especially sensitive and where also no further growth is possible in the product in the supply chain. Can also be the intermediate area leading into the high hygiene zone but where access is only across certain barriers.

**Low (Basic) hygiene** = Low care or low risk

Low (basic) relative to others but where minimal GHP must be applied  
Low (basic) hygiene areas can be sub-divided as proposed in EHEDG Doc. 26 on dry materials.

An area where products are not susceptible to contamination and are protected in their final packages. Can also be an area where raw materials are handled before being subjected e.g to a thermal process step (a CCP).

### **Examples**

Related to cleaning for total zoning, some examples are given in the table below but these are certainly only guidelines. **Each establishment must make its own zoning plans based on product and consumer group, local influences and legislation.**

Sample zoning plan in relation to cleaning :

	<b>High hygiene</b>	<b>Medium hygiene</b>	<b>Low (Basic) hygiene</b>
<b>(Controlled) wet cleaning</b>	Few cases e.g. Chilled pasta production	Bottling areas UHT filling Areas for ice-cream and frozen food filling /assembly	Fresh/raw milk reception Mix preparation prior to pasteurization
<b>Dry cleaning</b>	Infant formula filling area	Filling of dry soups, coffee, chocolate moulding	Warehouses

## References :

- (1) 3-A Standards Organisation, <http://www.3-a.org>
- (2) British Standards Institute. BS EN ISO 14698-1:2003 : Cleanrooms and associated controlled environments. Biocontamination control. General principles and methods. (<http://bsonline.techindex.co.uk>)
- (3) British Standards Institute. BS 5283:1986 :Glossary of terms relating to disinfectants (<http://bsonline.techindex.co.uk>)
- (4) Codex CAC/RCP1- 1969, Rev. 3-1997, Amd. (1999) Recommended International Code of Practice : General principles of Food Hygiene including Annex on HACCP System. Downloadable version at :  
[ftp://ftp.fao.org/codex/standard/en/cxp\\_001e.pdf](ftp://ftp.fao.org/codex/standard/en/cxp_001e.pdf)
- (5) EHEDG Doc 26. Hygienic Engineering of Plants for the Processing of Dry Particulate Materials, November 2003
- (6) EN ISO 9000:2000. Quality Management systems. Fundamentals and Vocabulary.
- (7) IDF. International Dairy Federation/Fédération International de Laiterie, Diamant Building, Boulevard Auguste Reyers 80, 1030 Brussels  
[www.fil-idf.org](http://www.fil-idf.org)