

Review of the literature and guidance on food allergen cleaning: Glossary

| Term | Definition |
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| Acceptable Quality Limit (AQL) statistical sampling | The use of statistical sampling to determine whether to accept or reject a production lot of material based on how many 'defectives' are considered acceptable in a given sample. |
| Acid | A chemical substance with a pH of less than 7, which when dissolved in water, releases hydrogen ions (H ⁺). Generally used in detergent formulations to assist in the removal of hard water scale (Campden BRI, 2020b). |
| Alkali | A chemical with a pH greater than 7 and generally used in detergent formulations to assist in the removal of fats and proteins (Campden BRI, 2020b). |
| Allergen | Means an otherwise harmless substance capable of triggering a response that starts in the immune system and results in an allergic reaction in certain individuals. In the case of foods, it is a protein which is found in food capable of triggering a response in individuals sensitised to it (Codex Alimentarius, 2020a). |
| Adenosine triphosphate (ATP) | A substance used in energy transfer in living cells and is, therefore, present in biological material. A rapid test for cleanliness of surfaces is based on ATP measurement as it is found in microorganisms and food (Campden BRI, 2020b) |
| Biofilm | Biofilms are surface-attached, structured microbial communities containing sessile bacteria and/or fungi embedded in a self-produced extracellular matrix composed of polysaccharides, DNA, and other components (Coenye, 2013). |

| Term | Definition |
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| Cleaning | The removal of soil, food residues, dirt, grease or other objectionable matter (Codex Alimentarius, 2020b). |
| Cleaning-in-place (CIP) | A method used to clean equipment, often involving pipe work and vessels, without first dismantling it. Cleaning chemicals and rinses may be pumped through equipment to remove food residues and contamination (Campden BRI, 2020b). |
| Cleaning-out-of-place (COP) | Denotes systems and equipment that must be disassembled, relocated, or specially treated in order to clean and sanitise them (Food Safety Magazine, no date). |
| Control measure | Any action or activity that can be used to prevent or eliminate a hazard or reduce it to an acceptable level (Codex Alimentarius, 2020b). |
| Controlled wet clean | The removal of soil, including food residues, dirt, grease or other objectionable matter using a limited amount of water and detergents and controlling the spread of the water used (Campden BRI, 2020b). |
| Critical control point (CCP) | A step at which a control measure or control measures, essential to control a significant hazard, is/are applied in a HACCP system (Codex Alimentarius, 2020b). |
| Cross-contact | Occurs when an allergenic food, or ingredient, is unintentionally incorporated into another food that is not intended to contain that allergenic food (Codex Alimentarius, 2020a). |
| Detergent | A chemical, or mixture of chemicals, that facilitates the removal of food debris from surfaces (Campden BRI, 2020b). |

| Term | Definition |
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| Deoxyribonucleic acid (DNA) | The major constituent of genes and hence chromosomes. |
| Dry clean | Use of equipment e.g. brush, vacuum, dry wipe to physically remove food soil, without the need for any water, cleaning chemical, detergent or soap. |
| Enzyme-linked immunosorbent assay (ELISA) | Immunological assay used to measure, in the case of food allergens, proteins. |
| Flow cytometry | Analytical technique that measures the physical or chemical characteristics of individual cells and particles as they pass through single or multiple laser beams. |
| Food | Where 'food' is referred to in this report, the definition in Article 2 of retained Regulation (EC) No. 178/2002 is applied: 'food' (or 'foodstuff') means any substance or product, whether processed, partially processed or unprocessed, intended to be, or reasonably expected to be ingested by humans. 'Food' includes drink, chewing gum and any substance, including water, intentionally incorporated into the food during its manufacture, preparation or treatment. |
| Food business operator (FBO) | The entity responsible for operating a business at any step in the food chain (Codex Alimentarius, 2020b). |

| Term | Definition |
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| Food Safety Management System (FSMS) | Prerequisite programmes, supplemented with control measures at CCP, as appropriate, that when taken as a whole, ensure that food is safe and suitable for its intended use. The FSMS is also the combination of control measures and assurance activities. The latter aims at providing evidence that control measures are working properly such as validation and verification, documentation and record keeping (European Commission, 2022). |
| Food Science and Technology Abstracts (FSTA) | Online database covering a wide range of food-related peer-reviewed articles. |
| Food service | Means a food business or institution that produces, prepares and serves food for direct consumption (Codex Alimentarius, 2020b). |
| 'Grey' literature | Evidence not published in commercial publications. Grey literature in this report includes codes of practice, guidance documents, industry/professional body publications, corporate white papers, websites, blogs and reports. |
| Hazard analysis critical control points (HACCP) | A food safety management system, which identifies, evaluates and controls hazards that are significant for food safety (Campden BRI, 2020b). |
| Hook effect | The hook effect is observed when a very high amount of an analyte is present in the sample but the observed value is falsely lowered (Dasgupta and Wahed, 2014). |
| Lateral flow device (LFD) | Immunological test in a lateral flow format for the qualitative detection of protein of food allergens. |

| Term | Definition |
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| Limit of detection (LOD) | The lowest defined quantity or concentration of a particular substance that can be reliably detected (above analytical noise), but not necessarily quantified, in the specified method of analysis. |
| Liquid Chromatography-Mass Spectrometry (LC-MS) | Analytical technique combining liquid chromatography with mass spectrometry to identify and quantify compounds. |
| Lower limit of quantification (LLOQ or LOQ) | The lowest defined quantity or concentration of a particular substance that can be reliably measured with the specified method of analysis. |
| Mass spectrometry | Analytical technique that measures the mass-to-charge ratio of ions to evaluate the composition and structure of samples. |
| Maximum Residue Level (MRL) | Upper legal level of a concentration for a pesticide residue in or on food, based on good agricultural practice and the lowest consumer exposure necessary to protect vulnerable consumers (Regulation (EC) No 396/2005). |
| Neutral | A chemical with a pH of 7 (Campden BRI, 2020b). |
| Open-plant cleaning (OPC) | Machines and surfaces in a production area are thoroughly cleaned and, if necessary, disinfected 'in situ', this may involve conveyor belt removal for example. |

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| Operational prerequisite programme | Control measure or combination of control measures applied to prevent or reduce a significant food safety hazard to an acceptable level and where action criterion and measurement or observation enable effective control of the process and/or product. They are typically linked to the production process and are identified by the hazard analysis as essential, in order to control the likelihood of the introduction, survival and/or proliferation of food safety hazards in the product(s) or in the processing environment (European Commission, 2022). |
| 'Pig' | Physical object sent through pipework to remove food residue. |
| Plate ELISA | Immunological assay based on the principles of the ELISA method that uses a multi-well plate. |
| Polymerase Chain Reaction (PCR) | Analytical technique used to amplify and replicate specific segments of DNA to enable the detection of genetic material. |
| Precautionary allergen labelling (PAL) or precautionary allergen information (PAI) | Voluntary statements or information indicating that a food allergen could be unintentionally present in a product. [The acronym 'PAL' is used throughout this report to refer to both PAL and PAI]. |
| ppm | Parts per million, which is equivalent to mg/kg. |
| Push-through | <p>A cleaning methodology incorporating use of an inert material, physical object ('pigs') or foodstuff that does not contain allergenic ingredients.</p> <p>[throughout this report the terms push-through and flushing have been used interchangeably; flush therefore refers to the material used for push-through or flushing].</p> |

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| Quantitative risk assessment (QRA) | Is a tool that complements allergen management practices by enabling the risk presented to allergic consumers due to unintended allergen presence in a food to be estimated. It thereby can provide useful information as input into risk management decision making, such as whether Precautionary Allergen Labelling (PAL) is appropriate (ILSI-Europe, 2022). |
| Quat | The abbreviation used for quaternary ammonium compound disinfectants. |
| Real-time Polymerase Chain Reaction (rtPCR) | Analytical technique based on PCR that monitors the amplification of DNA in real time. |
| Settle plates | Passive air sampling devices (e.g. empty petri dishes that can be swabbed or that contain a known quantity of extraction solution or a foodstuff that can be analysed for the presence of airborne food allergens that have settled onto the surface during a defined period of time). |
| Small and Medium Sized Enterprise (SME) | In the UK is defined as a business with under 500 employees and an annual turnover under £100 million (Foreign, Commonwealth and Development Office, 2023). |
| Soil | A complex mixture of food product, water and microorganisms to be cleaned off surfaces (Campden BRI, 2020b). |
| Standard Operating Procedure (SOP) | Instructions developed by a FBO to help trained staff to carry out routine operations. |

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| Surface Plasma Resonance (SPR) | Optical technique that measures changes in refractive index at the interface between a metal film and a sample and can measure molecular interactions in real time. |
| TACT | An acronym for Time, Agitation, Concentration and Temperature. |
| Validation | Obtaining evidence that a control measure or combination of control measures, if properly implemented, is capable of controlling the hazard to a specified outcome (Codex Alimentarius, 2020b). |
| Verification | The application of methods, procedures, tests and other evaluations, in addition to monitoring, to determine whether a control measure is or has been operating as intended (Codex Alimentarius, 2020b). |
| Visibly clean | Means having no visible food, debris and other residues (Codex Alimentarius, 2020a). |
| Wet clean | Application of water, whether alone, or in addition to a cleaning chemical, detergent or soap, either by carrying out a rinsing procedure or with a cloth. |
| Wet wipe | A small piece of wet cloth or paper that is used once for cleaning, may be wetted with cleaning or sanitising chemicals. |