This document has been created by Kerry Global Supply Quality.

This document has been approved by the VP Global Supply Quality.

This document has been authorized by the Global Food Safety & QHSE Officer and the Global Chief Procurement & Risk Management Officer.

Kerry Supplier Requirements Manual is effective as of May 2021.
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This document, the Kerry Group Supplier Requirements Manual (SRM), outlines Kerry’s requirements of its suppliers of raw materials (ingredients and packaging) and providers of outsourced processes or services such as third-party manufacturers.

It is based on, and in line with, the recognized schemes of Global Food Safety Initiatives (GFSI), and conforms to good manufacturing standards and regulations.

As a current or potential supplier to the Kerry Group, it is your responsibility to meet these requirements at all times, and to update all the appropriate verification documentation at least annually.

These are essential requirements to assure food safety, food defence, chain of custody (see Glossary) and compliance with regulations. They are not intended to alter or eliminate any requirements that may be set forth in any contracts or product specifications issued by any Kerry Group business unit. These requirements take the place of any general supplier requirements previously issued by units of the Kerry Group and are common throughout all of the Kerry Group. By reference, these requirements become part of our purchasing contracts.

Kerry may modify the SRM document from time to time. It is your responsibility as a supplier to periodically check that you have the most up-to-date version. Please refer to kerrygroup.com in order to confirm that you have the up-to-date version.

The document has three main sections:

- **Section A:** Quality Management System (QMS)
- **Section B:** Food Safety Management System (FSMS)
- **Section C:** Sustainability/Corporate Social Responsibility (CSR)

These three sections outline what Kerry expects and requires of its suppliers.

**Section A** has 8 sub-sections, from ‘Management Commitment’ to ‘Food Safety Culture’.

**Section B** has 13 sub-sections:

- Food Safety System – HACCP
- Good Manufacturing Practices (GMP)
- Facility, Grounds and Operations
- Receiving, Storage and Distribution
- Good Laboratory Practices (GLP) & Testing Programme
- Cleaning & Sanitation
- Pest Management Programme
- Product Control
- Food Fraud
- Food Defence and Security Programme
- Traceability and Product Recall
- Shelf-Life of Product Delivered to Kerry
- Certificate of Analysis for Product Delivered to Kerry

**Section C** has 12 sub-sections, from ‘Business Conducts Standards’ to ‘Environment’.

The remainder of the document consists of a Glossary, and Annex I to Annex VIII.

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1. These include hazard analysis and critical control points (HACCP), threat analysis critical control points (TACCP), and vulnerability assessment and critical control points (VACCP).

2. This document is Supplier Requirements Manual May 2021 v1.1
Definitions of Non-conformance

Kerry defines non-conformance as the non-fulfilment of a requirement specified in the Kerry standard. A Non-conformance can be categorized as minor, major or critical non-conformance.

The term clause below refers to any separate clause or paragraph in this manual, typically outlining a single requirement.

Minor non-conformance: This is when a clause has not been fully met but the food safety risk is minimal.

Major non-conformance: This is where there is a substantial failure to meet the requirements, or significant evidence that raises doubt about product conformity. It implies high food safety risk or the ineffectiveness of a required system.

Critical non-conformance: This is where there is a critical failure to comply with a food safety or legal issue that poses an imminent risk.

Time periods: All time periods mentioned in the document – such as “in an appropriate time frame” – refer to the specific time period given to the supplier to close the non-conformances.

* Disclaimer: Both Kerry’s and third-party-nominated auditors will use their professional judgement when applying the acceptance criteria in a holistic manner, taking into consideration factors such as the nature of the product, further mitigation processes, and intended use.

Further requirements not detailed in this document may apply according to the nature of the product and the facilities being audited. The auditor will apply both judgement and experience.
Quality Management System (QMS)
1. Management Commitment

Summary: Management shows commitment to food safety and quality in quantifiable ways, including a documented policy, a food safety and quality manual, provision of adequate resources, and support for continuing improvement of food safety culture.

Requirements

> The company has a documented policy stating its intentions to meet its obligation to produce safe and legal products, and to comply with its customer requirements.

> The company's processes and procedures are documented in a food-safety and quality manual to enable consistency and training, and to support due diligence.

> Site senior management attend management review meetings.

> Management review meetings include review date & frequency, management review representative name, review agenda (e.g. review of food safety policy) and capital plan to support food safety initiatives.

> Management provides the resources (human and financial) needed to produce food safely, in compliance with the law and Kerry's requirements.

> Management enables and ensures that non-conformances raised during Kerry's audit are addressed as soon as is reasonably possible.

> Management ensures that company staff collaborate and allow Kerry's auditors to verify their adherence to the agreed standard.

> Supply Chain management is accountable and responsible for communicating Kerry supply-chain quality standards. The Standard and Procedure is provided to every divisional director and quality manager for implementation at the site level.

> Suppliers of ingredients, food products and food packaging items must notify the Kerry Group of any change that may affect the quality or integrity of the products.

2. Document and Record Control System

Summary: A document control procedure shall be established that defines the creation, control, retention, review and obsolescence of all food safety and quality documents and records, such as processes, procedures, formulas and specifications. Records shall be maintained for all food safety and quality records to provide evidence of legality and conformity to product safety and quality requirements. All necessary documents needed to demonstrate the quality management in place must be current.

Requirements

> The company shall operate a document and record control system to ensure that the correct versions of all documents are used in the plant.

> Documents and records, not limited to the following, shall be created as part of the control system:
  - Policies
  - Manuals, including Quality and Food Safety manuals
  - Specifications and formulas
  - Standard operational procedures (SOPs)
  - Forms and checklists
  - Supporting documents needed to demonstrate that the supply chain is under strict control

> Records shall be clear, unambiguous and detailed as required.
Records shall be controlled, retained and stored appropriately, allowing retrieval without undue delay.

Documents and records containing Kerry Intellectual Property (IP) shall be controlled and maintained in a secured environment.

3. Regulatory Compliance

Summary: Suppliers shall comply with all laws and regulations that apply to food products and packaging. A documented procedure shall be maintained.

Requirements

> Suppliers shall comply with all laws and regulations that apply to food products where they are manufactured and delivered.

> In relation to the law that applies to specific food products and their packaging, the supplier shall maintain a documented procedure covering the following:
  
  - List of relevant regulations in the country where the products are manufactured
  - List of relevant regulations in the countries where the products are used or consumed
  - The appointment of personnel responsible for updates
  - An outline of the method used to ensure lists of regulations are kept up to date

> Evidence of local registration or approval, which covers all the activities on site, shall be available.

> Specifications of the food products and packaging supplied to Kerry shall be communicated and agreed with Kerry and to provide a foundation for inspection and approval.

> Suppliers to Kerry shall be responsible for completing Kerry's Raw Material Questionnaire (RMQ) for new items. This will facilitate the creation of raw material specifications and enable other regulatory requirements. The Certificate of Analysis (COA) is to be provided to Kerry in accordance with the requirements outlined in Annex II.

> Where Kerry raw material specifications are provided, they form part of the buying contract. In this contract, it is clearly indicated that the supplier acknowledges and understands the specifications; the supplier agrees to allow an audit to be performed before the start of supply, and agrees to comply with specifications. The appropriate third-party verification documentation must be provided as part of the specification agreement.
4. System Verification / Internal Audits

Summary: The company shall operate an internal auditing programme through which it can verify that the quality and food safety plan is being operated effectively.

Requirements

> The company shall implement an internal auditing programme that covers all sections of the food safety management system.

> Through this system, the supplier shall verify that the quality and food safety plan is being operated effectively.

- The programme includes the areas to be audited and the frequency of the audits.
- Every area is audited at least once annually.
- External resources may be used for internal auditing (e.g. consultant or subcontracted experts).
- Evidence is gathered to show that any required corrective actions have been implemented and verified.
- All internal auditors are trained: the lead auditor requires formal training; the lead auditor may train the other auditors, using supporting tools such as checklists.
- An auditor never audits his or her own work.
- Non-conformances identified in the internal audits are addressed with appropriate corrective actions to prevent reoccurrences. These corrective and preventive actions (CAPAs), along with verification of their efficiency, are completed as soon as is reasonably possible.

5. Customer Complaints Procedure

Summary: A written programme shall be in place to ensure effective response to customer complaints and concerns, and to minimize the number of recurring complaints.

Requirements

> A written customer complaints programme shall be in place to receive and investigate customer complaints, and enable the facility to respond to customer concerns.

> Customer complaints should be handled effectively. The information assembled should be used to reduce the level of recurring complaints.

- The complaints programme includes a clearly defined method of distributing complaints to the relevant departments to ensure immediate response, especially in cases involving food safety issues.
- All complaints received are recorded and investigated, and their root cause is identified.
- Actions appropriate to the seriousness and frequency of the complaint are taken promptly and effectively.
- The complaint data is analyzed, and used to implement ongoing improvement to avoid recurrence of complaints.
6. Management of Serious Issues

Summary: The company shall have a documented management plan to effectively manage threats to food safety, legality or quality.

Requirements

> The company shall have a documented Serious Issues Management Plan to effectively manage incidents and emergency situations that might affect food safety, legality or quality.

> The plan should include detailed measures on how to manage:
  - Disruption of key services
  - Fire, flood or natural disaster
  - Malicious contamination
  - Disease pandemic

> A list of key staff and key external contacts (government inspectors, key customers, certification bodies, etc) shall be drawn up and shall be kept up to date.

7. Training Programme

Summary: The company shall have a documented training programme, which includes details of the type and frequency of training for all staff.

Requirements

> The company shall have a documented training programme, which covers induction training (for new and temporary staff), food safety, GMP and personal hygiene, site security and relevant SOPs.

> All staff, including temporary staff, shall be trained at a predetermined frequency.

> The programme shall include specific training for employees involved in FSMS such as GMP and personal hygiene, HACCP Plan, allergen management, food fraud vulnerability assessment, food safety culture, etc.

> Emerging issues in the market shall be considered in training programme.

> Any employee responsible for monitoring CCP shall receive CCP training before starting to work at the CCP workstation.

> Upon completing their training for CCP monitoring, employees shall be aware of the following:
  - What is s/he monitoring?
  - What is the critical limit?
  - What action is to be taken in case of critical limit deviation?
  - Training for qualifying sanitizing crew shall include:
    - Topics covered, who conducted the training, and exit criteria used to verify skill requirements
    - Job skills, job safety (i.e. safe chemical handling, emergency response and food safety)
    - Cleaning assignments based on skill qualification
    - Keeping of current training records and recording of on-the-job training

> If a contract production cleaning company is appointed for carrying out the sanitation programme, the appointed company must maintain copies of the training records of their entire sanitation crew at the supplier’s site. Their training programme must cover the aforementioned programme.

> Any training carried out shall be recorded appropriately.
> Records of all training that has taken place shall be kept, including a description of all the information conveyed in the training sessions.

> Training effectiveness should be verified and documented. Verification may be in the form of an exam, observation and comments by the direct manager, etc.

8. Food Safety Culture

Summary: A clear plan supporting the development and continuing improvement of the food safety and quality culture shall be established and maintained.

Requirements

The documented food safety culture plan shall include:

> Defined activities involving all sections of the site that have an impact on product safety.

> An action plan indicating how the activities will be undertaken and measured, and the intended timescales.

> A review of the effectiveness of completed activities.

> Examples of relevant activities that could be incorporated into the food safety culture development plan, but are not limited to:

  - Training review and staff development
  - Annual staff reviews and recognition programmes
  - Employee surveys on company values and culture
  - Teamwork that promotes engagement and reinforces food safety practice (e.g. staff involvement in setting product safety objectives)
  - Effective communication strategies (e.g. townhall meeting, relevant GMP & food safety posters, KPIs posters to promote employee engagement)
  - Confidential feedback and reporting system enabling employees to report/share concerns relating to product safety, integrity and quality. The feedback and reporting mechanism is clearly communicated to the staff.
  - Proactivity to change, innovation or investment in food safety and quality culture
Food Safety Management System (FSMS)
1
Food Safety System (HACCP)
1. Food Safety System – HACCP

1.1 HACCP Programme
Summary: A documented Hazard Analysis and Critical Control Points (HACCP) system shall be established and signed by senior management.

Requirements
> A documented, effective HACCP plan shall be established.
> The HACCP plan shall cover the Codex Alimentarius HACCP principles.
> The HACCP plan shall include food safety policy and objectives, and shall be endorsed by senior management.

1.2 HACCP Team
Summary: A multidisciplinary HACCP team shall be established and team members shall be formally trained.

Requirements
> The HACCP team shall include personnel from an appropriate range of disciplines – i.e. quality/technical, production, engineering and other relevant functions.
> The team leader shall be appropriately trained, have undergone formal training on the HACCP system, and be qualified to lead the HACCP team. A record of formal training shall be available.
> The rest of the team shall have HACCP training, either internally by the team leader or externally. Their training records shall be available.
> The HACCP plan shall document each team member's specific knowledge of HACCP and relevant knowledge of product, process and associated hazards.
> If the company lacks appropriate in-house knowledge, external expertise may be used. However, day-to-day management of the HACCP programme remains the responsibility of the company.

1.3 Product Description
Summary: Product description and intended use shall include all relevant information on food safety.

Requirements
> The description shall include at a minimum:
  - Raw materials and ingredients (including origin of)
  - Important product characteristics – i.e. biological, chemical and physical
  - Storage condition
  - Shelf-life
  - Packaging type
  - Method of distribution
  - Intended use and intended consumers
1.4 Flow Diagram

Summary: A process flow diagram or chart shall be created for each product.

Requirements

> A process flow diagram or chart for each product shall be created, covering all aspects of the food process operation within the HACCP scope, from receiving raw materials to processing, reworks, packing, storage and distribution.

> The chart shall be dated, signed and verified as accurate.

1.5 Principle 1: Hazard Analysis

Summary: Hazard analysis and risk assessment shall be carried out for each raw material and process step, including control measures.

Requirements

> Hazard analysis and risk assessment shall be conducted for all raw materials and process steps, to identify significant food safety hazards and measures to control these hazards.

> The hazard analysis and risk assessment shall be based on scientific or technical data, and shall cover specific hazards relevant to products and processes, including allergen cross-contamination where applicable.

  - The hazard analysis shall analyze microbiological, physical, chemical (including radiological) and intrinsic hazards. Generally, intrinsic hazards are allergens, but these may be considered as chemical. Still, it is important to recognize that allergens have been considered in the hazard analysis. For biological hazards, not only generic but specific micro-organisms of concern for the product must be detailed (e.g. in the case of eggs, analyze the risk of not only pathogens but also of salmonella).

  - Consideration shall also be given to the form of the hazard that presents the biological hazard (whether vegetative cell, spore or toxin).

1.6 Principle 2: Critical Control Points (CCPs) Identification

Summary: All steps shall be rigorously reviewed to identify critical control points.

Requirements

> Every step shall be reviewed to identify those points that are critical. A logical approach is required. For example, using a CCP decision tree can help.

CCPs are the control points required in order to prevent, eliminate or reduce to an acceptable level the hazards identified.

1.7 Principle 3: Critical Limits Identification

Summary: Critical limits shall be identified and shall be validated scientifically.

Requirements

> An appropriate critical limit shall be established for every CCP in order to specify clearly whether the process is in control or out of control. The critical limit should be:

  - Measurable wherever possible – time, temperature, pH, etc

  - Supported by clear guidance or example where the measures are subjective – e.g. by use of photographs

  - Scientifically established and validated – e.g. through testing, by scientific or legal reference (bibliography)

> The performance objective of all processes or technologies used to eliminate or target pathogenic organisms shall be defined and validated.
The performance objective is the number of logarithmic reduction for the pathogen of concern; for example, peanut processors in the Americas must validate their thermal process/roasting to ensure they are able to achieve a five-log reduction of salmonella.

> For microbiological CCP, revalidation is required for any changes to the process or product range that may affect food safety.

1.8 Principle 4: CCP Monitoring
Summary: A CCP monitoring procedure shall ensure compliance with the critical limits.

**Requirements**
> A monitoring procedure shall be established for each CCP to ensure compliance with the critical limit. The monitoring procedure can detect processes out of control of CCP. It covers:
  - What to monitor:
  - Frequencies
  - Personnel responsible for the monitoring
  - Personnel responsible for dealing with non-conformances.

1.9 Principle 5: Corrective Actions
Summary: Corrective actions shall be established in case of deviation in critical limit.

**Requirements**
> Appropriate corrective actions for each CCP shall be established. These shall describe all steps needed to identify, quantify and segregate affected products when monitored results indicate loss of control or failure to meet critical limit.

> Records of corrective action taken when critical limits are not met shall be maintained.

1.10 Principle 6: Verification Procedures
Summary: Verification procedures shall be established to confirm that the HACCP plan is effective.

**Requirements**
> Verification procedures shall be established to confirm that the HACCP plan, including the controls managed by the prerequisite programmes, is effective.

> Examples of verification activities are (the list is not exhaustive):
  - Review of records: CCP records, IPQC records, etc
  - Signing of CCP records by an authorized person capable of verifying that the person undertaking the check has been properly trained and has completed the records correctly
  - Internal audits
  - Review of complaints or non-conformances raised by an enforcement authority or customers
  - Review of incidents such as product withdrawal or recall

> Records of related verification activities shall be maintained.

1.11 Principle 7: Record-keeping
Summary: Records shall be kept of monitoring, deviation and verification activities.

**Requirements**
> Records shall be kept of monitoring, deviation and verification activities. These are sufficient to demonstrate and to enable the company to verify that the HACCP controls are in place and maintained.
These records are well maintained and legible.

- Records associated with monitoring should include, as a minimum:
  - Date
  - Time
  - Result of the measurement
  - Signing by the person who undertook the check

- Where records are recorded electronically, there should be evidence that these have been monitored and verified at a prescribed frequency.

### 1.12 Monitoring Adherence to the Plan

**Summary:** The CCPs identified shall be monitored.

**Requirements**

- The CCPs identified shall be monitored according to the monitoring procedure established to ensure compliance with critical limits.
- The records of CCP monitoring shall be in compliance with the monitoring procedure (as per 1.8 'Principle 4: CCP monitoring', above).
- Records of corrective action taken in cases of deviation of critical limit shall be kept.

### 1.13 HACCP Review

**Summary:** A programme for reviewing the HACCP plan shall be established.

**Requirements**

- A written programme for reviewing the HACCP plan shall be in place.
- A review shall be carried out at least annually, or whenever there are changes such as equipment, processes, products or ingredients.
- The HACCP team shall carry out the HACCP review. It is acceptable to seek consultation or external help.
- A review shall be carried out when there is:
  - Change in raw material or supplier of raw material
  - Change in ingredients or recipe
  - Change in processing condition or equipment
  - Change in packaging, storage or distribution conditions
  - Change in consumer use
  - Emergence new risk – e.g. adulteration of an ingredient
  - Development in scientific information that relates to ingredients, process or products, or a change in regulatory requirements

- The results of the review shall be documented and recorded. A revision history shall be maintained.

### 1.14 HACCP Internal Audit

**Summary:** HACCP verification shall be carried out to confirm the efficiency and suitability of the plan.

**Requirements**

- HACCP verification (internal audit) shall be carried out at least annually – preferably before the annual HACCP review – so that results can be fed into the review for consideration.
Good Manufacturing Practices (GMP)
2. Good Manufacturing Practices (GMP)

2.1 GMP Programme
Summary: A GMP programme shall be established.

Requirements

> A written GMP programme, which applies to all employees, visitors and contractors, shall be established. It covers the following:

> The GMP procedure shall cover appropriate dress code and personal hygiene:

  - Outer garments policy: personnel who work in direct contact with food, food contact surfaces or food packing materials must:
  - Wear clean outer garments to cover street clothing while working
  - Wear protective coverings where bare skin may come in contact with exposed food or food contact surfaces (e.g. arm sleeve covering)
  - Remove protective garments when leaving a workstation (e.g. when going to the restroom, going for a break, going outside the building), and put the protective garments back on when re-entering the workstation
  - Use restraints for hair and beard (including moustache), unless clean-shaved or trimmed near skin.

  - Do's and don'ts inside manufacturing area:
    - No gum-chewing
    - No eating
    - No smoking
    - No jewellery or wristwatches, including exposed body jewellery (piercing)
    - Restriction on make-up (see Annex III), false eyelashes, long/false fingernails, body glitter, strong perfumes, etc
      
      *Exceptions: Items worn for medical or religious purposes and plain wedding bands are allowed as long as the company has a daily control in place to monitor.*

  - The hand-washing procedure is adequately defined.

> The GMP requirements should be posted in appropriate GMP zones (including entrances) for employees, visitors and contractors to refer to.

> Signage that defines personal hygiene requirements applicable to employees must be in a language or languages that employees can understand.

> All employees shall undergo GMP training at least annually (see A7: Training programme).

> The criteria for pre-employment medical screening shall be clearly defined (different countries have different legislation requirements). A communicable disease policy, including management of open lesions, shall be implemented. Personnel health cards shall be current.

> Work garments must not have buttons or external pockets at waist level or above.
2.2 Hand-washing Facilities

Summary: Adequate hand-washing facilities shall be provided.

Requirements

> The employer shall provide adequate hand-washing facilities in all restrooms, at production entrances and in high-risk areas, to include:
  - Hands-free operation – i.e. foot pedals, knee pedals or automated
  - Drying device – i.e. disposable hand paper towel
  - Antibacterial and unscented liquid hand soap specifically designed for the food industry
  - Hand disinfectant specific for the food industry – use of bleach is strictly prohibited
  - A sufficient quantity of potable (drinking quality) water at a suitable temperature
  - Bins that do not require lids to be opened by hand

> Hand-wash sinks shall be used for hand-wash only, and not for other use. Paper towel dispensers should not require hands to touch the dispenser for towel retrieval. Cloth towels of any sort are not acceptable.

2.3 GMP Programme Adherence

Summary: All employees, visitors and contractors shall comply with the GMP requirements.

Requirements

> Employees, visitors and contractors shall comply with:
  - the outer garment policy
  - the hand-washing procedure
  - the do's and don'ts inside the manufacturing area

> Personal items shall be stored away from processing areas – e.g. caps, coats/jackets, radios, fans, etc

> Any employee with an open lesion or any other abnormal source of microbial contamination shall be excluded from any operation. Bandages are covered with a non-porous covering such as latex or plastic gloves.

> Hand-wash signs should be posted, as appropriate.

> Tools and processing supplies (including cleaning tools and supplies) shall be properly stored when not in use.

> Areas shall be kept free of clutter to enable workers to perform their duties efficiently.
2.4 Staff and Visitor Health Assessment
Summary: All visitors shall have a health assessment signed before entering the plant and have been trained in GMP requirements.

Requirements
> Any person entering the plant (specially controlled areas) shall have a health assessment carried out beforehand:
  > All staff (permanent or temporary) have had a health assessment carried out in advance, stating their suitability to work in contact with food. This assessment is preferably renewed annually.
  > All visitors sign a health assessment in which their suitability to access the plant has been evaluated. The review and authorization to enter the plant are documented too.
  > See Annex IV: Communicable Diseases

> If the visitor/contractor is frequently on-site, an annual record may be sufficient provided completion of yearly training is recorded.

> A ‘back to work after sickness’ procedure shall be in place.

2.5 Waste Management
Summary: A waste management programme shall be implemented.

Requirements
> Waste containers shall be identified (e.g. colour-coded or labelled) and waste (e.g. paper, plastic, biodegradable) shall be collected and stored in appropriate containers and shall be different from those used for food products.

> An adequate number of waste containers shall be available in the manufacturing facility and be kept in good repair.

> Waste containers shall be emptied daily at a minimum.

> When removed from production and storage areas, waste shall be kept in designated waste containers, shall be covered, and should not attract pests.

> Substandard, trademarked materials should be destroyed (are not reusable), preferably by a specialist third party, to ensure they do not return to the food chain either by chance or because of fraud.

> Records that state the quantity of waste collected and disposed of shall be available.
2.6 GMP Inspections
Summary: Self-audit on GMP elements shall be conducted at least quarterly. A facility inspection programme shall be established at a predetermined frequency based on risk assessment. Audit results and corrective actions taken shall be available on file.

Requirements
> A self-audit on GMP elements shall be conducted at least quarterly to check for any deviation from the required standards.
> The self-audit GMP checklist shall cover all elements specified in the GMP programme.
> Facilities inspection program established shall include production areas, non-production areas and surrounding grounds with defined
  - Frequency of inspection.
  - Personnel responsible for conducting the inspections (may be individual or group).
  - Checklist of areas inspected.
> Any corrective actions needed shall be taken and their status shall be recorded.
> A record of the audit results and of any corrective actions – including their status, verification of their effectiveness, and their completion – shall be available on file.

2.7 Laundry
Summary: An effective laundry programme or subcontracted laundry service shall be in place.

Requirements
> Laundering can be sourced out to an approved laundry provider. An in-house laundry is acceptable if criteria to validate the effectiveness of the laundering process are defined, and its effectiveness is verified accordingly:
  - If outsourced:
    - Name and contact details of the appointed contractor
    - Method of delivering cleaned garments – i.e. use of covers of bags
    - Contractor’s on-site inspection and report maintained
  In-house laundry:
    - The laundry procedure defines the method of dirty-garment collection, washing and drying, the method of delivering cleaned garments, and the personnel responsible.
    - Washing of protective clothing by employees is acceptable where it is worn in low-risk areas or where the product is in an enclosed system.
3
Facility, Grounds and Operations
3. Facility, Grounds and Operations

3.1 Grounds and Building Exterior

Summary: The plant grounds and building exterior shall be adequately maintained so as to protect against pests, and avoid contamination of food or of the facility.

Requirements

> Grounds and building exterior:
  - The plant’s exterior perimeters (roads, yards, grounds, parking lots) shall be maintained in good condition. The areas are clean and litter-free.
  - The area within the immediate vicinity of the building (as a reference: 6 metres/20 feet) should be free from weeds, tall grass or any idle equipment. This is to prevent harbourage of pests.
  - Idle equipment and pipes shall be stored outside the 6-metre (20-foot) area, in a clean and organized condition, and at least 15cm (6 inches) above the ground to prevent rodent/pest breeding and harbourage. Pipe ends shall be sealed.
  - Areas shall be free from standing or pooling water that can serve as a source of contamination and breeding place for pests or insects. There is adequate drainage.
  - Loading docks shall be free from debris and spilled products. Any items or equipment stored in this area must be clean and arranged in an organized way.
  - The building shall be pest-proof. Any openings or gaps (e.g. gaps under doors) are sealed or screened adequately.
  - Doors and windows shall be closed at all times.
  - Cracks and crevices shall be sealed.

> Neighbouring activities must not pose any risk of product contamination or compromise legal status, such as Halal, Kosher or GMO-free.

3.2 Building Interior

Summary: The interiors of buildings shall be designed, constructed and maintained so as to facilitate GMP. Interior housekeeping shall be maintained to ensure cleanliness. All areas shall be properly maintained to prevent product contamination.

Requirements

> Walls and ceilings shall be constructed with materials that permit easy cleaning, and be kept in good repair:
  - The walls and ceilings are not constructed of wood.
  - Any cracks, crevices or other openings are sealed.
  - Floors are smooth, cleanable, non-slip and adequately sloped to drains.
  - There is no evidence of condensation on ceilings or walls, or of standing or pooled water on floors.
  - Walls, floors, drains and ceilings are clean and free from any build-up of old and dusty cobwebs.

> There shall be adequate lighting in all areas of the manufacturing facility: receiving, processing, storage, packing, shipping, locker-rooms, restrooms, break areas, etc.

> No overflowing waste containers and no offensive odours shall be evident. Any spillage shall be promptly cleaned up.

> Aged ice or frost build-up in freezers, and mould or mildew in chillers or coolers shall not be evident.

> Aisles and workspaces between processing equipment shall be kept unobstructed and of adequate width to allow employees to perform their duties and protect against contamination.
> Adequate ventilation shall be made available. The ventilation units, such as fans and air conditioners, shall be properly maintained and kept clean to minimize the potential for contaminating food products, packaging materials and other processing equipment.
> Extractor fans and canopies shall be provided in areas where cooking operations are carried out or a large amount of steam is generated.

3.3 Equipment and Utensils

Summary: Equipment and utensils shall be designed and constructed so as to prevent contamination of food products.

Requirements

> Equipment and utensils shall be systematically verified. The life cycle of each utensil should be identified for each application.
> Wooden equipment and wooden food surfaces are not used in food processing areas. Only flour-mill processing equipment – such as purifiers, sifter components including boxes and sieves, roll-stand cabinet, etc – are exempted from the 'no wood' requirement, as long as the wood used is in good condition and lacks any cracks or splinters.
> Equipment and utensils shall be kept in good repair. They shall be free from rust, not broken and do not have any pieces that may fall into a product.
> Mould or rust should not be evident on equipment. Contact surfaces shall be corrosion resistant.
> Equipment shall be constructed from food-grade materials – e.g. food-grade stainless steel (304/316). Belts have a food-grade statement provided by their supplier.
> Equipment shall be used for the task it is intended for.
> Equipment shall be placed so as to allow enough room for cleaning and maintenance.
> Equipment and food contact surfaces shall have smooth seams to avoid product residues or the growth of micro-organisms.
> Equipment and utensils shall be in good condition, cleaned, dried and stored appropriately.

3.4 Hygienic Zoning

Summary: The hygienic zoning programme shall be designed and documented to reduce the potential for cross-contamination of materials and products.

Requirements

> High-care and high-risk zones shall be physically segregated or separated.
> The supplier shall carry out a risk assessment to identify potential sources of cross-contamination between processing areas and/or products (e.g. product handling areas, storage areas, processing areas, raw materials), and document the findings.
> The outcome of the risk assessment shall be documented in a site plan of the facility. The site plan should indicate:
  - Access points and travel routes for personnel: employees are not allowed to move freely from low-risk/low-care zones to high-risk/high-care zones (or vice versa) unless they change outer garments to avoid any risk of cross-contamination.
  - Location of staff facilities and routes to the facilities from places of work: the location of transfer points must not compromise segregation or pose any risk of contamination. Materials and packaging transfer should involve a disinfection process if necessary.
  - Production process flow (raw materials, work in process, packaging, finished product)
- Routes for removal of waste
- Routes for the movement of rework
- High-risk/high-care zones and hygiene junctions: it is recommended that areas where use of wood is banned be also indicated in the site plan.

> High-risk zones shall be supplied with sufficient change of filtered air (see Annex V: Environmental Testing – ‘Air quality required’).

> The following items shall be documented:
  - Specification of filter used
  - Frequency of filter change
  - The risk assessment
  - Minimum air changes required per hour
  - Air quality standard (see Annex V: Environmental Testing – ‘Air quality required’)

**Zones definition**

> Non-manufacturing zone: Low-care
  - There is no open product in this zone.
  - Product may be stored but not manufactured here.
  - This zone may include offices, cafeteria, locker-room, laboratory, utilities room, etc.

> Low-risk zone
  - This zone includes areas for receiving and storing raw materials that have been potentially contaminated and require controls to prevent contamination of higher-hygiene zones.
  - These areas may have dedicated employees and may be physically separated from controlled or high-control zones.

> Controlled zone: High-care
  - Product that is not highly sensitive can be exposed to the environment and the operators.
  - GMP practices are implemented.
  - The controlled zone may also serve as a transition from non-manufacturing and high-risk zones to high-control zones.
  - Products of higher sensitivity may be present if they are completely enclosed.

> High-control zone: High-risk
  - Product of high sensitivity can be exposed to the environment and/or the operators.
  - Additional GMP practices, such as captive footwear and clothing, should be necessary, and more stringent equipment and building sanitary design requirements should be applied.
### Examples of production zones

<table>
<thead>
<tr>
<th>Product</th>
<th>Low-Risk Zone</th>
<th>High-Care Zone</th>
<th>High-Risk Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk processing/dairy plant</td>
<td>Raw milk receiving</td>
<td>Processing area after pasteurization</td>
<td>Cold-filled area</td>
</tr>
<tr>
<td>Peanut and tree nuts processing</td>
<td>Raw nut receiving and handling</td>
<td>Processing and filling after kill step</td>
<td>n/a</td>
</tr>
<tr>
<td>IQF vegetables</td>
<td>Raw vegetable receiving area</td>
<td>Processing/packing after microbial reduction step (e.g. final rinse, validated blanching)</td>
<td>n/a</td>
</tr>
<tr>
<td>Spices</td>
<td>Spice receiving</td>
<td>Processing and filling after kill step</td>
<td>n/a</td>
</tr>
<tr>
<td>RTE meat</td>
<td>Raw meat receiving and handling</td>
<td>Processing after kill step</td>
<td>Packing area</td>
</tr>
</tbody>
</table>

### 3.5 Preventive Maintenance

**Summary:** A written Preventive Maintenance programme shall be established to ensure proper preventive maintenance of all equipment and of relevant areas of the facility.

**Requirements**

- The Preventive Maintenance programme should include:
  - A procedure to ensure the proper cleaning and sanitizing of equipment after maintenance activity, before it is used in product processing
  - Notification to sanitation crew by production personnel of the need for cleaning and sanitizing after maintenance work is completed
  - A procedure for reconciling parts and tools after maintenance is performed. All parts and tools must be accounted for (by checking against a list to ensure all parts and tools are reconciled)
  - Verification and sign-off by designated personnel (operations staff, production staff or quality staff taking the responsibility from maintenance staff) that food contact zones have been cleared of any parts and tools before being released to production. Management must be notified immediately if any parts, tools or pieces of equipment are found to be missing. Corrective action(s) are documented. No loose or unaccounted-for parts or tools are found in the processing areas.
  - A procedure to protect exposed and non-exposed products during maintenance activities is documented.
  - Guidelines must be in place to remove products known to have been contaminated by any missing parts or tools, to prevent their entrance into the final product.
  - Records that must be available to review:
    - Records of equipment parts and tools reconciliation checklist following maintenance activities (before and after)
    - Records of notification to sanitation crew of cleaning and sanitizing required after maintenance work is completed
    - Records of food contact zones that have been cleaned and sanitized before being released to production
    - Records of corrective actions (if any).
3.6 Corrective Maintenance
Summary: Equipment and structure repairs shall be properly completed.

Requirements
> The corrective maintenance system must ensure:
  - All equipment and structures are properly maintained.
  - Equipment repairs or modifications are professionally completed without the use of string, tape, wire or other improvised materials.
  - Should temporary repair be required to complete the shift's production run, the temporary repair does not pose any risk to food safety. Permanent repair should be completed within one month or as early as possible.
  - If a repair must be completed during production time, preventive measures are taken to prevent product contamination (e.g. use of screens).

3.7 Walkways, Permanent Ladders and Conveyors
Summary: All walkways, permanent ladders and conveyors over exposed products or open bins or ingredients shall be shielded to protect product and packing materials from possible contamination.

Requirements
> At least 10cm (4-inch) kick plates should be used to shield walkways and ladders over product conveying belts or open bins of ingredients, to prevent dirt or foreign matter from falling onto food or food contact surfaces, or into packing materials.
> Plant refrigeration units – including high-velocity air-conditioning units (HVACs) shall have catch pans for condensate control.
> Electric motors located over exposed product shall be shielded.
> No condensate shall be observed dripping onto food or food contact areas.

3.8 Staff Facilities
Summary: Break areas, locker-rooms, restrooms and wash stations shall be maintained in a clean and sanitary condition.

Requirements
> All areas are kept clean, with no rubbish or spillage residue, and mould shall not be evident on walls, ceilings and floors.
> Break areas shall be separated from processing areas, and employees shall comply with the outer-garment policy.
> Brought-to-work meals shall not be kept in lockers. Temperature-controlled refrigeration units and reheating units shall be provided.
> Drains function properly and shall be free of standing water.
> Hand-washing stations located at break areas and in restrooms shall be sufficiently stocked with antibacterial liquid hand soap, water of a suitable temperature, paper towels, a hand sanitizer, and a rubbish bin.
> No offensive odours shall be present.
> Women's restrooms shall have covered sanitary receptacles.
> Lockers and storage in the locker-room must allow street clothing and personal belongings to be completely segregated from work clothes and shoes.
> Proper ventilation shall be available, and rooms shall be equipped with self-closing doors.
3.9 Vehicles and Moving Equipment
Summary: Vehicles and equipment – used for moving raw materials, finished products and packaging materials such as forklifts – shall be kept clean and maintained in good condition.

Requirements
> Forklifts used inside and outside of the facilities should not pose any risk of contamination.
> Forklifts shall be well maintained. Batteries shall be properly stored
> Storage and charging stations shall be located away from food products and packaging materials (at least 2m/6 feet away) and maintained in a clean condition.
> No leaking batteries or other fluids shall be present.
> Access for pest-control monitoring shall be made available behind battery storage areas.
> Gasoline-(petrol) or diesel-powered forklifts shall not be used indoors.

3.10 Container Labelling
Summary: All containers in the manufacturing facility shall be properly labelled.

Requirements
> All containers for manufacturing use, including waste containers and spray bottles, shall be properly and legibly labelled, and shall specify the intended contents.
> Where colour-coding is used for identification, adequate signage shall be posted in relevant areas, indicating the colour-coding interpretation. Kerry prefers colour-coding, but accepts any other system if full identification is possible and there is no risk of mistakes.
4

Receiving, Storage and Distribution
4. Receiving, Storage and Distribution

Summary: Receiving, storage and distribution methods shall be used to protect food from contamination through food safety hazards, pests or objectionable substances.

4.1 Reception of Incoming Materials

Summary: A written procedure on the receiving of incoming materials shall be established.

Requirements

The programme for the reception of incoming material shall include:

> Defined procedures on inspection and documentation of incoming raw materials (ingredients and packaging materials).
  - All of the truck, sealing and packaging integrity must be inspected and documented.
  - The personnel responsible for inspection must be identified.
  - The criteria for inspecting the delivery vehicle and load must be defined: cleanliness, signs of pest infestation, temperature, physical condition, quality, tamper evidence, off-odours, etc.
>
Labelling of packed incoming raw materials should include the following:
  - Supplier details (name, address, contact details, supplier manufacturing site address, etc)
  - Product (name and code)
  - Quantity
  - Lot code
  - Dates (manufacturing, shelf life)
>
Verification of compliance with specification either by Certificate of Analysis (CoA) furnished by the supplier for each batch of material or by conducting internal testing for key attributes upon receipt of every batch
>
Whichever method is used, compliance with the agreed specification must be determined prior to arrival and release. Special care is given as regards GMO, Kosher, Halal or Allergens compliance declarations.
>
Incoming material sampling plan, frequency and testing methods (this is part of the raw material testing programme)
>
Minimum life on receipt (MLOR) – a percentage of the original shelf-life available at the end of manufacture
  - Local products – 75% of manufacture shelf-life
  - International product – 50% of manufacture shelf-life
>
There should be a team responsible for carrying out a compliance verification check upon receiving of raw materials, and that decides disposition by accepting or rejecting, and raising non-conformance (NC) in case of deviation.

Requirements:
  - Any sensitive material automatically goes on hold and requires the manager, or designate, to review each Certificate of Analysis (CoA) or applicable verification documentation prior to use.
  - Parcel shipment: any shipment received is placed in the quarantine area until verification documentation has been received, reviewed and accepted. Material will not be placed into inventory until the accepted CoA is on file.
  - Procedure for product ‘on hold’: this is a required method to prevent release prior to verification of compliance with approved specification.
  - Procurement and/or relevant stakeholders must be notified of all shipments without the appropriate verification documentation.
Any CoA is verified against the packing slip and bill of lading (BL) for material details e.g. material name, material code, batch number, production date, etc.

Verification is needed to ensure that any CoA matches the specifications for both tests and results.

Sensory and laboratory analysis must be carried out, when applicable.

Dairy raw materials must originate from non-FMD (foot-and-mouth disease) and approved countries only, and appropriate verification documentation and, where legislated for, veterinary certificates must be provided.

> Appropriate control should be in place if ingredients are received in bulk (such as by tanker, rail, etc). A transfer procedure is in place to protect product from contamination; hoses are clean, capped and stored above the ground, and connection ports into the building are capped and locked when not in use.

> All liquid bulk raw materials are filtered with an inline filter strainer.

> The Certificate of Analysis (CoA) must accompany each load if it is used for specification compliance.

> Contact packaging must have a food contact certificate, Material Safety Data Sheet (MSDS) and migration test results for the type of material to be packed in; e.g. migrations from packaging to product may vary depending on whether the product is solid, liquid, oil, colourants, flavours, etc.

4.2 Materials and Packaging Identification

Summary: Raw materials and packaging materials shall be identified and clearly labelled.

Requirements

> All raw materials and packaging materials are identified and clearly labelled.

> The receiving date is recorded, or there is a verifiable system in place that ensures ‘first in first out’ (FIFO) or ‘first expired first out’ (FEFO) product rotation.

> Ingredients and primary packaging are traceable by the supplier’s lot number or by the processing facility’s assigned system.

4.3 Raw Materials and Packaging Storage

Summary: All materials (including WIP, intermediate products and rework) shall be kept in clean storage areas and according to the product’s storage requirement.

Requirements

> All raw materials (including packaging, WIP, intermediate products and rework) stored shall be in good condition – intact, clean, protected and free from contamination or spoilage.

> All materials shall be covered to prevent contamination.

> All materials shall be stored in appropriate storage conditions and at the correct temperature, according to manufacturer instructions, which generally are as follows:

  - Dry storage: ambient temperature
  - Freezer: minus 18°C (0.4°F) and below
  - Chiller: 0°C (32°F) to 4°C (39°F)

> Any product on hold for specification compliance verification that is rejected due to damaged package, is out of specification, out of shelf-life or does not conform in quality, etc, shall be properly segregated, clearly identified and labelled, and held in appropriate condition.
> Storage areas shall be kept in a clean and sanitary condition, with no evidence of spills or other litter within the facility. Spillages shall be immediately cleaned up.

> An inspection perimeter shall be maintained along all storage walls (46cm or 18 inches from the wall) to allow for inspection of pest-activity cleanliness. In addition, materials are stored off the floor (at minimum of 15cm or 6 inches, or pallet height).

> If an inspection perimeter (as specified above) is physically impossible (e.g. small storage room), the area shall be cleaned and inspected at least monthly, and the inspection is recorded.

> Part-used ingredients or packaging shall be kept clean and protected against dust and other forms of contamination.

4.4 Storage of Finished Goods

Summary: There shall be a procedure for adequate management and control of finished product during storage and dispatch (FIFO, expired product control and FEFO).

Requirements

> A procedure shall be set up to ensure that finished product is adequately managed and controlled during storage and dispatch, to avoid any product safety risk, or quality risk.

> At a minimum, the procedure during finished product storage shall include:
  - Temperature control of storage areas when necessary
  - Segregation of products where necessary to avoid cross-contamination
  - Storing of materials off the floor
  - Specific handling or stacking requirements to avoid product damage

4.5 Transport Inspection and Verification

Summary: Carriers and transporters, including vehicles, shall be inspected for loading, palletizing, sealing and traceability to ensure food safety.

Vehicles and trailers or containers delivering to Kerry shall be in good condition, roadworthy, compliant with all local regulations, fit for purpose (e.g. road tankers carrying food are used exclusively for food), fitted with all necessary equipment to provide security of vehicle (e.g. lock-in gates, restraints, seals and other methods), fully operational (refrigeration systems or controlled temperature conditions), clean and sanitary.

A contract/specification shall be agreed with the carrier that details the applicable food safety and quality expectations and requirements. Carriers are audited as necessary to verify compliance. Carrier performance is scored by supply chain and communicated to management.

Requirements

> All vehicles shall be inspected before loading, and the inspection is documented. Containers shall be inspected internally and externally for holes, dents, excessive rust, and damage in seals or locks. They are free from odours, soil, mud, debris, pest, any non-food or food item that may contaminate the load (allergen, raw meat, etc), and any other form of contamination.

> The inspection shall include:
  - Cleanliness
  - Lack of odours or other residues
  - No evidence of pests and pest resistance
  - Suitability to avoid damage to the load
  - Temperature control equipment when necessary
At a minimum, the procedure during loading and palletizing shall include:

- Use of covered bays for vehicle loading and unloading
- Securing of the load on pallets to avoid movement and damage in transit
- Inspection of loads and packaging integrity before distribution
- Palletizing is done using slip-sheets, and avoids any kind of cross-contamination or damage to product

**Pallets**

- Pallets shall be in good condition to avoid any health and safety or product contamination risk. Good palletizing practices are in place to physically secure the load and enable easy identification. The criteria for wooden pallets are:
  - All boards are intact and secured to bearers.
  - There are no broken boards, missing boards, or protruding nails.
  - No foreign objects are present, such as soil, oil, chemicals, powders or other contaminants.
- Pallet weight
  - To ensure safe handling, transportation and storage, maximum pallet weights are specified (unless mutually agreed otherwise):
    - 1,250kg (gross weight of pallets, packaging and product)
- Pallet height
  - Maximum pallet height is set at:
    - Unit in the pallet >16kg (and chilled/frozen food) – 1.3m
    - Unit in the pallet <16kg – 1.8m
- Pallet configuration
  - The configuration Ti x Hi is used for stock control and efficient, safe storage:
    - Ti = number of units per layer
    - Hi = number of layers
  - The pallet must be interlocked, unless specifically required not to be – in which case, or when column stacking is unavoidable, it is recommended to use cardboard sheets at internals through the pallet to improve stability (see Annex VI).
- Pallet use and overhang
  - For safety and efficiency, the pallet configuration should be designed to use the whole surface of the pallet, without product protruding over the pallet.
  - Underused or overhanging pallets present a risk during transportation or storage, and do not allow for safe double-stacking.
- Wrapping
  - When wrapping is used to secure goods, it should be done in a safe manner, with clear stretch film that allows the goods to be seen. If airflow needs to be maintained to keep the goods in optimum conditions, perforated stretch film can be used.
In general, the wrapping should:

- be firmly secured, not be loose or trailing, but the tension should not risk damage to the goods
- be applied in a sufficient number of passes to hold the goods
- anchor the product to the pallet, allowing sufficient binding area
- Pallet labels must be applied after the pallet is wrapped.

Pallet labelling

- Pallet labels must contain the minimum information:
  (a) Supplier details (name, address, contact details, supplier manufacturing site address, etc)
  (b) Product (name and code)
  (c) Quantity
  (d) Lot code
  (e) Dates (manufacturing, shelf life)
- Labels should be printed on white, non-glossy/non-reflective labels, be free from printing defects and be positioned correctly.
- When bar codes are used, those must be in high-quality print, to allow them to be scanned. Labels need to be applied smoothly, not warped or folded over, and quality stock should be appropriate for the temperature environment (chilled and frozen chambers).
- Two labels should be applied per pallet, one at each fork entry side. The labels should be at a height of between 40cm and 80cm (16 and 31 inches).

Multi-SKU pallet (consolidation of pallets)

- Multiple-part layer pallets are not safe or efficient. It is acceptable to consolidate different products into one pallet if the following criteria are met:
  (a) All of the products have been ordered in less-than-layer quantities.
  (b) All of the products are part of the same purchase order.
  (c) Each of the products or items is clearly segregated, to allow for easy identification.
  (d) Each product has its own 'pallet' label.
  (e) Pallets are stretch-wrapped.
  (f) No more than 4 products are to be consolidated in a single pallet.
  (g) High-visibility labels are applied to the finished pallet (fork entry sides), indicating ‘Mixed Pallet’.

Multi-lot pallets

- Consolidating product (2 or more lot numbers of the same product) into a single pallet is permitted, if the following rules are applied:
  - Build the pallet in the correct stock rotation order – with fresher stock (longer expiry date) at the bottom and oldest (shortest expiry date) at the top.
  - The combined quantity of units should be indicated in a single pallet label (not different labels for different codes).
  - Ensure that the TlxHI is not exceeded.
  - Apply a label indicating Multi-Lot Pallet.
  - Ensure that traceability of all dates/lots can be maintained.

Pallet slip-sheets, pads and corners

- Use of cardboard slip-sheets and pallet pads is permitted and is a good practice. These slip-sheets must be made of cardboard or paper only. Plastic, wood or any other material is not permitted. The slip-sheets must remain confined to the pallet footprint.
- Cardboard corner posts are also permitted to improve stability, but, since they lead to extra waste, they should only be used when necessary.
At a minimum, the procedure for sealing trucks and containers involves inspection to ensure that the truck and container have been correctly loaded and sealed, including in those instances where Kerry has arranged the freight and the carrier is under a Kerry contract.

Traceability should be ensured during transportation. Distribution records demonstrating sufficient checks are completed and kept current.

The transport company should be provided with a vehicle breakdown procedure to ensure correct product handling should an incident occur. Evidence of this consists of transport company sign-off or contract. Driver sign-off is required when internal transport is involved.

Cold chain management
- The term ‘cold chain’ shall cover all the means used to maintain the temperature of temperature-sensitive products as they move through the chain of custody, from production to final user.
- To ensure the safety and quality of the temperature-sensitive products, the supplier must ensure that the cold chain is maintained at every point of the chain of custody.
- Chilled product should not exceed 5°C or 41°F (avoiding formation of crystals) at any point in the chain of custody.
- Frozen product should not exceed -18°C (-0.4°F) at any point in the chain of custody.
- Product rejected due to temperature breaches must not be redelivered.
- When delivering temperature-controlled products, the vehicle refrigeration unit must remain running until directed to unload.
- The use of data loggers is required to verify, at least annually, that the cold chain is unbroken.

4.6 Supplier Approval Programme
Summary: A supplier approval programme shall be established for all raw materials and packaging materials, clearly defining processes by which a supplier is approved.

Requirements
- The supplier shall have in place a written supplier approval programme, which shall include:
  - A current and accurate list of approved suppliers
  - Supplier evaluation and selection criteria
  - A supplier audit programme that includes the following food safety elements:
    - HACCP programme
    - Cleaning & sanitation
    - Pest control programme
    - GMP
    - Process control
    - Traceability and recall
    - Food security
- Third-party audit is acceptable; preferably, GFSI benchmarked certification.
- The frequency of the supplier performance evaluation and supplier audit shall be determined based on product risk to the facility.
- The supplier performance criteria shall include:
  - Number of complaints
  - Delivery performance
  - Specification compliance
  - Corrective actions when issues are identified
- Defined method of supplier monitoring and tracking
- Criteria for disqualification

> In the case of agricultural-based raw materials:
- The use of pesticides shall be documented, with full traceability per field.
- There shall be a documented and up-to-date list of pesticides and fertilizers permitted, and documented proof that all agricultural suppliers are informed about this requirement.
- It must be demonstrated that agricultural suppliers handle agrochemicals according to local regulations and security (including doses, harvest intervals, quantity in each application).
5

Good Laboratory Practices (GLP) and Testing Programme
5. Good Laboratory Practices (GLP) and Testing Programme

5.1 GLP Programme

Summary: A written GLP programme shall be established. Only approved official test methods or established methods that have been validated shall be used. All test methods shall be documented.

* This section is not applicable to a manufacturing site that does not have an in-house laboratory.

Requirements

> If the laboratory is ISO 17025 or CLAS (Campden)-certified, it can be accepted as complying with the whole section; only general laboratory practices need to be verified. The programme shall include or cover the following:

- A written standard operating procedure for all test methods used. Approved official test methods (e.g. AOAC) are followed.
- Handling and storage of reagents, media, prepared media and chemicals – to be used within their shelf-life, labelling of all containers (primary and secondary) including distilled water, labelling of bottle/container opened date, prepared date and use-by date
- A written procedure for internal and external calibration, which includes calibration schedule, methods and frequency of calibration, identifying appropriate reference standards
- A written procedure for controlling cross-contamination between laboratory and manufacturing areas (applicable if the laboratory is testing for procedures)
- Assessment of the competency of the laboratory technician, at least annually, for each of the tests that s/he performs
- A training programme for all laboratory staff, including sampling technique

> Laboratory compliance:

- The laboratory has sufficient working and storage space and overall facilities to handle workload.
- The laboratory shall be well organized, clean and free from clutter.
- No personal items, food and beverage shall be stored in the laboratory. No eating, gum-chewing, drinking or smoking takes place in the laboratory.
- The microbiological and chemical laboratories shall be segregated, and measures are in place to avoid cross-contamination of microbiological lab staff into production.
- Especially in microbiological laboratories where pathogens are tested, access to staff shall be controlled, and entry is limited to authorized personnel only.
- Designated laboratory coats and/or other protective clothing for laboratory use shall be worn in the laboratory. Microbiological lab garments are clearly differentiated from garments worn in the chemical or production areas (e.g. red collar).
- Calibration results shall be recorded.
- Laboratory results shall be documented and signed.
5.2 Testing Programmes and Procedures

Summary: The testing programmes and procedures developed shall be comprehensive, and all important elements shall be included.

Requirements

> Testing procedures for the following programmes (if applicable) shall be established, incorporating test parameters, acceptable limits, frequency, personnel responsible, etc:

  - Raw Material, Ingredients, Packaging Testing programme: other than microbial test, other parameters to be considered are allergens, GMO, pesticides and heavy metals.
  - Finished Product Testing programme: testing parameters shall include all those stipulated in the agreed specifications.
  - Environmental Testing programme: this should be unique to the product and production environment, and include swabbing of food contact surfaces (after sanitization), of any relevant surfaces in high-care or high-risk zones, and workers’ hand swab (during food handling) (see Annex V).
  - Utilities Testing programme (water, gas, steam and ice)

> Shelf-life assessments shall be carried out regularly.

> Water testing shall take place at least once a year, from different sampling points. The water analysis results shall meet the local regulatory standard. At a minimum, water shall be analyzed for:

  - Total plate count
  - Coliforms
  - E coli (not necessary if none detected in coliform count)
  - Heavy metals: lead and mercury
  - Off-flavours and odours

> Retention samples shall be kept for every batch produced for at least 1.5 times the shelf-life time in order to set up and verify the shelf-life of products.

5.3 In-house Pathogen Testing

Summary: Control measures shall be established for plants that test pathogens on-site.

Requirements

> Strict controls shall be in place, for both entries to and exit from the laboratory; e.g. air shower, negative air pressure in the laboratory and filtered outlet, complete garment change, shower change, full hand-wash, etc.

5.4 Third-party Laboratories

Summary: Appointed third-party laboratories that perform critical analysis shall be accredited, and operate in accordance with ISO 17025 or equivalent.

Requirements

> Appointed third-party laboratories that perform analysis that is critical to product safety and/or legality shall be accredited, and operate in accordance with the requirements and principles of ISO 17025.

> The scope of accreditation shall be available, and shall cover all the critical tests performed on product quality and safety (ISO 17025 certifies each test, not the whole laboratory system).
Cleaning and Sanitation
6. Cleaning and Sanitation

6.1 Master Sanitation Programme

Summary: A written master sanitation programme shall be established and all critical elements shall be adequately addressed to prevent cross-contamination. This programme shall list all equipment, utensils and areas requiring cleaning and sanitizing.

Requirements

> The master sanitation programme shall specify the following:

- All areas and equipment to be cleaned
- Frequency of cleaning and when to initiate cleaning (e.g. product changeover, after every shift)
- The methods and procedures for each cleaning task – these are adequately defined in the Sanitation Standard Operating Procedure (SSOP)
- The cleaning products used, the concentration required, and instructions for use
- The personnel responsible for the designated tasks
- The individual accountability for each task, with signing-off for each completed task

> Cleaning equipment and utensils shall be specific to one area (e.g. raw vs. cooked) or shall be thoroughly cleaned and sanitized before they are moved to a different area.

> For the Clean-In-Place (CIP) system, the sanitation programme and records shall include the following:

- Monitoring of all automatic cleaning systems, with cleaning chemicals and concentrations documented
- A CIP system is defined by 4 parameters:
  - Temperature of the water or solution
  - Mechanical agitation (m/s)
  - Chemical concentration
  - Circulation time
- Frequency and method to monitor temperature, flow rates or velocity in open systems, and pressure and/or cycle times in closed systems
- The dosage of the CIP chemical is verified and recorded.
- Corrective or follow-up actions are documented.

> Where external service providers are employed for cleaning and disinfection, they shall fulfil all of the above requirements.

> Records and trends of the cleaning validation report and testing records supporting the effectiveness of the sanitation programme shall be maintained.

6.2 Use of Cleaning Chemicals

Summary: The concentration of sanitizer and cleaning chemical shall be verified, and complies with the manufacturer’s recommended concentration.

Requirements

> The dilution, concentration and application of sanitizer and cleaning chemical used shall comply with the manufacturer’s recommendation for effective cleaning and sanitation.

> The automatic cleaning chemical mixing station shall be routinely calibrated. The chemical concentration shall be verified by the system supplier. A service report that indicates system functionality and concentration verification shall be maintained on file and kept current.
The dilution of cleaning chemical as well as the dilution and concentration of sanitizer shall be recorded, signed and dated each time a manual mixture is made.

To verify the concentration of a sanitizing solution, a sample of already mixed solution shall be obtained and be tested with test strips or a test kit.

If test strips or test kit are not made available by the supplier at the point of concentration verification, this will be interpreted as “systematic failure to use correct concentration”.

### 6.3 Cleaning Chemicals Documentation

**Summary:** A Material Safety Data Sheet (MSDS) and a copy of labels, for all cleaning chemicals and sanitizers used, shall be maintained.

**Requirements**

> The labels and any other supporting documents must state clearly that all cleaning and sanitizing chemicals are approved for use in a food manufacturing facility, and/or that they meet regulatory guidelines.

> A copy of labels and the MSDS shall be kept on file, and kept current, for all cleaning and sanitizing chemicals in use.

### 6.4 Pre-operational Sanitation Inspection

**Summary:** A Pre-operational Sanitation Inspection programme, which includes all production-related areas, shall be established. Records of pre-start up inspections shall be maintained.

**Requirements**

> The Pre-operational Sanitation Inspection programme shall be available and shall include all production-related areas.

> The Pre-operational Sanitation Inspection programme shall include (but not be limited to) the following:

  - The limits of acceptable and unacceptable cleaning performance, based on the potential hazard relevant to the product or processing area (e.g. microbiological, allergen, foreign-body contamination, chemical contamination or product-to-product contamination)

  - The limits shall be defined for both food contact surface and processing equipment.

  - Acceptable levels of cleaning should be verified through visual appearance checking, ATP bioluminescence techniques, microbiological testing, allergen testing or chemical testing, as appropriate.

  - The site shall define the corrective action to be taken when verification results are outside of the acceptable limits.

  - The result of the cleaning effectiveness verification and any corrective action taken, when verifications results are outside the acceptable limits, shall be recorded.
6.5 Environmental Monitoring Programme

Summary: An Environmental Monitoring programme (EMP) shall be established and shall be monitored.

Requirements

> An Environmental Monitoring programme shall be established and monitored.

> Records and trends of the Environmental Monitoring programme, demonstrating its effectiveness, shall be maintained as part of the Master Sanitation programme.

> The Environmental Monitoring programme focuses on specific pathogens; for example, Salmonella spp. and Listeria monocytogenes, using indicator organisms (see Annex V).

> The programme shall include:

  - A systematic sampling plan to test all food contact surfaces on all food-processing equipment. The plan covers the following zones:
    - **Zone 1** – direct or indirect product contact surfaces
      Direct product contact surfaces are surfaces exposed to product during normal equipment operation.
      Indirect product contact surfaces are surfaces from which liquids, dust or other material may drain, drop, diffuse or be drawn into the product or into the container, and other surfaces that touch product contact surfaces or the container.
      Examples include (but are not limited to): conveyor surfaces, product chutes, pipeline interior and storage fill hoppers, nozzles, formers, cut & wrap equipment, product scrapers/utensils, product contact gloved hands, etc.
    - **Zone 2** – non-product contact surfaces but adjacent to product contact surfaces
      Such surfaces are close to product contact surfaces and, under normal operating procedures, do not directly contact the product or the product contact surfaces of the container, including the exterior of processing equipment.
      Examples include (but are not limited to): non-product contact gloves, equipment supports, frames, outside of tunnels, outside of enclosed filling cabinets or below filling equipment, control panels, weight scales, motor housings, catwalks, scrap carts, HVAC vents, vacuum cleaners if used near product contact surfaces, air filters, etc.
    - **Zone 3** – non-product contact; environmental surfaces in the processing room that are more remote from product contact surfaces
      Examples include (but are not limited to): hand trucks, forklifts, walls, drains, floors, equipment legs, ductwork, ceilings, fork truck and cart wheels, tools, brooms, squeegees, floor scrubbers, debris from vacuum collection points, floor debris, trash cans, traffic pathways into processing area, ceiling drain pipes, wall/floor junctures, wash stations, ingredient storage areas, etc.
    - **Zone 4** – sites that are remote from product contact surfaces outside the processing room but could affect processing areas through the movement of people, equipment or materials
      Examples include (but are not limited to): warehouses, hallways, break areas, locker rooms, maintenance rooms, offices, cafeteria, restrooms, coolers, floors, wheeled vehicles and materials, waste/recycle collection areas, etc.
  - Frequency of swab and when to swab – e.g. after CIP
  - A master sampling plan to determine areas for swabbing
  - Description of media and sponges used for swabbing – e.g. sponge with neutralizing buffer, cotton swab
  - Method for swabbing, including how to handle swabs once taken, how long before swabs are processed, how swabs are collected specific to the size of areas swabbed
  - Confirmation method if growth of indicator organism is positive
  - Final rinse water reference samples (just before inlet)
  - Definition of acceptable criteria or standards
– Recording of corrective actions and follow-up actions, with plans for retesting if results do not comply with standards
– Method of investigation in case of pathogen being detected
– Procedure for recommissioning a processing room or a piece of equipment
– Training of technical staff on swabbing as well as training and qualification of individuals overseeing the EMP (i.e. microbiologist, food technologist or science-based); keeping of records, and refresher training conducted at least annually
– Records are maintained and results are reviewed and trended on a routine basis to identify areas for continuous improvement.
– Whenever product surfaces are tested for pathogens, the affected product lot(s) is placed ‘on hold’ pending the test results.

> The verification of the cleaning procedures may be visual (when the product cannot support microorganisms and evidence of this can be provided) or may need to be done based on allergens residues (see Annex VII: Sanitation Verification Parameters).

### 6.6 Cleaning Equipment Storage

**Summary:** Storage of cleaning equipment shall be adequate to prevent cross-contamination.

**Requirements**

> All cleaning equipment and chemicals shall be neatly stored and organized.
> Mops shall be stored in a dry condition.
> All cleaning equipment should be colour-coded according to its designated area or use, and stored in a hygienic manner, off the floor and segregated by different areas or uses.
Pest Management Programme
7. Pest Management Programme

7.1 Pest Control Programme

Summary: A Pest Control programme shall be established.

Requirements

- A documented Pest Control programme shall be implemented. The pest-control service shall be a licensed and certified Pest Control Operator (PCO) or a licensed, insured and certified Pest Control Service (PCS).

- A PCO within the supplier’s organization who is licensed and certified shall apply pesticides, or a PCO trainee may apply pesticides if authorized under local laws to do so.

- A licence and certificate may be one and the same in some locations; the relevant name must be identical to the name signed on service reports.

- If an on-site employee is certified, s/he may supervise someone else applying pesticides.

- In either scenario, copies of all documents must be maintained at the facility. The licence, insurance and certification must be current.

- The programme shall include:
  - Designated PCO or designated PCS company.
  - PCS’s proof of liability insurance.
  - Updated licence for PCS.
  - PCO certification (internal PCO and/or external PCO).
  - Frequency of scheduled service intervals – it is recommended that services take place at least monthly.
  - Labelling of all pest control devices such as traps, bait station and insect light traps (insect zappers that cause the insects to explode are not allowed inside the facility) to include PCO initials and inspection date on the label.
  - Master list of all approved pesticides used in the plant, including where and how they are applied, and concentration or recommended dilution.
  - Up-to-date schematic map of all pest-control devices, showing the location of traps, bait stations and insect light traps, both interior and exterior of plant. The devices are identified – e.g. a numbering system – for ease of tracking and trending.
  - Explanation of how unit inspections will be tracked. For example, the date and initials are on the final report of electronic scanning of units or punch cards.
  - In production and storage areas, no bait devices are allowed.
  - Only approved pest control devices are placed inside the manufacturing facility.
  - No food baits are allowed internally.

7.2 Pesticides

Summary: Material Safety Data Sheets (MSDS), handling & mixing procedures and pesticide labels shall be available on file.

Requirements

- All pesticides used shall meet the applicable regulations and approvals (EPA, USDA, OSHA, etc) and shall be approved for use in a food manufacturing facility.
  - MSDS for all pesticides used shall be readily available and maintained on file.
  - A copy of the label for each pesticide, indicating the name, mix procedure and application instruction,
shall be maintained on file and kept current.

- All pesticides shall be stored in the recommended storage condition (as specified in the MSDS), in a locked, secured area, and shall be accessible to authorized personnel only.
- All pesticides stored shall be properly labelled. Any secondary bottle or container shall be labelled ‘for insecticide use only’.
- Pest-control chemicals shall be used in their original packaging, and containers shall not be reused.

7.3 Inspection Reports
Summary: Service reports or pest-control inspection records shall be kept on file and are current.

Requirements

> Duly completed service reports (by PCS) or pest-control inspection records (if the service is performed by an internal PCO) shall be kept on file and shall be current. Reports shall include, at a minimum, the following:
  - Name of pesticide applied
  - Quantity and concentration or dosage applied
  - The name of the individual conducting the service
  - Date of service
  - Application method used
  - Specific area where pesticide was applied
  - Signs of any pest activity observed
  - Type of services performed
  - Corrective action(s) documented for frequent pest activity
  - Records of follow-up, completion and verification of actions, requested by the pest-control technician to avoid or resolve infestation problems – these are available on file.

7.4 Pest-control Devices
Summary: Pest-control devices shall be adequately placed to avoid pest infestation as well as contamination.

Requirements

> The locations of pest-control devices shall be adequate to effectively control pest infestation and to avoid any contamination to product, packing materials or equipment.
> The following restrictions shall be observed:
  - **Rodent control**
    - All bait stations are secured to the wall or floor and are tamper-resistant, so as to minimize movement of the device.
    - The bait used must not be of a loose or granular type. It is secured inside the bait station by a rod (horizontal or vertical) above the floor of the station to avoid the bait being removed by a rodent or floating away in the event of heavy rain.
    - The bait station is located at a maximum of 50m/15ft intervals around the exterior of the building parameter.
    - All pest control devices are located between 7–12 metres /23–40 ft apart, and located on either side of any entrance into the building facility. Traps are not placed on curbing.
    - Traps are placed so that openings are parallel with and closest to the wall.
  - **Insect control**
    - Insect electrocuters (pulsed electrocution) should not be allowed in zones 2 or 3
    - All insect light traps are fitted with catch trays.
– Insect light traps are located at least 1.5m/5ft from protected or exposed product or packing material.
– Insect light traps are not located above dock doors.
– All insect trap light bulbs are shatterproof (with metallic ring). Covering the bulb with sticky plastic is not acceptable as it decreases the effect of the light.

The above-specified intervals only serve as a guide. Pest-control evaluation is required depending on the size of the facility.

7.5 Pest-activity Trend Analysis
Summary: Pest-activity trend analysis shall be carried out. Corrective actions and areas for improvement shall be identified.

Requirements
> Pest-activity trend analysis shall be carried out by the PCO or plant.
> Corrective actions and areas for improvement shall be identified.
> Trend analysis shall be carried out for all pest-control devices in the plant.
> Trend analysis shall be done at least annually.
> Trend analysis shall be analyzed after each servicing and reviewed as part of the assessment. This data shall be used to identify problematic areas and criteria for improving the Pest Control programme.

7.6 Pest Activity
Summary: Pest activity shall not be evident either inside or outside the building.

Requirements
> All areas shall be free from any reoccurring or existing pest activities, including:
  – Rodent activity – evidence of burrows, trails, excreta, tracks, gnawed bags or cases.
  – Bird activity – nesting around the interior perimeter of the plant, droppings or feathers in the internal areas of the warehouse.
  – Live animals inside the plant perimeter – cats, dogs, etc.
  – Insect activities inside the plant – flying insects, cockroaches (smell, excreta), spiders (with active webs).
  – Decomposed rodent(s) on traps and bait stations.
Product Control
8. Product Control

8.1 Temperature Control
Summary: Temperature control measures for temperature-sensitive products or ingredients shall be effective.

Requirements
> All temperature-sensitive product and its processing rooms shall be monitored with a calibrated thermometer in the warmest part of the room.
> Facility temperature (where temperature-sensitive products or ingredients are stored) shall be monitored and recorded at least twice daily.
> Docks shall be enclosed and cooled to less than 10C (50F) if temperature-sensitive items are shipped.
> Thawing of product shall be undertaken in equipment and rooms appropriate for the purpose. Water overflow shall be directed to the drainage and not onto the floor.

8.2 Contamination Control
Summary: Steps shall be taken to prevent the introduction of foreign material or contamination of any kind into the product.

Requirements
> No evidence of imminent contamination – physical, chemical or microbiological – shall be observed during the audit.
> If gloves are used, they shall be suitable for food use, of a distinctive colour (blue where possible), be intact and not shed loose fibres.
> If seals are used during work-in-progress, seals with the same colour as the product should be avoided. The condition of the seals shall be verified.

8.2.1 Foreign-body Control Devices

Requirements
> The use of foreign-body control devices shall be in place and documented.
> The site shall have equipment in place to detect or remove foreign objects. The procedure shall include the following:
  > Typical equipment to be considered as foreign-material control devices may include:
  > - Filters
  > - Sieve
  > - Metal detection
  > - Magnets
  > - Optical sorting equipment
  > - X-ray detection equipment
  > Other physical separation equipment – e.g. gravity separation, fluid bed technology
> The foreign-material control device must be working and placed as close as possible to the final packing.
> For products packed in foil packaging, an in-line metal detector shall be placed before packing, or else an imaging system is used after packing.
> Verification of the sensitivity of metal detectors and imaging devices shall be conducted by passing metal pieces through the middle of the metal detection area, as it is the least sensitive, resulting in the worst-case scenario. It is best practice to pass each test piece three times in the normal flow of the product, with
the standard at the leading, middle and trailing edge of the product, where possible.

> Verification frequency shall not be less than:
  > – Every 8 hours if the plant runs 3 x 8 hour shifts a day
  > – At the start and end of the shift if the plant runs 2 shifts a day or fewer (even if they are 12-hour shifts)

> The metal detector or x-ray equipment shall be calibrated externally by a competent organization at least annually. Magnets shall be calibrated at least annually, but this can be done internally with a Gauss meter traceable to the national standard.

> The metal detector (including in-line) or imaging device may incorporate one of the following:
  > – An automated rejection device for continuous line systems, which either diverts contaminated product out of the product flow or to a secure unit accessible only to authorized personnel
  > – A process line or conveyor-belt stop system with an alarm where the product cannot be automatically rejected (e.g. for very large packs)

> The sensitivity of the detector is set as low as possible and based on the location of the detector, packaging size and anything else that may affect the sensitivity.
  > – The metal detection verification should target a size as follows:
    > – 1.5mm ferrous
    > – 1.5mm non-ferrous
    > – 2.5mm stainless steel (316 grade)
    > Where the target is not achievable, the sensitivity use must be derived from HACCP analysis.
  > – UHT milk products are exempted from the metal detection standards as long as rare-earth magnets are used.

**Points for attention**

> At a minimum, metal detection and imaging system testing must be conducted:
  > – at start-up
  > – at breaks
  > – after maintenance
  > – at the end of a production run

> For metal detection without a positive rejection device, but with an alarm, warning light or belt shut-off mechanism, a written procedure on how the system is restarted and the disposition of suspected products must be in place.

> A product rejection log shall be kept, including analysis and corrective actions for any foreign materials.

> The internal auditor shall verify that the positive reject device is operating correctly. If the metal detector or imaging device fails, the auditor shall check if the product was handled according to the written procedure.

> The internal auditor shall observe how the operator conducts the verification according to procedure, without management interference.

### 8.2.2 Metal Utensils Control and Policy Requirements

> A procedure to define accountability, periodic control (frequency and records) and disposal measures shall be implemented.

> Specific controls shall be applied for sharp metal utensils that entail a potential risk to health in the event of contamination.
> These utensils include (but are not limited to): knives, needles, sieve wires, cutting devices, blades.

**8.2.3 Wood Policy**

**Requirements**

> A wood policy shall be in place. Wood shall be banned from high-risk or high-care zones. Other production and storage areas may have wooden pallets under risk assessment.

> A map showing ‘wood allowed’ and ‘wood banned’ areas is recommended.

> Some exceptions may exist; e.g. in flour mills it is traditional to have wooden framed sieves. In the case of such exceptions, it is important to check that the wood does not pose a risk to the safety of the product and is in optimum condition (no splinters, not wet, etc).

**8.2.4 Glass and Brittle/Hard Plastic Contamination Control**

**Summary:** A written procedure on glass and brittle/hard plastic shall be established. All lights and glass are shielded so as to prevent product or packing contamination in the event of any bulb or glass breakage.

**Requirements**

> The policy or procedure shall include the following:

  - No glass or brittle/hard plastics are used in the factory, except where this is necessary.
  - A list is maintained of all essential glass and brittle/hard plastics within the manufacturing facility, including all lights, glass and brittle/hard plastics in production, warehousing and storage areas.
  - All glass and brittle/hard plastics are shielded with plastic film to prevent shattering during breakage. However, tamper-proof glass does not require a plastic film. Plastic film should not be used over UV lights for microbiological load decrease or electronic fly killers, as this may decrease efficiency.
  - Usage of shatterproof bulbs in UV lights or pest-control devices is necessary. A manufacturer certificate should be available.
  - Employees are strictly prohibited from bringing in any personal effects that are made from glass, except for eyeglasses.
  - Any breakage of eyeglasses or loss of contact lenses is immediately reported to management.
  - Guidelines are provided for reporting any broken glass or brittle/hard plastic incidents, as well as instructions for disposal.
  - A log of broken glass and hard plastic incidents is kept, logging what, where, when and what action has been taken to any compromised product.
  - If any receptacle (such as a bottle or beaker) is required for sampling, it must not be made of glass or hard plastic.
  - A brittle and glass programme is required.

*Examples of brittle plastics are: Acrylic, Lucite, Optix, Plexiglas and Polycast. Brittle plastic shatters in a manner similar to glass. Example of soft plastics are: Polycarbonates, Lexan, Tuffak and Unicar. Soft plastic cracks but does not shatter.*

**8.2.5 Chemical Control (Including Cleaning Agents, Lubricants, etc.)**

**Summary:** The use, storage and handling of non-food chemicals shall be controlled to prevent chemical contamination.

**Requirements**

> Controls shall include:

  - All chemicals are kept in locked storage to prevent unauthorized use. The key is kept by authorized personnel only. Storage of cleaning chemicals is segregated from food and packing materials. The storage area is in a clean condition.
– Material Safety Data Sheets (MSDS) are available.
– There is confirmation of suitability for use in a food-processing environment.
– The sanitizer bottle in the production area is adequately labelled, with the word ‘sanitizer’.
– Cleaning chemicals and sanitizers may be in production areas if they are secured and do not pose a risk of product contamination (e.g. sanitizer bottle on wall racks, drums of chlorine on pallets for automatic dispensing systems or hand dip stations).

**Lubricants**

> Only food-grade lubricants shall be used in all product or packing contact surfaces.
> Risk assessment shall be carried out to identify which equipment requires the use of food-grade lubricant or grease, and this is documented.
> Containers and grease guns of food-grade lubricants shall be clearly labelled or colour-coded.
> Food-grade lubricants shall be segregated from non-food-grade items to avoid confusion between the two.
> There shall be evidence of food-grade declaration – via label, MSDS, etc.

### 8.3 Allergen Control

**Summary:** An allergen management and control programme shall be established to prevent cross-contact from allergenic material to non-allergenic material.

**Requirements**

> The allergen control procedure should be effective and shall include the following:
  
  > A master list of ingredients identified as food allergens shall be kept, and is updated when ingredients identified as food allergens are brought into the facility.
  > Ingredients identified as food allergens shall be identified in all records of formulation, batch or raw material production.
  > At a minimum, the following food allergens shall be addressed:
    > Cereals containing gluten and products thereof
    > Crustaceans (including shellfish) and/or products thereof
    > Molluscs (including shellfish) and/or products thereof
    > Egg and products thereof
    > Fish / Seafood and products thereof
    > Peanuts and products thereof
    > Soybeans and products thereof
    > Milk and products thereof
    > Nuts and products thereof
    > Celery and products thereof
    > Mustard and products thereof
    > Sesame and products thereof
    > Sulphur Dioxide & Sulphites
    > Lupin and products thereof
    > Bee pollen, royal jelly and products thereof
  > A production scheduling or change-over procedure shall be in place to ensure that allergens are not transferred to a non-allergen-containing product. Verification of changeover activity shall be conducted and records of this shall be maintained.
  > Allergen control shall include allergen separation in storage with clear labels, the clean-up procedure for
allergenic ingredient spills, utensils and storage containers control, etc.

> There shall be specific sanitation practices that prevent cross-contamination of allergens to non-allergen products.
> Verification of sanitation shall be implemented to ensure no allergens cross-contaminate.
> Ingredient handling practices shall be in place – e.g. weighing does not leave scope for cross-contamination of allergens to non-allergen products and ingredients.
> There shall be a defined procedure on the rework handling of product containing allergen – e.g. proper labelling of rework to identify product and type of allergen present, etc.

8.4 Sensitive Products, Claims and Chain of Custody
Summary: Systems shall be in place to ensure that all product descriptions and claims are legal, accurate and verified.

To substantiate claims, procedure and records shall be in place to ensure chain of custody.

Requirements
> A master list of sensitive ingredients shall be updated when sensitive ingredients are brought into the facility.
> Where claims are made on products and labelled as such per agreed specification which are dependent on the status of a raw material, the status of each batch of the raw material shall be verified. These claims include:
  - Halal
  - Kosher
  - genetically modified organism (GMO) status
  - identity preserved
  - Authenticity claim (species, variety, organic, etc)
  - specific provenance or origin
  - breed/varietal claims
  - assured status (e.g. GlobalG.A.P.)
> The facility shall maintain purchasing records, traceability of raw material usage and final product packing records to substantiate claims. The site shall undertake documented mass balance tests at a frequency to meet the particular scheme requirements or at least every 6 months in the absence of a scheme-specific requirement.
> Where claims are made about the methods of production (e.g. organic, halal, kosher) the site shall maintain the necessary certification status in order to make such a claim.
> The process flow for the production of products where claims are made shall be documented and potential areas for contamination or loss of identity ascertained. Appropriate controls shall be established to ensure the integrity of the product claims.

8.5 Water Contamination
Summary: A procedure shall be in place to prevent contamination from water or ice.

Requirements
> The procedure to prevent contamination from water or ice, when used as an ingredient or through contact with food ingredients, shall include:
  - A 150-micron water filter (or smaller) shall be used at point of use or earlier in the flow.
– All filtration devices shall be included in the Preventive Maintenance programme, and records are maintained. The report includes:
  – Date of last check
  – Condition of equipment and filter
  – Corrective action where filters need repair or replacement
  – Names of personnel who performed the maintenance
– If UV light is used to sterilize water, records shall be kept of the hours of use of the bulbs, and the changes. Bulb maximum hours of use for efficiency shall be certified by the manufacturer.
– Back-flow devices shall be installed where necessary, especially in CIP systems and where processing water is recycled.
– Water or ice used as an ingredient or on a direct-contact surface shall comply with drinking water regulations.

8.6 Control of Non-conforming Product

Summary: Control of non-conforming product shall be established.

Requirements

> Non-conforming product shall be identifiable and shall pose no risk of contamination. Acceptable ways of segregating or identifying non-conforming products are:
  – Red stickers with the wording: On Hold, Quarantined or Non-Conforming are used (in each pallet if shrink-wrapped, otherwise in each box/bag).
  – A stock control system (SAP) or similar is used where it is impossible to load non-conforming product as every pallet or unit is controlled
  – When segregated, non-conforming areas exist, they are clearly delimited and shall not allow confusion.
  – For branded or trademarked product, procedures shall be in place to demonstrate destruction of packaging as well as product to avoid fraud or mistakes in bringing it back to the market.
  – Decision-making responsibilities shall be clearly defined, and actions taken must have supporting documentation as evidence.

8.7 Finished Product Release

Summary: A procedure for release of finished product shall be established to ensure proper release.

Requirements

> When products require positive release, there shall be a recorded procedure showing that the product was not dispatched until the release criteria had been applied and release was authorized.
  – The roles and responsibilities for effective implementation shall be clearly defined.
  – All criteria or test parameters to be met prior to release shall be listed.
> A Certificate of Analysis shall be provided in accordance with Kerry Group policy.

8.8 Operations Control

Summary: Operations control shall be adequate, with work instructions and process specification in place.

Requirements

> Documented process specifications and work instructions shall be available to staff as a training and support tool. The instructions must include:
  – Recipes or formulas, mixing instructions
  – Equipment process settings
– Cooking/cooling time and temperatures
– Labelling instructions
– Coding or batch definition
– Shelf-life marking
– Any specific food safety requirements in the process (CCP, OPRP)
– Packing procedures to ensure product is properly closed for safety and quality during at least its shelf-life

> When important to the process, parameters shall be recorded – such as temperatures, times, pressure, conductivity, etc.
> In the event of specifications deviation, procedures shall be in place to establish the quality or safety of the product.

8.9 Quantity Control
Requirements
> Weight, volume and number control checks shall be carried out at a predetermined frequency to ensure appropriate weight labelling (minimum weight, net weight, etc). The checks and method shall be documented.

8.10 Calibration Programme
Summary: All instruments critical to safety, quality or legality shall be calibrated.
Requirements
> All instruments critical to safety, quality or legality shall be calibrated at a predetermined frequency, based on risk.
> All calibrations shall be traceable to the national or international standard.
> Records of all the calibrations shall be kept (in a schedule or procedure).
> Calibration records shall include:
  – Instrument ID or serial number
  – Range of calibration
  – Date of calibration
  – Validity of the certificate (if external certificate is issued)
  – Name of technician conducting the calibration
  – Reference instrument used in the calibration, for traceability purposes
  – Record findings before and after calibration
> A qualified member of staff must review the calibration and verify that it is in line with agreed contractual parameters.
Food Fraud
9. Food Fraud

9.1 Food Fraud Document
Summary: A Food Fraud programme is established to prevent intentional adulteration for economic gain.

Requirements
- The assessment method, assessment element cover, classification of risk level and mitigation approach versus the risk identified shall be defined and described in detail.
- Management shall appoint a designated responsible person to the Food Fraud programme.
- Activities (including training) aimed at increasing awareness and knowledge of food fraud in relation to their raw material and packaging material shall be established.

9.2 Document Assessment
Summary: A documented fraud vulnerability assessment shall be carried out for all raw material or groups of raw material in relation to potential risk of adulteration in any form.

Requirements
- The raw material scope and grouping for assessment shall be described.
- The food fraud risks shall be identified.

9.3 Claims
Summary: Where claims concerning product authenticity are made on product labels and/or pertain to a specific raw material, and/or methods of production, the site shall maintain necessary documentation (e.g. certification) as part of verification.

Requirements
- Relevant evidence – e.g. certification and testing reports – shall be available to support product claims.
- Records of the latest certification date and expiration date shall be available.

9.4 Testing Procedure
Summary: Appropriate assurance and/or testing processes are in place to reduce the risk of adulteration based on the food fraud vulnerability assessment.

Requirements
- Mitigation actions shall be identified against the risks identified.
- Records of mitigation action identified (e.g. verification record, testing report, process control programme, etc) shall be made available.

9.5 Assessment Review and Change Management
Summary: A written procedure for the review of the Fraud Vulnerability Assessment programme is established and reviewed at least annually or whenever there has been a change in the economic circumstances and market intelligence that may alter the potential risk.

Requirements
- The last reviewing date and expected next reviewing date shall be specified.
- Review programme detail on minimum review frequency, trigger criteria and evidence of last review shall be available.
- Relevant action and changes taken shall be documented. Management controls indicating how the changes were implemented shall be available. Records shall be available.
10

Food Defence and Security Programme
10. Food Defence and Security Programme

10.1 Food Security Programme

Summary: A Food Security programme, based on risk or threats, shall be established to prevent intentional harm to employees, products and processes.

Requirements

> All entrances to the facility shall be monitored to protect from unauthorized intrusion, and be equipped with appropriate control devices.
  - Examples of monitoring: use of security guards, CCTV system.
  - Control devices may include a simple locking mechanism, self-locking door, access control system, etc.
> Visitors (including contractors) to the facility shall be managed and controlled.
> It is mandatory to seal trucks and containers of all loads to Kerry. All shipments of truckloads or full-load orders, including any transfer between facilities and warehouses, are properly sealed with numbered trailer seals. The seal number is recorded in the bill of lading, the invoice or other sales document accompanying the load. Between deliveries, all ‘less than truckload’ shipments (LTLs) are required to be locked with a padlock.
> Supplier records – whether incoming ingredients, packaging or finished product – shall be received in locked and/or sealed vehicles or containers. Seal numbers are recorded.
> Staged vehicles containing food products shall remain locked while on the supplier’s premises.
> All outbound vehicles shall be locked and/or sealed before leaving the supplier’s dock.
> Access to the laboratory shall be restricted, including sensitive materials such as reagents and bacteria, drugs, toxin positive control, etc.
> Access to the computer process control system and formulation or recipe shall be restricted.
> Water-handling facilities, water storage and water wells shall be secured with locks.
> The interior and exterior of the facility shall be adequately lit.
> Access to air intake points for facilities with direct pneumatic conveyance of ingredients or products (flour, dry mix, etc) shall be secured.
> Tamper-evident packaging shall be used.
> All staff shall be trained in site security, including the need to report immediately to management or security any unknown or suspicious person on the premises (see A7: Training programme).
> Designated personnel shall manage the Food Security programme.

10.2 Food Security Programme Review

Summary: The Food Security programme shall be reviewed at least annually. Corrective actions shall be recorded.

Requirements

> The Food Security self-audit programme shall include:
  - A list of personnel responsible for the review
  - The personnel responsible for updating the programme when a new risk or area is included
  - A checklist that includes all areas relevant to food security
  - An annual review.
Traceability and Product Recall
11. Traceability and Product Recall

11.1 Traceability Procedure
Summary: A traceability procedure shall be established for all ingredients, finished product and product packaging.

Requirements
> A traceability procedure shall be established that allows all ingredients, finished product and product packaging to be traced to their lot numbers and throughout their entire history from receiving to distribution, enabling identity preservation when required.

> The traceability procedure shall include the following:
  - All incoming materials, including bulk, shall be adequately identified and labelled with material name. Distinct codes are assigned to the material.
  - The traceability coding system shall not be limited to raw materials. All types of packaging, processing aids, intermediate or semi-processed products, partly used materials, finished products and materials pending investigation are also included.
  - Types of records involved and how each record is used shall be defined.
  - The specific traceability information available on each record, including the personnel responsible, shall be defined.
  - How the coding system is interpreted shall be defined.
  - The method to link each ingredient and food contact packaging material to finished product lots or identification shall be specified.
  - The method to track production codes shipped to each external customer shall be specified.
  - The methods to maintain full traceability of rework and/or repack that allow trace-back to the original production lot shall be specified.
  - Traceability shall be challenged and records shall be kept (traceability exercise) at least annually, backwards and forwards.
  - Systems of traceability and identification, which ensure that claims relating to provenance or assured status can be substantiated, shall be maintained. These claims or status may be Kosher, Halal, GMO-free, allergens declaration, etc.

11.2 Traceability Coding and Identification
Summary: Raw materials, work in progress, finished products and packing materials shall be properly identified.

Requirements
> All raw materials, work in progress (including any receptacle in containers), finished products and packaging materials shall be clearly labelled and identified in such a way that they can be easily tracked.

> The coding complies with the coding system as defined in the product traceability procedure (see 11.1: Traceability Procedure).

> All containers for manufacturing use, including waste containers and spray bottles, shall be properly labelled with the intended contents.

> If colour-coding is used for identification, adequate signage shall be placed in relevant areas, indicating the colour-coding interpretation.

> Records of training on colour-coding usage shall be available on file.
11.3 Product Recall Programme

Summary: The Product Recall programme shall define the steps, personnel and communication plans for effective execution.

Requirements

> A written Product Recall programme shall be established. It shall define all the steps, personnel and communication needed to ensure effective execution.

The term 'recall' here includes 'withdrawal'.

The programme shall include the following:

- Key personnel on the supplier’s recall team shall be identified, and their responsibilities shall be clearly outlined.
- Guidelines shall be provided on deciding whether a product needs to be recalled or withdrawn.
- An updated emergency contact list shall be maintained and readily available. The contact list shall include the recall team, suppliers, customers and regulatory authorities.
- The reconciliation and disposal of recovered product shall be specified.
- The communication plan shall include the provision to inform customers, consumers and regulatory authorities in a timely manner.

11.4 Mock Recall

Summary: The product recall procedure shall be tested at least annually, and records shall be maintained.

Requirements

> The product recall procedure shall be tested at least annually to ensure that it operates effectively. Records shall be kept of the tests and their results.

The term 'recall' here includes 'withdrawal'.

- The mock recall exercise shall be conducted from raw material and primary packaging (food contact) to finished products delivered.
- Finished products can be traced from lot code backwards, up to raw material and primary (food contact) packaging.
- Raw material/primary packaging can be traced from lot code forward to finished product.
- The mock recall exercise shall be completed within a set target. The summary of the mock recall and traceability results includes:
  - Identification of the raw material, packaging material or finished product traced
  - Date and time of mock recall exercise – when started and completed
  - List of records reviewed to obtain the amount of products involved
  - Summary of calculation – i.e. amount of material received at plant, amount of material located in storage, total product (disposed of, in use, etc), percentage of material recovered, total amount of product produced, total amount of product recovered, percentage of product located, etc.
  - Documented review by the recall team, including test effectiveness based on amount of product recovered, any issues uncovered and opportunities to improve the system
  - List of who should be notified in case of actual product recall
  - Documented retest within 60 days of any mock recall that fails
  - The formulas in Annex VIII are used to calculate the mass balance and capacity of recovering all the product

*Note: A failure is defined as recovering <95% or >105% of the product.*
11.5 Traceability (Chain of Custody) Verification Programme

Summary: A Traceability Verification programme must be in place to verify that the supplier can identify, track and locate 100% of raw material, ingredients and packaging material to finished product sold to Kerry.

Requirements

> A traceability exercise shall be conducted to verify chain of custody forward to customer and backwards to a supplier/primary processor/farm/grower, to demonstrate that they are able to trace back through each step in the chain of custody and to country of origin.

> Forward traceability to Kerry.

> Traceability backwards may start from a Kerry PO already delivered. In this case, customers receiving the same batch being traced back or similar must be identified.

> The traceability verification either backwards or forward must identify all raw materials, ingredients, packaging rework, work in progress, product on hold or non-conforming, as well as product disposed of.

> The traceability exercise shall be completed within a target of 2 hours and a maximum of 4 hours.

> Supporting documents are required for verification and must include mass balance. The formulas in Annex VIII are used to calculate the mass balance and capacity of recovering or locating the totality of product.

Note: A failure is defined as taking longer than 4 hours.
Shelf-life of Product Delivered to Kerry
12. Shelf-life of Food Product Delivered to Kerry

12.1 Shelf-life of Food Product Delivered to Kerry

At time of delivery, ingredients shipped to Kerry shall not have less than the following minimum life on receipt (MLOR), as a percentage of the original shelf-life available at the end of manufacture:

- Local products – 75% of manufacture shelf-life
- International product – 50% of manufacture shelf-life
- By exception, material outside of these parameters may be received where all regulatory requirements are still met with respect to the goods supplied to Kerry.

For the specific shelf-life details of sensitive products, please refer to the purchasing contract and the Kerry raw material specification.
Certificate of Analysis for
Product Delivered to Kerry
13. Certificate of Analysis for Product Delivered to Kerry

13.1 Certificate of Analysis Requirements
Summary: A Certificate of Analysis (CoA) is a mandatory document issued by the supplier that attests to the quality of the supplied material according to specified quality attributes defined in the agreed specification. The CoA indicates the results of specific tests or analysis performed on a defined lot of the supplier’s product.

Requirements
> As a minimum, the Certificate of Analysis must list all criteria listed in Annex II.
> As a minimum, vendors must provide a hard copy of the Certificate of Analysis in line with Annex II for each delivery and lot number.
> In addition, the vendors can also email copies of the Certificate of Analysis.
Sustainability

Corporate Social Responsibility
Summary
The company adheres to Kerry requirements on Environmental, Workplace, Marketplace and Community sustainability, detailed in the Kerry Supplier Code of Conduct.

Requirements
The company should ensure that this Supplier Code of Conduct is communicated and read by all appropriate stakeholders in order to carry out these commitments. Below is the current version of the Supplier Code of Conduct as of the time of distributing the Kerry Supplier Requirements Manual.

Introduction
As part of our mission we are committed to the highest standards of business and ethical behaviour, to fulfilling our responsibilities to the communities which we serve and to the creation of long term value for all stakeholders on a socially and environmentally sustainable basis. We are committed to the responsible sourcing of goods and services and this Supplier Code of Conduct sets out our expectations of those who provide these goods and services to the Group.

This code is informed by a number of international standards and guidance documents, including the UN Guiding Principles on Business and Human Rights, the International Labour Organisation’s (ILO) Declaration on Fundamental Principles and Rights at Work, the Children's Rights and Business Principles, the Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families, and the Convention on the Elimination of Discrimination Against Women.

Purpose and Scope
This Code of Conduct sets out the minimum standards we expect, and we encourage all suppliers to go beyond these requirements. The term ‘Supplier’ as used in this code refers to suppliers, vendors, contractors, consultants, agents and other providers of goods and services who do, or seek to do, business with Kerry Group worldwide.

Kerry’s commitment to responsible business practice is clearly defined within our Group Code of Conduct and we understand the need for dialogue with workers, suppliers and stakeholders whom we impact on across our wider value chain, particularly those who may be more at risk. We pursue continuous engagement with these stakeholders and representative bodies to adopt and share best practice and ensure adherence with the requirements set out below.

Suppliers shall apply these requirements to their own suppliers, contract labour providers, and approved sub-contractors with whom they work to supply goods and services to Kerry Group, ensuring compliance with the letter and spirit of this code. These principles form part of the supplier selection process and are subject to continued monitoring. Where there is a pre-existing relationship with a supplier, the requirements of this code are in addition, and not in lieu of, any legal or contractual agreement between that supplier and Kerry Group.

Business Conduct Standards
As a responsible business, Kerry Group sets the highest standards for the way we conduct our operations. In turn, we expect suppliers to conduct business responsibly, with integrity and transparency. Furthermore, we expect suppliers to treat all employees fairly, honestly and with respect, in full compliance with the following requirements:
Child Labour
Requirements
> Suppliers shall not permit the use of child labour. No child below the age for finishing compulsory schooling, or 15 years of age (whichever is the greater) may be employed by a supplier, subject to ILO exceptions.
> Where young people under the age of 18 are employed, suppliers will ensure that their work is not likely to be harmful to their health and/or development, including no working under hazardous conditions and ensuring compliance with all applicable laws.

Forced Labour
Requirements
> Suppliers shall not permit the use of forced or involuntary labour of any type (i.e. forced, trafficked, bonded, indentured or involuntary prison labour) and workers shall be free to leave employment without penalty on the provision of reasonable notice.
> Suppliers must ensure no fees or related costs are charged to applicants and workers for recruitment and that no monetary deposits, financial or collateral guarantees or personal possessions are demanded as a condition of employment.
> Suppliers must ensure that workers are not held in debt bondage or forced to work for an employer, or any other entity to pay off debt.
> Suppliers shall not restrict worker’s freedom of movement, require workers to remain at the workplace at the conclusion of their working hours or confine them in any worker accommodation.

Migrant Workers
Requirements
> Suppliers must ensure that all employees have the legal right to work and any migrant workers should be in possession of a valid work permit issued by the relevant authority.
> Suppliers shall implement effective measures to protect migrant employees against any form of discrimination.

Freedom of Association and Collective Bargaining
Requirements
> Suppliers shall respect the rights of employees to organise and join, or refrain from joining, worker organisations and to bargain collectively. Suppliers will allow workplace access for such organisations to facilitate their representative functions.
> In the absence of legal protections for the right to collective bargaining or freedom of association, suppliers will seek to engage workers through alternative lawful mechanisms that allow worker representation on workplace issues.
> Suppliers must develop and implement mechanisms for resolving industrial disputes, including employee grievances, and ensure effective communication with employees and their representatives.
Discrimination / Fair Treatment

Requirements

> Suppliers shall not discriminate in hiring, compensation, access to training, promotion, termination or retirement on the grounds of race, caste, religion, age, nationality, social or ethnic origin, sexual orientation, gender, gender identity or expression, marital status, family status, pregnancy, union membership, political affiliation, disability or other legally protected class.

> Supplier shall respect the rights of women and seek to create an environment in which they can access opportunities to participate in the workplace on an equal basis.

> The use of physical abuse, verbal or sexual harassment or intimidation of workers shall be prohibited by suppliers.

Wages

Requirements

> Suppliers are required to inform workers about their employment terms and conditions in writing and in an understandable manner before they enter into employment.

> Suppliers shall ensure that their employees are fairly compensated. At a minimum, compensation must comply with all applicable wage and hour laws, or industry standards approved on the basis of collective bargaining, whichever is higher. Suppliers should aim to provide compensation for a regular work week that is sufficient to meet workers’ basic living needs and provide some discretionary income.

> Deductions to wages shall only be made in accordance with applicable law or under collective agreement and all workers will be provided with clear and written details of their wages each time they are paid.

Working Hours

Requirements

> Suppliers must provide for working hours that comply with national laws and industry standards. Regular hours worked shall not typically exceed sixty hours per week, (including overtime) and workers will be provided with one day off in every seven day period.

> Overtime shall be voluntary and compensated at a premium rate. All overtime related practices will be conducted in accordance with applicable laws and regulatory standards.

> Suppliers shall not seek to avoid obligations to workers under labour or social security laws and regulations arising from the regular employment relationship through the excessive use of fixed term contracts, labour-only contracting, subcontracting, home-working or apprenticeship schemes.

Occupational Health & Safety

Requirements

> Suppliers shall ensure all employees work within safe and humane conditions, including providing adequate training and effective protective equipment to safely carry out their duties. Suppliers will also provide access to clean toilet facilities, potable water and sanitary facilities for food storage.

> Facilities must be constructed and maintained in accordance with applicable laws and regulations. Accommodation, where provided, shall be clean, safe and meet the basic needs of workers while respecting their dignity. Suppliers will also ensure that there are appropriate exits, procedures and equipment in place to deal with emergency situations.
Land Rights
Requirements
> Suppliers shall respect the rights to land tenure of local communities and indigenous peoples impacted by its operations, including its raw material sourcing, and will adhere to the principle of Free, Prior and Informed Consent.

Business Ethics
Requirements
> In keeping with our commitment to exercising appropriate standards of professionalism and ethical conduct in all business activities, Kerry Group will not tolerate bribery or corruption in any form, or any acts that contravene its Anti-Bribery Policy.
> Suppliers and business partners are not permitted to directly or indirectly promise, offer or provide any improper advantage to any person or entity, including officials of a government or a government-controlled entity. Kerry Group’s employees are not allowed to accept any such advantage and we expect the same approach in business dealings from our business partners, suppliers and third parties.
> Suppliers are expected to maintain accurate records of their activities and performance that clearly demonstrate compliance with all applicable standards, regulations and Kerry Group requirements.
> Suppliers must disclose any personal relationships, economic interest or other ties to their business held by an employee or contractor with Kerry Group.
> Suppliers shall take appropriate measures to secure and protect all confidential information related to its relationship with Kerry Group and use it only for the purpose authorised under contractual agreement. This obligation shall remain in force regardless of the status of the business relationship.

Environment
Requirements
> Suppliers to Kerry Group shall carry out operations with care for the environment and at a minimum will comply with all applicable environmental laws and regulations.
> Kerry Group expects suppliers to make progressive improvements in their operations and through adoption of good operating practices, to ensure the responsible use of natural resources, cleaner production, pollution prevention and the creation of products with lower environmental impacts.
> Kerry recognises the right to water and suppliers must implement practices to ensure good water stewardship, including optimising the use of water onsite, employing adequate wastewater or effluent controls to protect the surrounding environment and ensuring withdrawals do not adversely impact on the needs of local communities and other water users.
> Suppliers are required to be transparent about their raw material sourcing practices and to share upon request relevant traceability information that supports Kerry’s broader responsible sourcing goals.

Compliance
Kerry Group requires suppliers to ensure their operations comply with all applicable laws and regulations at a minimum. Furthermore, we expect that all suppliers adhere to Kerry Group requirements, including the standards as laid out in this Supplier Code of Conduct.

Suppliers shall have the appropriate processes and systems in place to do so, including a means for the confidential reporting of concerns about misconduct or unethical behaviour and an appropriate mechanism to remedy adverse impacts. Where issues are identified through internal reporting, whistle-blowers will be protected from any negative repercussions. Similarly, suppliers shall not tolerate threats, intimidation, physical
or legal attacks against human rights defenders.

Suppliers shall cooperate with Kerry Group to allow the Group, or any authorised third party, to conduct audits to verify compliance with these standards or other required certifications. In the event deficiencies are identified, the supplier will take the steps necessary within an acceptable timeframe to correct any deficiency to Kerry Group's satisfaction. Suppliers shall immediately report any concerns about compliance with legal requirements or any aspect of this code, to their designated point of contact or through our confidential reporting facility: www.kerrygroup.ethicspoint.com.

Where suppliers are found to have contravened the requirements set out in this Code, Kerry Group reserves the right to terminate any associated agreement or business relationship.

References

Second-party supplier requirements or standards

- PepsiCo Global Supplier Code of Conduct (June 2018)
- Kraft Foods SQE Manual (December 2019)
- McDonald's Global SQMS V4 (February 2017)
- McDonald's Code of Conduct (November 2012)
- Yum! Global Code of Conduct (April 2020)
- Yum's checklist Food safety audit (2017)

Third-party industry standards

- BRC issue 8
- FSSC 22000 version 5
- SQF Code Edition 8.1

Others

- Codex Alimentarius, link: http://www.codexalimentarius.org/
- Subject-matter experts in Kerry.
- Sedex, link: https://www.sedex.com/
Glossary

Allergen
A known component of food that causes physiological reactions due to an immunological response (e.g. nuts and others identified in legislation relevant to the country of production or sale).

Audit
A systematic examination to substantiate whether activities and related results comply with planned arrangements, and whether these arrangements are implemented effectively and are suitable to achieve objectives.

Calibration
A set of operations that establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system, or values represented by a material measure or reference material, and the corresponding values realized by standards.

Certificate of Analysis (CoA)
A document provided by the supplier that indicates the results of specific tests or analysis performed on a defined lot of the supplier's product. The tests are done either by the supplier or by an external testing firm, and must be based on protocols or methods that have been approved and agreed by Kerry technical experts.

Certificate of Authenticity
A document provided by the supplier that authenticates the food claims in accordance with country regulations.

Chain of Custody
This refers to every link in the supply chain back to farm, field or ocean, covering every time the raw material is moved, paid for, handled, stored or processed.

Reviewing the full chain of custody should include a supply-chain map detailing all additional processes, handlers, agents and storage, such as freezing and defrosting, paying particular attention to the long, convoluted supply chains and where the raw material or ingredient is no longer recognizable from its original format.

Cleaning in Place (CIP)
The process of cleaning and sanitizing food-processing equipment in its assembled position without the need for dismantling and cleaning the individual parts.

Code of Conduct
The Supplier Code of Conduct outlines the social norms and rules and responsibilities of, or proper practices for, an individual, party or organization.

Codex Alimentarius
The body responsible for establishing internationally recognized standards, codes of practice and guidelines. HACCP is one such standard.

Competence
Demonstrable ability to apply skill, knowledge and understanding of a task or subject, to achieve intended results.

Contamination
Introduction or occurrence of an unwanted organism, taint or substance in food or the food environment. Types of contamination include physical, chemical, biological and allergenic. Contamination can also mean incorrect mixing of packages.

Control Measure
Any action or activity that can be used to prevent or eliminate a food safety hazard or reduce it to an acceptable level.
Cook
A thermal process designed to heat a food item to a minimum of 70 degrees Celsius for 2 minutes, or equivalent.

Corrective Action
Action to eliminate the cause of a detected non-conformity deviation.

Country of Manufacture
The country of manufacture (Kerry also refers to this as Goods Supplier Location) is where the goods are produced, in accordance with national laws.

Country of Origin
Place of provenance of the primary ingredient of a product.

Critical Control Point (CCP)
A step at which control can be applied that is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level.

Critical Limit
A criterion that separates acceptability from unacceptability.

Customer
A business or person to whom a product has been provided, either as a finished product or as a component of the finished product.

Feed
Any substance or product, including additives, whether processed, partially processed or unprocessed, intended to be used for direct or indirect feeding to animals.

Feed Safety
A concept that feed will not cause harm to animals or adversely affect human health when used according to its intended purpose

First in First Out (FIFO)
A method of stock rotation in which new supplies are shelved behind old supplies, so that the old supplies are used first.

First Expired First Out (FEFO)
A method of stock handling of perishable products or products with a specified expiry date in which the product with the deadline for the next intake will be the first to be served or removed from stock.

Flow Diagram
A systematic representation of the sequence of steps or operations used in producing or manufacturing a food item.

Food Handler
Anyone who handles or prepares food, whether open (unwrapped) or packaged.

Food Safety
Assurance that food will not cause harm to the consumer when it is prepared or eaten according to its intended use.

Genetically Modified Organism (GMO)
An organism whose genetic material has been altered by the techniques of genetic modification so that its DNA contains genes not normally found there.

Global Food Safety Initiative (GFSI)
Managed by the Consumer Goods Forum, a project to harmonize and benchmark international food safety standards: www.mygfsi.com
Good Manufacturing Practice (GMP)
Procedures and practices that are implemented using best-practice principles.

Hazard
A biological, chemical, physical or allergenic agent in food, or a condition of food, that has the potential to cause an adverse health effect.

Hazard Analysis and Critical Control Points (HACCP)
A system that identifies, evaluates and controls hazards that are significant for food safety.

Heavy Metal
Silver, arsenic, barium, selenium, lead, mercury, cadmium and hexavalent chromium. The list is not exhaustive. Compliance with regulation as per country of manufacturing should be documented.

High-care Area or Zone
An area designed to a high standard where practices relating to personnel, ingredients, equipment, packaging and environment aim to minimize product contamination by pathogenic micro-organisms.

High-care Product
A product that requires chilling or freezing during storage, is vulnerable to the growth of pathogens, has undergone a process to reduce microbiological contamination to safe levels (typically 1-2 log reduction) and is ready to heat or eat.

High-risk Area or Zone
A physically segregated area, designed to a high standard of hygiene, where practices relating to personnel, ingredients, equipment, packaging and environment aim to prevent product contamination by pathogenic micro-organisms.

High-risk Product
A chilled ready-to-eat or ready-to-heat product or food where there is a high risk of growth of pathogenic micro-organisms.

Identity Preserved
A product that has a defined origin or purity characteristic that needs to be retained throughout the food chain (e.g. through traceability and protection from contamination).

Indicator Organisms
Micro-organisms that may not themselves be considered pathogenic, but whose presence may indicate unsanitary conditions and/or potential presence of specific pathogens. For the purposes of this manual, indicator organisms for salmonella in wet environments would include total enteric bacteria or coliforms. Indicator organisms for L. monocytogenes would be of the Listeria genus.

Ingredient / Raw Materials
A component of a food or feed that has undergone processing

Internal Audit
The general process of audit, for all activities of the company, conducted by or on behalf of the company for internal purposes.

Letter of Guarantee
A document confirming ongoing conformance to agreed specifications and business requirements.

Lot or Batch (lot number)
A unique identity given to a defined quantity of a material, usually based on time and location of manufacture. For continuous processes, a lot may not exceed the amount of material produced in one 24-hour period. For non-continuous processes, the batch, blend, shift or other time segment may be used to identify a lot. For materials received in bulk, the lot is usually identified as the contents of the bulk vehicle.

Low-risk Area or Zone
An area where the processing or handling of foods presents minimum risk of product contamination or growth
of micro-organisms, or where the subsequent processing or preparation of the product by the consumer will ensure product safety.

Mock Recall
A simulated recall process. This exercise helps to ensure that traceability procedures are adequate and to identify opportunities for improvement in the event of a real recall situation.

Potable Water
Water that is safe to drink, is free from pollutants and harmful organisms, and conforms to local legal requirements.

Prerequisite
The basic environmental and operational conditions in a food business that are necessary for producing safe food. These control generic hazards covering good manufacturing practice and good hygienic practice, and are considered in the HACCP study.

Primary Packaging
Any packaging that is in direct contact with the product, e.g. soft-drink bottles, sweet wrappers or the inner bag of cereal boxes.

Procedure
An agreed method of carrying out an activity or process that is implemented and documented in the form of detailed instructions or process description (e.g. a flowchart).

Process
Set of interrelated or interacting activities that transform inputs into outputs. Processes in an organization are generally planned and carried out under controlled conditions, to add value.

Processing Aid
Any substance not consumed as a food by itself, intentionally used in the processing of raw materials, food or their ingredients to fulfil a certain technological purpose during treatment or processing, and which may result in the unintentional but technically unavoidable presence of the residues of the substance or its derivatives in the final product – provided that these residues do not present any health risk and do not have any technological effect on the finished product.

Product Recall
Any measures aimed at achieving the return of an unfit product from customers and final consumers.

Product Withdrawal
Any measures aimed at achieving the return of an unfit product from customers, but not final consumers.

Quality
Quality consists of those product features that meet the needs of customers. It is the degree to which a set of inherent characteristics fulfils requirements. Food safety is an integral part of the quality.

Quality Management System
A management system that directs and controls an organization with regard to quality and food safety, including the establishment of quality and food safety policies and objectives, planning, control, and continuous improvement. A management system approach encourages an organization to analyze customer requirements, to define the processes that contribute to the achievement of a product that is acceptable to the customer, and to keep these processes under control.

Quantity Check / Mass Balance
A reconciliation of the amount of incoming raw material against the amount used in the resulting finished products, also taking into account process waste and rework.

Ready-to-eat Food
Food intended by the manufacturer for direct human consumption without the need for cooking or other processing, effective to eliminate or reduce to an acceptable level micro-organisms of concern.
Recognized Laboratory Accreditation
Laboratory accreditation schemes that have gained national and international acceptance, awarded by a competent body and recognized by government bodies or users of the standard (e.g. ISO 17025 or equivalents).

Rework
Material left over from production, which is reused to make the same or a similar product. This can be part processed material or finished product.

Risk Analysis
A process consisting of three components: risk assessment, risk management and risk communication.

Risk Assessment
The identification, evaluation and estimation of the levels of risk involved in a process, to determine an appropriate control process.

Root Cause
The underlying cause of a problem that, if adequately addressed, will prevent a recurrence of that problem.

Seasonal Production Sites
A product harvested and processed on a site that is opened specifically for the duration of the short term of that harvest (typically 12 weeks or less) during a 12-month cycle.

Supplier
Any person, firm, company or other entity to whom a company's purchase order to supply food or feed ingredients, packaging or a service is addressed.

TACCP
Threat analysis and critical control points.

Third-party manufacturers
A non-Kerry company subcontracted to manufacture or provide any service to manufacture any product, whether partially or fully processed.

Traceability
The ability to trace and follow a food, feed, food-producing animal or raw material that is intended to be, or expected to be, incorporated into a food, through all stages of receipt, production, processing and distribution.

Trend
An identified pattern of results.

Utility
A commodity or service, such as electricity or water, that is provided by a public body.

VACCP
Vulnerability assessment and critical control points.

Validation
Confirmation – by providing objective evidence – that the requirements for the specific intended use or application have been fulfilled.

Verification
Confirmation by providing objective evidence that specified requirements have been fulfilled.

Work in Process
Partially finished goods waiting for completion; product that is held over or removed from the natural production flow to be blended later into production.
I

Annex
Annex I

Supplier Code of Conduct
Kerry's Supplier Code of Conduct may be updated from time to time. The most up-to-date version can be found on the Kerry Group corporate sustainability website: http://www.kerrygroup.com/sustainability/policies-statements/
Annex II

Certificate of Analysis (CoA) Requirements
A Certificate of Analysis (CoA) is a mandatory document issued by the supplier attesting to the quality of the supplied material according to specified quality attributes defined in the agreed specification.

The certificate of analysis (CoA) gives the results of specific tests or analysis performed on a defined lot of the supplier’s product. A CoA must have the following minimum information for the Kerry Group:

<table>
<thead>
<tr>
<th>General Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Name</td>
</tr>
<tr>
<td>Supplier Address</td>
</tr>
<tr>
<td>Contact Details</td>
</tr>
<tr>
<td>Quality Contact</td>
</tr>
<tr>
<td>Phone Number</td>
</tr>
<tr>
<td>Email Address</td>
</tr>
<tr>
<td>Supplier Manufacturing Site Name</td>
</tr>
<tr>
<td>Supplier Manufacturing Site Address and Country</td>
</tr>
<tr>
<td>Approved Supplier Manufacturing Site Number</td>
</tr>
<tr>
<td>Customer</td>
</tr>
<tr>
<td>Kerry Purchase Order Number</td>
</tr>
<tr>
<td>Material Name</td>
</tr>
<tr>
<td>Kerry Material Number</td>
</tr>
<tr>
<td>Product Code</td>
</tr>
<tr>
<td>Manufacturing LOT Code</td>
</tr>
<tr>
<td>Quantity</td>
</tr>
<tr>
<td>Date of Manufacture</td>
</tr>
<tr>
<td>Certified Minimum Shelf-life</td>
</tr>
<tr>
<td>Best Before Date</td>
</tr>
<tr>
<td>Country of Origin</td>
</tr>
<tr>
<td>Stability Statement</td>
</tr>
<tr>
<td>Analysis Section</td>
</tr>
</tbody>
</table>

<p>| Critical Property                          |
| Test Method                                 |
| UOM                                        |
| Minimum Limit                               |</p>
<table>
<thead>
<tr>
<th>Critical Property</th>
<th>Test Method</th>
<th>UOM</th>
<th>Minimum Limit</th>
<th>Maximum Limit</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water activity</td>
<td>FCC Ed 10</td>
<td></td>
<td>0.65</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>Fine Ferrous Metal</td>
<td>FCC Ed 10</td>
<td>ppm</td>
<td>20</td>
<td>100</td>
<td>65</td>
</tr>
<tr>
<td>Moisture</td>
<td>FCC Ed 10</td>
<td>% w/w</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Ash</td>
<td>FCC Ed 10</td>
<td>% w/w</td>
<td>4.49</td>
<td>7</td>
<td>5.28</td>
</tr>
<tr>
<td>Volatile Oil</td>
<td>FCC Ed 10</td>
<td>% w/w</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Pinerine</td>
<td>FCC Ed 10</td>
<td>%</td>
<td>3.9</td>
<td>4.5</td>
<td></td>
</tr>
</tbody>
</table>

Results: this material complies with the Kerry specification set forth in reference specification.
**Raw Material Non Conformance (RMNC)**

In instances where a supplier fails to meet the requirements stated above, Kerry will raise a Raw Material Non-Conformance (RMNC) for Certificate of Analysis (CoA) or General Information issues, for example:

<table>
<thead>
<tr>
<th>Defect</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illegible</td>
<td>Document cannot be read (i.e.: print is unclear on CoA)</td>
</tr>
<tr>
<td>No CoA provided</td>
<td>Certificate of analysis missing from delivery (e.g.: analysis or general information)</td>
</tr>
<tr>
<td>Missing Supplier Plant Location</td>
<td>Document does not include the location of the plant that manufactured the material</td>
</tr>
<tr>
<td>Incorrect Supplier Plant Location</td>
<td>Document contains the incorrect manufacturing plant</td>
</tr>
<tr>
<td>Missing Material Name</td>
<td>Document does not contain the material name</td>
</tr>
<tr>
<td>Incorrect Material Name</td>
<td>Document contains the incorrect material name</td>
</tr>
<tr>
<td>Missing PO Number</td>
<td>Document does not contain the Purchase Order Number of the certified material</td>
</tr>
<tr>
<td>Missing Material SAP Code</td>
<td>Document does not contain the Kerry SAP code</td>
</tr>
<tr>
<td>Misalignment of Shelf-life</td>
<td>Document contains a different minimum/maximum shelf-life of certified material in the agreed specification</td>
</tr>
<tr>
<td>Missing Shelf-life</td>
<td>Document does not contain minimum/maximum shelf-life of the certified material (i.e. missing expiry / used-by)</td>
</tr>
<tr>
<td>Parameter out of specification</td>
<td>Critical parameter is out of specification on CoA</td>
</tr>
<tr>
<td>Missing Signature/System Validation</td>
<td>CoA does not contain signature/system validation</td>
</tr>
<tr>
<td>Missing Specification Property</td>
<td>CoA does not contain all critical quality properties identified in the agreed specification</td>
</tr>
<tr>
<td>Misalignment of Test Methods</td>
<td>CoA contains an incorrect test method that was used</td>
</tr>
<tr>
<td>Missing UOM</td>
<td>CoA does not contain unit of measure (e.g. Kg, L)</td>
</tr>
<tr>
<td>Missing lot #/DOM/other supplier general information</td>
<td>Ingredient/raw material delivery format does not include label/data regarding lot number, date of manufacture (DOM), supplier name, supplier address</td>
</tr>
</tbody>
</table>
III

Annex
Annex III

GMP General Requirements

Actions not allowed in GMP areas

> Eating or drinking – permitted in authorized areas of the facility only.
> Chewing gum, candies, throat candies, throat lozenges and tobacco. Holding toothpicks, matchsticks or other objects in the mouth.
> Wearing false eyelashes, fingernails or fingernail polish.
> Carrying objects above the belt or waistline (e.g. flashlight, thermometers, placing pens or cigarettes behind the ears).
> Expectorating (spitting) in production or storage areas.
> Rings (other than wedding bands), watches, earrings, necklaces, or other jewellery (including ornaments or piercing in exposed body areas such as the tongue and the nose).

Other issues to be considered

> If smoking is allowed in the facilities, only in designated areas.
> Badges and clip-on identification cards, if used, must be worn below the waist to avoid being potential source of contamination.
> Buttons, service pins or similar articles are not permitted on uniforms, smocks, bump caps or hard hats.
> Lunches must be stored in designated areas. Lunches must be completely enclosed in cleanable/reusable containers or in single-use packing.
> Personal lockers must be maintained free of waste and soiled clothing. Food and direct product contact tools must not be stored in employee’s lockers.

Clothing and personal equipment

> All clothing must be kept in good repair. Employee clothing should not be a source of contamination.
> GMP areas: Employees who work in GMP areas must wear only company-approved clothing. Clothing provides adequate coverage that ensures hair, perspiration or other foreign materials do not contaminate the product (e.g. no shorts, tank tops, sleeveless shirts).
> Non-production employees, contractors and visitors who enter the GMP area must wear a laboratory coat (or other approved covering) and wear appropriate footwear consistent with the plant policy.
> Pockets above the waist must be removed or sewn shut. Only zippers, grippers or snaps may be used as the fasteners on shirts, coats, laboratory jackets or smocks.
> Restricted uses: Work wear dedicated to specific product areas must be restricted to those areas. Such areas must be defined in local procedures (typically high-care areas where clothing change is required on entry and exit). Such work wear is not permitted in other plant or non-plant areas where they may be subject to allergen or microbiological contamination (e.g. cafeteria, external rest areas, any area not subject to GMP controls).
> Shoes: to help avoid product contamination (and for personal safety), shoes worn in GMP areas should be designed and constructed as follows: fully enclosed (no open toes, open weave, or sandals) made with leather or vinyl outer material (no canvas or nylon mesh), low-heeled. Sole groove depth must not be a source of contamination. Shoes in wet microbiologically sensitive areas must not allow passage of water from the base of the shoes (should not trap or absorb water when walking through footbaths at room entrances).
> Safety helmets: These must be maintained in a sanitary condition. Labels or stickers are prohibited. Helmets used in microbiologically sensitive areas must be cleaned and sanitized at a frequency determined by plant quality. Helmets must not be used for storing or carrying objects such as cigarettes, notepads,
Ear protection devices: These must be secured to prevent product contamination. They include earplugs attached by string worn around the neck, earplugs with rigid attachment worn around the neck, and earmuffs attached by headband.

If available, particularly in facilities where production lines are equipped with metal detectors, it is recommended that metal detectable earplugs be used. Earplugs must be colourful and easily differentiable from product colour.

Personnel working in GMP areas must wash hands at the following times: before entering a GMP area; upon re-entering the GMP area; after each visit to the toilet facility, restroom, and lunch and break room facilities; prior to touching product or product contact surfaces; or any time when hands have become soiled or contaminated.

Personnel working in a microbiologically sensitive area must sanitize their hands after proper washing and after touching non-product contact surfaces. If soil is observed on hands, hands must be washed before resanitizing.

When working in GMP areas, the use of hands for unsanitary practices must be avoided. Especially, hands should not be used to scratch head or body, touch face or wipe forehead, and fingers should not be placed on or in the mouth, nose, or ears.

Hand lotions must not be used if hands are in direct contact with product or product contact surfaces. However, approved gloves may be worn over hands having non-perfumed lotion, if compatible with work conditions and regulatory rules.

Personnel with minor cuts or injuries on hands must be able to protect the wound and keep it clean and free from infection. They will be allowed to work on production lines provided the cuts are bandaged and covered with an impermeable sanitary material. Adhesive bandages must be metal-detectable in facilities where metal detectors are used.
## Annex IV

### Communicable Diseases

**Pathogens and diseases from pathogens**
Currently recognized pathogens or diseases from pathogens that can be transmitted by food that has been contaminated by an infected person:

<table>
<thead>
<tr>
<th>Often Transmitted</th>
<th>Occasionally Transmitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis A virus</td>
<td>Campylobacter jejuni</td>
</tr>
<tr>
<td>Norwalk(-like) viruses (Norovirus)</td>
<td>Entamoeba histolytica</td>
</tr>
<tr>
<td>Salmonella typhi</td>
<td>Enterohemorrhagic escherichia coli</td>
</tr>
<tr>
<td>Shigella species</td>
<td>Enterotoxigenic escherichia coli</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>Giardia lamblia</td>
</tr>
<tr>
<td>Streptococcus pyogenes</td>
<td>Nontyphoidal</td>
</tr>
<tr>
<td></td>
<td>Salmonella rotavirus</td>
</tr>
<tr>
<td></td>
<td>Taenia solium</td>
</tr>
<tr>
<td></td>
<td>Vibrio cholerae 01</td>
</tr>
<tr>
<td></td>
<td>Yersinia enterocolitica</td>
</tr>
<tr>
<td></td>
<td>Cryptosporidium parvum</td>
</tr>
</tbody>
</table>
## Annex V

### Environmental Testing

#### Air quality required

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Organism</th>
<th>Air Exposure</th>
<th>Air Sampler</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post heat treatment or pasteurization; products with Aw&lt;0.65 (processing, filling and packing)</td>
<td>Yeast and mould</td>
<td>&lt; 100 cfu/15min</td>
<td>&lt; 1000 cfu/m3</td>
</tr>
<tr>
<td>Dairy powder</td>
<td>Yeast and mould</td>
<td>&lt; 10 cfu/15min</td>
<td>&lt; 500 cfu/m3</td>
</tr>
<tr>
<td>Post heat treatment or pasteurization; products with Aw 0.65 – 0.95 (processing, filling and packing)</td>
<td>Yeast and mould</td>
<td>&lt; 10 cfu/15min</td>
<td>&lt; 500 cfu/m3</td>
</tr>
<tr>
<td>Post heat treatment or pasteurization; products with Aw &gt;0.95 (processing, filling and packing), hot filled</td>
<td>Yeast and mould</td>
<td>&lt; 10 cfu/15min</td>
<td>&lt; 500 cfu/m3</td>
</tr>
<tr>
<td>Post heat treatment or pasteurization; products with Aw &gt;0.95 (processing, filling and packing), cold filled</td>
<td>Yeast and mould</td>
<td>&lt; 5 cfu/15min</td>
<td>&lt; 100 cfu/m3</td>
</tr>
<tr>
<td>Meat products</td>
<td>Yeast and mould</td>
<td>&lt; 5 cfu/15min</td>
<td>&lt; 500 cfu/m3</td>
</tr>
<tr>
<td>Products allowing survival of microorganisms, but not supporting growth.</td>
<td>Yeast and mould</td>
<td>&lt; 5 cfu/15min</td>
<td>&lt; 1000 cfu/m3</td>
</tr>
</tbody>
</table>

### Pathogen environmental testing

**Indicators:** Indicate unsanitary conditions and potential presence of pathogens:

- Coliforms
- E coli
- Enterobacteriaceae (as an alternative to Coliform and E coli)

**Quantitative testing – enumeration of these organisms**

**Note**

**Salmonella** – Pervasive\(^2\) environmental micro-organism, well adapted to dry and warm environments. High tenacity in production of products such as chocolate, dairy powders and dry mixes. 

**Qualitative testing – presence /absence**

**Listeria** – Ubiquitous\(^3\) environmental micro-organism, well adapted to wet and cold environments. High tenacity in dairy and meat production. 

**Qualitative testing – presence /absence**

**Areas for pathogen environment testing**

- Direct contact surfaces
- Indirect product contact surfaces – surfaces that touch direct product contact surfaces during normal equipment operation, e.g. scrapers
- Non-product contact areas adjacent to product – surfaces that under normal operating procedures do

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\(^2\) Present or noticeable in every part of a thing or place. Tendency to infiltrate or spread. Seeming to be in all places, widespread.

\(^3\) Seeming to be in all places, widespread.
not contact the product or product contact surfaces, e.g. exterior of equipment, chill units, panel buttons, aprons, handles, etc

> Non-product contact areas in the processing room – more remote surfaces from product, e.g. drains, walls, floors, hand trucks, etc

> Areas remote from product contact surfaces outside the processing room, e.g. hallways, bathroom door, cafeteria, cooler, etc

At least five swabs should be taken from each area each month.

Samples within the same area may be a composite of up to five sample points in one composite.

**Test results acceptance criteria for Indicator Organisms**

<table>
<thead>
<tr>
<th>Coliforms/Enterobacteriaceae</th>
<th>Ecoli</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rating</strong></td>
<td><strong>Cfu/ 100cm² (15.5in)</strong></td>
</tr>
<tr>
<td><strong>Target</strong></td>
<td>&lt; 10</td>
</tr>
<tr>
<td><strong>Acceptable</strong></td>
<td>10 – 20</td>
</tr>
<tr>
<td><strong>Not acceptable</strong></td>
<td>&gt; 20</td>
</tr>
</tbody>
</table>
Annex VI

Pallet Configuration

TI-HI, Ti-High, Tie-High, or Ti by Hi is a term often used in the logistics industry. It refers to the number of boxes/cartons stored on a layer or tier (the TI) and the number of layers high that these will be stacked on the pallet (the HI). It can also be used in reference to the stacking pattern used to load a pallet in order to generate a relatively stable stack (refer to Figure 1).

**Example of Ti-Hi**  
*Figure 1*

Where manufacturers design and stack boxes/cartons on pallets in non-standard Ti-Hi patterns, this stacking pattern does not compute logically to Ti-HI applications. Pallets with non-standard Ti-Hi are unconventional and less stable (refer to Figure 2).

**Example of Non-standard Ti-Hi**  
*Figure 2*
Annex VII

Sanitation Verification Parameters

After wet cleaning

Swabbing should be performed after cleaning but before sanitizing procedures.

Swab methods, sampling sites and sample size/area must be defined for each zone based on the HACCP study, which should specify critical points.

At a minimum, the clean equipment swabs should be taken after the microbiological control step where contamination could occur (e.g. heat treatment). If swabs are taken after sanitizing, proper buffer solutions must be used to prevent inaccurate results.

Individuals performing swabbing must receive proper training.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cfu / 100cm²</td>
<td>Cfu / 40in²</td>
</tr>
<tr>
<td><strong>APC</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target</td>
<td>&lt;50</td>
<td>&lt;100</td>
</tr>
<tr>
<td>Acceptable</td>
<td>&lt;50</td>
<td>&lt;1000</td>
</tr>
<tr>
<td><strong>Coliforms</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target</td>
<td>&lt;5</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Acceptable</td>
<td>&lt;50</td>
<td>&lt;100</td>
</tr>
<tr>
<td><strong>Lactobacillus</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target</td>
<td>&lt;5</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Acceptable</td>
<td>&lt;50</td>
<td>&lt;100</td>
</tr>
<tr>
<td><strong>Yeast Moulds</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target</td>
<td>&lt;5</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Acceptable</td>
<td>&lt;50</td>
<td>&lt;100</td>
</tr>
</tbody>
</table>

| Meat products – others                                       |              |            |              |            |
| **APC (aerobic plate count)**                                |              |            |              |            |
| Operational Swab                                             | Good         | <100       | N/A          | N/A        |
| Brine                                                        | Good         | <1000      | Negative     | 100ml      |

**Operational Swab**

- **APC (aerobic plate count)**
  - Good: <100

**Brine**

- **APC (aerobic plate count)**
  - Good: <1000 cfu / ml
  - **Coliform**
    - Negative: <100 ml
VIII
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Annex VIII

Formulas for Mass Balance Calculation

A. Tracing finished product backwards:

\[ PR = \left( \frac{\Sigma A \text{ mass+waste recorded} + \text{expected process loss}}{\Sigma \text{ingredients mass}} \right) \times 100 \]

Where:
- \( PR \): product recovered %
- \( A \): product delivered to customers

When process does not allow the exact calculation from raw material, alternative formula can be used, as follows:

\[ PR = \frac{\Sigma A \text{ mass}}{\text{Total mass produced in the specific batch/lot}} \times 100 \]

Where:
- \( PR \): product recovered %
- \( A \): product delivered to customers

B. Tracing raw material forward:

\[ \text{Ingredient located \%} = \frac{\text{Ing mass in RM storage} + \text{Ing mass disposed of} + \text{Ing mass transferred to production}^*}{\text{Mass Ing received}} \times 100 \]

* 1: Ing mass transferred to production = 
\[ \frac{\% \text{ of Ing in FP formula} \times \text{FP mass}}{100} + \text{FP or inprocess waste} + \text{expected process loss} \]