



Foreign Body Prevention & Detection

BEST PRACTICES FOR NESTLE SUPPLIERS

Pre-amble:

A foreign body is any kind of material such as metal, glass, plastic, stones etc., materials of animal origin (insects, bones, hairs etc.), materials of plant origin (wood stalks, etc.) or materials from product (burnt particles, scorched particles, etc. The consumer does not want or expect to find these in the products they purchase

Foreign body prevention and detection is an important element of food safety and compliance at Nestlé.

Delighting our consumers and customers is one of Nestlé's key priorities but new global food safety issues constantly emerge in the supply chain to threaten the trust of our consumers.

To protect the quality of our products, we need to ensure that raw and packaging materials are received with the highest quality standards across all Nestlé factories. This means our vendors must be prepared to prevent and detect foreign bodies from entering their food and packaging supply.

This document is a guideline intended to explain simply what are the risks, requirements, and actions to take to mitigate foreign body contaminants in our raw materials.

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Introduction: Three Lines of Defense

Foreign body management is an integrated approach encompassing a set of complementary control measures. It must cover the whole value chain and be organized along the three lines of defense which include:

First Line of Defense:

- Vendors delivering raw or packaging materials that are free from foreign bodies.
- Properly equipping our vendors and Nestlé tipping lines to prevent, separate and/or detect any residual risks.

Second Line of Defense:

- Processing equipment.
- Practices during manufacture up to packaging.
- Measures for prevention, detection and removal during processing.

Third Line of Defense:

- Environment in processing areas.
- Downstream steps such as warehousing and distribution.

Cereals

Barley, Corn, Oat, Wheat, Rye, Rice	For crop calendar (harvest/production): http://www.usda.gov/oce/weather/CropCalendars/index.htm
Main Foreign Body risks: Metal, Plastic, Insects, fiber and string	

Area of Vulnerability	Potential Issues	Mitigation actions
Field Selection & Preparation	<ul style="list-style-type: none"> • Stones & Crop remains: straw, stubble, roots etc. Check for traces in the field • Insect events or contamination: Check payment records to identify rebate due to low quality • General foreign body: Farmer interview and assessment • Rubbish dumps: Short distance from roads, industry etc. Examples: highways, car parks... • Weed: records, previous use of herbicides • Plastic / metal: pieces of drip tape irrigation 	<ul style="list-style-type: none"> • Ploughing to bury old plant materials. • In the absence of ploughing, no-tilling¹ practice, ensure proper cultivation. • Avoid growing areas with lots of stones • Visit farm mechanical area & workshop to understand metal risks, level of care / organization • Select best in class farmers • Support the training programs • Walk the fields to assess risk and then remove foreign objects https://www.youtube.com/watch?v=bYGNI7dNCIU • Select appropriate herbicide where necessary or mechanical weed control (chemical free)
Sow, plant and grow crop	<ul style="list-style-type: none"> • Foreign seeds: review seeds and their certificates • Repair conditions of machinery • Weed development: Inspect field at early stage of growth. • Weed development and history: Check previous use of herbicides • Weed development: direct sowing, no tilling • General foreign bodies: Inspect the fertilizers • Insects: Study spray records to assess history • Metal & Plastics: Inspection of irrigation equipment • Plastics: Inspection of water source 	<ul style="list-style-type: none"> • Use only certified seeds. If using own seed, proper cleaning is a must! • Cleaning, servicing and maintenance of all machinery before use, i.e. for sowing, fertilizers application and crop protection application • Record weed development. Select appropriate herbicide where necessary or mechanical weed control (reduced chemical control methods) • Use only certified artificial fertilizers • If using organic / recycled, ensure there is a foreign body prevention program (magnets, sieves ...) in the production process • When necessary, select appropriate insecticides and application timing • Grids to remove large foreign bodies in water
Harvest	<ul style="list-style-type: none"> • Conditions of machinery: inspect • Remains of previous crops & Rubbish: Define risk areas and walk the fields • General foreign body: Inspect containers / trailers • Cross-contamination: Check harvested grain at start and during harvesting process 	<ul style="list-style-type: none"> • Service & cleaning of harvest equipment, sieves • Remove foreign objects • In case of severe weed infestation, record, remove, segregate part of the crop from the rest of the field • Cleaning instructions for personnel. • Destruction of damaged containers. • Avoid use of wooden containers. • Cover the containers when transporting/waiting, even when empty • Ensure cleaning between different crops • Calibration of equipment at start and where necessary during the harvesting process • Control the height of the harvester
Transport & Storage	<ul style="list-style-type: none"> • General hygiene: Inspect trailers / conveyors and storage facilities • No segregation between crops, tools, spare equipment • Insects: Monitor activity during the whole storage period. • Insects: Check temperature and moisture gauges/ equipment 	<ul style="list-style-type: none"> • Clean, Maintain & repair trailers / conveyors & storage facilities. • Cleaning, dusting & drying steps must be efficient, well maintained and not a source of FB • Where necessary fumigate to control for insects (non-chemicals exists such as CO₂ ...). • Service the facility ensuring no leaks, no access to birds, rodents, ... • Efficient Magnets and Metal Detectors

Cereals: Milling Facilities

Area of Vulnerability	Potential Issues	Mitigation actions
Reception & storage	<ul style="list-style-type: none"> • Metal & rubbish: Inspect the unloading bay, conveyors & storage. • Insects: Monitor insect activity during the whole storage period. • Insects: Check temperature and moisture gauges/ equipment 	<ul style="list-style-type: none"> • Maintain & Clean the equipment and areas • Training of personnel. • Review of written recommendations (responsibilities, cleaning, sampling, release, specification limits) • Where necessary fumigate to control for insects (non-chemicals exists such as CO₂). • Service the facility ensuring no leaks, no access to birds, rodents, ... • Efficient Magnets and Metal Detectors
Pre-milling	<ul style="list-style-type: none"> • Absence of detection and removal equipment: • Effectiveness of detection and removal equipment: Assess calibration, validation, verification, monitoring, rejects. • Hygiene: Area cleanness. • Insects: Building/door tightness and sealing • Hair: Operator uniforms, practice 	<ul style="list-style-type: none"> • Repair, maintain and clean • Calibration, validation, learn from the rejects • Aspiration, destoners, densimetric tables • Optical sorting • Sieving before milling • Training of personnel / uniform • Heat treat / Fumigate where necessary (non-chemicals exists such as CO₂)
Milling	<ul style="list-style-type: none"> • Metal: Equipment conditions. • Plastics & insects: Area cleanness. • Plastics: Written recommendations for operators • Insect: History of activity 	<ul style="list-style-type: none"> • Maintain and clean • Destruction of insect eggs (entoleter) • Sieving during milling • Calibration • Training of personnel / uniform
Packing	<ul style="list-style-type: none"> • Metal and loss of parts from the line. • Insects and rubbish: Ability to clean, cleaning effectiveness. • Plastic and strings: Bag specifications • Insects and rubbish: Storage conditions of bags • Plastic, strings & paper: Inspection of bags at reception • Insects: Consider use of liners inside and outside • Insects and rubbish: Pallet conditions • Insects: Pallet¹ and Wrapping standards¹ <p>¹ Nestlé Internally accessible links only</p>	<ul style="list-style-type: none"> • Efficient Magnets and Metal Detectors • Repair and maintenance • Line separation • Cleaning validation, routines, documentation • Training of personnel • No use of recycled bags • Review of packaging specifications • Inspection / Cleaning of bags before usage • Proper closure of bags • Pallet specifications • Undamaged pallets • Wrapping tightness of bags and pallets

Specific Rice guidance:

Area of Vulnerability	Potential Issues	Mitigation actions
De-hulling (removal of outer cortex) incl. oats	<ul style="list-style-type: none"> • Cortex remains after de-hulling • Metal from line • Rubber parts from line 	<ul style="list-style-type: none"> • Sieves after de-hulling step • Repair and maintenance • Cleaning
Polishing	<ul style="list-style-type: none"> • Black grains • Damaged grains • Cortex remains 	<ul style="list-style-type: none"> • Optical sorting (color) • Equipment calibration, validation, monitoring • Repair, maintenance and cleaning
Parboiling	<ul style="list-style-type: none"> • Metal parts from autoclave / cooker / trays • Calcium carbonate agglomerates 	<ul style="list-style-type: none"> • Repair and maintenance • Cleaning • Metal detectors / Magnets

Dairy Ingredients - Powder

Main Foreign Body risks: String, Plastic, Fibers	
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Area of vulnerability	Potential issues	Mitigation actions
Preparation of the line	<ul style="list-style-type: none"> • Cleaning with damaged cleaning tools (brushes, scrapers, vacuum cleaner...) • No tools management available • Tools are placed in unexpected places (on cables, on electric cabinet...) • Improper repaired cleaning tools (tapes...) 	<ul style="list-style-type: none"> • Selection of materials adapted to the purpose should be established. • Do not use sponges or similar materials which could be a source of Foreign bodys • Inspection plan and interval for change of tools should be defined • Regular visual check of the condition by operators before use should be done. Visual standard is a good practice. Sufficient utensils quantities should be available in case of need. • Dedicated places according to the tools use should be defined. • Repair must be forbidden for equipment in contact with food and minimized for non-contact places
Raw material management	<ul style="list-style-type: none"> • No Foreign body assessment included in RM supplier assessment • Packaging specification not designed to prevent Foreign body creation • No protection of the RM packaging • Use of RM with damaged packaging • No Foreign body prevention at the tipping station or liquid milk reception and/or downstream • No management of RM opening tools (knives, cutter...) • No operator awareness during discharge operations • No zoning, no stripping area for wet or dry mix ingredients 	<ul style="list-style-type: none"> • Have a supplier approval system in place including Foreign bodys prevention and detection • Recommended is the use of strippable packaging (e.g. paper bags, bags in an outer box) • Plastic big bags must not be a source of plastic and fiber strings • RM packaging must be protected during the transport and in the warehouses • Damaged packaging should be put aside and not used • Grids and/or sieves should be present at the tipping stations and/or strainers and filters at the milk reception and downstream for liquid semi-finished products. • Rules must be clearly defined (e.g.no breakable tools, visual checking, attached tools, sharp...) • Concerned operators should be trained to the foreign bodies prevention and detection • Zoning rules should be established. A stripping area should defined for all types of ingredients
Equipment state in the environment	<ul style="list-style-type: none"> • Use of damaged plastic pallets • Cable arrangement and binders not managed 	<ul style="list-style-type: none"> • Plastic pallets should be regularly checked. Damaged ones should be put apart and not re-used in production area. • Cable and arrangement setup should not create a potential source of foreign bodies

Dairy Products: Powder

Area of vulnerability	Potential issues	Mitigation actions
Condition of equipment in contact with the product	<ul style="list-style-type: none"> • The product is exposed to the environment during the process. • Air filters as a potential sources of fibers • Improper repairing done in equipment in contact with food (cable binder, tape) • Use of cotton-type sleeves • Gaskets as a source of foreign bodies. • Sight glass as source of foreign bodies • Plastic sieve as source of foreign bodies 	<ul style="list-style-type: none"> • Closed line (but easy to inspect) is preferred. Use flexible part to have a fool proof installation at the level of the measurement instruments. • Specifications need to be aligned with usage and need to be checked at reception. • Operators need to be trained in installing the filters. • Properly sized frames and housing should be in place. • Improper home-made repairing should be forbidden for equipment in contact with the product. • A proper procedure on managing damaged equipment in contact with product need to be in place. • Use plastic flexible connections as they are less susceptible to wear and tear compare to cotton material. Preventive change plan should be in place. • Location of all gaskets in contact with food must be known. Do not use materials with evidence of deterioration / damage. • Damaged gaskets should be replaced and cross contamination risk in products quickly assessed. • A preventive maintenance plan should be in place. • Only original spares should be used or validated by equipment suppliers during the change management • In case of gasket damage, can it be detected downstream i.e. on sieve, by metal detector or X-ray? • Hard plastic in contact with food and in a close environment must be mapped. Preference must be to eliminate them. If not possible, a check frequency must be defined according to the risk (e.g. in a Hard plastic check-list) • A procedure must be defined in case of hard plastic breakage. • Plastic sieves model are not recommended. • In case of use, an adapted visual check needs to be done before product release
Operator personal protective equipment (PPE)	<ul style="list-style-type: none"> • Ear plugs, glasses, gloves... 	<ul style="list-style-type: none"> • Clear rules about PPE items should be in place (awareness in case of lost parts...) • Only detectable items should be used in production area.
Clothes, fibrous material and other material used on line	<ul style="list-style-type: none"> • Clothes, Hairnet, Pens, Personal items • Office materials (paper clips, staples, mobile phone...) 	<ul style="list-style-type: none"> • Clothes and hairnets should not be a source of strings and fibers • Clear rules about personal items should be in place • Office material should not be used on production line excepted clear validated detectable items by your metal detector and/or Xray.
Finished Packaging material	<ul style="list-style-type: none"> • Paper bags with internal plastic layer, plastic bags and big bags as sources of foreign bodies • No properly protection of the big bags and/or bags during the transport 	<ul style="list-style-type: none"> • Use of strippable paper bags and/or bag-in-box specifications is highly recommended for dry mix ingredients. • Plastic big bags must not be a source of plastic and fiber strings • Pallets should be protected from the top until the pallets by adapted covers and plastic stretch film.
Engineering practices	<ul style="list-style-type: none"> • Plastic pieces coming from perforation and other technical operations in production area 	<ul style="list-style-type: none"> • Hygienic rules to be defined for technical intervention. Technicians have to be trained concerning the rules they have to respect. • A procedure for line release after maintenance and before production must be in place (cleaning, visual checking, recording...)




Baked Goods

<p>Main Foreign Body risks: Metal, Plastic, Hair, Insects, Fat residues</p>	<p>Production process:</p> <pre> graph LR A[Mixing] --> B[Developing] B --> C[Laminating] C --> D[Forming] D --> E[Baking] E --> F[Cooling] F --> G[Filling] </pre>
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Area of Vulnerability	Potential Issues	Mitigation actions
Ingredients	<ul style="list-style-type: none"> • Wheat flour: metal, grains, insects • Sugar: metal, plastic • Fat: metal, stones • Milk powder: metal, plastic • Water: metal and stone residues 	<ul style="list-style-type: none"> • Sieves and magnets (10 kGauss) on all separate incoming ingredient lines, incl. water • Metal detectors on sugar line • Experience and knowledge on how to properly open bags, big bags, trailers • Destruction of insect eggs (entoleter) at mill
Cleaning operation	<ul style="list-style-type: none"> • Plastic fibres from manual tools • Metal from automatic pumps and brushes 	<ul style="list-style-type: none"> • Line inspection and release • GMP of cleaning tools • Preventive maintenance • Sieves in return circuits of cleaning fluids
Wet mixing	<ul style="list-style-type: none"> • Poor dispersion, dough balls • Metal shavings • Hair in manual operations 	<ul style="list-style-type: none"> • Fine sieves (1 mm) • Equipment maintenance and repair • Zoning and uniform policy
Doughing	<ul style="list-style-type: none"> • Foreign objects from the environment • Metal shavings • Hair in manual operations 	<ul style="list-style-type: none"> • Closing equipment • Covering trolleys • Zoning and uniform policy • Metal detector before laminator
Laminating / Moulding	<ul style="list-style-type: none"> • Pieces of moulds: metal and plastics • Parts of conveyors: plastics • Foreign objects from the environment • Hard parts from rework 	<ul style="list-style-type: none"> • Moulds and conveyors preventive maintenance and daily routine inspection • Rework procedure • Line coverage and cover cleaning policy
Baking	<ul style="list-style-type: none"> • Metal pieces from the oven or conveyor belt • Burnt particles stuck into the belt • Plastic coating from the conveyor belt 	<ul style="list-style-type: none"> • Oven and conveyors preventive maintenance and daily routine inspection • Operating temperature and speed • Presence / correct orientation of metal brushes located below the oven • Running time of the oven empty to clean the belt • Color sorter at the exit of the oven • Metal detector at the exit of the oven
Conveying / storage	<ul style="list-style-type: none"> • Accumulation of product residues on edges and corners, which randomly stick to the biscuits • Plastics & tissues from the conveyor belts and transport/storage boxes • Dust and other foreign object from the environment 	<ul style="list-style-type: none"> • Complete coverage of the conveyors • Box and conveyors preventive maintenance and daily routine inspection • Metal detector before the filler with < 2-mm capacity for all metal types
Filling	<ul style="list-style-type: none"> • Metal to metal contacts • Plastics from pouch material, easy-to-open strings or easy-to-reseal zip • Dust and other foreign object from the environment • Accumulation of product residues 	<ul style="list-style-type: none"> • Preventive maintenance and daily routine inspection • Operator intervention protocol • Center lining of sealing jaws • Sharpness of foil/zip cutting tools • Coverage of the filler & laminate rolls
Casing	<ul style="list-style-type: none"> • Sharp parts damaging the laminates • Dust from cardboards • Glue and tape materials 	<ul style="list-style-type: none"> • X-ray inspection to reduce metal, glass & stone risks • Preventive maintenance and daily routine inspection • Cleaning schedule

Baked Goods

Typical Defects:

DEFECT DESCRIPTION	EXPLANATION
<p>Carbon <u>Residue</u> Defects Light/dark/greyish deposits or black marks on the surface, bottom or inside the item</p>  	<p>Caused by carbon residues of biscuit on the net of the oven, baked again and taken up by raw biscuits at the entrance of the oven</p> <p>Carbon residues due to ineffective cleaning of some belts (oven or transport/packaging lines)</p>
<p>Indigenous foreign body</p>	<p>Example of fat accumulation:</p> 

Poultry

Trim, formed, tenders, whole breast	Production Information: Feeder plants debone and separate raw material items which supply the further processing plants which formulate and cook to finished products.
Main Foreign Body risk: Bone, fat/gristle/cartilage, hair, plastic, metal, glove, wood	

Area of vulnerability	Potential issues	Mitigation actions
De bone process and Feederplant performance	<ul style="list-style-type: none"> • Bone, Fat/Gristle/Cartilage 	<ul style="list-style-type: none"> • Manual de-bone only. Auto de-bone not authorized as it creates a higher amount of defects. • Use of X-ray to detect and remove bone. • Fishbone RCA completed. De-bone process and control plan has established defect rate, SPC & control limits, sampling & frequency, type and numbers of bone recorded, and CA related to adjust line speed. • Bone Detection and Removal Control Plan has established defect rate and x-ray validation procedure. • Control limits established at these locations in the process: after mechanical de-bone, after manual trim, pre and post x-ray. • Vertical integration. Purchase of trim or tender from open Market (not vertically sourced) must be approved by Nestle. • Feeder plant performance data is shared weekly and a robust chargeback and rejection program is in place. Eliminate underperformers and use raw material from best performers. • Calibration of DSI daily and validate F/G/C complies with the specification.
Feeder plant	<ul style="list-style-type: none"> • Hair, Plastic, Metal, Wood, Glove 	<ul style="list-style-type: none"> • Hair removal program to include Lint rollers and floor audits to quantify hair found on employees and facility (platforms, steps, bridges). • Robust belt inspection program and use of metal belts or metal detectable. Plastic liners 7 mil. • Tool issuance program. • Blade and grinder weight collection and checks. • Plastic pallets. Tote dipping process that prevents debris on pallets from contaminating product.
Further Processing plant	<ul style="list-style-type: none"> • Hair, Plastic, Metal, Wood, Glove 	<ul style="list-style-type: none"> • All above. • X-ray and Metal Detection. Locked reject bins. • Foreign Body Control Plan (Capability of devices x-ray and MD).
Supply Chain	<ul style="list-style-type: none"> • Warehouse (stacked storage) and Transportation conditions (trailer cleanliness). Debris falling into cases or totes. Pallet debris (wood, stone, glass). 	<ul style="list-style-type: none"> • Mandatory Pallet cap/cover. • Remove debris on top of pallet cover prior to use. • CHEP or plastic pallets.
Trim	<ul style="list-style-type: none"> • Bone, Fat/Gristle/Cartilage 	<ul style="list-style-type: none"> • Dual pipeline x-ray units with 180 degree turn into second unit. • Reject mechanism for each unit. • Minimum two persons to inspect material rejected from pipeline x-ray units. • DSI calibrated daily to adhere to spec.

Poultry

Area of vulnerability	Potential issues	Mitigation actions
Tender	<ul style="list-style-type: none"> Bone, Fat/Gristle/Cartilage 	<ul style="list-style-type: none"> Specification for tender not to exceed 1/4 inch but is inspected and clipped to 1/8". Dual x-ray passes with re-work loop.
All	<ul style="list-style-type: none"> Bone 	<ul style="list-style-type: none"> COA requirement that all material to passed through an x-ray system to detect and eliminate bone. X-ray detection & rejection capable of detecting at 99% effectiveness to 1/8" and outgoing defect level 1 bone per 10,000 lbs. of material.
X-ray	<ul style="list-style-type: none"> Bone 	<ul style="list-style-type: none"> Validation procedure using double pass method of minimum 1,000 lbs. to be conducted once per quarter. Defect rate must be recorded for pass 1 and pass 2. Pass 1 cannot exceed 20 bones per 10,000 lbs. Pass 2 cannot exceed 1 bone per 10,000 lbs. 1/8 inch pulley bone used for daily calibration and conducted once per hour X-ray infeed reject rate cannot exceed 95%.

Peanuts

Main Foreign Body risk: Stones, Plastic, Rubber, Wood, Insects, Glass, Hair, Metal, other plants	For crop calendar (harvest/production): http://www.usda.gov/oce/weather/CropCalendars/index.htm
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Area of vulnerability	Potential issues	Mitigation actions
Field Choice & Preparation	<ul style="list-style-type: none"> • Stones, rocks, sand, plant material, wood • Used packaging, plastics, string, rubber, glass, metal • Rubbish from nearby dump • Stubble/plant material from previous crop • Weeds including previous crop and grasses • Animal remains, hair, feathers • Metal & Plastics from cultivation machinery 	<ul style="list-style-type: none"> • Selection of field/farmer/growing area • Soil preparation incorporating previous crop remains and other plant material. • Removal of rubbish (field walks) • Protection against animals, birds (fence, bird scarers) • Service of machinery replacement of old parts
Sowing to Pre-Harvest	<ul style="list-style-type: none"> • Foreign crop seeds & weeds in seed at sowing • Metal & Plastics from sowing equipment • Weeds & foreign plants • Insect infestation • Animal habitants of fields • Birds frequenting fields 	<ul style="list-style-type: none"> • Use only certified seed. Clean sowing equipment to remove any foreign crop seeds from other crops • Service and repair sowing equipment before use • Selective use of herbicides and or mechanical weed control. Use pre and post emergence herbicides where appropriate • Selective use of relevant insecticides based on risk assessments and forecasting • Fenced and periodical inspection of fields • Removal of bolting, flowering, plants
Harvest	<ul style="list-style-type: none"> • Harvest and Transport Machinery with foreign bodies (plants, plastic, metal, rubbish) • Animals habitant in fields (rabbits, squirrels, snakes) • Insects habitant in fields (pollinating, biological control) • Debris – plastics, rubbers, tubes, glass, metal • Personnel in contact with harvested crop • Stones 	<ul style="list-style-type: none"> • Machinery cleaning before and during harvest. • Loud machinery to scare way animals • Machinery height adjustments • Inspection and removal of debris before harvest (field walks) • Use of harvesting machinery that removes stones & similar foreign bodies. Ensure correct calibration of machinery. • Ensure correct dry time of peanut vines for peanut separation from plant.
Shelling/Production	<ul style="list-style-type: none"> • Transportation trucks and Open trucks • Transportation routes • Storage silos • Off load area (exposed to all elements) • Processing line (metal, rubber, plastic) • Personnel in contact with harvested crop • Shells • Field trash (metal, stones, glass, plastic, rubber) • Rodents, snakes, insects 	<ul style="list-style-type: none"> • Cleaning of trucks & covering open trucks • Minimal hold time in the transport phase and storage silos • Cleaning and removal of foreign bodys at loading / unloading • Good manufacturing practices • Blowers ventilators • Hand sorting • Good manufacturing practices for personnel • Sorters on line (optic & manual), gravity separators • De-stoners

Peanuts

Area of vulnerability	Potential issues	Mitigation actions
Storage (pre-processing field/Farmer storage/Supplier storage)	<ul style="list-style-type: none"> • Various debris • Rodent/pest infestation • Special attention – Rocks, stones, foreign dried plants, plastics, metal, shells 	<ul style="list-style-type: none"> • Clean storage and transport bands • Apply first in first out principle • Use controlled atmosphere storage • Sorting of crop when removing from storage • Pest control program • Special attention – Optic and manual sorting, screeners, gravity separation for rocks/stones. Removal of stones with appropriate harvest machinery

Examples of Foreign Bodies in Nuts at Nestle Factory:



Stones, Wood- in NUTS

Oils and Fats

Oilmix, Polyunsaturated Fatty Acids (PUFA), Corn, Peanut, Rapeseed, Sunflower, Coconut, Palm.	Refer to Peanut Best Practice for mitigation of foreign bodies originating at the fields.
Main Foreign Body risk: Metal, Hair, Pest, Plastic	

Area of vulnerability	Potential issues	Mitigation actions
Engineering practices	<ul style="list-style-type: none"> • Metal pieces coming from welding, cutting, perforation and other technical operations in production area 	<ul style="list-style-type: none"> • Hygienic rules to be defined for technical intervention in production area • Production line to be protected during operations in the environment • Technicians have to be trained concerning the rules they have to respect. • A procedure for line release after maintenance and before production must be in place (cleaning, visual checking, recording...) • Soldering should be replaced by welding
Filling area	<ul style="list-style-type: none"> • Cross contamination coming from process equipment • Insects presence in the filling area • Foreign bodys present inside the containers 	<ul style="list-style-type: none"> • The equipment must be closed during production. A fine filtration must be done before the storage tank for bulk and filling line (at least 1mm) • Sieve integrity must be checked before release of the production • Strong implementation of the pest management should be present • A procedure should be defined to minimize Foreign bodys contamination originating with the packaging container (covered conveyors, inverter, rinsing, regular inspection)
Operator hygienic rules	<ul style="list-style-type: none"> • Contamination with hair during intervention by operators which need to open the equipment (cleaning, maintenance) 	<ul style="list-style-type: none"> • See for details the general guidance document specific to prevention of hair contamination
Finished Packaging material design and transport	<ul style="list-style-type: none"> • Foreign bodys coming from metallic barrels • Plastic liner stuck in the solid grease not visible • Foreign bodys from environment during the transport 	<ul style="list-style-type: none"> • Packaging must not be a source of metal • Use colored blue plastic liner • Pallets of small containers should be fully protected during transportation by covers and stretch film.
Loading of the tanker	<ul style="list-style-type: none"> • Introduction of Foreign bodys during the loading (tanker equipment, manhole opening) 	<ul style="list-style-type: none"> • Dedicated food grade tanker with cleaning certificate (for tanker and equipment) with recording of validated cleaning operations to be checked for acceptance before loading • Covered premise for loading operation is preferred • Strong implementation of the pest management should be present • Loading hoses and connection parts protected from environment (e.g.: covers) • Opening of the manhole must be managed to avoid introduction of Foreign bodys from environment • Proper garment for operators and drivers (hairnet, long sleeve, beard protection...) are in place • A sieving of 1mm is recommended before loading

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Vegetables: Fruit Vegetables


Tomatoes, Peppers, Eggplant	For crop calendar (harvest/production): http://www.usda.gov/oce/weather/CropCalendars/index.htm
Main Foreign Risk: Stones, Plastic, Rubber, Wood, Insects, Glass, Hair, other plants	

Area of vulnerability	Potential issues	Mitigation actions
Field Choice & Preparation	<ul style="list-style-type: none"> • Stones, rocks, sand • Used packaging, plastics, string, rubber, glass, metal, rubbish (e.g. from nearby dump) • Stubble/plant material from previous crop • Weeds including previous crop and grass • Animal remains, hair, feathers • Metal & Plastics from cultivation machinery 	<ul style="list-style-type: none"> • Selection of most optimal field/farmer/growing area • Removal of rubbish (field walks) • Soil preparation by incorporating previous crop remains and other plant material • Protection against animals, birds (scarers) • Service of machinery - Replacement of old parts
Sowing to Pre-Harvest	<ul style="list-style-type: none"> • Foreign crop seeds & weeds in seed at sowing • Metal & Plastics from sowing equipment • Weeds & foreign plants • Insect infestation • Animal habitats of fields/Birds frequenting fields 	<ul style="list-style-type: none"> • Use only certified seed. Clean sowing equipment to remove any foreign crop seeds from other crops • Service and repair sowing equipment before use • Selective use of herbicides and or mechanical weed control. Use pre- and post emergence herbicides where appropriate • Selective use of relevant insecticides based on risk assessments and forecasting & biological control • Periodical inspection of fields, bird scarers
Irrigation	<ul style="list-style-type: none"> • Metal, rubber and plastics coming from irrigation equipment 	<ul style="list-style-type: none"> • Maintain and repair irrigation equipment • Ensure complete removal of all parts when removing sprinkler and drip irrigation pipes from field • Check water source for potential risk for foreign bodies
Harvest	<ul style="list-style-type: none"> • Harvest and transport machinery with foreign bodies (plants, hairs, plastic, metal, rubbish) • Animals habitant in fields (rabbits, squirrels) • Insects habitant in fields (pollinating, biological control) • Debris – plastics, rubbers, tubes, glass, metal • Personnel in contact with harvested crop • Stones 	<ul style="list-style-type: none"> • Machinery cleaning before/during harvest. • Metal detectors on machinery where possible • Blowers on machinery to remove hairs, insects • Loud machinery to scare away animals • Machinery height adjustments • Inspection and removal of debris before harvest (field walks) • Manual sorting of debris after harvest of freshly picked produce. • Use of harvesting machinery that removes stones & similar foreign bodies. Ensure correct calibration of machinery • Proper training and providing adequate personal hygiene facilities • correct calibration of machinery

Vegetables: Fruit Vegetables

Area of vulnerability	Potential issues	Mitigation actions
Post-Harvest	<ul style="list-style-type: none"> • Transportation trucks & Open trucks • Time crop held in the field • Transportation routes • Off load area (exposed to all elements) • Processing line (broken pieces) • Personnel in contact with harvested crop 	<ul style="list-style-type: none"> • Cleaning of trucks & covering open trucks at all times during transport and parking • Minimal hold time in the transport phase • Cleaning and removal of foreign bodies at loading / unloading • Blowers ventilators • Hand sorting • Good manufacturing practices for personnel, sorters on line (optic & manual), gravity separators
Storage (pre-processing (field/Farmer storage/Supplier storage)	<ul style="list-style-type: none"> • Various debris • Damaged and rotten crop material 	<ul style="list-style-type: none"> • Clean storage and transport bands • Apply FIFO principle • Use controlled atmosphere storage • Sorting of crop when removing from storage

Specific Raw Material Guidance

Crop	Potential issues	Mitigation actions
	Special attention – Rocks, stones, foreign dried plants, plastics, tubes, dried stalks	Special attention – Optic and manual sorting, screeners, gravity separation for rocks/stones

Vegetables: Herbs


Parsley, Coriander, Bay leaf, Oregano	For crop calendar (harvest/production): http://www.usda.gov/oce/weather/CropCalendars/index.htm
Main foreign Body risk: Stones, Metal, Plastic, Rubber, Wood, Insects, Glass, Hair, other plants.	

Area of vulnerability	Potential issues	Mitigation actions
Field Choice & Preparation	<ul style="list-style-type: none"> • Stones, rocks, sand • Used packaging, plastics, string, rubber, glass, metal, rubbish (e.g. from nearby dump) • Stubble/plant material from previous crop • Weeds including previous crop and grass • Animal remains, hair, feathers • Metal & Plastics from cultivation machinery 	<ul style="list-style-type: none"> • Selection of most optimal field/farmer/growing area • Removal of rubbish (field walks) • Soil preparation by incorporating previous crop remains and other plant material • Protection against animals, birds (scarers) • Service of machinery - Replacement of old parts
Sowing to Pre-Harvest	<ul style="list-style-type: none"> • Foreign crop seeds & weeds in seed at sowing • Metal & Plastics from sowing equipment • Weeds & foreign plants • Insect infestation • Animal habitans of fields/Birds frequenting fields 	<ul style="list-style-type: none"> • Use only certified seed. Clean sowing equipment to remove any foreign crop seeds from other crops • Service and repair sowing equipment before use • Selective use of herbicides and or mechanical weed control. Use pre- and post emergence herbicides where appropriate • Selective use of relevant insecticides based on risk assessments and forecasting & biological control • Periodical inspection of fields, bird scarers
Irrigation	<ul style="list-style-type: none"> • Metal, rubber and plastics coming from irrigation equipment 	<ul style="list-style-type: none"> • Maintain and repair irrigation equipment • Ensure complete removal of all parts when removing sprinkler and drip irrigation pipes from field • Check water source for potential risk for foreign bodies

Vegetables: Herbs

Area of vulnerability	Potential issues	Mitigation actions
Harvest	<ul style="list-style-type: none"> • Harvest and transport machinery with foreign bodies (plants, hairs, plastic, metal, rubbish) • Animals habitant in fields (rabbits, squirrels) • Insects habitant in fields (pollinating, biological control) • Debris – plastics, rubbers, tubes, glass, metal • Personnel in contact with harvested crop • Stones 	<ul style="list-style-type: none"> • Machinery cleaning before and during harvest. • Metal detectors on machinery where possible • Blowers on machinery to remove hairs, insects • Loud machinery to scare away animals • Machinery height adjustments • Inspection and removal of debris before harvest (field walks) • Manual sorting of debris after harvest of freshly picked produce. • Use of harvesting machinery that removes stones & similar foreign bodies. Ensure correct calibration of machinery • Proper training and providing adequate personal hygiene facilities
Post-Harvest	<ul style="list-style-type: none"> • Transportation trucks & Open trucks • Time crop held in the field • Transportation routes • Off load area (exposed to all elements) • Processing line (broken pieces) • Personnel in contact with harvested crop 	<ul style="list-style-type: none"> • Cleaning of trucks & covering open trucks at all times during transport and parking • Minimal hold time in the transport phase • Cleaning and removal of foreign bodies at loading / unloading • Blowers ventilators • Hand sorting • Good manufacturing practices for personnel, sorters on line (optic & manual), gravity separators
Storage (pre-processing (field/Farmer storage/Supplier storage	<ul style="list-style-type: none"> • Various debris • Damaged and rotten crop material 	<ul style="list-style-type: none"> • Clean storage and transport bands • Apply FIFO principle • Use controlled atmosphere storage • Sorting of crop when removing from storage

Specific Raw Material Guidance

Crop	Potential issues	Mitigation actions
	<ul style="list-style-type: none"> • All of the above apply • Special attention – Rocks, stones, foreign dried plants, plastics, tubes • Insects, foreign leaves, stalks, weeds, plastic, dried leaves of other plants 	<ul style="list-style-type: none"> • All of the above apply • Special attention – Optic and manual sorting, screeners, air blowing for light particles such as insects, stalks

Vegetables: Leafy Greens


Raw material concerned: Spinach, Kale, Cabbage, Broccoli	For crop calendar (harvest/production): http://www.usda.gov/oce/weather/CropCalendars/index.htm
Main foreign Body risk: Stones, Plastic, Rubber, Wood, Insects, Glass, Hair, other plants	

Area of vulnerability	Potential issues	Mitigation actions
Field Choice & Preparation	<ul style="list-style-type: none"> • Stones, rocks, sand • Used packaging, plastics, string, rubber, glass, metal, rubbish (e.g. from nearby dump) • Stubble/plant material from previous crop • Weeds including previous crop and grass • Animal remains, hair, feathers • Metal & Plastics from cultivation machinery 	<ul style="list-style-type: none"> • Selection of most optimal field/farmer/growing area • Removal of rubbish (field walks) • Soil preparation by incorporating previous crop remains and other plant material • Protection against animals, birds (scarers) • Service of machinery - Replacement of old parts
Sowing to Pre-Harvest	<ul style="list-style-type: none"> • Foreign crop seeds & weeds in seed at sowing • Metal & Plastics from sowing equipment • Weeds & foreign plants • Insect infestation • Animal habitants of fields/Birds frequenting fields 	<ul style="list-style-type: none"> • Use only certified seed. Clean sowing equipment to remove any foreign crop seeds from other crops • Service and repair sowing equipment before use • Leave a buffer area between the side of the field and the sown area • Selective use of herbicides and or mechanical weed control. Use pre- and post emergence herbicides where appropriate • Selective use of relevant insecticides based on risk assessments and forecasting & biological control • Periodical inspection of fields, bird scarers
Irrigation	<ul style="list-style-type: none"> • Metal, rubber and plastics coming from irrigation equipment 	<ul style="list-style-type: none"> • Maintain and repair irrigation equipment • Ensure complete removal of all parts when removing sprinkler and drip irrigation pipes from field • Check water source for potential risk for foreign bodies
Harvest	<ul style="list-style-type: none"> • Harvest and transport machinery with foreign bodies (plants, hairs, plastic, metal, rubbish) • Animals habitant in fields (rabbits, squirrels) • Insects habitant in fields (pollinating, biological control) • Debris – plastics, rubbers, tubes, glass, metal • Personnel in contact with harvested crop • Stones 	<ul style="list-style-type: none"> • Machinery cleaning before and during harvest. • Metal detectors on machinery where possible. • Blowers on machinery to remove hairs, insects • Loud machinery to scare away animals • Machinery height adjustments • Inspection and removal of debris before harvest (field walks) • Manual sorting of debris after harvest of freshly picked produce. • Use of harvesting machinery that removes stones & similar foreign bodies. Ensure correct calibration of machinery • Proper training and providing adequate personal hygiene facilities

Vegetables: Leafy Greens

Area of vulnerability	Potential issues	Mitigation actions
Post-Harvest	<ul style="list-style-type: none"> • Transportation trucks & Open trucks • Time crop held in the field • Transportation routes • Off load area (exposed to all elements) • Processing line (broken pieces) • Personnel in contact with harvested crop 	<ul style="list-style-type: none"> • Cleaning of trucks & covering open trucks at all times during transport and parking • Minimal hold time in the transport phase • Cleaning and removal of foreign bodies at loading / unloading • Blowers ventilators • Hand sorting • Good manufacturing practices for personnel, sorters on line (optic & manual), gravity separators
Storage (pre-processing (field/Farmer storage/Supplier storage	<ul style="list-style-type: none"> • Various debris • Damaged and rotten crop material 	<ul style="list-style-type: none"> • Clean storage and transport bands • Apply FIFO principle • Use controlled atmosphere storage • Sorting of crop when removing from storage

Specific Raw Material Guidance

Crop	Potential issues	Mitigation actions
	<p>Special attention – Rocks, stones, foreign dried plants, plastics, tubes, insects, regrowth of other plants, dried leaves, extraneous dirty</p>	<p>Special attention – Optic and manual sorting, screeners, gravity separation of heavy materials, calibration of harvest machinery.</p>

Vegetables: Underground Bulbs and Root Crops



Raw materials concerned: Beetroot, Carrots, Celeriac roots, Onions, Potatoes, incl. Garlic	For crop calendar (harvest/production): http://www.usda.gov/oce/weather/CropCalendars/index.htm
Main foreign body risk: Stones, Metal, Plastic, Rubber, Wood, Insects, Glass, Hair, other plants.	

Area of vulnerability	Potential issues	Mitigation actions
Field Choice & Preparation	<ul style="list-style-type: none"> • Stones, rocks, sand/Plant material, wood • Used packaging, plastics, string, rubber, glass, metal, rubbish (e.g. from nearby dump) • Stubble/plant material from previous crop • Weeds including previous crop and grass • Animal remains, hair, feathers • Metal & Plastics from cultivation machinery 	<ul style="list-style-type: none"> • Selection of most optimal field/farmer/growing area • Removal of rubbish (field walks) • Soil preparation by incorporating previous crop remains and other plant material • Protection against animals, birds (scarers) • Service of machinery - Replacement of old parts
Sowing to Pre-Harvest	<ul style="list-style-type: none"> • Foreign crop seeds & weeds in seed at sowing • Metal & Plastics from sowing equipment • Weeds & foreign plants • Insect infestation • Animal habitans of fields/Birds frequenting fields • Crop type (carrots & parsnips bolting) 	<ul style="list-style-type: none"> • Use only certified seed. Clean sowing equipment to remove any foreign crop seeds from other crops • Service and repair sowing equipment before use • Selective use of herbicides and or mechanical weed control. Use pre- and post emergence herbicides where appropriate • Selective use of relevant insecticides based on risk assessments and forecasting & biological control • Periodical inspection of fields, bird scarers • Removal of bolting, flowering, plants
Irrigation	<ul style="list-style-type: none"> • Metal, rubber and plastics coming from irrigation equipment 	<ul style="list-style-type: none"> • Maintain and repair irrigation equipment • Ensure complete removal of all parts when removing sprinkler and drip irrigation pipes from field • Check water source for potential risk for foreign bodies

Vegetables: Underground Bulbs and Root Crops

Area of vulnerability	Potential issues	Mitigation actions
Harvest	<ul style="list-style-type: none"> • Harvest and transport machinery with foreign bodies (plants, hairs, plastic, Metal, rubbish) • Animals habitant in fields (rabbits, squirrels) • Insects habitant in fields (pollinating, biological control) • Debris – plastics, rubbers, tubes, glass, metal • Personnel in contact with harvested crop • Stones 	<ul style="list-style-type: none"> • Machinery cleaning before and during harvest. • Metal detectors on machinery where possible • Blowers on machinery to remove hairs, insects • Loud machinery to scare away animals • Machinery height adjustments • Inspection and removal of debris before harvest (field walks) • Manual sorting of debris after harvest of freshly picked produce. • Use of harvesting machinery that removes stones & similar foreign bodies. Ensure correct calibration of machinery • Proper training and providing adequate personal hygiene facilities • Use of harvesting machinery that removes stones & similar foreign bodies. Ensure correct calibration of machinery
Post-Harvest	<ul style="list-style-type: none"> • Transportation trucks & Open trucks • Time crop held in the field • Transportation routes • Off load area (exposed to all elements) • Processing line (broken pieces) • Personnel in contact with harvested crop 	<ul style="list-style-type: none"> • Cleaning of trucks & covering open trucks at all times during transport and parking • Minimal hold time in the transport phase • Cleaning and removal of foreign bodiess at loading / unloading • Blowers ventilators • Hand sorting • Good manufacturing practices for personnel, sorters on line (optic & manual), gravity separators
Storage (pre-processing, field/farmer storage/supplier storage)	<ul style="list-style-type: none"> • Various debris • Damaged and rotten crop material 	<ul style="list-style-type: none"> • Clean storage area and transport conveyors • Apply FIFO principle • Use controlled atmosphere storage • Sorting of crop when removing from storage

Specific Raw Material Guidance

Crop	Potential issues	Mitigation actions
	Carrots <ul style="list-style-type: none"> • Special attention – Rocks, stones, plastics, tubes, bolting plants, woody carrots/parsnips 	<ul style="list-style-type: none"> • Bolting plants to be removed manually on a regular basis in the fields. • Use varieties with reduced bolting risk • Avoid sowing during cold period
	Potatoes and sweet potatoes <ul style="list-style-type: none"> • Necrosis or simply inefficient peeling can cause dark specs, which are causing significant consumer dissatisfaction. 	<ul style="list-style-type: none"> • Variety selection • Selection of growing region / climate • Agreement on quality grade (A, B ...) • Sufficient sorting processes • Sufficient peeling depth

Vegetables: Stalks


Leek, Chives, Asparagus	For crop calendar (harvest/production): http://www.usda.gov/oce/weather/CropCalendars/index.htm
Main foreign body risk: Stones, Plastic, Rubber, Wood, Insects, Glass, Hair, other plants	

Area of vulnerability	Potential issues	Mitigation actions
Field Choice & Preparation	<ul style="list-style-type: none"> • Stones, rocks, sand • Used packaging, plastics, string, rubber, glass, metal, rubbish (e.g. from nearby dump) • Stubble/plant material from previous crop • Weeds including previous crop and grass • Animal remains, hair, feathers • Metal & Plastics from cultivation machinery 	<ul style="list-style-type: none"> • Selection of most optimal field/farmer/growing area • Removal of rubbish (field walks) • Soil preparation by incorporating previous crop remains and other plant material • Protection against animals, birds (scarers) • Service of machinery - Replacement of old parts
Sowing to Pre-Harvest	<ul style="list-style-type: none"> • Foreign crop seeds & weeds in seed at sowing • Metal & Plastics from sowing equipment • Weeds & foreign plants • Insect infestation • Animal habitans of fields/Birds frequenting fields 	<ul style="list-style-type: none"> • Use only certified seed. Clean sowing equipment to remove any foreign crop seeds from other crops • Service and repair sowing equipment before use • Selective use of herbicides and or mechanical weed control. Use pre- and post emergence herbicides where appropriate • Selective use of relevant insecticides based on risk assessments and forecasting & biological control • Periodical inspection of fields, bird scarers
Irrigation	<ul style="list-style-type: none"> • Metal, rubber and plastics coming from irrigation equipment 	<ul style="list-style-type: none"> • Maintain and repair irrigation equipment • Ensure complete removal of all parts when removing sprinkler and drip irrigation pipes from field • Check water source for potential risk for foreign bodies
Harvest	<ul style="list-style-type: none"> • Harvest and transport machinery with foreign bodies (plants, hairs, plastic, metal, rubbish) • Animals habitant in fields (rabbits, squirrels) • Insects habitant in fields (pollinating, biological control) • Debris – plastics, rubbers, tubes, glass, metal • Personnel in contact with harvested crop • Stones 	<ul style="list-style-type: none"> • Machinery cleaning before and during harvest. • Metal detectors on machinery where possible • Blowers on machinery to remove hairs, insects • Loud machinery to scare away animals • Machinery height adjustments • Inspection and removal of debris before harvest (field walks) • Manual sorting of debris after harvest of freshly picked produce. • Use of harvesting machinery that removes stones & similar foreign bodies. Ensure correct calibration of machinery • Proper training and providing adequate personal hygiene facilities

Vegetables: Stalks

Area of vulnerability	Potential issues	Mitigation actions
Post-Harvest	<ul style="list-style-type: none"> • Transportation trucks & Open trucks • Time crop held in the field • Transportation routes • Off load area (exposed to all elements) • Processing line (broken pieces) • Personnel in contact with harvested crop 	<ul style="list-style-type: none"> • Cleaning of trucks & covering open trucks at all times during transport and parking • Minimal hold time in the transport phase • Cleaning and removal of foreign bodies at loading / unloading • Blowers ventilators • Hand sorting • Good manufacturing practices for personnel, sorters on line (optical & manual), gravity separators
Storage (pre-processing (field/Farmer storage/Supplier storage)	<ul style="list-style-type: none"> • Various debris • Damaged and rotten crop material 	<ul style="list-style-type: none"> • Clean storage and transport bands • Apply FIFO principle • Use controlled atmosphere storage • Sorting of crop when removing from storage

Specific Raw Material Guidance



Crop	Potential issues	Mitigation actions
	<p>All of the above apply Special attention – Rocks, stones, foreign dried plants, plastics, tubes, dried stalks</p>	<p>All of the above apply Special attention – Optic and manual sorting, screeners, gravity separation for rocks/stones, blowers for light materials</p>

Prevention of Hair Contamination

Main Origins: <ul style="list-style-type: none"> • Animals • Human • Packaging 	Known Origin of Hair contamination:						
	Origin	Field	Slaughtering	Cleaning /washing	Transforming	Packaging	Environment
	Meat & poultry		X	X	X		X
	Ingredients	X		X			X
	Employees	X	X	X	X		X
Packaging					X	X	

Area of vulnerability	Potential issues	Mitigation actions
Animal fur and feather	<ul style="list-style-type: none"> • Incoming animals: hair and feather remains • Other ingredients with hair on pack, inside • Lack of standard / specification • Specification not mutually agreed • Lack of internal & external awareness for the specification 	<ul style="list-style-type: none"> • Have a clear & agreed specification addressing absence of hair and feather • Have it trained internally and externally • Have this as visual reminders for operators • All ingredient processing lines have a hair removal step (see below)
Human hair	<ul style="list-style-type: none"> • Absence of hair prevention policy • Non respect of the hair policy (zone, frequency) • Hair nets not covering all hairs, incl. beard, sideburns • Improper hair net quality • Conflicting interpretation of the hair policy • People traffic close to open products • Forklifts traffic close to open products 	<ul style="list-style-type: none"> • Traffic takes place away from open products • Zoning and uniform policies are clear and communicated broadly • The uniform includes long sleeves and pants with tight ends • Mirrors are available to verify the uniform • In open product areas, the hair net covers head, neck, shoulders and sideburns • Hair nets should be worn prior to the uniform • The tissue density of the hair net should be ≥ 20 gram per square meter (med. surgery grade)
Hair-like fiber from plastics	<ul style="list-style-type: none"> • Lack of prevention program against fiber generation • Opening of ingredient packaging • Sealing of packaging materials • Sealing control is not a release parameter 	<ul style="list-style-type: none"> • Work with the supplier of the packaging material • Define the optimal packaging specifications • Define the optimal sealing conditions • Define the optimal machine settings • Define the best manner to open bags without fiber generation • Train your clients on how to safely open ingredient bags
Handling dry ingredients	<ul style="list-style-type: none"> • The open parts of the line past the dust aspirators and last sifting steps • Hair, wood or dust visible on the floor • Outer surface of the bags • Lack of specific area to strip the bags 	Zoning: <ul style="list-style-type: none"> • Define the areas with open products as high risk • Restrict traffic to the minimum in those areas and make visible on floors / walls • Collect hair on the floor & plastic surfaces • Communicate / Train employees • Revise cleaning frequencies based on findings • Review wall & door tightness
Handling wet ingredients	<ul style="list-style-type: none"> • The open part of the line past the last washing and rinsing steps • Packaging or pipes with electrostatic surfaces • Hair, wood or dust visible on the floor • Lack of specific area to strip the pallets 	

Specific Guidance

Manufacturing Practice	Basics	Best Practice (on top of basics)
<p>People</p> 	<ul style="list-style-type: none"> • Caps completely cover hair and ear-lobes with no exposed parts, single use • Beard masks completely cover beard and moustache • Long sleeve uniform in locations where products or materials are exposed • Shirts always underneath pants • Mirror at each hairnet delivery station • Hairs sticking out of hairnet with low tissue density: 	<ul style="list-style-type: none"> • In medium and high care areas: • Hair net covers all hair with no exposed hair on head, neck, shoulders and sideburns • The tissue density of the hair net is ≥ 20 gram per square meter (med. surgery grade) • Detailed descriptions in place establishing sequence of wearing uniforms, correct use during production and intervals • Lint sticky rollers at all entries with visual training
<p>Methods</p>	<ul style="list-style-type: none"> • Prevention training included in the site induction plan and yearly repetition • Training includes at least production, quality, maintenance, engineering staff, and contractors. • Behavior monitoring organized on the shop floor, including correct use of caps and uniforms as part of the routine GMP hygiene verifications 	<ul style="list-style-type: none"> • Training includes all facility staff. • Visual reminders on the shop floor connected with the training given (picture) • Training methods actively adapted based on findings on the floor and claims from clients • Training effectiveness verified on the floor by testing for the presence of hairs on uniforms and surfaces
<p>The Environment</p>	<ul style="list-style-type: none"> • Compressed air is not in use in areas with open products • Ventilation is not directed towards open products • Open food and primary packaging are covered • Restricted traffic in open product areas 	<ul style="list-style-type: none"> • Air pressure control, tight doors & windows, filtration of recirculated air. Air showers. • Collect and record dust & hair on floor and surfaces • Optimum frequency for environmental cleaning • Trend analysis communicated to all employees • Check if air circulation is not a source for hair contamination (are there filters?)
<p>Materials</p>	<ul style="list-style-type: none"> • In basic areas: • External liner always covering bags and big bags • Flexible package and auxiliary material always protected in the warehouse 	<ul style="list-style-type: none"> • Vacuum or antistatic systems for bags, big bags and their protection • Procedure to inspect bags and big bags for dust, fiber and hair before use
<p>Management of Complaints</p>	<ul style="list-style-type: none"> • Each client information and claim triggers a specific root cause analysis, followed by corrective actions • A specific reply to the client is made within 2 weeks • All programs for managing of foreign bodies are incorporated into the management system of the factory 	<ul style="list-style-type: none"> • Client information and claim shown to all employees and reviewed by management • Yearly objectives set for client information and claims • Yearly objectives set for internal findings • Yearly technical improvement visits organized with selected clients • Outcome of activities and trends are input to management reviews

Hair risk zones

