Mondelēz International
Nut/Seed Supplier Quality Expectations

October 22, 2014
Agenda Topics

• **Introduction and Company Presentation**
  Manfred Kerner  
  10 min

• **Mondelēz International Nut/Seed Supplier Quality Expectations**
  Anett Winkler  
  40 min

• **Supplier Food Safety Assessment: most common issues**
  Aude Martin  
  20 min

• **Questions**  
  20 min
OUR DREAM: CREATE DELICIOUS MOMENTS OF JOY

We offer many of the world’s favorite brands
Fast Facts

- net revenues of $35 billion in 2013
- global snacks powerhouse
- products marketed in 165 countries
- #1 in biscuits, chocolate, candy & powdered beverages *
- #2 in gum & coffee *
- over 100,000 employees
- donated more than one billion servings of food since 1997

* Source: Euromonitor market share
A Global Snacks Powerhouse with Net Revenues of $35 billion in 2013

Biscuits includes salted and other snacks

Nearly 75% of revenues in fast-growing snacks categories

80% of revenues come from outside North America
Our Regions

North America

Latin America

Global HQ: Deerfield, Illinois

Europe

Eastern Europe, Middle East and Africa

Asia Pacific
Supplier Quality Management at Mondelēz International

A comprehensive approach to managing supplier quality

**Policy/Contract Requirements**
- Quality Policy
- WW Supplier Quality Expectations (SQE)
- Supplier HACCP Manual
- Material Specifications

**Continuous Improvement**
- Supplier Quality Partnerships
- Supplier Development
- Supplier Forums
- Supplier QI Program
- Industry Benchmarking

**Selection/Approval**
- Risk Assessments
- Supplier Pre-Assessment
- Quality Audit Approval
- Approval of material

**Monitoring**
- Continuous Quality Audit Program
- Food Safety Assessments
- COA Verification
- Materials Monitoring Program
- Supplier Performance Monitoring
## Quality Audit (Re-) Approval Today

<table>
<thead>
<tr>
<th>Tier</th>
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Supplier Quality Management at Mondelēz International

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SFSA = Supplier Food Safety Assessment

- conducted by our Micro experts
- frequency to be determined by Micro
- target interval 2 years

- Focus on key Food Safety programs:
  - Zoning (separation between raw and RTE)
  - Pathogen Environmental Monitoring
  - HACCP
  - Validation of the kill step (CCP)
    - review of the technical data
    - review of production records
  - Supplier Quality Program
  - Environmental Monitoring (non-pathogen)
    - sanitation indicators
    - air handling
  - Lab proficiency (if internal lab)
Tree Nut / Peanut / Seed Processing Expectations

Introduction to the Tree nut / peanut / Seed Processing expectations:

Why do we have such expectations?

What is the content of that document?

- Biological CCP’s
- Other programs to consider
Historically, nut and seed processing was aiming to achieve a certain **product quality** (to remove the skin and/or develop color and/or flavor in the finished product), but was not meant to ensure microbiological safety of the final products.
History

Outbreaks with nuts, seeds, legumes

😊 Dried Coconut (1999)
History

2007 (peanut butter - USA)

- 425 illnesses from *Salmonella Tennessee*
- Total cost to the business approximately $50 - 60 Million
- Source: moisture inadvertently entering the production process allowing for growth of Salmonella organisms present at low levels in the product

2008-9 (peanut products - USA)

- ca. 700 illnesses and at least 9 deaths related to *Salmonella Typhimurium*
- Total cost to the business not defined, but business filed for bankruptcy liquidation, additional fine $14.6 Million
- Source: gaps in CCP controls & zoning issues identified (roof leaks, faulty sprinkler systems), as well as shipping of products that had been tested positive for Salmonella
1. Extremely low level contamination with Salmonella can cause illness in dry & high fatty foods!

Examples: 3 cfu/g in peanut butter (1996 – Australia)  
2 cfu/g in chocolate (1983 – Italy)  
0.3 cfu/10g in chocolate (2006 - UK)

2. Heat resistance of Salmonella depends on water activity / moisture of the materials to be heat-treated.

Examples:  
*Salmonella Senftenberg* in raw milk  D-value at 67.5° C: 0.046min  
*Salmonella Senftenberg* in chocolate D-value at 70° C: min. 440 min
Nuts, seeds and products thereof are used in the confectionary, cereal, and other businesses with no further lethal processing steps.

Any potential *Salmonella* present in the product are able to survive in the finished product.

Raw material and finished product testing for *Salmonella* is not adequate to detect low level, spot contamination.
Potential Contamination Routes

Nuts and seeds are grown and are harvested from the natural environment, e.g. by
- shaking nuts from the trees (with machines or manually) onto the floor of the orchard,
- digging up from the ground and drying in the sun at the field (peanuts)
- collecting them in the forest (Brazil nuts)

😊 As a result of this, the outside (shells) is occasionally contaminated with low levels of *Salmonella* and other bacteria from animal/fowl feces and/or soil.

😊 The cleaning (and shelling) operation removes the majority of the microbial contamination, but subsequent storage and transportation creates opportunities for re-contamination with microorganisms from soil, dust, insects, birds, and rodents.
Control Options

Commonly used processing steps which can be used to control microbiological hazards:

Roasting: Oil or
         Dry (continuous or batch process)

Vacuum/Steam Pasteurization Units

Blanching (hot water), e.g. almonds

PPO (Gas) treatment (only allowed in USA & Mexico)

Marzipan Cooking
Key Changes in Processing Expectations

1.0 OBJECTIVE

.....for Mondelēz International shall have effective processing conditions in place. Additional processing conditions as outlined in Supplier Quality Expectations or External Manufacturers Quality Expectations that shall be in place but are not covered within this document include: Good Manufacturing Practices (GMPs), Hazard Analysis and Critical Control Points (HACCP), process validation(s), cross-contamination prevention, Pathogen Environmental Monitoring (PEM), calibration, and allergen management.

3.0 SCOPE

.....This document is based on current knowledge with respect to ensuring food safety by processing and handling. It will be amended as necessary when new data are available. In the meantime, this document shall be used to provide examples of processes that would ensure safe products for consumer use.
Key Changes in Processing Expectations

5.1 Critical Control Points (CCP)

CCP ID: Minimum time and temperature processing requirements necessary to produce a 2 log reduction of *Salmonella* on all seed/nut products. (a 4 log reduction for almonds – USA delivery only.) **Dry roasting is the least preferred option to be used as biological control step.**

... Note: Moisture of the nut product must be within the spec for the product. When nut products are pre-dried to lower moisture prior to roasting, Mondelez International Corporate Quality shall be contacted.

... **For seed/nut products processed in the USA,** is for almonds bound for delivery within the United States of America: processing conditions must be sufficient to deliver a minimum four log reduction of *Salmonella*. The exception is for products produced in the USA or to be exported to the USA guidance can be obtained by contacting Mondelēz International Corporate Quality.
Key Changes in Processing Expectations

5.1- B. Dry Roasting; Continuous and Drum

5.1 – B.1 CONTINUOUS BELT ROASTING

Critical Limit: Time/Temperature conditions are listed below. Equivalent Time/Temperature parameters can be calculated using z-values listed.

<table>
<thead>
<tr>
<th>Nut Type</th>
<th>Product Temperature</th>
<th>D-value (minutes)</th>
<th>z-value</th>
<th>Time for log-reduction (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pecan/Walnut</td>
<td>248°F /120.0°C</td>
<td>19.5</td>
<td>54.9°F /30.5°C</td>
<td>39.0</td>
</tr>
<tr>
<td></td>
<td>265°F /129.4°C</td>
<td>9.5</td>
<td></td>
<td>19.0</td>
</tr>
<tr>
<td></td>
<td>280°F /137.8°C</td>
<td>5.1</td>
<td></td>
<td>10.2</td>
</tr>
<tr>
<td>Peanut</td>
<td>265°F /129.4°C</td>
<td>6.4</td>
<td>49.8°F /27.8°C</td>
<td>12.8</td>
</tr>
<tr>
<td></td>
<td>280°F /137.8°C</td>
<td>3.2</td>
<td></td>
<td>6.4</td>
</tr>
<tr>
<td></td>
<td>295°F /146.1°C</td>
<td>1.6</td>
<td></td>
<td>3.2</td>
</tr>
<tr>
<td>Hazelnut/soy</td>
<td>230°F /110.0°C</td>
<td>19.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>nut/Macadamia*</td>
<td>248°F /120.0°C</td>
<td>10.1</td>
<td>62.5°F /34.8°C</td>
<td>39.0</td>
</tr>
<tr>
<td></td>
<td>265°F /129.4°C</td>
<td>5.4</td>
<td></td>
<td>20.2</td>
</tr>
<tr>
<td></td>
<td>280°F /137.8°C</td>
<td>3.1</td>
<td></td>
<td>10.8</td>
</tr>
<tr>
<td>Sunflower</td>
<td>248°F /120.0°C</td>
<td>10.3</td>
<td>52.1°F /29.0°C</td>
<td>6.2</td>
</tr>
<tr>
<td>Kernel/other</td>
<td>265°F /129.4°C</td>
<td>4.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>seeds*</td>
<td>280°F /137.8°C</td>
<td>2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pistachio kernel</td>
<td>248°F /120.0°C</td>
<td>9.3</td>
<td>46.3°F /25.8°C</td>
<td>18.6</td>
</tr>
<tr>
<td>/Cashew</td>
<td>265°F /129.4°C</td>
<td>3.9</td>
<td></td>
<td>7.8</td>
</tr>
<tr>
<td></td>
<td>280°F /137.8°C</td>
<td>1.9</td>
<td></td>
<td>3.8</td>
</tr>
<tr>
<td>Almonds</td>
<td>266°F /130°C</td>
<td>7.4</td>
<td>65.4°F /36.4°C</td>
<td>14.8</td>
</tr>
<tr>
<td></td>
<td>280°F /137.8°C</td>
<td>4.55</td>
<td></td>
<td>9.1</td>
</tr>
</tbody>
</table>

* for similar nut products
Key Changes in Processing Expectations

5.1 – B.2 CONTINUOUS CONVECTIVE HEAT TRANSFER; mainly FLUIDIZED BED

Note: Some seeds (linseed / Flax, poppy seeds) are generally not subjected to dry roasting for quality reasons. For those seeds either other treatments have to be validated or contact Corporate Microbiology / Food Safety for further guidance.

Critical Limit: Time/ Temperature conditions are listed below. Equivalent Time/ Temperature parameters can be calculated using z-value of 14.37°C (40.16°F)

<table>
<thead>
<tr>
<th>Minimum Temperature</th>
<th>Minimum Time for 2 log reduction</th>
<th>Z value °C/°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>110°C (230°F)</td>
<td>39.0 min.</td>
<td>14.37°C/40.16°F</td>
</tr>
<tr>
<td>115°C (239°F)</td>
<td>17.5 min.</td>
<td></td>
</tr>
<tr>
<td>120°C (248°F)</td>
<td>7.86 min.</td>
<td></td>
</tr>
</tbody>
</table>

The lowest applicable temperature is 110°C/230°F.
## Key Changes in Processing Expectations

### 5.1 – B.3 DRUM mainly CONDUCTIVE HEAT TRANSFER

Critical Limit: Nut/Peanut products: Time/Temperature conditions are listed below. Equivalent Time/Temperature parameters can be calculated using z-value of 54.°C (129.3°F).

<table>
<thead>
<tr>
<th>Minimum Temperature</th>
<th>Minimum Time for 2 log reduction</th>
<th>Z value°C/°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>90°C (194°F)</td>
<td>30.5 min.</td>
<td>54.°C / 129.3°F</td>
</tr>
<tr>
<td>100°C (212°F)</td>
<td>19.9 min.</td>
<td></td>
</tr>
<tr>
<td>110°C (230°F)</td>
<td>13.0 min.</td>
<td></td>
</tr>
<tr>
<td>120°C (248°F)</td>
<td>8.5 min.</td>
<td></td>
</tr>
</tbody>
</table>

The lowest applicable temperature is 90°C/194°F

### 5.1 – B.4 DRUM mainly CONDUCTIVE HEAT TRANSFER

Critical Limit: Seed Products:

Time/Temperature conditions are listed below. Equivalent Time/Temperature parameters can be calculated using z-value of 13.27°C (23.87°F).

<table>
<thead>
<tr>
<th>Minimum Temperature</th>
<th>Minimum Time for 2 log reduction</th>
<th>Z value°C/°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>100°C (212°F)</td>
<td>28.3 min.</td>
<td>13.27°C / 23.87°F</td>
</tr>
<tr>
<td>105°C (221°F)</td>
<td>11.9 min.</td>
<td></td>
</tr>
<tr>
<td>110°C (230°F)</td>
<td>5.0 min.</td>
<td></td>
</tr>
</tbody>
</table>
Key Changes in Processing Expectations

5.1 - C. Brining & dry roasting (drum) Seeds only [HACCP Model 38]

Note: After brining superfluous liquid is drained of by a sieve, before the seeds are subjected to the roast. However, the seeds have not been significantly dried before roasting.

Critical Limit: Time/Temperature conditions are listed below. Equivalent Time/Temperature parameters can be calculated using z-value of 18.52°C (33.33°F).

<table>
<thead>
<tr>
<th>Minimum Temperature</th>
<th>Minimum Time for 2 log reduction</th>
<th>Z value°C/°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>95°C (203°F)</td>
<td>1.2min</td>
<td>18.52°C /33.33°F</td>
</tr>
</tbody>
</table>

The lowest applicable temperature is 95°C (203°F).

5.1 - D. Vacuum/Steam Pasteurization [HACCP Model 40]

Critical Limit: Time/Temperature conditions for large chamber vacuum/steam pasteurization units are listed below. These parameters must be validated at the cold spot in the chamber.

Controllable conditions required to ensure the steam chamber pressure > 5 psi for the prescribed time for a > 4 log kill of Salmonella, 2 log reduction log kill of salmonella needs to be validated. The chosen parameters must be validated.

For steam pressure chambers critical limits are given below:

Nut Temperature = 71°C (160°F) minimum
Time = minimum 20 minutes, depending on the nut type
### Key Changes in Processing Expectations

5.1 - E. **Blanching by using hot water**

Critical Limit for tree nuts and peanuts: Time/Temperature conditions are listed below. Equivalent Time/Temperature parameters can be calculated using z-value of 29°C (84°F). (Based on almond studies of Uesugi and Harris, 2005)

<table>
<thead>
<tr>
<th>Temp °C/°F</th>
<th>Time exposure (sec)</th>
<th>Log reduction Salm PT30 30 sec exposure</th>
<th>D value (min)</th>
<th>Minimum Time for 2 log reduction</th>
<th>Z value</th>
</tr>
</thead>
<tbody>
<tr>
<td>70°C (158°F)</td>
<td>30</td>
<td>1.7</td>
<td>1.0</td>
<td>2.0</td>
<td>29°C (84°F)</td>
</tr>
<tr>
<td>80°C (176°F)</td>
<td>30</td>
<td>3.0</td>
<td>0.6</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>88°C (190.4°F)</td>
<td>30</td>
<td>4.6</td>
<td>0.3</td>
<td>0.6</td>
<td></td>
</tr>
</tbody>
</table>

Non Almond nuts shall be validated on the equipment used for blanching.
The lowest applicable temperature is 70°C/158°F
Key Changes in Processing Expectations

Temperature

...If the temperature between the nuts cannot be measured (e.g. in certain drum roasters) a correlation must be established, through roaster validation, between the temperature between the nuts and the point where the temperature is monitored to ensure minimum temperature requirements of the nuts are achieved. ...Corporate Microbiology shall be contacted in case such validations are performed.

Temperature - Batch systems: ..is recorded to a permanent record such as a temperature chart or a digital recording device. Temperature readings can be manually recorded as long as the system is alarmed at the critical limit, the start and end times of the holding period are noted, and a correction to the hold time is made in case the temperature drops below the critical limit.

Temperature – continuous systems: ..permanent record, such as a temperature chart or a digital recording device. (The recording frequency depends on the speed at which the process variable changes, the monitoring frequency, and the robustness of the control system particularly if there are automatic alarms and reactions to alarms.)
Key Changes in Processing Expectations

**Alarm**
An audible or visible alarm must be in place to notify technician of deviations in the critical limits (e.g. temperature/time settings, belt speed). The **alarm events shall be recorded**.

**Time**
If time is not directly measured, but expressed as flow rate or belt speed a **verified correlation shall be available to correlate time to that measurement** (e.g. minutes to Hz).
Flow rate or belt speed setting shall be recorded and checked at the beginning of the process run, once per shift after start-up, after adjustments and at the end of the run to the belt speed/product changeover.
Key Changes in Processing Expectations

Other critical parameters as defined during the validation study shall be adequately monitored to ensure control of the process. Some examples are listed below:

**Initial temperature**
If initial temperature is determined during the validation as being a critical parameter than it shall be recorded to a permanent record to assure product safety is not compromised.

**Belt roaster – bed depth**
The product bed depth as validated and documented in the validation study shall be verified via measurement and recorded the setting for bed depth. If this parameter is fixed, locked, or sealed, then records shall be available to demonstrate control.
Examples of HACCP Plan Verification Activities include:

- A designated plant employee review of records daily or prior to release of product to Mondelez International.
- Alarm operation must be verified at a frequency sufficient to demonstrate control.
- Verification of bed depth setting systems shall be conducted daily.
- Verification of belt speed/residence time readout devices shall be conducted daily.
- Verification of the diversion system shall be done daily.
- All measuring devices used to monitor critical control parameters shall be calibrated at a frequency sufficient to demonstrate control, as outlined in SQE.
- The correlation flow rate/holding time for the fastest particle must be documented and filed with the HACCP plan, and documented at least once per shift and after speed changes.
Key Changes in Processing Expectations

1st Requirement for all biological CCP’s used in Nut processing

A validation report shall be available to prove that the equipment and process fulfills Mondelez requirements respective the lethality required!

Validation reports can be issued by Mondelez Food Safety representatives or supplier. In the latter case the validity of the report should be confirmed preferably by Mondelez or a recognized external expert.
Key Changes in Processing Expectations

Defined Validation frequency was removed & requirements added which trigger a re-validation:

For processes where the CCP Model is under development or where monitored parameters cannot be adequately validated as reflecting the actual process, adequate alternative studies e.g., inoculation studies, (in consultation with Mondelez International Corporate FSM) shall be substituted. The decision, what is a significant change (in equipment, hardware, software settings) triggering a new validation, needs to be taken by technical experts…

…Cumulative lethality can be calculated from the temperature data. The validation studies are conducted as a minimum in triplicate (e.g. the temperature sensor or surrogate-inoculated seeds/nuts has to run three times through the equipment)…
Caramelization

Caramelization of nuts can be done in one of two ways:
1. Roasting together with caramelization
   This step can be validated as CCP using the dry roast model 5.1.B.
2. Caramelization of processed nuts
   This step is commonly performed in open pans / drums thereby not allowing for adequate temperature controls to be validated as CCP. Therefore, nuts being caramelized that way shall have received an adequate lethal step (see 5.1 A-E) before caramelization.

Note: If the temperature in open pans would be measured constantly, e.g. by infrared thermometer, and time / temperature combination would by far exceed our requirements, this step can be agreed to be handled as control step PP.
Key Changes in Processing Expectations

Marzipan

Typically, Marzipan is made using blanched almonds. In that case there are two control options:

1. Blanching (using hot water)

2. Marzipan cook (that is commonly used in marzipan production)
   An example of an adequate marzipan cook is $93^\circ$ C for 10min, $z=13^\circ$ C. If no corresponding time / temperature values can be achieved, the supplier has to do a validation study to prove that they achieve a 2log *Salmonella* reduction by their cooking.
Reference documents

• Up-dated the scientific references which include additional studies and scientific basis for CCP models, removed some non-applicable references
Other Programs to consider

**Air filtration** sizes for the final filter in the processed nut areas, including nut roaster cooling zone, should be:

Minimum 80 – 85% efficient (**equivalent to F7**) at 1 micron
10 air exchanges/hour

- Cooling air adequately filtered
  - Air should not be sourced from areas where raw products are stored / handled
  - minimum Filtration required F7

- Hot air roasting: How is air heated? Combustion gases in contact with product?
  - Risk of chemical contamination assessed?
Other Programs to consider

➢ adequate corrective actions defined & followed (Roaster failure, power shut down) including
  ➸ **Cleaning** after potential under-processing

Notes:
Cleaning has to include all parts after treatment, e.g. cooling equipment, conveyors, slicing, packing!

*Microbiological testing is not an adequate corrective action due to low contamination levels expected!*

➢ Are there light treatments not fulfilling Kraft requirements adequately separated (by cleaning)?
Other Programs to consider

- separation (Zoning) between raw & processed areas adequate
  - Storage and handling of raw / under-processed products completely separated, which includes also traffic controls (forklifts, clothing, people, mobile container / bag usage, tools), drainage systems
  - air flow directed towards areas of raw products (negative pressure in “raw” areas)
  - no usage of same equipment – or, as a minimum, deep cleaning between both products, e.g. for chopping / caramelizing raw and processed products
  - rework areas assessed
Other Programs to consider

> Is **pathogen environmental monitoring (PEM)** performed?

**Organism to be monitored**: *Salmonella*

Note: PEM is not a control measure but a verification of correct / adequate zoning!

**WHY?**

⇒ Nuts are microbiologically sensitive products
⇒ The product is exposed to the environment during processing

**Where?**

⇒ Not to be done in raw product areas
⇒ **in processed areas** where risk of contamination from environment exists esp. look for any wet areas / cracks / high traffic
⇒ Swabs shall be taken from **non-product contact surfaces** including floors, drains, wheels/legs of equipment, control panels, equipment exterior, etc.
Other Programs to consider

- Was the risk of **allergen carry over** assessed? e.g.
  - floating particles (coating) in the oil from previous productions
  - usage of common equipment for different kind of nuts
  - usage of other allergenic materials in shared equipment (caramelization / coating)
  - Rework areas assessed?

- Are there any **GMO issues** regarding the frying oil?
Other Programs to consider

- Any foreign material contamination risks (exposed product)?

- Is the metal detector verified/which test piece/records and action plan available?

- Operators trained regularly? minimum 1 / year
Principal risks associated with processing raw nuts & the major pre-requisite programs and controls that must be present:

- **Raw Material Quality**
  - Pesticides
  - Dirt & pest control
  - Segregated storage

- **Extraneous Matter**
  - (fragments of shell)
  - Sieves/Filters
  - X-ray units
  - Magnets/Metal detectors
  - Preventative Maintenance
  - Disposal of contaminated shells

- **Pathogen Environmental Monitoring**
  - Salmonella
  - Zoning verification

- **Traceability of raw materials**

- **Allergen Management**
  - Storage areas
  - Shared equipment (roasters, conveyors, oil in fryers)
  - Recirculated utilities (oil)

- **Sanitation**

- **Calibration**

- **Control of rework**

- **Equipment Lubrication**

- **Utilities: Water**
  - Water as ingredient
  - Water as processing aid
  - Recirculated water

- **Utilities: Air**
  - Plant environmental air (F7)
  - Cooling air (F7)
  - Compressed air (filtered to 0.3 microns)

- **Zoning**
  - Tools (trolleys, probes)
  - Staff traffic flow
  - Clothes
  - Line usage

Other Programs to consider:

- **Other Programs to consider**
Supplier Food Safety Assessment

NUT suppliers: Common issues
Heat treatment/validation:

- Validation not performed at the ‘worst case scenario’ conditions:
  - Incoming nuts temperature not taken into account
  - The bed height used for the validation lower than the maximum bed height used.
  - The validation not performed at the start-up of the roaster
  - Validation does not take to consideration alarm setting (ex: +/- 5°C)
  - The establishing of the coldest side of the roaster is not done.

- Recording/monitoring probe NOT located at the coldest spot
- Tolerance of the calibrated continuous monitoring probe is not taken into account for critical limit set up.
- The alarm is not verified and documented by the operator.
Zoning:

- ‘Washing area’ located in raw material storage.
- Common entry for raw and processed area
- Passage by raw area to go into processed area without hygienic barrier.
- No dedicated forklifts for raw and controlled zones
- Handling of non sensitive materials (e.g., sugar) in same room as raw nuts.
- Hopper above the roaster that feeds raw nuts not completely enclosed

- Map of drains often not available
PEM Issues

• Mobile equipment (e.g. forklifts, wheeled items) is not considered to include in PEM (only advisable when dedicated to defined areas)
• Drains often not included in PEM
• Direct product testing -> no hold and release procedure in place

• No sponges used for sampling big & smooth areas
• Samples taken the same day every week
• PEM procedure does not reflect that swabbing should be done 3-4 hours after production starts
• Time / storage conditions between taking PEM samples tested for *Salmonella* in the external laboratory and their processing is not established.

• Reporting of results and action limits for indicators are not clearly defined or meet our specific target limits.
• 3 negative sampling within 3 consecutive weeks not in the procedure as part of corrective actions
• Not meeting with minimum laboratory requirements if testing P.E.M especially testing pathogens.
Utilities issues (Water and Air)

- Not all water circuits tested, volume/methods used is inadequate sometimes.
- Chlorine levels are not checked at the defined frequency
- Ingredients such as water not always considered in the process flow and therefore not always tested at our required frequencies
- Acceptable air limits not defined
- Air filtration specifications do not always meet with Mondelez requirements.
- Packing area, frequency of air checks inadequate in absence of air filtration
- Steam condensate quality is not routinely evaluated for turbidity, off flavours and particulates at the frequency to demonstrate control (every 6 months).
The Mondelēz International Supplier Quality web site is designed to facilitate the communication between Mondelēz International and our suppliers. Here you will find all of the Quality Requirements and Guidelines for Suppliers to Mondelēz International, as well as the slides used in our Supplier Forums.

The web site includes:
- Supplier Quality and Food Safety Contractual Requirements
- Supplier Forum presentations
- Quality Support Material
- Contact email address
- eLearning modules

Browser Address:
Thank you very much!

Questions & Answers