Options to extend Annex X Reg 1169/2011: No date marking on foods

42.4 kg of food found in New Zealand household rubbish

Dr.ir. Aarieke de Jong
NVWA
Office for Risk Assessment and Research

Brussels, Nov 7\textsuperscript{th} 2017
Line out

Based on Advisory Report

Date marking
Food safety
→ Safe not to date mark?

Disclaimer
Pictures taken from internet are labelled for non-commercial reuse
Q: How to reduce Food Waste (Government NL)

Option x: Reduce unnecessary waste due to date marking

Research Q @ Office for Risk Assessment - NVWA
Research Questions

• “Quick win” option extending Annex X?
  → focus on long shelf-life foods
• Product criteria?
• Exceptions?
• Proposal EC WG Food Labelling?
Annex X

Annex of Reg EU 1169/2011

→ Food Information Regulation

Aim: High level of health protection
Food Information Regulation

Mandatory food information

- Identity, composition etc
- Nutritional aspects
- Protection of consumers’ health, safe use, incl. durability & storage

Date marking
Background – Date marking

Food in the EU must be date marked (Reg EU 1169/2011)

• Date of minimum durability
Background – Date marking

Date of minimum durability
*Date until which the food retains its specific properties when properly stored*
→ ‘Best before’ date

< 3 months  day, month  21-Jan
>3, <18 months month, year  Jan 2018
>18 months  year  2018
Background – Date marking

Food in the EU must be date marked (Reg EU 1169/2011)

- Date of minimum durability
- Use by date
Background – Date marking

Use By Date

In the case of FOODS which, from a MICROBIOLOGICAL point of view, are HIGHLY PERISHABLE and are therefore likely after a short period to constitute an IMMEDIATE DANGER TO HUMAN HEALTH, the date of minimum durability shall be replaced by the ‘USE BY’ DATE. After the ‘use by’ date a food shall be deemed to be UNSAFE in accordance with Article 14(2) to (5) of Regulation (EC) No 178/2002.
Background – Date marking

Food in the EU must be date marked (Reg EU 1169/2011)

• Date of minimum durability
• Use by date
• Exceptions: Annex X
Annex X

Exempted from date marking:

Products for which

• Deterioration is clearly visible
  → spoilage before harmful to health

• No spoilage possible (pH, Aw etc)
Annex X

• fresh fruit and vegetables
Annex X

- fresh fruit and vegetables
- wines
Annex X

- fresh fruit and vegetables
- wines
- beverages >10 % alcohol
Annex X

• fresh fruit and vegetables
• wines
• beverages >10 % alcohol
• bakers’ or pastry cooks’ wares consumed <24H
• vinegar
Annex X

- fresh fruit and vegetables
- wines
- beverages >10% alcohol
- bakers’ or pastry cooks’ wares consumed <24H
- vinegar
- cooking salt
Annex X

- fresh fruit and vegetables
- wines
- beverages >10 % alcohol
- bakers’ or pastry cooks’ wares consumed <24H
- vinegar
- cooking salt
- solid sugar
- confectionery products (flavoured/coloured sugars)
Annex X

- fresh fruit and vegetables
- wines
- beverages >10 % alcohol
- bakers’ or pastry cooks’ wares
- vinegar
- cooking salt
- solid sugar
- confectionery products (flavoured/coloured sugars)
- chewing gums
Why date marking?

Aim Food Information Regulation
High level of health protection

Date marking → To protect consumers’ health

Thus....

Foods that will not turn harmful....
Need no date marking
How do foods turn harmful?

Decay - Oxford dictionary

- Rot or decompose (microbiologically)
- Deteriorate (structural, physical)
- Decline in quality
How do foods turn harmful?

Decay - Oxford dictionary
- Rot or decompose (microbiologically)
- Deteriorate (structural, physical)
- Decline in quality

Unsafe – Reg EC 178/2002 (General Food Law)
- Injurious to health
How do foods turn harmful?

Decay - Oxford dictionary

- Rot or decompose (microbiologically)
- Deteriorate (structural, physical)
- Decline in quality

Unsafe – Reg EC 178/2002 (General Food Law)

- Injurious to health
- Unfit for human consumption
Background – Decay / Food spoilage

Physical deterioration

- Drying out, absorbing water
- Settling
- Mechanical damage

→ Organoleptic changes
→ Not harmful
Background – Decay / Food spoilage

Biological deterioration

- Maggots
- Insects
- Worms
- Mice

→ Depends on storage conditions
→ Not affected by date marking
Background – Decay / Food spoilage

Chemical deterioration

Light, oxygen, enzymes
  • colour
  • flavour
  • texture
→ Mainly affects quality
→ Organoleptic changes
→ Biogenic amines!
Background – Decay / Food spoilage

Microbiological deterioration

• Mould
• Yeast
• Bacteria

→ Not always organoleptic changes
→ Not always harmful
Background – Decay / Food spoilage

Microbiological deterioration

Harmful → Pathogens

Bacteria: Salmonella, Listeria, STEC, Campylobacter
Viruses: Hepatitis A & E virus, Norovirus
Parasites: Toxoplasma, Giardia, Trichinella

Only bacteria can grow in food
When are pathogens harmful?

Depends on
- Individual
- Food matrix
- Type of pathogen
- Infectious dose

Date Marking
When are pathogens harmful?

Infectious dose ($10^{\text{log}}$)

No growth needed

Growth needed

Source: Schmid-Hempel & Frank, 2007
How to keep food safe?

• Hygiene → Prevent contamination
• HACCP → Eliminate / Reduce risk

Eliminate risk

• Sterilisation
  • can
  • hermetically sealed packaging

Note: not all canned food is sterile
  storage temperature, RH (tropics)
How to keep food safe?

• Hygiene  →  Prevent contamination
• HACCP  →  Eliminate / Reduce risk

Reduce risk: Prevent growth

• Type of pathogen
• Product characteristics
• Process: heating, drying
• Storage: light, temperature, packaging, time

Date marking
Reduce risk: Prevent growth

Product characteristics: pH

Source: Wijtzes et al., 2007
Reduce risk: Prevent growth

Product characteristics: Water activity (Aw)

<table>
<thead>
<tr>
<th>Water Activity</th>
<th>Food Type</th>
<th>Control Measures</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;0.85</td>
<td>Moist food</td>
<td>Refrigeration, other barrier to control pathogen growth</td>
<td>Vegetables, fish, (cured) meat, salami, milk, cheese, margarine, sponge cake</td>
</tr>
<tr>
<td>0.60-0.85</td>
<td>Intermediate moisture food</td>
<td>No refrigeration, Short shelf-life, Spoilage by yeast and mould</td>
<td>Jam, jelly, nuts, some dried fruits, soy sauce, peanut butter</td>
</tr>
<tr>
<td>&lt;0.60</td>
<td>Low moisture food</td>
<td>No refrigeration, Extended shelf-life</td>
<td>Dried fruits, noodles, pasta, spices, cookies</td>
</tr>
</tbody>
</table>
Reduce risk: Prevent growth

Combined effects: ‘hurdle’ technology

Unrefrigerated storage: no growth / growth

Heated & packaged

<table>
<thead>
<tr>
<th>$a_w$</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.92</td>
<td></td>
</tr>
<tr>
<td>0.92 – 0.95</td>
<td></td>
</tr>
<tr>
<td>&gt;0.95</td>
<td></td>
</tr>
</tbody>
</table>

Heated & unpackaged

<table>
<thead>
<tr>
<th>$a_w$</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.88</td>
<td></td>
</tr>
<tr>
<td>0.88 – 0.90</td>
<td></td>
</tr>
<tr>
<td>0.90 – 0.92</td>
<td></td>
</tr>
<tr>
<td>&gt;0.92</td>
<td></td>
</tr>
</tbody>
</table>

Unheated
No date marking needed for ...

Foods that
• Are and remain sterile
• Very short-shelf life
• Cleary spoil, before getting harmful
• Bacterial growth not supported / die off due to product characteristics
Research Questions

• “Quick win” option extending Annex X?
  Focus on long shelf-life foods

• Product criteria?

• Proposal EC WG Food Labelling?

• Exceptions?
Answers

Product criteria

- Sterilised in a can
- Sterilised in other hermetically sealed packaging
- Water activity (a\textsubscript{w}) < 0.60
- Acidity (pH) < 3-4
- Lower a\textsubscript{w} + additional inhibiting factor:
  - a\textsubscript{w} < 0.85 + low pH / preservative
- Storage temperature < -18° C
Keep in mind

• Unless sterilised, these foods may contain pathogens
• Pathogens won’t grow, but may survive

FDA, Oct 16\textsuperscript{th}
Spicely Organics \textbf{Recalls}
Organic \textbf{Tarragon} Because
Of Possible Health Risk
(\textbf{Salmonella})
Keep in mind

Extension Annex X?

Annex X contains 9 food(groups)
- >10% alcohol
- Low water activity or low pH
- Short shelf life / spoil first

→ Base Annex X on (product) criteria
Research Questions

• “Quick win” option extending Annex X?
• Product criteria?
• Exceptions?
• Proposal EC WG Food Labelling?
Keep in mind

Shelf-life = safety & QUALITY

Loss of flavour
Loss of crunchyness
Loss of nutrients / vitamins

→ failure to comply to labelled food information...
Keep in mind

Shelf-life = safety & QUALITY

Exceptions: Need a mark
- Infant formula
- Foods for medical purpose

→ Must retain all product characteristics
→ Vitamins, nutrients, dissolvability etc.
Keep in mind

Not all spoiled food is harmful, but because Not all harmful food is spoiled & ‘spoiled’ food is unfit for consumption you need Date marking
Keep in mind

Regarding date marking:

- Food safety $\rightarrow$ microbiology
- Shelf-life $\rightarrow$ also quality
- Annex X
  - $\rightarrow$ extended (also quick win)
  - $\rightarrow$ exemption not obligation
  - $\rightarrow$ CRITERIA BASED

Succesfull?
Thank you for your attention

THE END