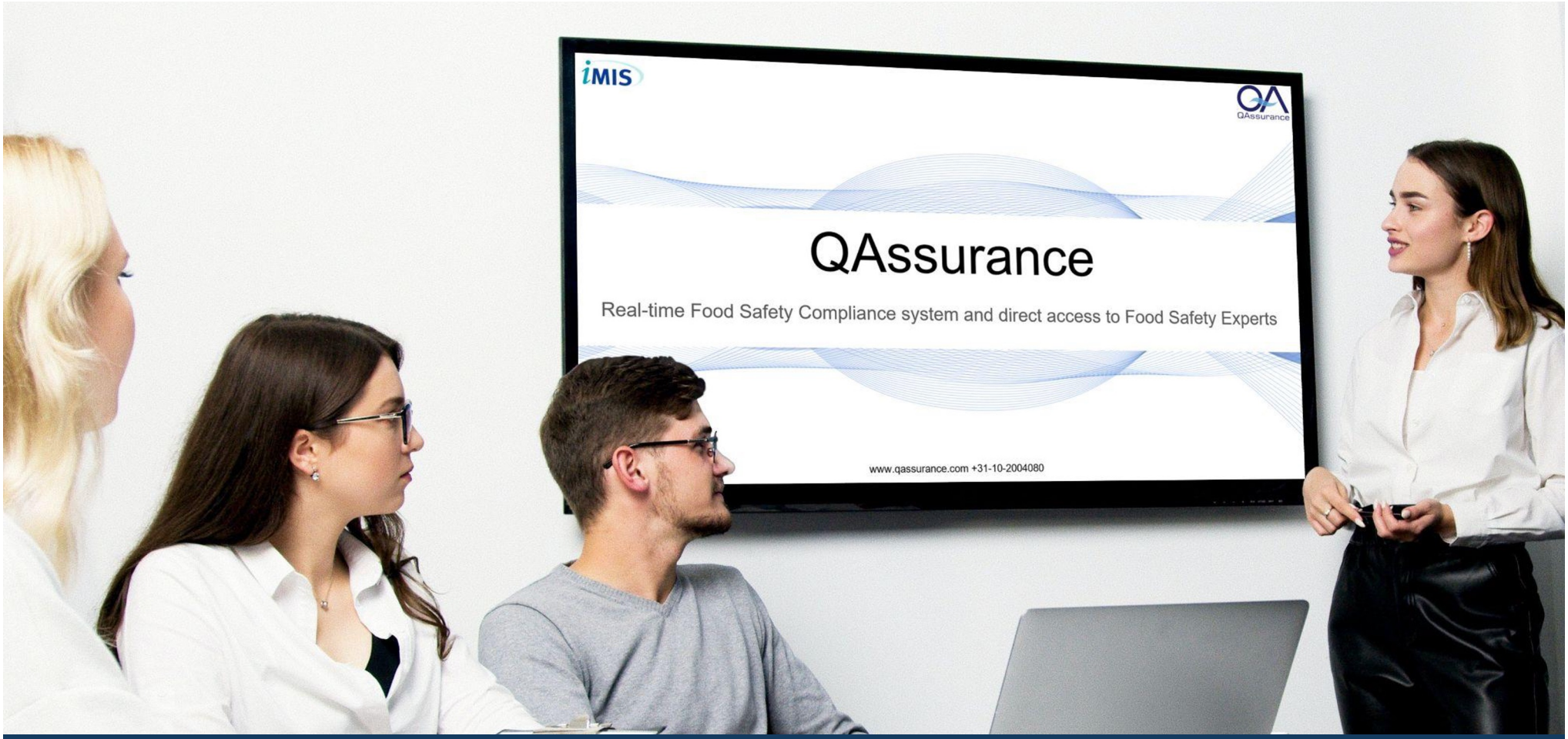
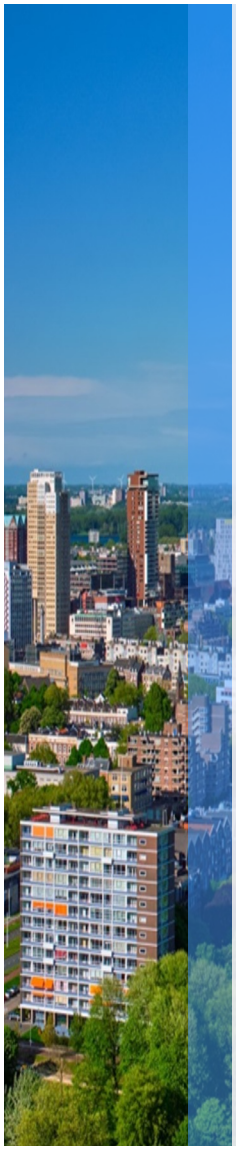
Food Safety Compliance training

HACCP and Legislation



With our Food Safety Compliance for QA managers training we go back to the basics, the foundation to properly fulfill the complex function of a QA manager, now and in the future.



Introduction

1. **Food Safety Compliance**
2. HACCP introduction
3. Methodology
    - Prerequisite program
    - Control measures
4. HACCP study: specific hazards
5. HACCP study: decision tree, raw materials and processes
6. Cornelis Bartlema Food Group: HACCP
7. Legislation
    - EU regulations & Information sheets & Recall
    - Listeria control
    - Additives regulation
    - NVWA

Food Safety Compliance

In which field do we operate?

Objectives for Food Management:

Brand protection

- Legal compliance (license to operate)
- Quality standard compliance (license to sell)
- Peace of mind (license to relax)

Quality

- Real-time Food Quality Assurance
- Building Food Quality history
- Improving in-house Food Quality capabilities

Efficiency

- Opportunities for integral cost-saving
- Flexibility: Organised for Food Quality dynamics

Effectiveness

Real-time management of:

- Specifications
- Quality activity
- Traceability
- Assessment

Quality Standards

QUALITY STANDARDS

EFQM	SQF	HACCP
INK	Eurepgap	BRC
ISO9001:2000	GMP Animal Feed	IFS
ISO17025	AIB	EFSIS

ACCREDITATIONAL BODIES | **CERTIFICATIONAL BODIES**

CUSTOMERS

- Retail Organisations
- Food Service
- Wholesalers and Trade
- Food Manufacturers
- Out of Home Outlets
- Hospitals

CONSUMERS

- Habits, Attitudes
- Preferences
- Allergens
- Quality Needs
- Information Needs

FOOD AND DRINK FACTORY

FOOD & DRINK MANAGEMENT

LABORATORIES

- Microbiological
- Analytical

PRODUCT SUPPLIERS

- Raw materials
- Equipment
- Packaging
- Machines

SERVICE SUPPLIERS

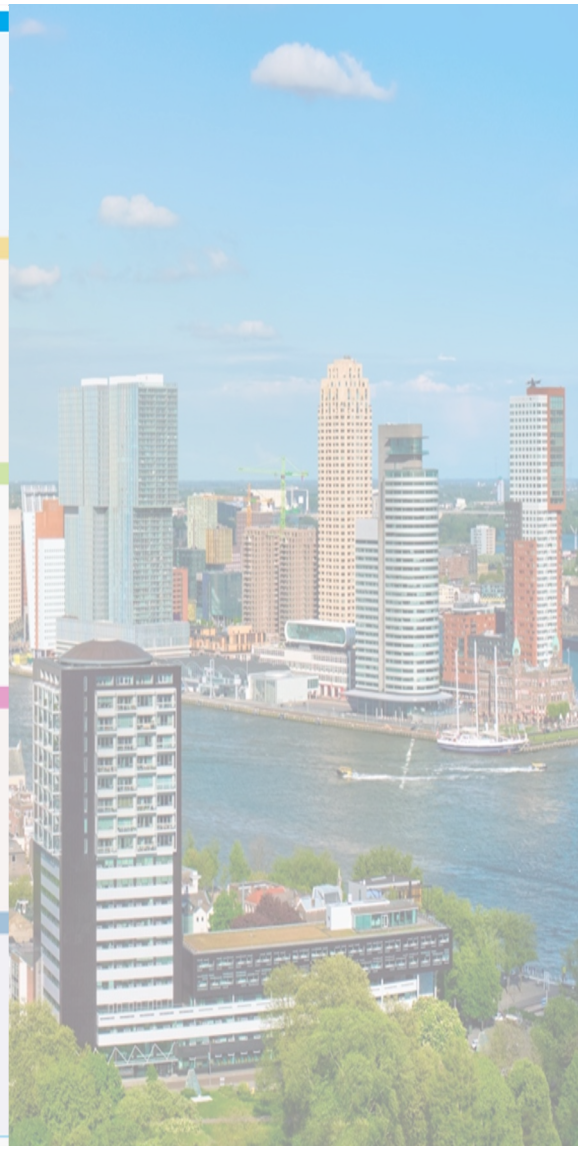
- Cleaning and Hygiene
- Pest Control
- Measurements
- Cooling Systems

GOVERNMENT CONTROL BODIES

- Global
- International
- National
- Where appropriate

- General Food Law
- Codex Alimentarius

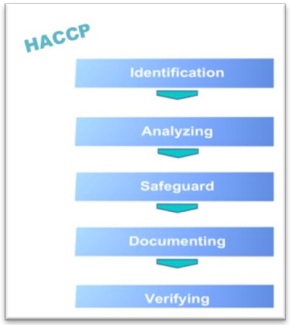
LEGISLATIONS



Certification Management

IFS Standard requirements

1. Quality system
1.2 HACCP system
2. Management responsibility
3. Resource Management
4. Product control
5. Measurements, analysis, improvements



BRC Standard requirements

1. HACCP system
2. Quality system
3. Standards for the factory environment
4. Product control
5. Process control
6. Staff

Customers & Consumers

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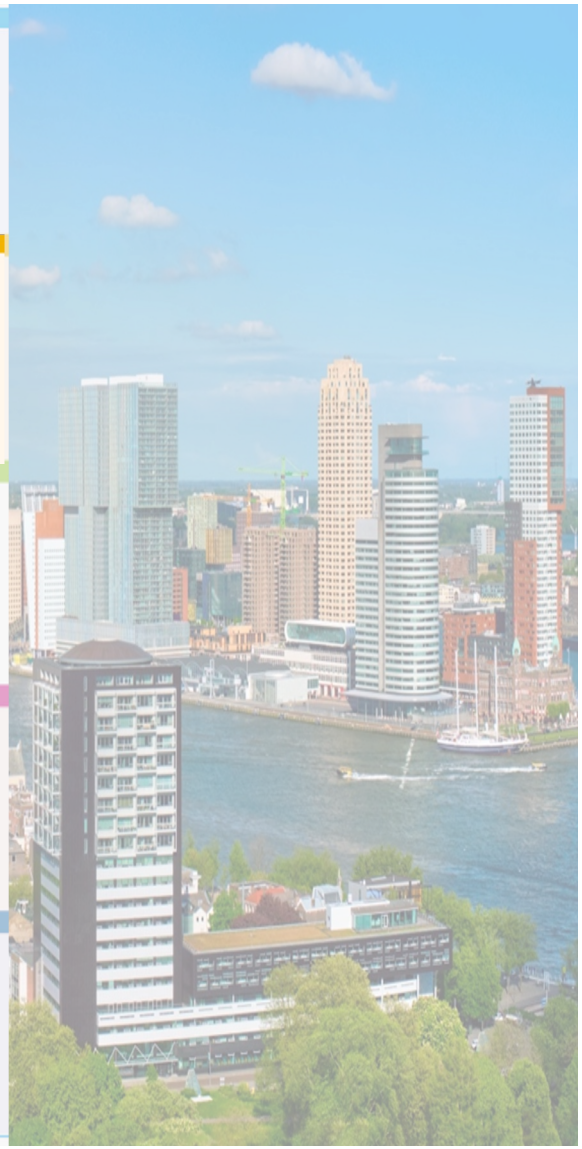

Demand Relationship Management (DRM)

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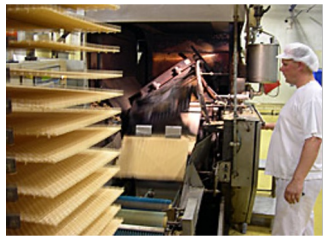
LEGISLATIONS

Food and Drink Management

Business Performance Management (BPM)



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Out of Home Outlets	Information Needs
Hospitals	

FOOD AND DRINK FACTORY

FOOD & DRINK MANAGEMENT

LABORATORIES | **PRODUCT SUPPLIERS** | **SERVICE SUPPLIERS**

Microbiological	Raw materials	Cleaning and Hygiene
Analytical	Equipment	Pest Control
	Packaging	Measurements
	Machines	Cooling Systems

GOVERNMENT CONTROL BODIES

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LEGISLATIONS

Suppliers

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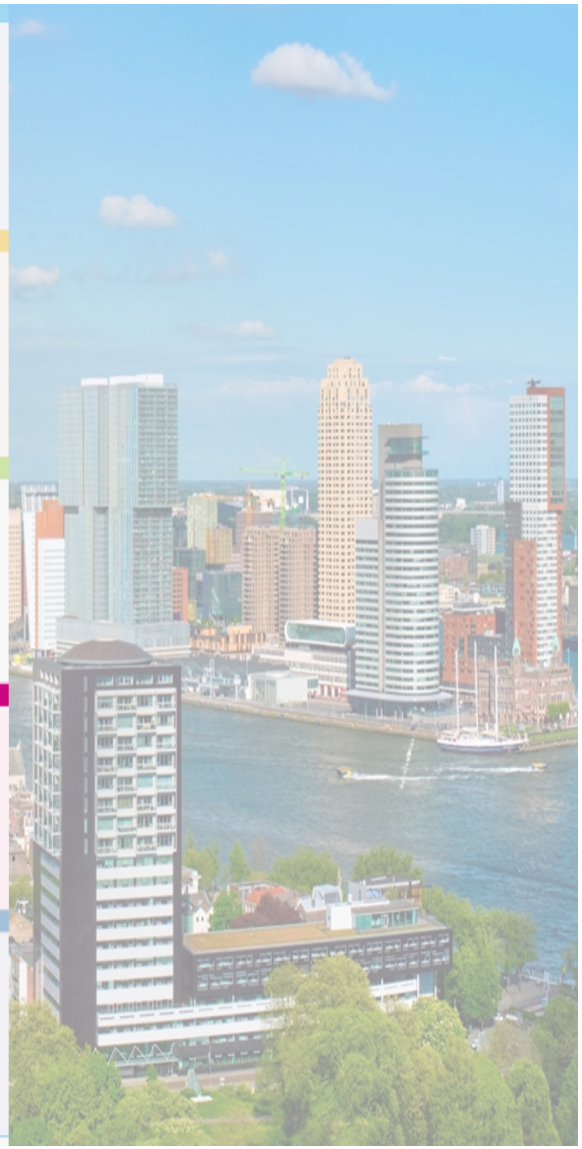

Supply Relationship Management (SRM)


measure


register


validate


test


process registration


gas packaging


permeability


surface technique


and more

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Analytical	**Equipment**	**Pest Control**
	Packaging	**Measurements**
	Machines	**Cooling Systems**

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Government and Legislation

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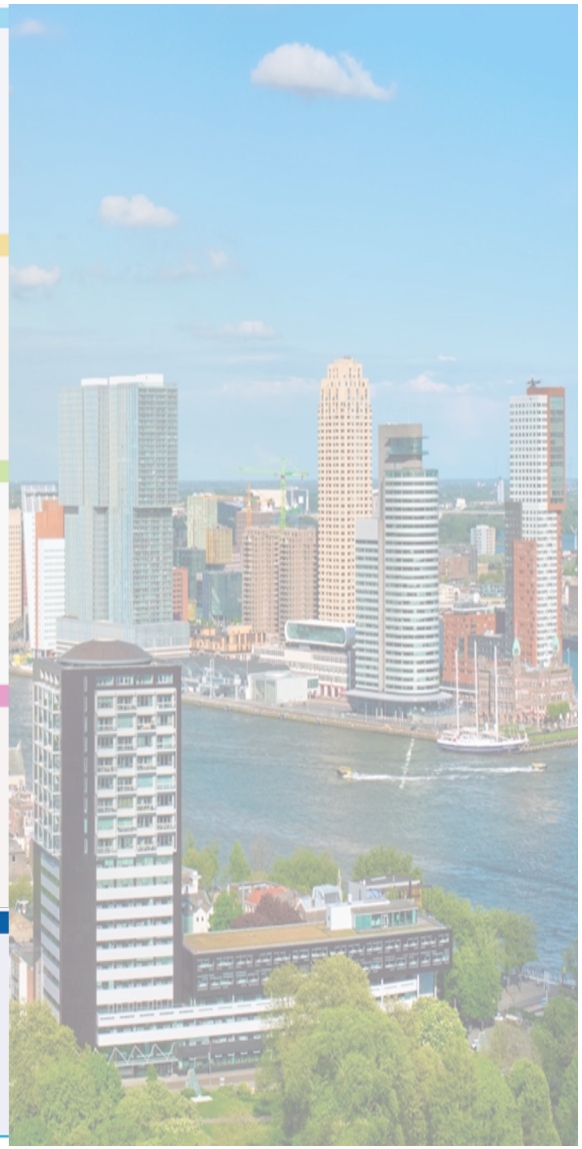


Legislation Management

4 aspects recur in all groups:

- Specifications
- Traceability
- Quality activities
- Assessment

Food Safety Compliance management

Management of business performance, demand and supply relations, legislation and certification with regard to Food Safety, taking into specifications, quality activities, traceability and assessment.

	Specifications	Quality activities	Traceability	Assessment
	Requesting, drawing up, issuing and securing specifications regarding raw materials, semi-finished products, processes and end products, with which legalisation, quality standards and customer requirements are met.	Drawing up, complying with and guaranteeing product and process parameters through procedures, job descriptions and responsibilities with which legalisation, quality standards and customer requirements are met.	Registering all information flows and related actions regarding raw materials, semi-finished products, processes and end products, with which legalisation, quality standards and customer requirements are met (transparency and consumer intimacy).	Testing whether the product and process parameters and the related procedures, job descriptions and responsibilities meet legislation, the quality standards and customer requirements that are set.
Quality Standards				
Certification	Standard requirements	Operational framework	Test, certification body informed	HACCP, TACCP, VACCP, standard based practice
Customers & Consumers				
Demand Relationships	Product, process requirements	Demand Information Center	Products, specifications	Customer satisfaction, consumer needs
Food Company				
Food Company	Product, process and people requirements	Training, support, procedures, quality documents and database	Ingredients, semi-products, final products	Business System
Suppliers				
Supply Relationships	Product, process and people requirements	Supply Information Center	Raw materials, services, specifications	Supplier selection and performance
Legislation				
Legislation	Legal requirements	HACCP and prerequisite program	Food Safety Authority informed	HACCP, legal based practice

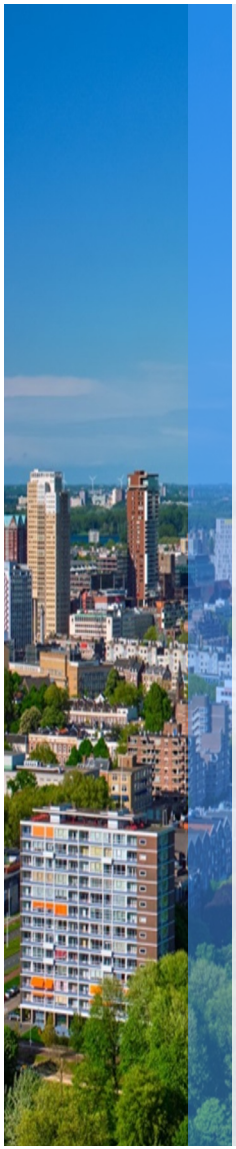
Food management:

- Dynamic playing field
  - 2000 quality requirements
  - 100 suppliers
  - 100 customers
  - 100 employees
  - 400 legislative changes

Legislation: HACCP

- Hazard analysis
- Overview of pathogens, chemical hazards
  - Pathogenic bacteria
  - Mycotoxins
  - Other biotoxins
  - Viruses, rickets and prions
  - Parasites & Pests
  - Chemical & Physical
  - Zoonoses & Extensive Toxins
  - Spoilers

- Hazard analysis
  - Control of raw material hazards
  - Process hazard management
  - HACCP-team
  - Decision tree
  - Control measures



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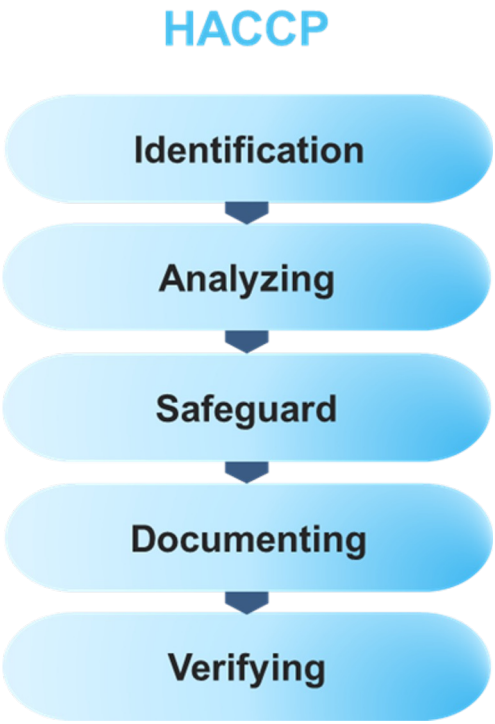
HACCP Introduction

HACCP

- **Hazard Analysis and Critical Control Points**
- ‘For everyone who works with food’
- Food safety system, based on a risk analysis
- Required since 1998, checked by the Keuringsdienst van Waren.

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HACCP in practice
HACCP
Identification
Analyzing
Safeguard
Documenting
Verifying

Identification

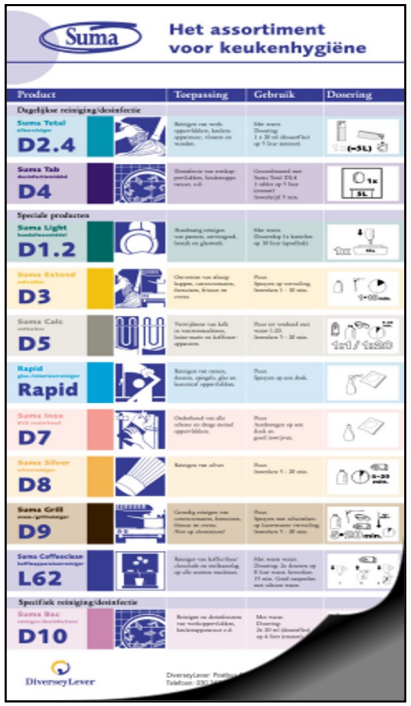
- Quality policy
- Forming a HACCP team
- Food safety information
- Industry / hygiene codes
- Also include your product / market combination factors!

Identification: Food Poisoning

- 75,000 reported cases per year
- 1,500,000 in reality
- Symptoms like the flu
- Sometimes need to go to the doctor
- More than 70% of these illnesses originate outside the home

Identification: Hygiene in the kitchen/production

- It must be done! (HACCP)
- Product liability
- Consumer expectation
- Economic importance
- It works better



Identification: hygiene codes: answer from industries

- Settings
- Catering
- Hospitality industry
- CBL
- Gas station convenience stores
- Sport canteens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Analyzing

- Dangers and critical concerns
- Risks (quantitative risk analysis) and preventative measures
- Critical control points

Hazard analysis

Hazard analysis means that the potential hazards of all food preparation steps must be identified and analyzed.

- There are three types of hazards:
  - **physical hazards**
  - **chemical hazards**
  - **(micro)biological hazards**

Analysis: Physical hazards

Physical hazards usually involve foreign substances such as metal particles, glass, bones, or stones that can cause cuts in the mouth, break teeth, cause choking, or perforate the gastrointestinal tract.

This includes various materials such as those originating from land, animals, glass objects, metal objects etc. With respect to chemical and biological hazards, physical hazards are often visible and can be felt.

Analysis: Chemical hazards

Chemical hazards include substances that adversely affect health, because they are acutely dangerous or because they cause damage in the long term. The following types of substances should be considered:

- Substances of natural origin,
- (Agricultural) chemicals,
- Environmental pollution.

Analysis: Biological hazards

When making an inventory of the biological hazards, it is important to identify those factors and microorganisms that play a role in the occurrence of food spoilage, food infection, and food poisoning. The presence and occurrence of microorganisms in food is determined by three factors, namely:

- Factors determining the “introduction” (sources).
- Factors influencing the growth of microorganisms (conditions).
- Factors by which microorganisms are killed (processes).

Biological hazards: Bacteria

- Examples of infectious pathogens: *Campylobacter jejuni*, *Salmonella*, *Shigella*, *Escherichia coli*, *Vibrio cholerae*, *Vibrio parahaemolyticus*, *Listeria*, etc.

- Examples of toxigenic pathogens: *Bacillus cereus*, *Clostridium botulinum*, *Clostridium perfringens*, *Staphylococcus aureus*, fungi, etc.

Biological hazards: Viruses

- Small round structured viruses (SRSV's) appear to be the main cause of food-related viral infections.
- The food-related infections are mainly caused by people contaminating ready-to-eat food.

Analysis: Risk assessment

Table 3. Risk of food-related infections/diseases caused by various groups of microorganisms. (van Notermans et al., 1994a)	
A. Infective microorganism	*Average chance of infection from exposure to 1 microorganism*
Campylobacter	7.0×10^{-3}
Salmonella	2.3×10^{-3}
Shigella	1.0×10^{-3}
Vibrio cholerae classical	7.0×10^{-6}
Vibrio cholerae E1	1.5×10^{-5}
B. microorganisms causing toxic infection	*Number that can cause illness*
Clostridium perfringens	10^5
Bacillus cereus (diarrheal type)	10^5
C. Microorganisms causing intoxication	*Amount of toxins causing the symptoms*
Clostridium botulinum	0.5 – 5 ng
Staphylococcus aureus	0.5 – 5 µg
Bacillus cereus (vomiting type)	?

Analysis: Risk assessment

Table 1: Overview of the estimated severity of the hazard and the frequency with which the hazard occurs, on a scale of 1 to 4

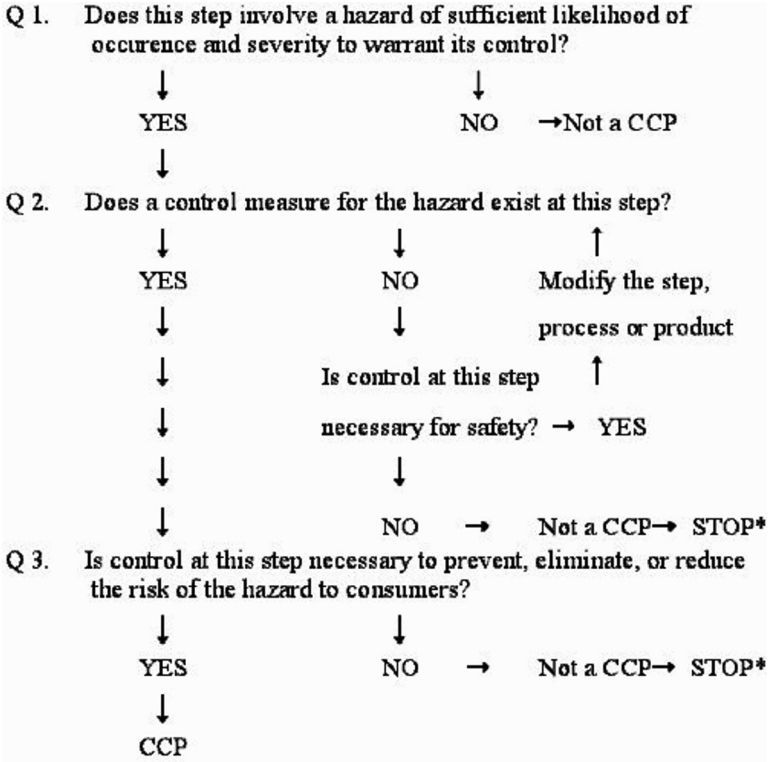
Severity	Frequency of occurrence		
	Little	Moderate	Often
Major	3	4	4
Moderate	2	3	4
Low	1	2	3

The following was used as an aid in estimating the hazard, whether high, moderate or low:
Major: serious injury, serious illness
Moderate: moderate injury, considerable illness
Low: hardly any illness or minor illness

When estimating the frequency, little, moderate or often, the following was used as an aid:
Little: 1 0p 1000,000 - 1 in 100,000
Moderate: 1 in 100,000 - 1 in 10,000
Often: 1 in 10,000 - 1 in 1000

CCP Analysis

- Critical Control Point (CCP) analysis
  - Identify the points where hygiene and food safety can go wrong
  - Regular checking of these points



Difference between PVA-CCP

- **PVA = point of attention**
  (= general control measure); the preventative measures of a general nature (purchasing plan, hygiene plan, maintenance plan) are points of attention. It should be checked whether these points meet the requirements of the objectives of the food safety system.

- **CCP = critical control point**
  specification, a process step, an activity that eliminates or controls a potential hazard, such that the risk is reduced to an acceptable and manageable level.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Safeguard

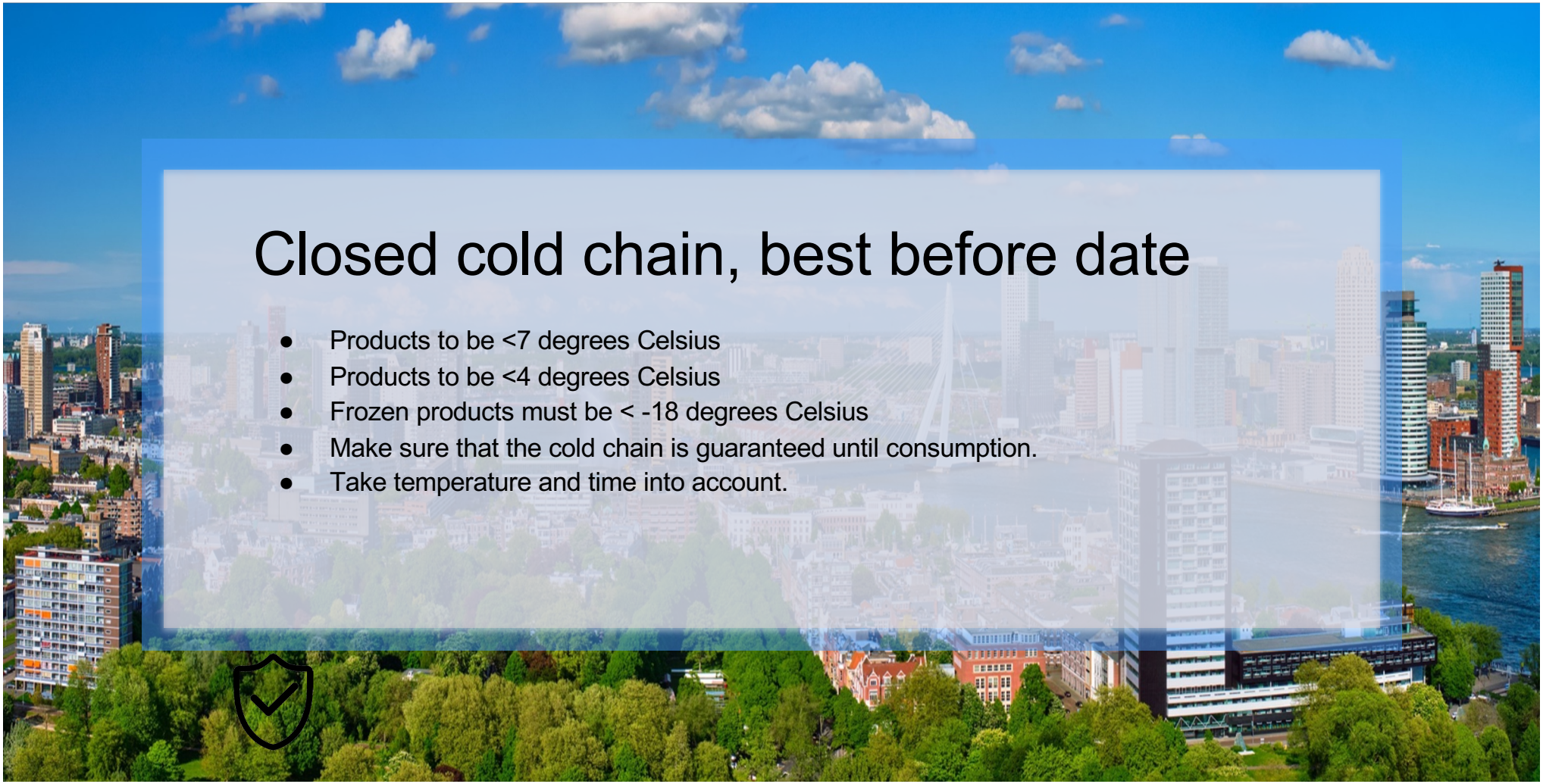
- Complete system of safeguarding for these points
  - With duties and responsibilities
  - Instructions, procedures, and checklists

Important points

- Entry control
- Closed cold chain and best before date
- Pest control
- Cleaning and hygiene
- Personal hygiene
- Transport

Entry control

- Reliable suppliers
- Good product specifications / order lists
- Closed cold chain
- Best before date products
- Method of packaging


Closed cold chain, best before date
Products to be <7 degrees Celsius
Products to be <4 degrees Celsius
Frozen products must be < -18 degrees Celsius
Make sure that the cold chain is guaranteed until consumption.
Take temperature and time into account.

Pest Control

- List of pesticides used
- User manual
- Pest control checklists
- Pest monitoring

Cleaning and hygiene

A good plan

It is great that the government sets rules, but what does such a thorough cleaning plan look like? The basis of such a professional plan is formed by five points:

1. Organization and Staff

2. Clear methods

3. Clear assortment

4. Environment and safety

5. Planning and control

When drawing up the cleaning schedule and control, take the following issues into account:

- Surroundings

Which cleaning agents do we use? At what times should cleaning be done? How and where are the resources used?

- Approach

How can employees be involved in the cleaning process in the most efficient way? How can planning and control contribute to this? And how can we monitor the quality of the process by measuring and registering?

- Organization

How do we set up the control system?
Which achievements do you want to make visible?
How do we then use that information to make improvements?
And what is the impact of this on the entire business operations?

- Conditions

How can the results of cleaning and hygiene be demonstrated, so that, for example, it can be proven that everything was in order a month ago?

Cleaning and hygiene

… And the method of food preparation, the frequency of washing hands, wearing jewelry, having a cold in combination with food preparation.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Documenting

- Specifications
- Procedure & Instructions
- Registration forms: Also, the corrective measures!

HACCP in practice

HACCP

- Identification
- Analyzing
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- Verifying

Verifying

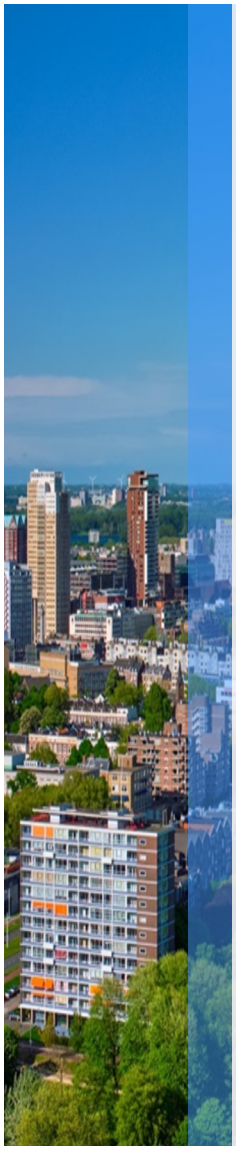
- Internal
- External

Verification of the HACCP system

(WHL, art.30; CBL hygienecode 2002, 15.2, blz. 97)

The purpose of verification is to determine whether the control measures included in the HACCP system are efficient and effective. In short: does the supermarket have a demonstrably controlled system (demonstrable for both the supermarket itself and third parties)

Example of requirements for retailers



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Methodology

Methodology

- Firstly, the prerequisite program (PRP) must be completed.
- The entire food safety plan is based on a prerequisite program, followed by HACCP-based procedures.
- In the HACCP study, specific hazards are related to the raw materials and the processes.
- For the purpose of clarifying generic hazards that are reduced to an acceptable level by means of the PRP, an additional control measure table has been drawn up to also operationalize the PRP in procedures.
- This is not necessary according to the principles of HACCP.
- The hazard analysis is based on the Codex Alimentarius, scientific documents and legal texts.
- The hazard analysis has been drawn up per process step and per product (raw material, admixture, end products). This involved looking at microbiological, chemical, and physical hazards. All this according to the likelihood and consequence principle.

Methodology: generic hazards

- Firstly, the prerequisite program (PRP) must be completed.
- For the purpose of clarifying generic hazards that are reduced to an acceptable level by means of the PRP, an additional control measures table has been drawn up to also operationalize the PRP in procedures.
- This is NOT necessary according to the principles of HACCP.

QAssurance

Prerequisite program

- Prerequisite program
- Reference: Codex Alimentarius, ‘General Principles of Food Hygiene’ CAC/RCP 1-1969, Rev. 3, 1997, Amended 1999.

Prerequisite program (1/6)

- 2. Establishment: design and facilities
- 2.1.1 Establishment
- 2.1.2 Equipment
- 2.2 Premises and rooms
- 2.2.1 Design and layout
- 2.2.2 Internal structures and fittings
- 2.2.3 Temporary / mobile premises, vending machines
- 2.3.1 General
- 2.3.2 Food control and monitoring equipment
- 2.3.3 Containers for waste and inedible substances
- 2.4.1 Water supply
- 2.4.2 Drainage and waste disposal
- 2.4.3 Cleaning
- 2.4.4 Personnel hygiene facilities and toilets
- 2.4.5 Temperature control
- 2.4.6 Air quality and ventilation
- 2.4.7 Lighting
- 2.4.8 Storage

Prerequisite program (2/6)

- 3.1 Control of food hazards
- 3.2.1 Time and temperature control
- 3.2.2 Specific process steps
- 3.2.3 Microbiological and other specifications
- 3.2.4 Microbiological cross contamination
- 3.2.5 Physical and chemical contamination
- 3.3 Incoming materials requirements
- 3.3.1 Specifications
- 3.3.2 Control at reception
- 3.3.3 Stock rotation
- 3.4 Packaging
- 3.4.1 Design and materials
- 3.4.2 ‘Food-grade’ materials and gases
- 3.4.3 Reusable packaging
- 3.5 Water
- 3.5.1 Water in contact with food

Prerequisite program (3/6)

- 3.5.2 Reuse of re-circulated water
- 3.5.3 Reuse of re-circulated, non-treated water
- 3.5.4 As an ingredient
- 3.5.5 Ice and steam
- 3.6 Management and supervision
- 3.6.1 Type of control and supervision
- 3.6.2 Knowledge required
- 3.7 Documentation and records
- 3.7.1 Retain records
- 3.7.2 Effectiveness and credibility
- 3.8 Recall procedures
- 3.8.1 Effective procedures
- 3.8.2 Tracing & Tracking
- 3.8.3 Destroy or reprocess

Prerequisite program (4/6)

- 4 Establishment: maintenance and sanitation
- 4.1 Maintenance and cleaning
- 4.1.1 General
- 4.1.2 Cleaning procedures and methods
- 4.2.1 Specifications
- 4.2.2 Monitoring and verification
- 4.3 Pest control
- 4.3.1 General
- 4.3.2 Preventing access
- 4.3.3 Harborage and infestation
- 4.3.4 Monitoring and detection
- 4.3.5 Eradication
- 4.4 Waste management
- 4.4.1 Removal, storage
- 4.4.2 Cleaning
- 4.5 Sanitation systems
- 4.5.1 Monitoring
- 4.5.2 Verification
- 4.5.3 Review

Prerequisite program (5/6)

- 5 Establishment: personal hygiene
- 5.1 Health status
- 5.1.1 Access prevention
- 5.2 Illness and injuries
- 5.2.1 Conditions to be reported
- 5.3 Personal cleanliness
- 5.3.1 Protective clothing
- 5.3.2 Cuts and wounds
- 5.3.3 Washing hands
- 5.4 Personal behavior
- 5.4.1 Smoking, eating, sneezing
- 5.4.2 Jewelry
- 5.5 Visitors
- 5.5.1 Cleanliness and behavior

Prerequisite program (6/6)

- 6 Transport
- 6.1 General
- 6.2 Requirements
- 6.3 Use and maintenance

- 7 Product information and consumer awareness
- 7.1 Batch identification
- 7.2 Product information
- 7.3 Labelling
- 7.4 Consumer education

- 8 Training
- 8.1 Awareness and responsibilities
- 8.2 Training programs
- 8.3 Instruction and supervision
- 8.4 Refresher training

Generic hazards (1/3)

- Cross-contamination with pathogens towards the product with a risk of disease.
- Cross-contamination with pathogens or hazardous substances due to poor company hygiene in the broad sense of the word with a risk of disease.
- Pests, excrement, food, etc. Pests can carry pathogens with a risk of disease.
- Accelerated spoilage due to the product temperature becoming too high during processing.
- Decay of products due to too long storage time.
- Contamination with non-product components: glass, wood, metal, packaging, etc.
- Infection with PVB due to poor maintenance. And product contamination with non-food-grade agents.
- Accumulation of, and cross-contamination with, dirt and microorganisms (pathogens).
- Contamination / migration from packaging materials to product.
- Risk of illness due to incorrect label information (allergens)

Generic hazards (2/3)

- Cross-contamination with allergens due to incorrect recipe
- The use, processing of “bad” and dangerous products with all its consequences.
- Injuries can occur to the consumer if one consumes a product with a shard of glass.
- Serious injuries can occur to the consumer if one consumes a product with wood splinters.
- Cross-contamination with allergens due to wrong working method.
- Accelerated spoilage due to incorrect recipe (too little salt, etc.).
- Cross-contamination from poorly loaded trucks.
- Accelerated decay, outgrowth of pathogens due to incorrect transport temperature.
- Outgrowth of pathogens and spoilage due to a too long shelf life (submit best before date)
- Outgrowth of pathogens and spoilage due to a too long shelf life on the label.
- Cross-contamination from poor building and machinery condition.

Generic hazards (3/3)

- Hazardous products by incompetent personnel.
- Dangerous products due to non-functioning or malfunctioning measuring instruments.
- Dangerous products back into production due to returns.
- Improper storage, disposal and / or collection of waste with the risk of end product contamination.
- Contamination of intent / sabotage.
- Dangerous situations due to non-compliance with claims.
- Product contamination from sick employees or visitors.
- Delivering / producing new products that can pose a hazard: microbiological, chemical or physical.
- Cross-contamination with dirt, pathogens from poorly washing clothing.
- Delivery of products due to poor CCP measurements due to ignorance.

QAssurance

Control measures

Control measures: procedures (1/2)

- Waste
- Business security
- Business hygiene
- Quarantine, incidents and recall
- Prerequisite program and maintenance
- Hygiene
- Hygiene and visitors.
- Customer and customer satisfaction
- Supplier and supplier assessment
- Microbiological research
- Maintenance
- Supplier and supplier assessment

Control measures: procedures (2/2)

- Pest and entry control
- Education and training
- Storage
- Product development and calibration
- Non-product components, glass, wood
- Cleaning and disinfection
- Rework
- Transport
- Release of products
- Wash clothes

Generic instructions

- Check prerequisite program and construction inspection
- Process control checks
- Control foreign components
- Glass control
- Wood control
- Entry control
- Knowledge questions for staff and new staff
- Storage control
- Product control
- Cleaning control, cleaning performance and disinfection control
- Release after maintenance

Prerequisite program table based on generic hazards and procedures and instructions

Control measures

The prerequisite program lists various possible dangers and points for attention. The applicable aspects are governed by procedures, instructions and the accompanying measures.

Since they arise from the basic benefits program or that the basic conditions program gave rise to the drawing up of these measures, they are not guided by the decision tree.

The following measures apply within our company.

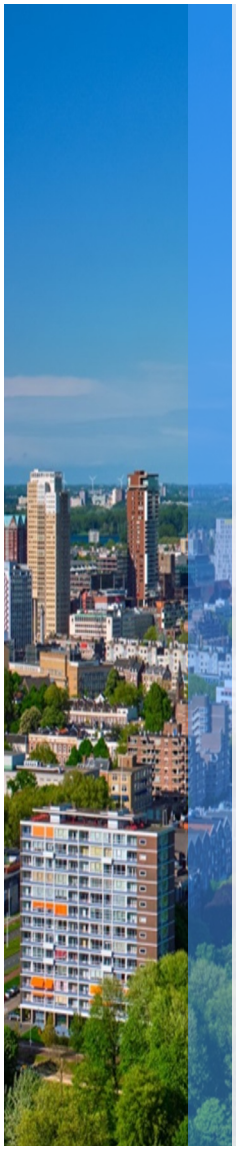
Danger	Control by	Norm	Action in case of deviation	Procedure/ instruction
Cross-contamination with pathogens towards the product with a risk of disease.	Cross-contamination is prevented by proper personal hygiene.	Everyone must comply with the applicable regulations.	Re-instruction of staff, addressing staff. Block products at extremes.	Procedure: hygiene Instruction: hygiene control
Cross-contamination with pathogens or hazardous substances due to poor industrial hygiene in the broad sense of the word, with a risk of disease.	Cross-contamination is prevented by following the company hygiene.	Everyone must comply with the applicable regulations.	Re-instruction of staff, addressing staff. Block products at extremes.	Procedure: industrial hygiene Instruction: hygiene control
Pests feces, feeding, etc. Pest can be carriers of pathogens with the risk of disease.	Good pest control, entrance check and weekly check for accumulation of dirt / food.	No bugs	Apply additional control. Instruction staff. Structural adjustments.	Procedure: pests and entry check Instruction: hygiene check, pest check and entry check
Accelerated spoilage due to the product temperature becoming too high during processing.	By controlling the ambient temperature, heating is prevented. Measuring the product temperature provides insight into the temperature of products in the department.	see instruction	Block products. Destroy products if the temperature is much too high. Ambient temperature control. Decrease ambient temperature. Increase throughput speed. Instruction staff.	Instruction: product temperature
Decay of products due to too long storage time.	Visual checks on shelf life	Must not be expired	Destroy product	Procedure: storage Instruction: storage check
Contamination with non-product components: glass, wood, metal. packaging, etc.	Control for foreign components and the possibility of cross-contamination.	No contamination. No possibility of contamination.	Block products, process or equipment. Block maintenance. Destroy products.	Procedure: PVB, glass, wood Instruction: control, non-product components

Generic hazards and controls linked to process steps

Danger	Control by	Norm	Action in case of deviation	Procedure/ instruction	1000 generally	2000 processes	3000 stews	4000 Smoked products	5000 single products
Cross-contamination with pathogens towards the product with a risk of disease.	Cross-contamination is prevented by proper personal hygiene.	Everyone must comply with the applicable regulations.	Re-instruction of staff, addressing staff. Block products at extremes.	Procedure: hygiene Instruction: hygiene control					
Cross-contamination with pathogens or hazardous substances due to poor industrial hygiene in the broad sense of the word, with a risk of disease.	Cross-contamination is prevented by following the company hygiene.	Everyone must comply with the applicable regulations.	Re-instruction of staff, addressing staff. Block products at extremes.	Procedure: industrial hygiene Instruction: hygiene control		x	x	x	X
Pests feces, feeding, etc. Pest can be carriers of pathogens with the risk of disease.	Good pest control, entrance check and weekly check for accumulation of dirt / food.	No bugs	Apply additional control. Instruction staff. Structural adjustments.	Procedure: pests and entry check Instruction: hygiene check, pest check and entry check		X	x	x	x
Accelerated spoilage due to the product temperature becoming too high during processing.	By controlling the ambient temperature, heating is prevented. Measuring the product temperature provides insight into the temperature of products in the department.	see instruction	Block products. Destroy products if the temperature is much too high. Ambient temperature control. Decrease ambient temperature. Increase throughput speed. Instruction staff.	Instruction: product temperature	x	x	x	x	x
=Decay of products due to too long storage time.	Visual checks on shelf life	Must not be expired	Destroy product	Procedure: storage Instruction: storage check	x	x	x	x	x
Contamination with non-product components: glass, wood, metal. packaging, etc.	Control for foreign components and the possibility of cross-contamination.	No contamination. No possibility of contamination.	Block products, process or equipment. Block maintenance. Destroy products.	Procedure: PVB, glass, wood Instruction: control, non-product components					

Methodology specific hazards

- In the HACCP study, specific hazards are related to the raw materials and the processes.
- The hazard analysis is based on the Codex Alimentarius, scientific documents and legal texts.
- The hazard analysis has been drawn up per process step and per product (raw material, admixture, end products). This involved looking at microbiological, chemical and physical hazards. All this according to the likelihood x consequence principle.



Introduction

1. Food Safety Compliance
2. HACCP introduction
3. Methodology
    - Prerequisite program
    - Control measures
4. **HACCP study: specific hazards**
5. HACCP study: decision tree, raw materials and processes
6. Cornelis Bartlema Food Group: HACCP
7. Legislation
    - EU regulations & Information sheets & Recall
    - Listeria control
    - Additives regulation
    - NVWA

HACCP study: specific hazards

HACCP study: specific hazards

Hazard analysis

Overview of pathogens, chemical hazards

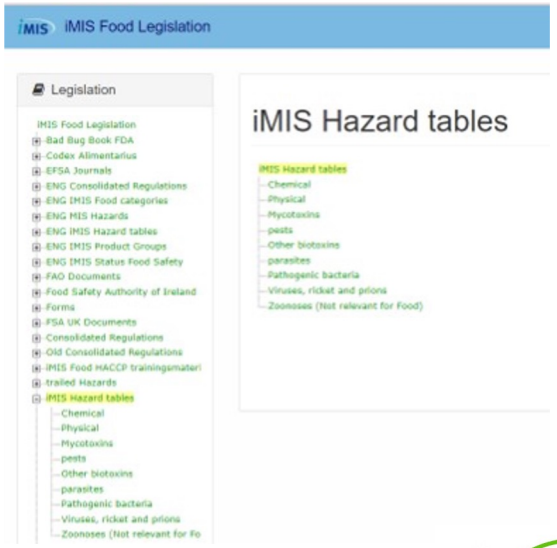
- Pathogenic bacteria
- Mycotoxins
- Other biotoxins
- Viruses, rickets and prions
- Parasites & Pests
- Chemical & Physical
- Zoonoses & Extensive Toxins
- Spoilers

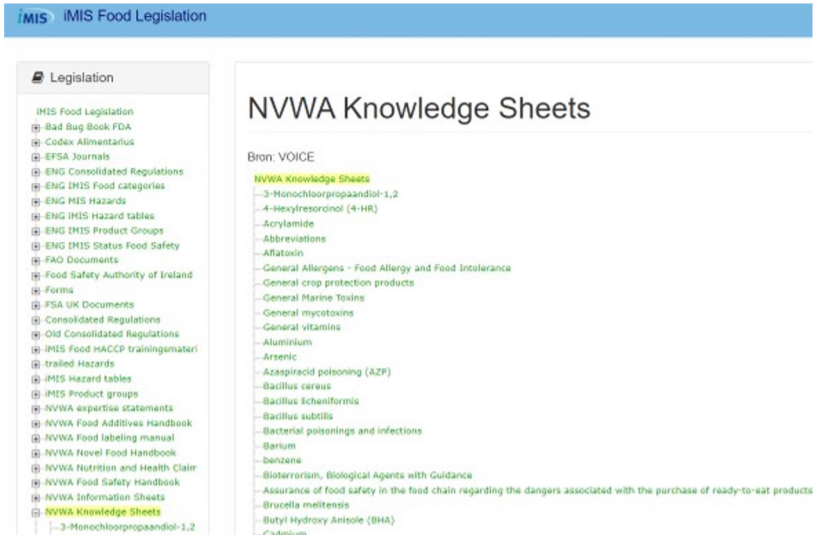
Hazard analysis

- Control of raw material hazards
- Process hazard management
- HACCP-team
- Decision tree
- Control measures

- **Specific hazards: Codex approach**
  - **Raw materials and info sheet 64/65/85**
  - **Processes**
- **HACCP approach validated weekly in audits and part of the iMIS Food Updates.**

HACCP study: specific hazards background information





Risk determination method

Systematics Statement

Risk analysis statement (based on: Probability x Severity = Risk)

Probability:
Probability level 0 = there is no danger or the danger is not (yet) known
probability level 1 = the reality that a hazard can occur

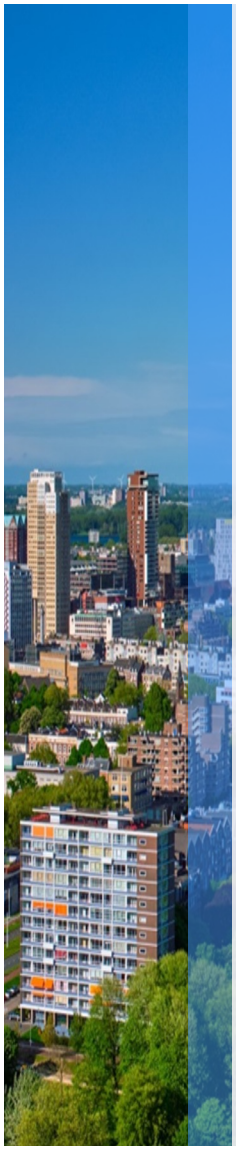
Severity:
Severity level 0 = no danger to public health
Severity level 1 = any known threat to public health

Risk:
By combining the probability with the severity, the degree of risk can be determined, see table below PROBABILITY x SERIOUS = RISK

Probability ▼		
1	No risk	Risk
0	No risk	No risk
Severity ▶	0	1

Red – CCP

Green – no risk



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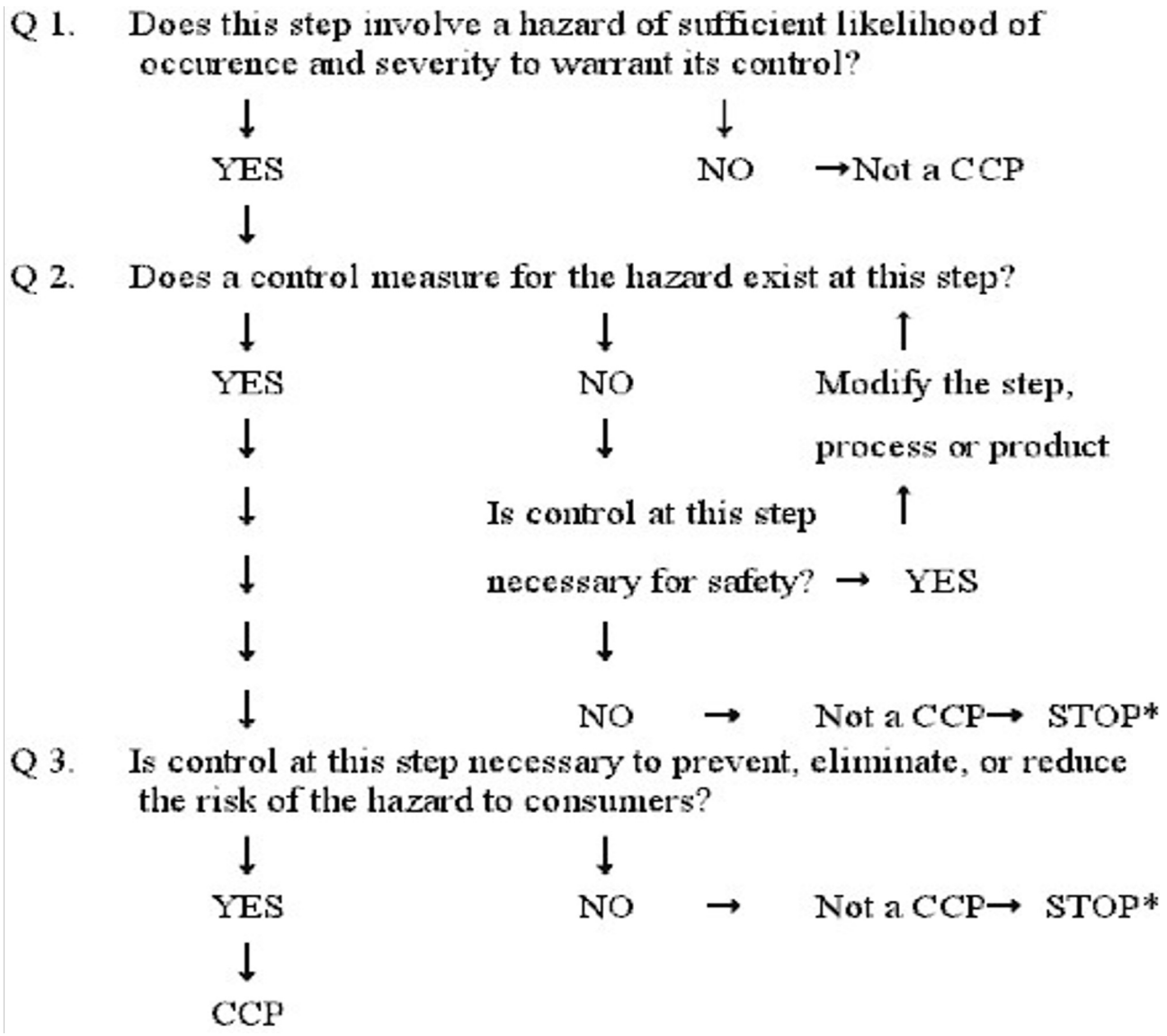
HACCP study: decision tree, raw materials and processes

Decision tree

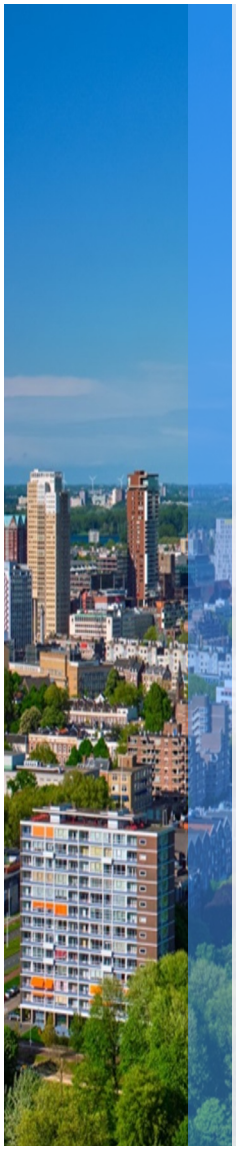


HACCP study: raw materials and processes

Raw material	Hazard	Type of Hazard	Cause	Potential effect	Probability to occur	Risk = probability x potential effect	Control measure	Is control of this risk necessary?	Is this phase specifically intended to eliminate the potential hazard or	Would the contamination with the identified hazard be such that the	Will a subsequent production phase eliminate the identified	CCP: Critical control point	Nr.	Substantiation
All kinds of unprocessed poultry meat	Presence of pathogenic microorganisms such as Salmonella and parasites	Microbiological	Incorrect slaughtering process	1	1	1	None, but minimal purchasing on specification	Yes	No	Yes	Yes			The meat will be heated at a later stage in which the vegetative pathogenic microorganisms will be killed.
All kinds of unprocessed poultry meat	Residues of veterinary drugs	Chemical	Misuse of veterinary medicines	1	0	0	None, but minimal purchasing on specification	No						No risk due to National plan
All kinds of unprocessed game	Presence of pathogenic microorganisms such as Salmonella and parasites	Microbiological	Incorrect slaughtering process	1	1	1	None, but minimal purchasing on specification	Yes	No	Yes	Yes			The meat will be heated at a later stage in which the vegetative pathogenic microorganisms will be killed.

HACCP study: raw materials and processes

Raw material	Hazard	Type of Hazard	Cause	Potential effect	Probability to occur	Risk = probability x potential effect	Control measure	Is control of this risk necessary?	Is this phase specifically intended to eliminate the potential hazard or	Would the contamination with the identified hazard be such that the	Will a subsequent production phase eliminate the identified	CCP: Critical control point	Nr.	Substantiation
General														
Receives perishable raw materials	Outgrowth of pathogenic microorganisms	Microbiological	Incorrect transport of raw materials	1	1	1	Measure the temperature	Yes	Yes			CCP	1	The meat will be heated at a later stage in which the vegetative pathogenic microorganisms will be killed.
Receipt of frozen products	Outgrowth of pathogenic microorganisms	Microbiological	Transport temperature too high	1	0	0	None	No				Legal condition (LCP)		Only when frozen products are delivered above 7 ° C can there be dangers for public health. There is, however, a legal requirement of -15 ° C.
Receipt of other raw materials	No specific danger													
Storage of frozen products	Outgrowth of pathogenic microorganisms	Microbiological	Transport temperature too high	1	0	0	Frozen temperature measurement	No				Legal condition (LCP)		Only when frozen products are delivered above 7 ° C can there be dangers for public health. There is, however, a



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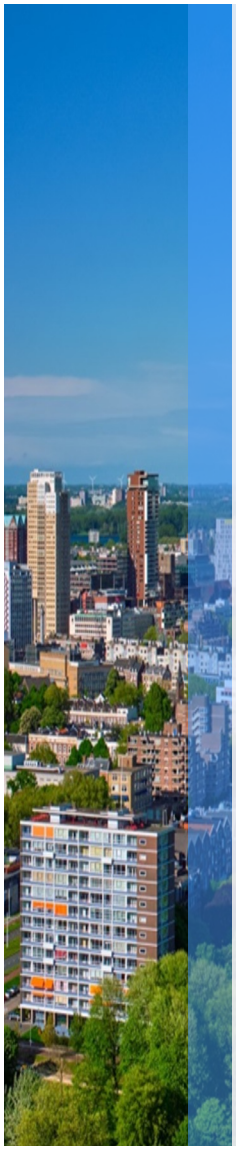
Cornelis Bartlema Food Group: HACCP



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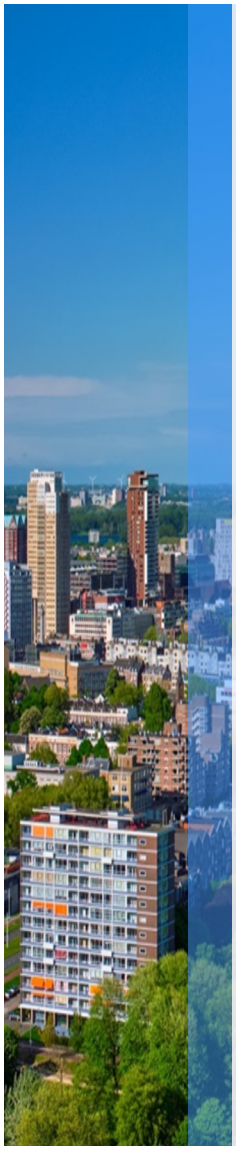
Legislation

Legislation: EU regulations

- 1990-496 Nutritional information
- 2002-178 General Food Law
- 2005-2073 Microbiological criteria
- 2005-396 Pesticide residues
- 2006-1881 Contamination of food
- 2006-1924 Nutrition and health claims
- 2008-1333 Additives
- 2008-1334 Aromas
- 2011-1169 Food information



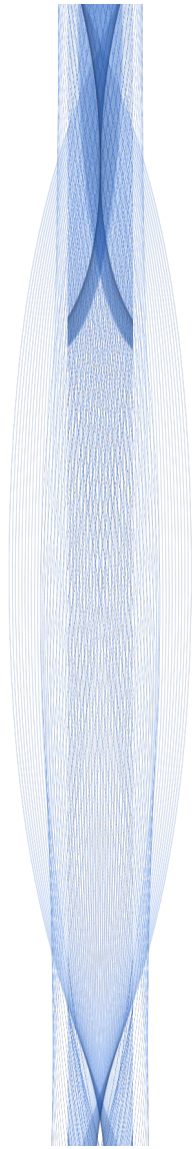
Legislation: Info Sheets & Knowledge Sheets

- Info Sheets: how to deal with sampling
  - Info sheet 64
  - Info sheet 65
  - Info sheet 85

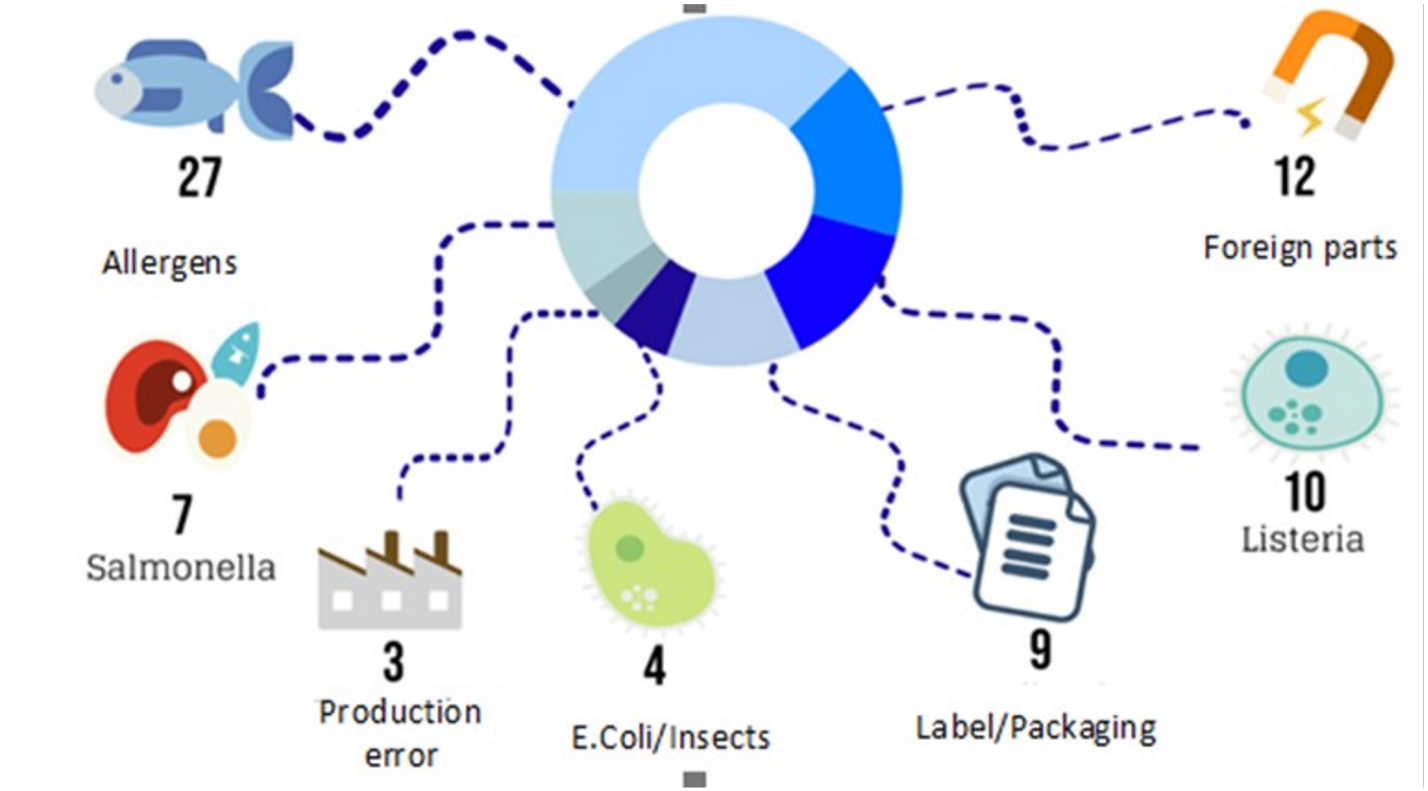
- Knowledge Sheets
  - Food allergy and food intolerance
  - Bioterrorism, biological agents with guideline
  - Contaminants from PVC packaging
  - Contaminants from packaging by irradiation
  - Paralytic shellfish poisoning (PSP)
  - Toxoplasma gondii
  - Zoonoses

Legislation: Recall

- 2002-178 General Food Law
- Article 19: By order of competent authority
- BuRO risk assessment
- Reporting guide
- Issue management
- RASFF - Food and Feed Safety Alerts



Legislation: Recall (VMT overview 2019)



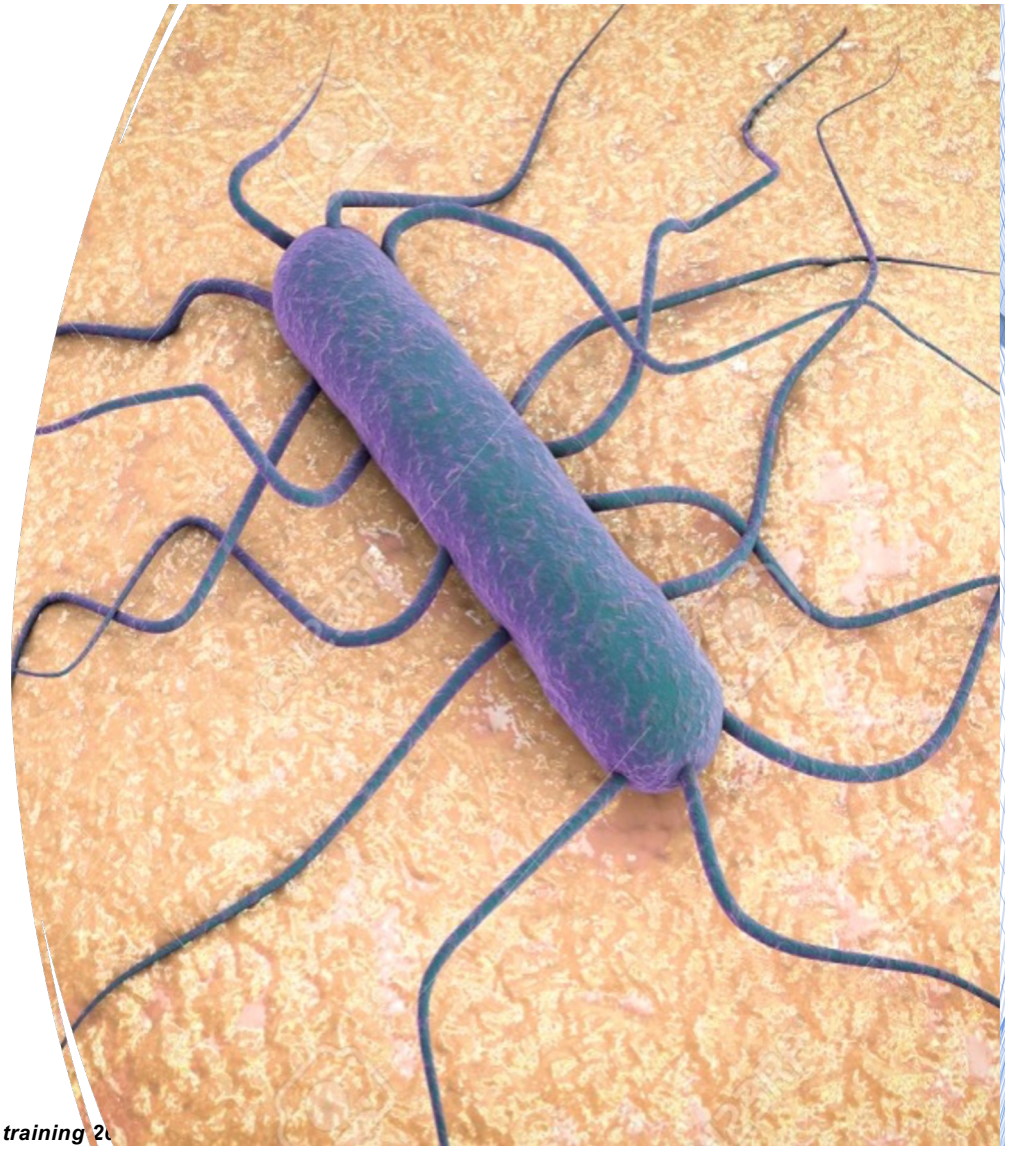
Listeria control

- Info Sheets: how to deal with sampling
  - Info sheet 64
  - Info sheet 65
  - Info sheet 85

- Knowledge Sheets
  - Food allergy and food intolerance
  - Bioterrorism, biological agents with guideline
  - Contaminants from PVC packaging
  - Contaminants from packaging by irradiation
  - Paralytic shellfish poisoning (PSP)
  - Toxoplasma gondii
  - Zoonoses

Listeria monocytogenes

Risk management



Content

- Listeria Monocytogenes
  - Case example
  - Legislation and interpretation

- Risk assessment and reporting
  - Shelf-life study with FFSP
  - NVWA in practice

Listeria species

Micro-organism: Listeria spp

Family: Listeriaceae

Genus: Listeria

Species:17

-L. monocytogenes

-L. innocua

-L. ivanovii

-L. seeligeri

-L. welshimeri

-L. marthii

L. grayi

L. rocourtiae

L. weihenstephanensis

L. grandensis

L. riparia

L. booriae

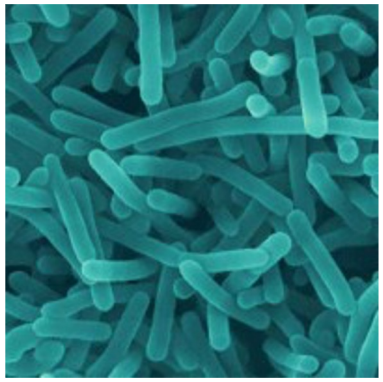
L. fleischmannii

L. florendensis

L. aquatica

L. newyorkensis

L. cornellensis



Case example

Largest deadly outbreak of Listeria monocytogenes

Listeria outbreak in luncheon meat

- Cause: Listeria monocytogenes
- 1.060 causes of illness between December 2017 and June 2018
- 216 deaths (mortality ± 20%)
- 41% babies younger than one month

Producer Enterprise Foods

- Brand name: Tiger Brands
- Largest producer of consumer goods in South Africa.

- Fully certified food safety management system
- FSSC 22.000 v4.1

Economic consequences

- No meat (goods) consumption
- Import from South Africa stopped
- Three countries also stopped importing dairy, vegetables and fruit

European legislation

- Regulation (EC) no. 2073/2005
- Info sheet 85 (microbiological criteria for food) (NVWA)
- 12 July 2019

Information Sheet 85

- Page 7 - modified: definition ready-made.
- Page 13 - added: guideline for re-use in relation to ‘processing’ for ‘treatment’.
- Page 15 - adapted: table 2 'per food category’ to 'per production location’.
- Page 15 - added: sampling scheme for process hygiene criteria (same as info sheet 85 from before September 2017).
- Page 16 - added: sampling frequency for small sprout vegetable producers.
- Page 22 - deleted: 'Listeria spp.’ as an environmental research requirement in the decision tree of figure 1.
- Page 23 - added: guideline sampling (frequency/number) of environmental research.
- Page 23 - added: explanation of the limitation of the application of (more) quantitative analysis following qualitative analysis (abs / 25g)
- Page 25 - added: identification of (possible) CCPs from predictive models.
- Page 28 – added: application of text that restricts the shelf life in relation to opening MAP packaging.
- Page 29 - adapted: from ‘raw material(s)’ to ‘foodstuff(s)’.
- Page 34 - clarified: application of ISO 16140-2 when using alternative analysis methods.
- Page 35 - removed: accreditation requirements for analyzes following the sampling of processing areas (environmental investigation).

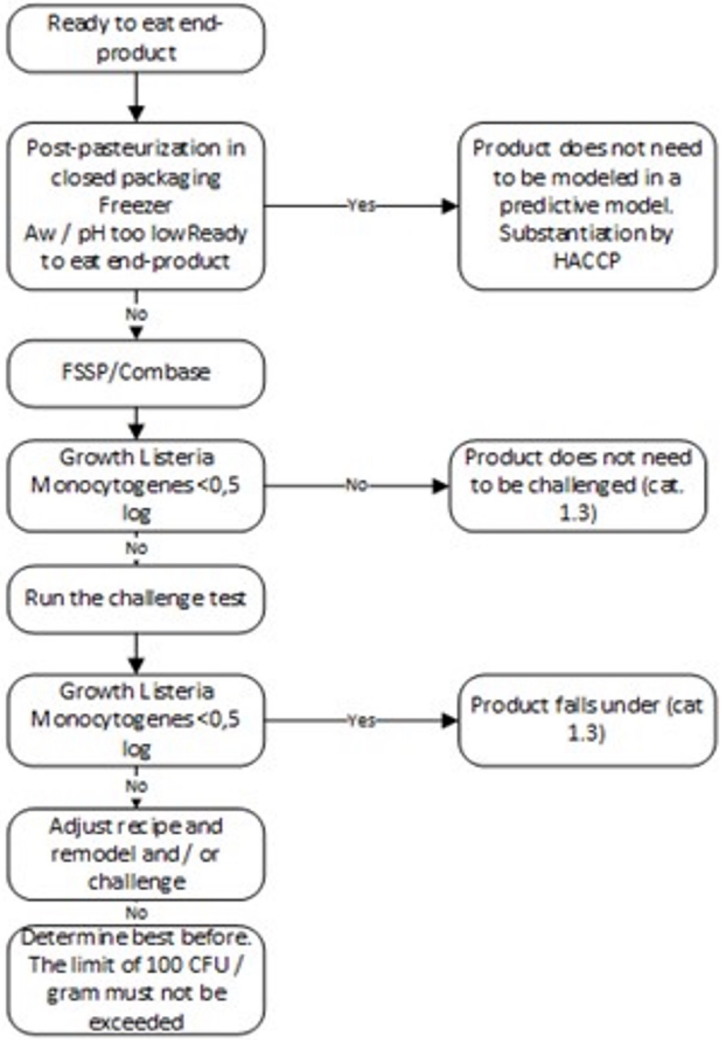
Information Sheet 85

- Listeria monocytogenes:
- Absent in 25-gram product
- Products that have been placed on the market; max. 100 CFU/gram.

Growth factors *Listeria monocytogenes*

- pH > 4.4
- Aw > 0.92
- pH > 5.0 and Aw > 0.94
- No heating for 2 minutes at 70°C in the core.
- No protective microflora.

Decision tree



Product overview

Article number		Best before fresh	Best before frozen	Particularities	Meats	Ready to eat end product	Frozen	Pasteurized in closed packaging	pH ≤4,4	aW ≤ 0,92	pH ≤ 5,0 and aw ≤ 0,94	FSSP already in practice	Notes
1234	Jalapeno burger	28	365	Processing		x					x	x	

Parameters needed for FSSP-study

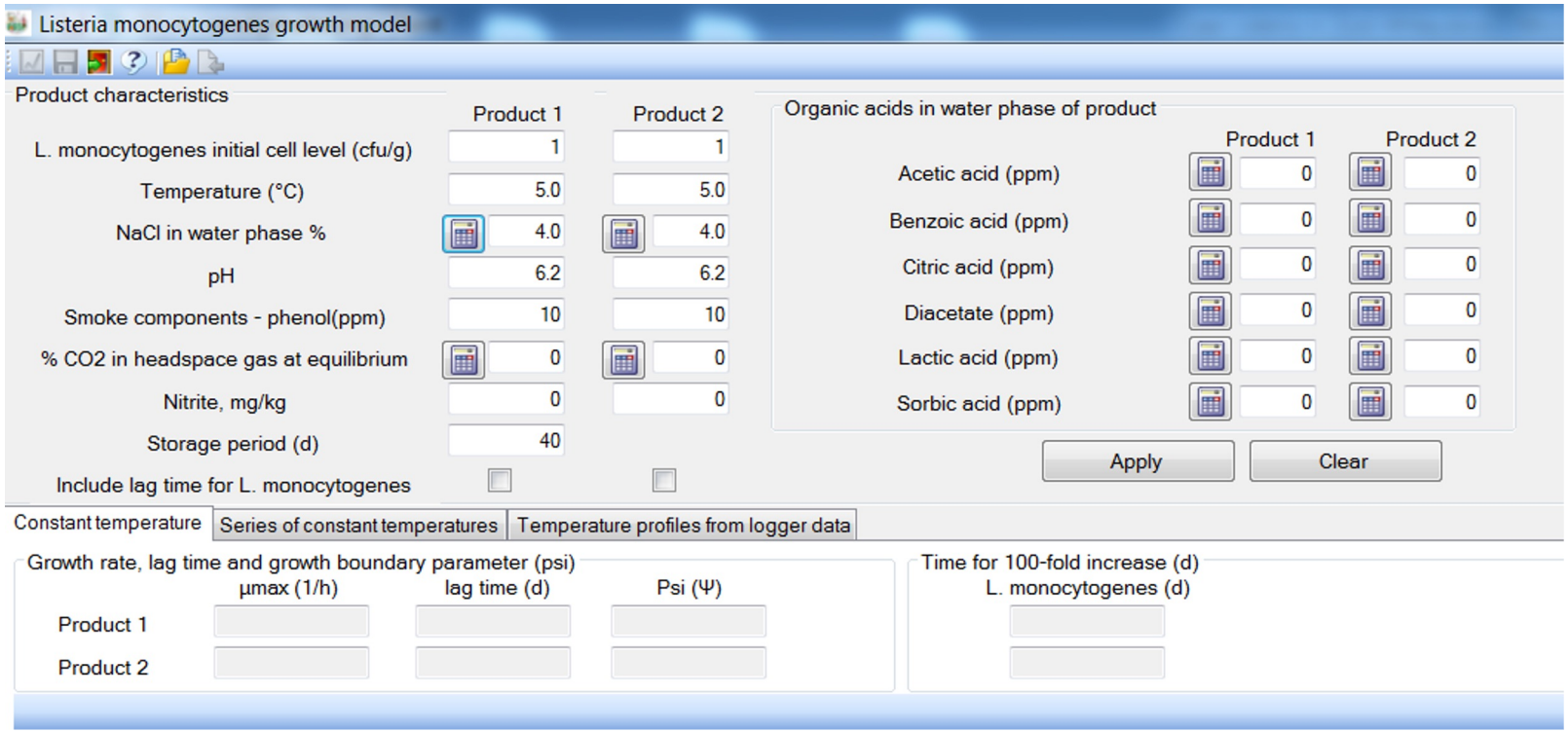
- **Dry matter**
- **pH**
- **Salt (sodium)**
- CO2 in packaging
- Organic acids
  - Acetic acid E260
  - Benzoic acid E210
  - Citric acid E330
  - Diacetate E 262
  - Lactic acid E325
  - Sorbic acid E200
- Option: Aw value

Shelf-life study with FSSP 4.0

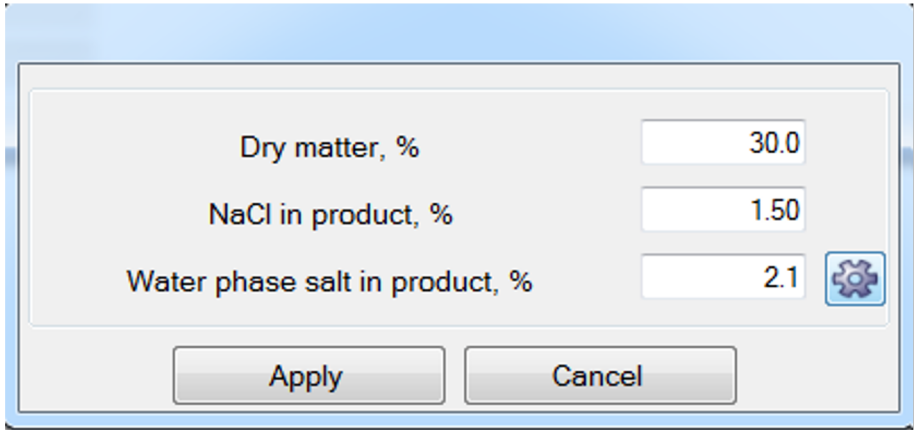
Parameters overview

art.nr.		pH 1	pH 2	pH lab	zout 1	zout 2	zout 3	droge stof 1	droge stof 2	droge stof 3	lactaat berekend	acetaat berekend	tht	aantal dagen log 0,5	lactaat 1	lactaat 2	lactaat 3	acetaat 1	acetaat 2	acetaat 3
1234	**Jalapenoburger**	5,97	5,99	5,83	1,51	1,68	1,55	35,00	35,50	35,60	1,30	0,53	15,00	15	1,34	1,16	1,27	0,59	0,54	0.54

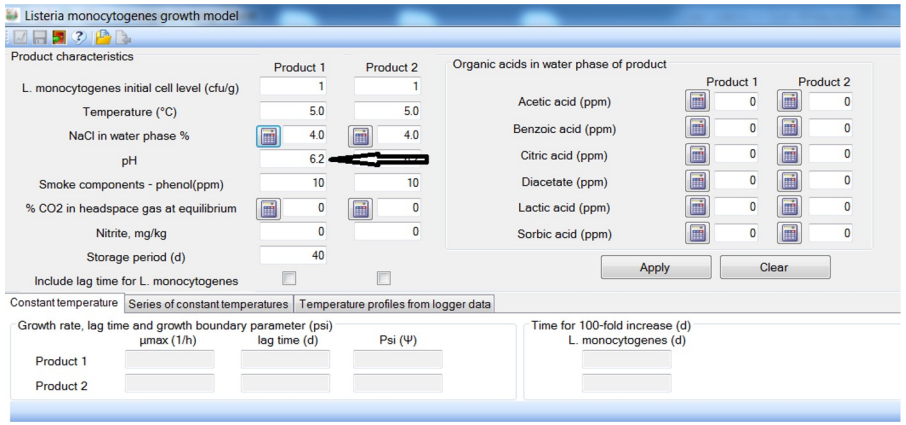
FSSP version 4.0

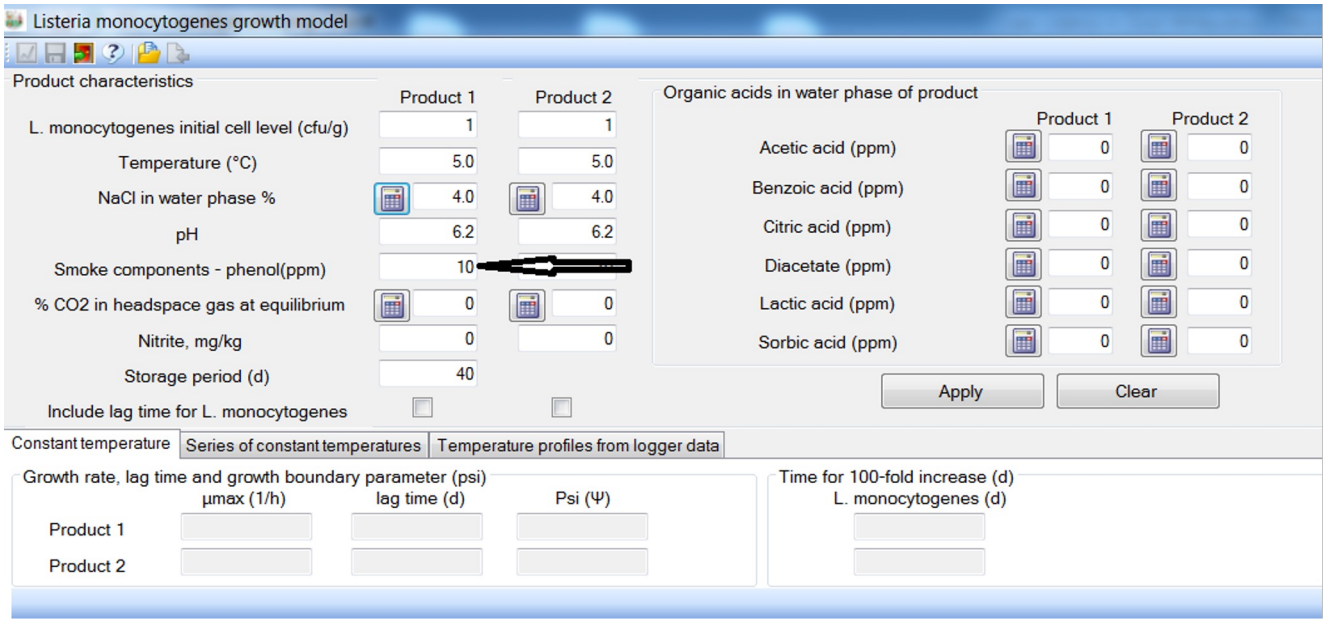


Salinity


Dry matter, %
30.0
NaCl in product, %
1.50
Water phase salt in product, %
2.1
Apply
Cancel

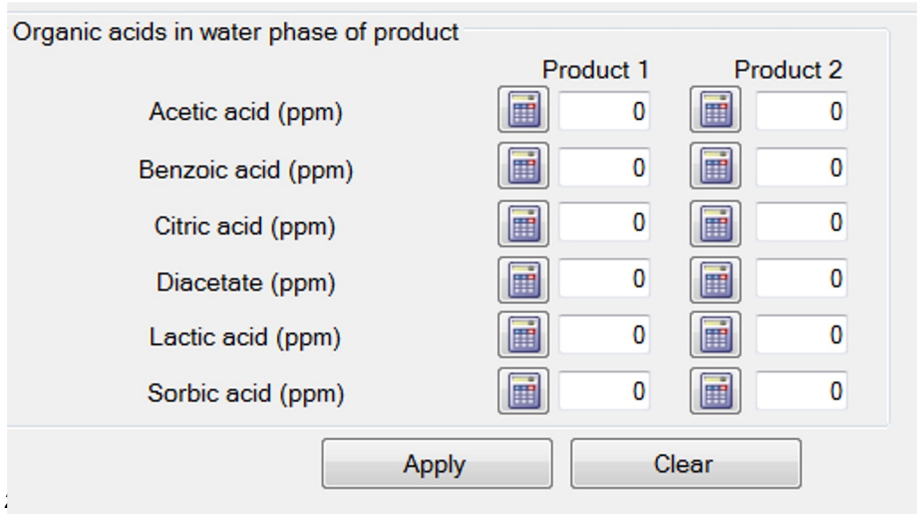
pH


Listeria monocytogenes growth model
Product characteristics
Product 1
Product 2
L. monocytogenes initial cell level (cfu/g)
Temperature (°C)
NaCl in water phase %
pH
Smoke components - phenol(ppm)
% CO2 in headspace gas at equilibrium
Nitrite, mg/kg
Storage period (d)
Include lag time for L. monocytogenes
Organic acids in water phase of product
Acetic acid (ppm)
Benzoic acid (ppm)
Citric acid (ppm)
Diacetate (ppm)
Lactic acid (ppm)
Sorbic acid (ppm)
Apply
Clear
Constant temperature
Series of constant temperatures
Temperature profiles from logger data
Growth rate, lag time and growth boundary parameter (psi)
μmax (1/h)
lag time (d)
Psi (Ψ)
Time for 100-fold increase (d)
L. monocytogenes (d)
Product 1
Product 2

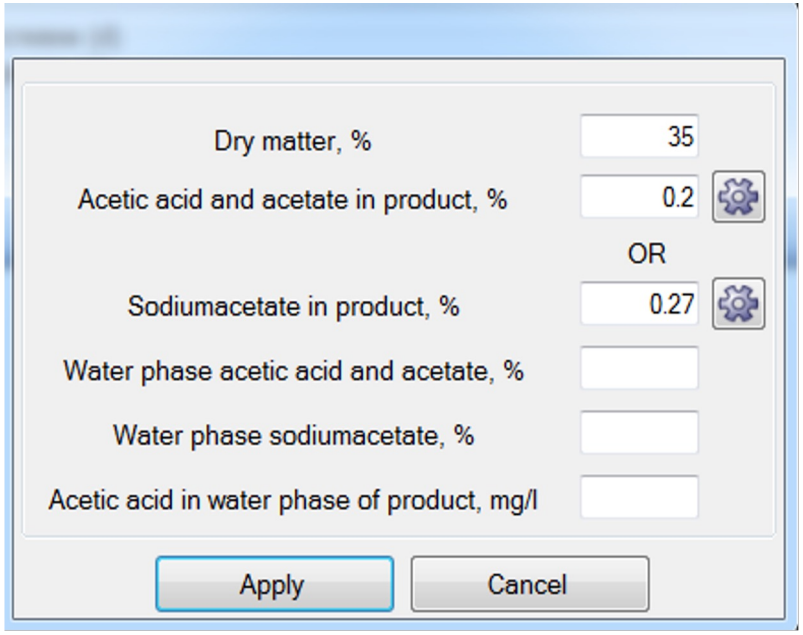


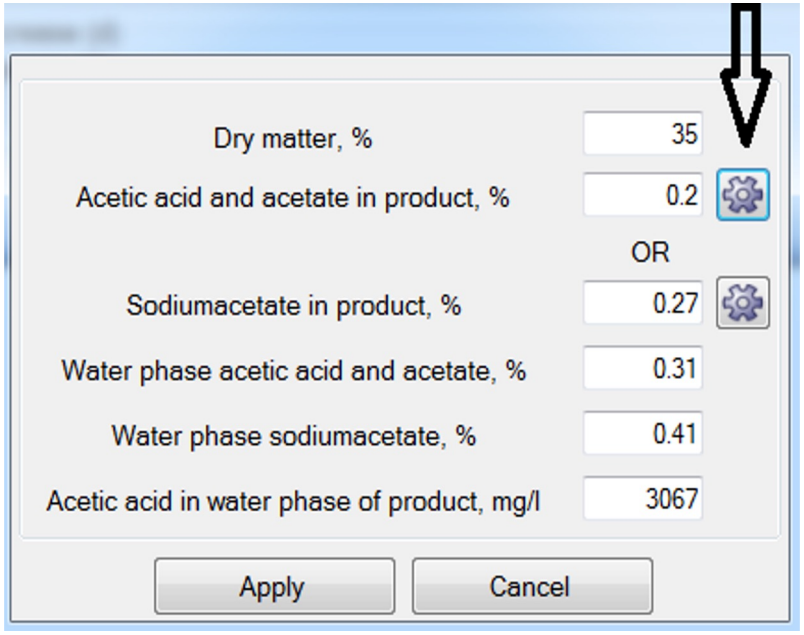
Smoke components - phenol

Organic acids

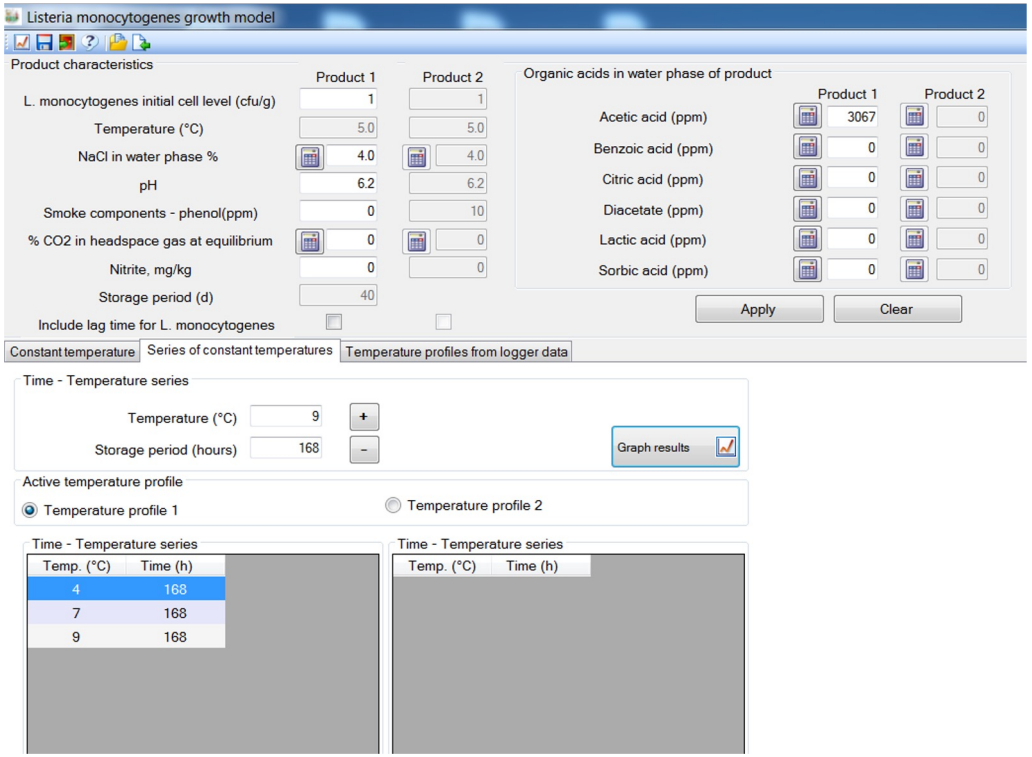


Acetic acid E260





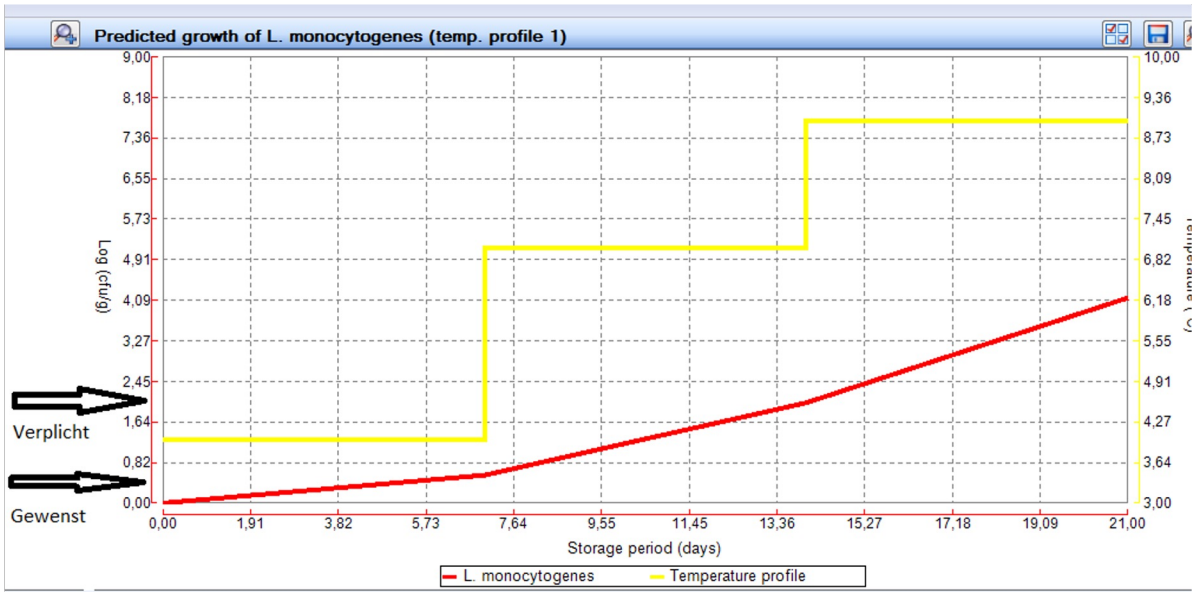
Temperature



Results

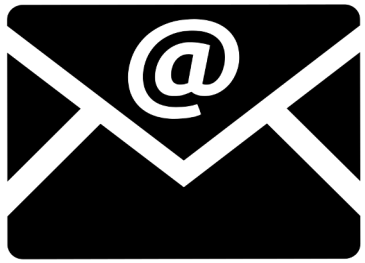
< 2 log (100 cfu/g)

<0,5 log (3,2 cfu/g)



Cornelis Bartlema Food Group BV Report

Example report, available for inspection



Can be requested at info@qassurance.com

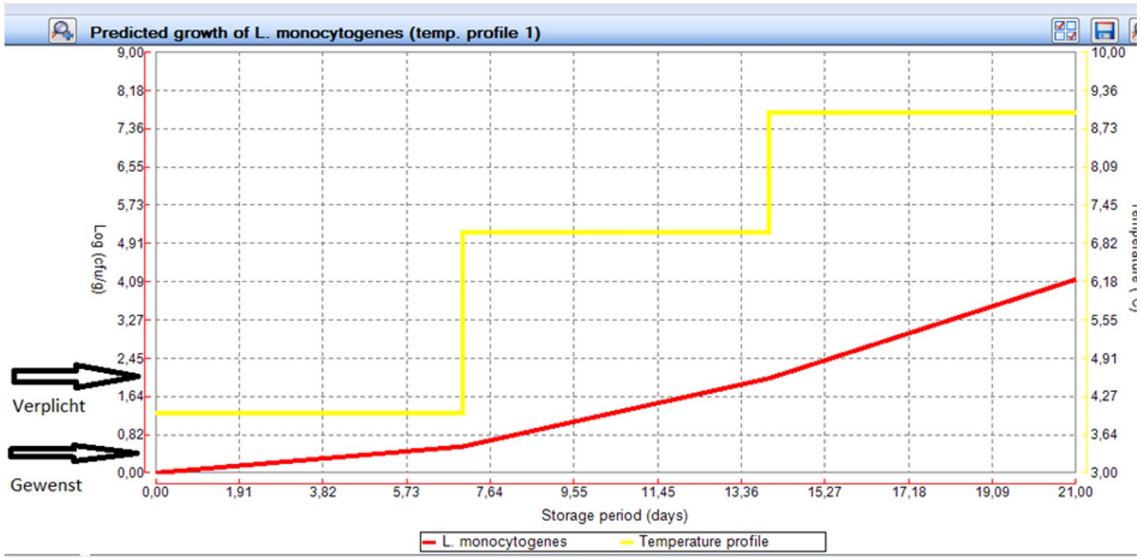
Challenge test

- Growth test in which the product is deliberately contaminated

  -> perform at a value of 0.5 - 2 log cfu/g

Listeria lessons

- Increased supervision (veto)
- Positive release
- Verification of temperature profile
- Determine FSSP parameters 3x
- Preparation advice is sufficient for B2B
- Validate <0,5 log with challenge test
- FSSP screenshots
- EDP audits….
- Listeria present: always counting
- Aroma not for preservation
- Acid of preservative labeling
- HACCP study update: more CCPs



New CCP's and LCP

PROCESS STEP	HAZARD	HAZARD TYPE	CAUSE	CONTROL MEASURE	CCP: CRITICAL CONTROL POINT	SUBSTANTIATION
Pasteurization (exterior product min. 2 minutes at 72 degrees)	Post-contamination with pathogenic microorganisms such as Listeria	Microbiological	Not working hygienically	Pasteurization step	CCP	Listeria Monocytogenes is killed at 72 degrees Celsius for 2 minutes
Weigh out and add preservatives	Outgrowth of (spore-forming) micro-organisms in the end product	Microbiological	Incorrect weighing or not adding pink salt and / or lactate, diacetate, acetic acid, etic..	Check on weighing and adding preservatives	CCP	The consideration of preservatives is secured in the ERP system. When adding too much or too little, the ERP system issues a message. This also applies to not adding preservatives. The color of the product can also be seen if no nitrite has been added. See also: TNO report on nitrite.
Labeling	Outgrowth of Listeria Monocytogenes, present due to post-contamination	Microbiological	Post-contamination	Checking new labels for regeneration advice	Legal requirement	We deliver to professional end users who regenerate. Advice: heat for at least 2 minutes to core temperature ? 75 degrees Celsius before use. Preparation advice: Oven: approx.: 50 minutes, Max 110 degrees Celsius.

Recipe management in SpecCheck

	% Total Moisture Loss	20,00		% Remaining water	5,21	
	% Water for Moisture Loss	25,21		% Moisture loss other Ingredients	0,00	
Ingredient		**Function**	**E-nr**	**%n***	**%v****	**%sp*****
pork	(78%)			62,07	77,59	
water				25,21	6,51	
salt				3,17	3,96	
caramelized sugar				2,48	3,10	
sodium lactate		food acid	E325	1,88	2,35	
natural aroma				0,82	1,03	
triphosphates		stabilizer	E451	0,69	0,87	
sodium (di) acetate			E262	0,58	0,72	
dried corn syrup				0,47	0,58	
diphosphates		stabilizer	E450	0,40	0,49	
dextrose				0,36	0,45	
Monosodium Glutamate (MSG)		flavour enhancer	E621	0,34	0,43	


Enterprise Foods

Additives regulation

- **Nitrite**
- Additives legislation
- Raw products: the use of additives
- Case: Filet Americain

Nitrite: function

- E249 = potassium nitrite; E250 = sodium nitrite
- Microbial preservation: The nitrite (present as HNO_2) is able to penetrate the bacterial cells and react with bacterial proteins, so that all kinds of essential processes in the bacterium are disrupted.
- Coloring agent: red coloring of meat (via heating or oxidation and fermentation)
- Chemical preservation. Nitrite reduces the susceptibility to oxidation of unsaturated fats.
- Interaction with salinity, pH, Aw, additives.
- Color formation: minimum 50 mg/kg required.

Nitrite: substitutes?

- As a preservative:
  No declaration on the label: vegetable extract
  - Via oxidation and fermentation, nitrate -> nitrite
- As colorant and stabilizer:
  - Antioxidants with herbs and spices
- Status 2016: no alternative to nitrite in meat products yet
- Additives legislation:

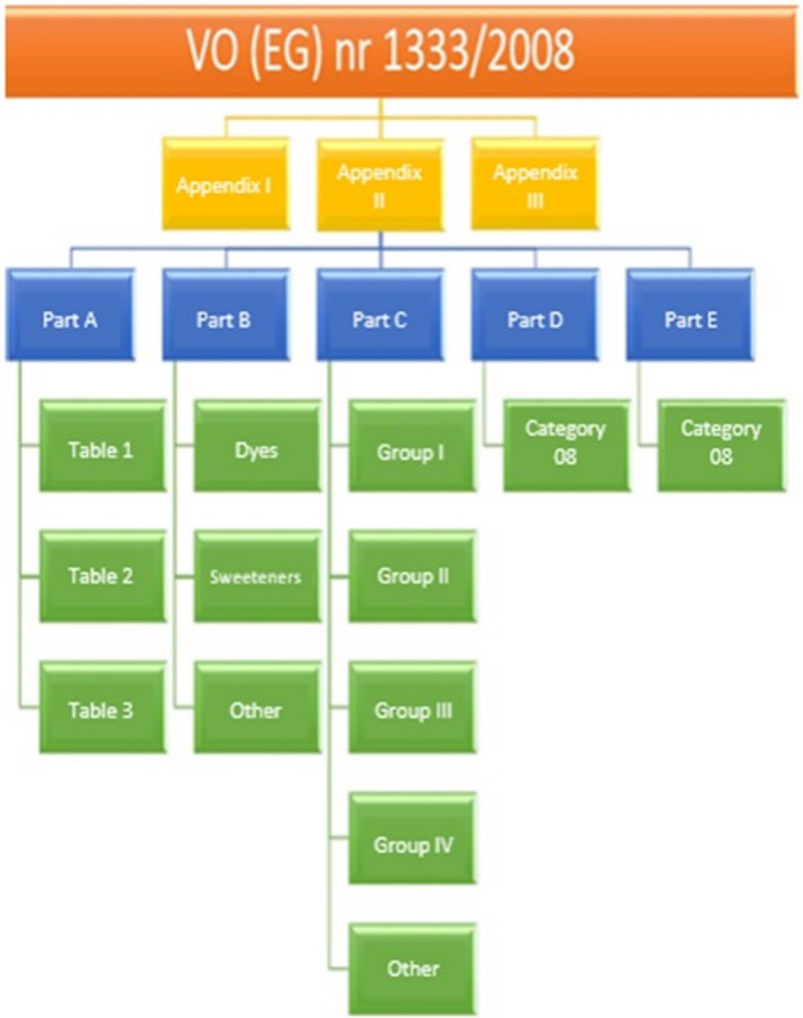
E 249 - 250	Nitrites	ML = 150 mg/kg , except sterilised meat products (Fo > 3.00) ML = 100 mg/kg , only sterilised meat products (Fo > 3.00)

Additives regulation

- Nitrite
- **Additives legislation**
- Raw products: the use of additives
- Case: Filet Americain

Structure of additives legislation

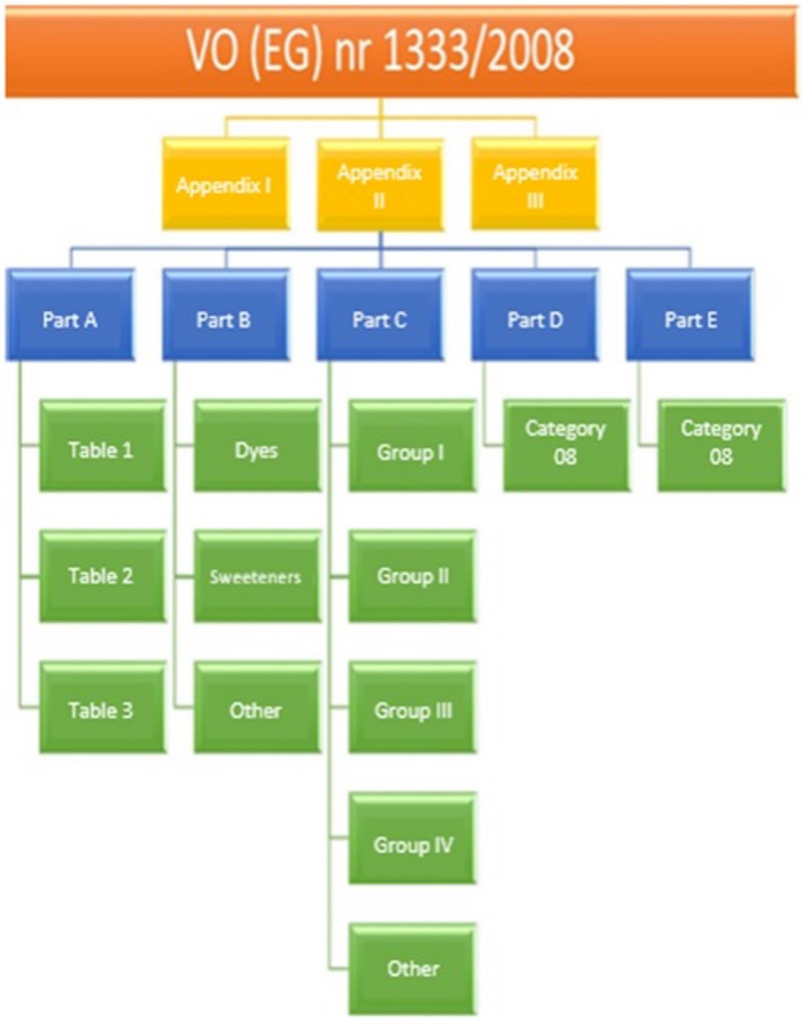
thanks to Karin Koppen (VNV) for the pictures



Additives legislation

- Annex I

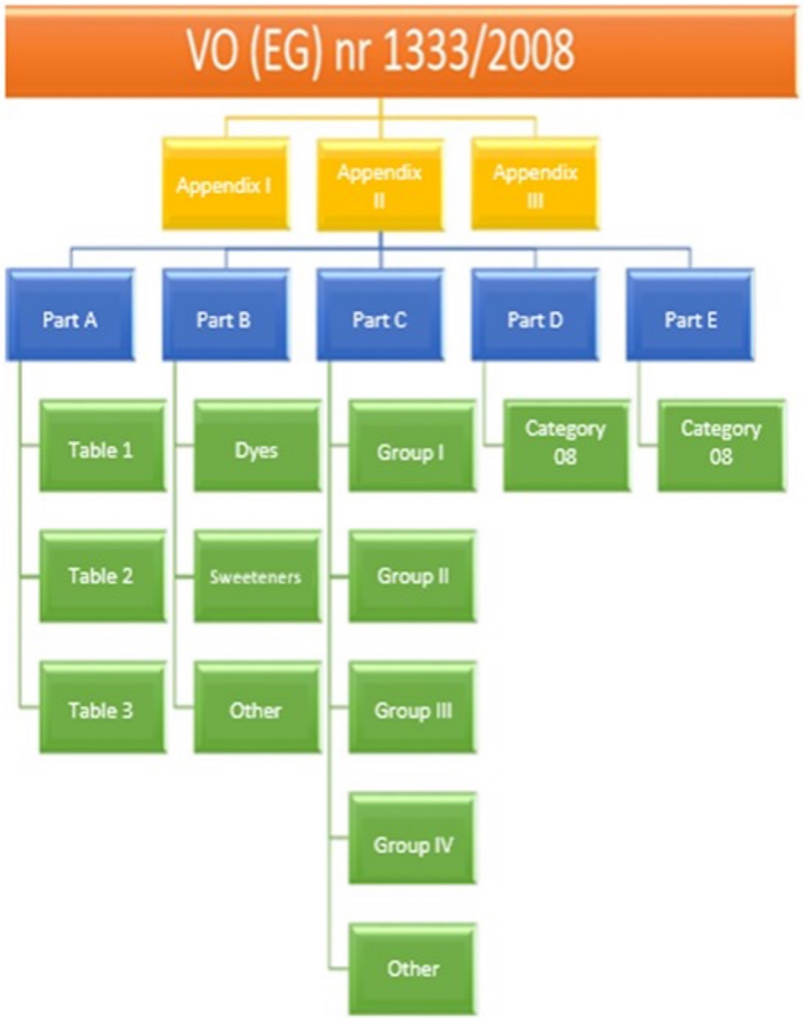
  Functional classes of additives



Additives legislation

- Annex II

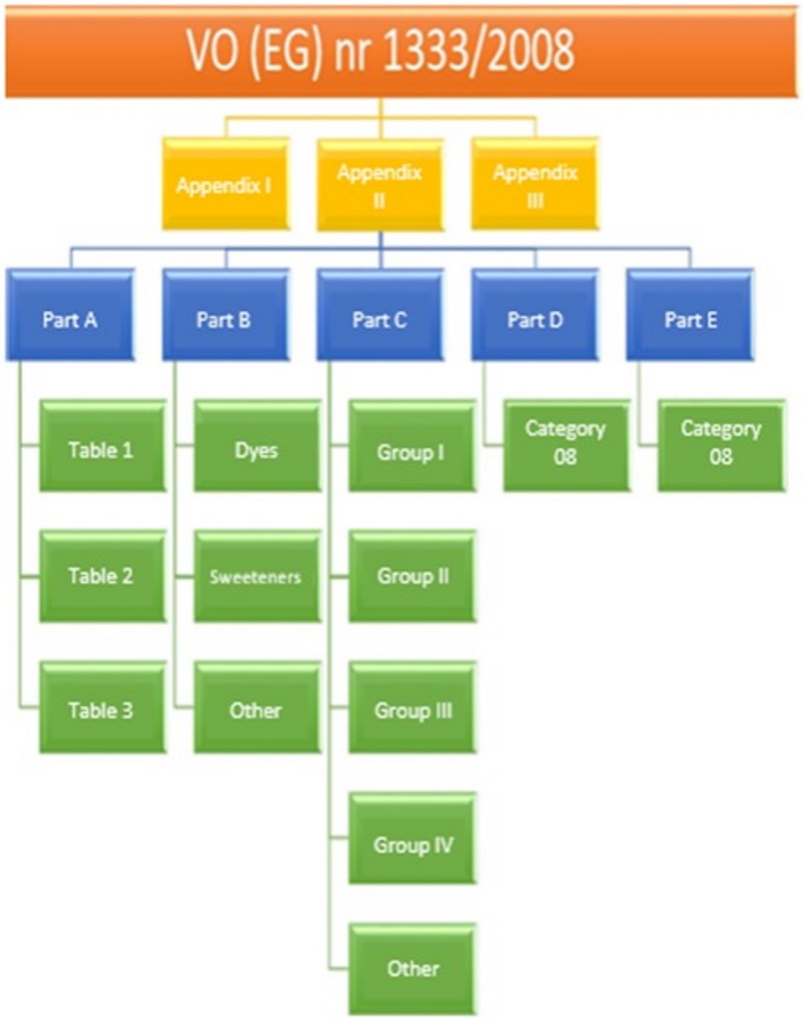
  EU list of additives approved for use in foodstuffs



Additives legislation

- Annex II, Part A
  General provisions

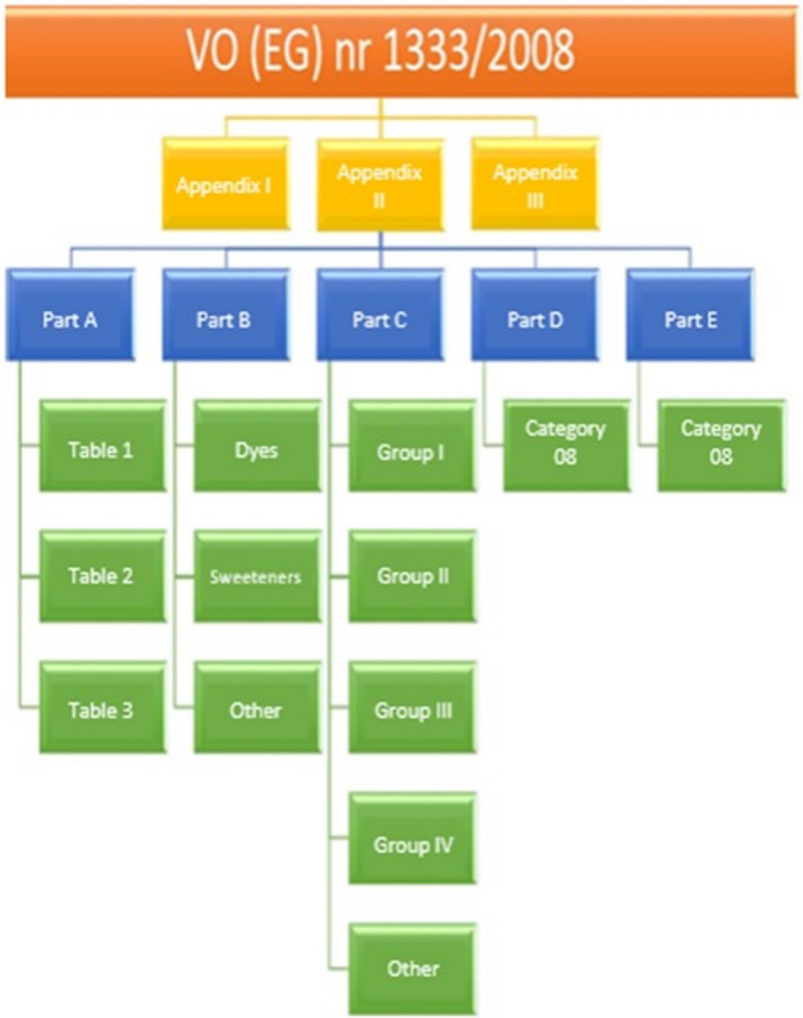
- Table 1: Additive not allowed by carry-over
- Table 2: Coloring agent not allowed
- Table 3: Colorant in the form of lacquers



Additives legislation

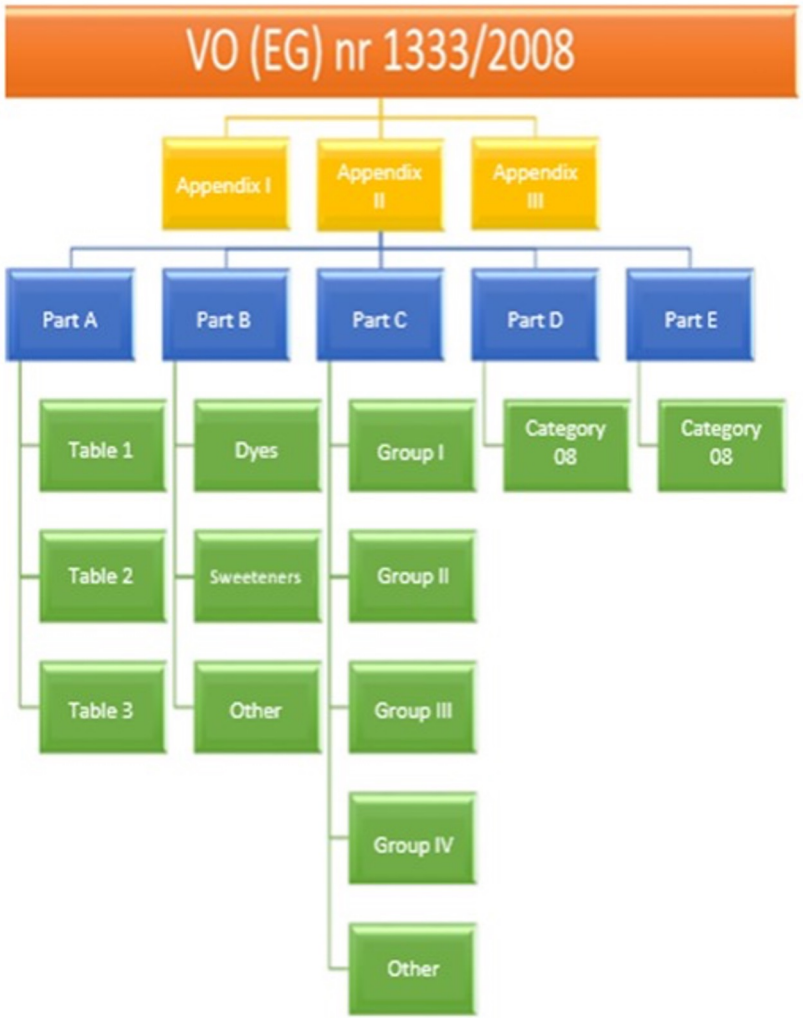
- Part II, Part B
  List of all additives

- Colorants
- Sweeteners
- Other



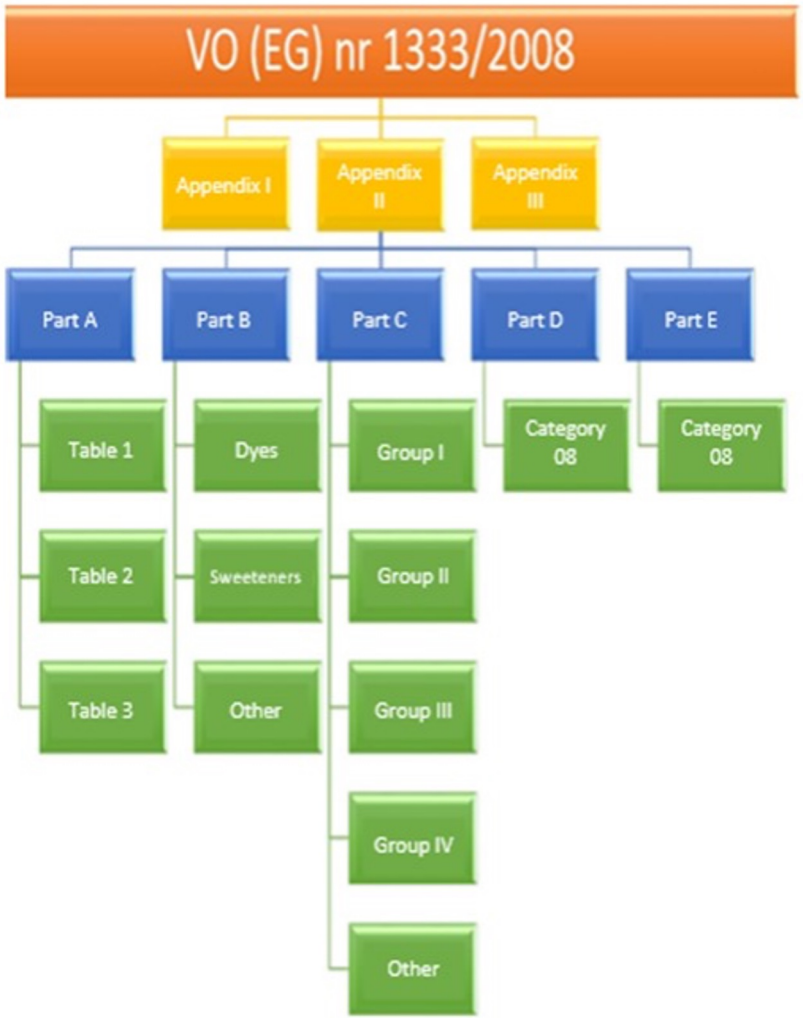
Additives legislation

- Annex III, Part C
  Definitions of groups of additives



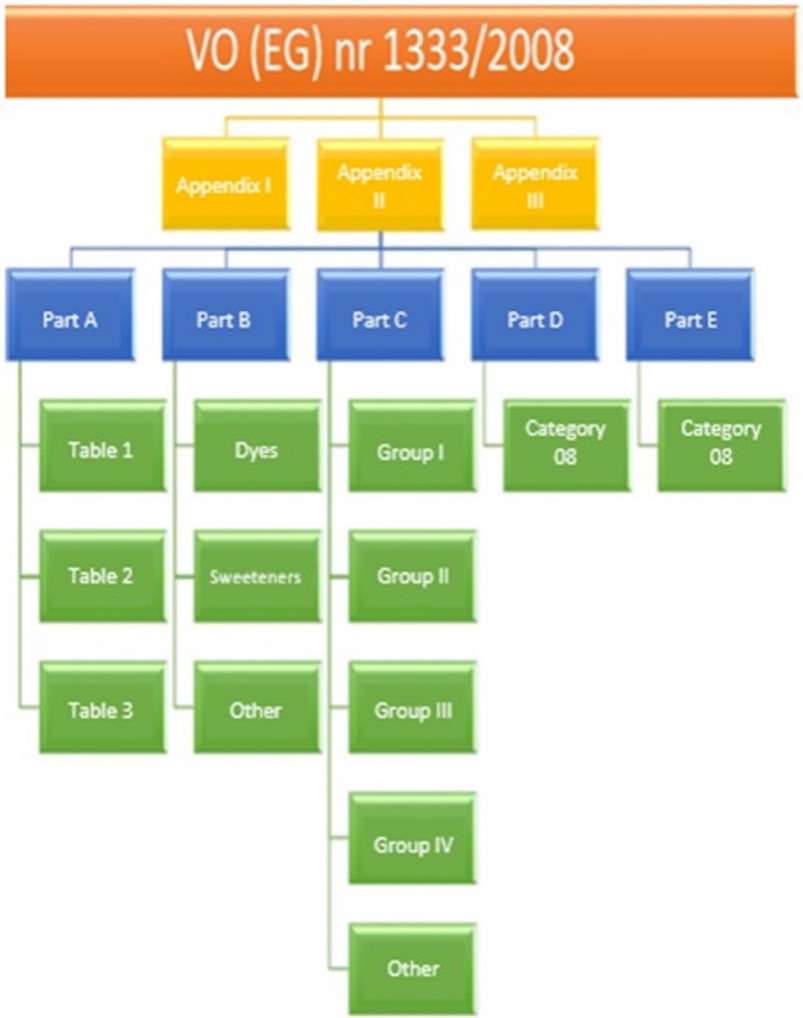
Additives legislation

- Annex II, Part D
  Foodstuff categories
- Category 8: meat

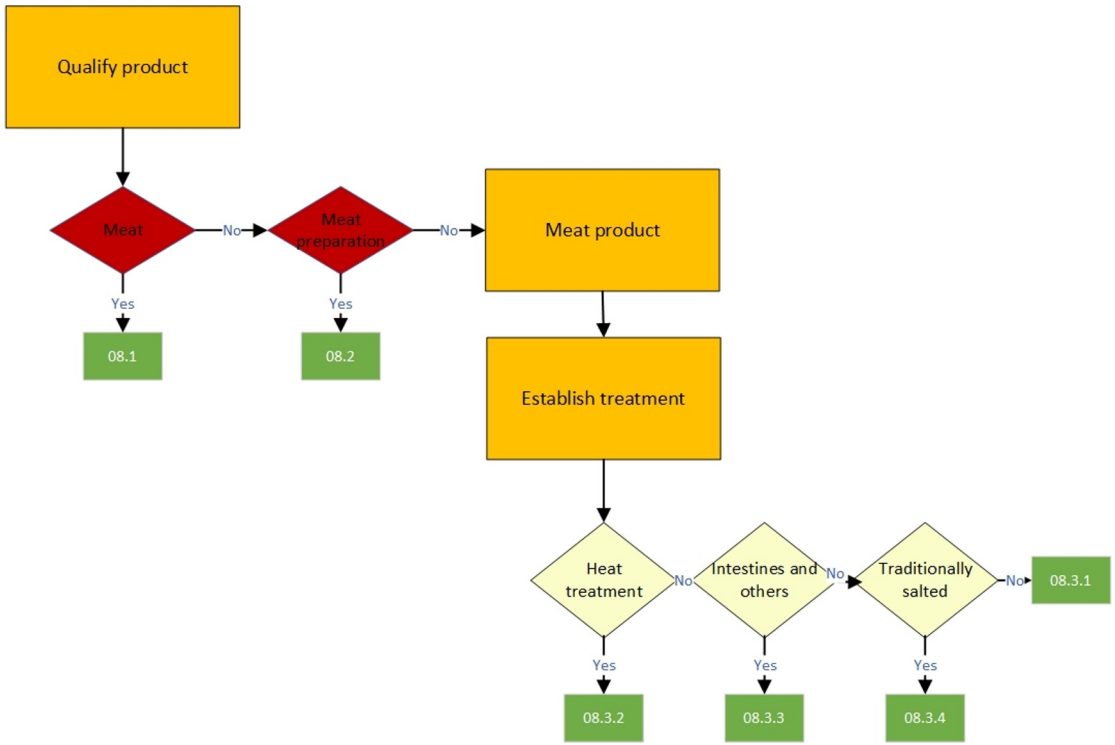


Additives legislation

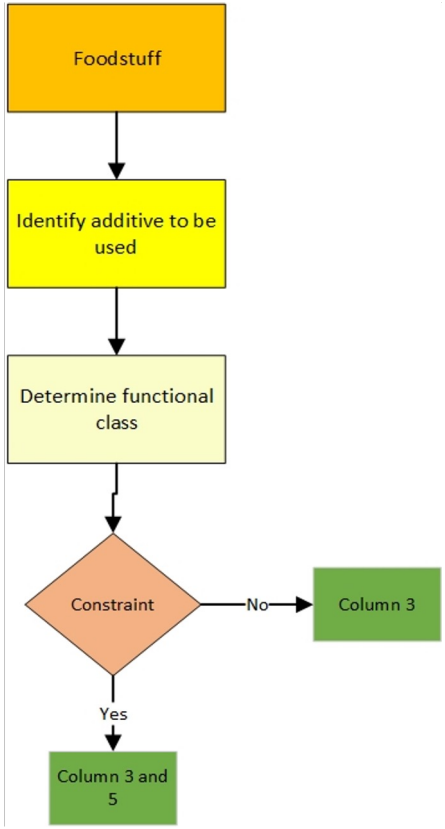
- Annex III
  EU list for the use of food additives, food enzymes, food flavors and conditions of use

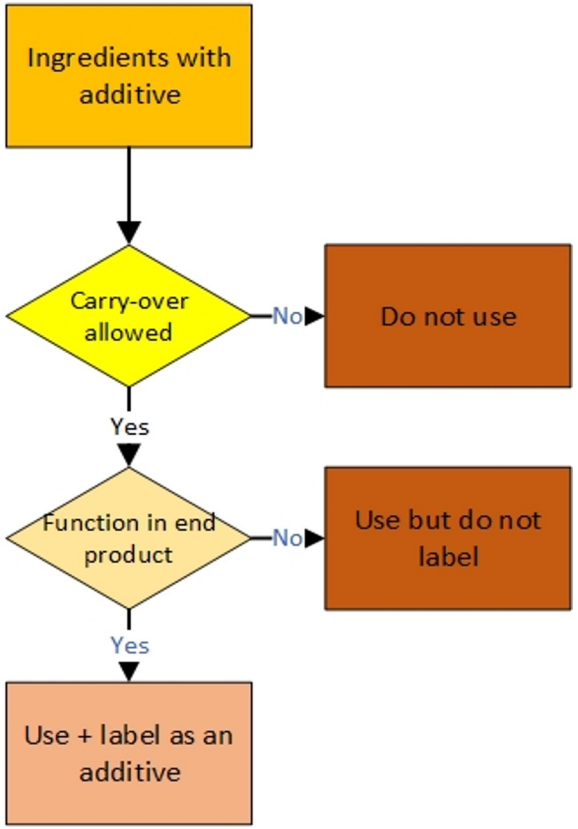


Qualify product



Additives to be used





Carry-over (1/2)

The presence of a food additive is allowed:

- a) in compound foods not listed in Annex II, provided that the food additive is authorized in one of the ingredients of the compound food;
- b) in a food to which a food additive, food enzyme or food flavor has been added, provided that the food additive:
  - i) is authorized in the food additive, food enzyme or food flavor in accordance with this Regulation, and also
  - ii) got into the food via the food additive, food enzyme or food flavor, and also
  - iii) has no technological function in the final product;
- c) in a foodstuff intended for use only in the preparation of a compound foodstuff, provided that the compound foodstuff complies with this Regulation.

Carry-over (2/2)

- Unless expressly provided otherwise, paragraph 1 shall not apply to infant formulas, follow-on formulas, processed cereal-based foods and baby foods, and dietetic foods for infants and young children for special medical purposes as referred to in Directive 89/398/EEC.
- Where a food additive is added to a food in a food flavor, food additive or food enzyme and has a technological function in that food, it shall be considered as a food additive of that food and not a food additive of the added flavoring, food additive or food enzyme and shall thus fulfill the conditions for use of that food.
- Without prejudice to paragraph 1, the presence of a food used as a sweetener is permitted in compound foods with no added sugar, compound foods with reduced energy value, compound diet foods intended for a low-calorie diet, in non-cariogenic compound foods and compound foods with an extended shelf life, provided that the sweetener is any of the ingredients of these compound foods is permitted.

Additives regulation

- Nitrite
- Additives legislation
- **Raw products: the use of additives**
- Case: Filet Americain

Raw meat products: the use of additives

- beef sausage (and comparable products such as tea sausage and steak sausage)
- Filet American
- Roast beef
- Carpaccio

Raw meat products: the use of additives

Regulation 853/2004 Annex I

- 1.10 Fresh meat: meat that, apart from the cooling or freezing treatment, has not undergone any treatment to improve the shelf life, including vacuum-packed meat or meat in CA packaging (controlled atmosphere).
- 1.15 Meat preparations: fresh meat, including meat that has been minced into small pieces, to which foodstuffs, seasonings or additives have been added or that has undergone processing which is not sufficient to change the internal muscle tissue structure of the meat and thereby the characteristics of fresh meat to disappear.
- 7.1 Meat products: **processed products** obtained from the **processing** of meat or from the further processing of such processed products, so that the cut surface shows that the **characteristics of fresh meat have disappeared.**

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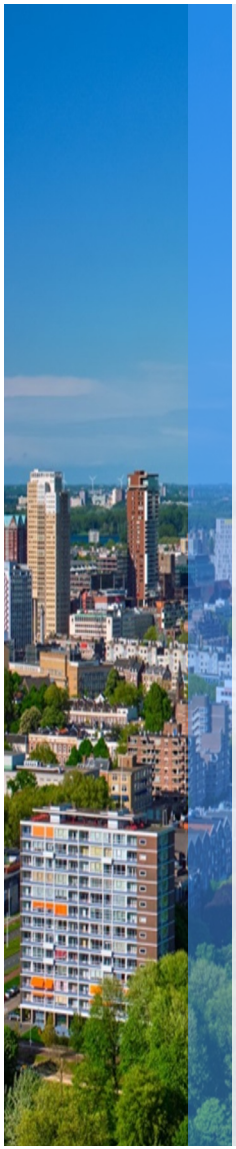
Regulation 852/2004, article 2

- 1m. **Processing:** an operation that significantly modifies the original product, including by means of heating, smoking, salting, maturing, drying, **marinating,** extraction or extrusion, or a combination of such treatments."
- 1n. Unprocessed products: food that has not undergone treatment, including products that have been divided, cut into parts, slices, or pieces, deboned, minced, skinned, ground, cut, cleaned, trimmed, peeled, crushed, chilled, frozen, deep-frozen or thawed.
- 1o. **Processed products:** foodstuffs resulting from the processing of unprocessed products; these products may contain ingredients necessary for their manufacture or to give them specific characteristics.

Raw meat product or meat preparation?

- Marinating to the core is one of the operation mentioned in Regulation 852/2004 to obtain a processed product.
- This marinating, salting and fermentation has the result that the characteristics of fresh meat have disappeared (as with dry sausage).
- The mechanical processes also influence the structure of fresh meat. This creates a processed product (meat product) as mentioned in Regulation 853/2004 under Annex I under 7.1.



Additives regulation

- Nitrite
- Additives legislation
- Raw products: the use of additives
- **Case: Filet Americain**

Filet american: a meat product or a meat preparation

- The NVWA regards filet american as a meat product with regard to the use of additives. With regard to storage temperature, the storage temperature of 7°C is also accepted for a meat product, while a maximum storage temperature of 4°C has been set for meat preparation.
- The NVWA regards filet american in the context of regulation 2073/2005 as a meat preparation that is consumed raw.

Regulation 853/2004

- *7. PROCESSED PRODUCTS*
- *7.1. Meat products: processed products obtained from the processing of meat of from the further processing of such processed products, so that the cut surface shows that the characteristics of fresh meat have disappeared.*

Filet american: as a meat product

- If it appears from this that these products meet the criterion of a “meat product”, that is in any case clear. But that also applies to the microbiological criteria of Regulation 2073/2005. The microbiological safety of these meat products could then be guaranteed via Annex I of this regulation under point 1.8.

1.8	Meat products intended to be eaten raw, with the exception of products where the salmonella risk is eliminated by the production process or the composition of the product	*Salmonella*	5	0	Absent in 25 g	EN/ISO 6579	Products placed on the market, for the duration of their shelf life

Filet american: as meat preparation

- If filet american were to be regarded as a meat preparation instead of a meat product, the use of additives will be severely limited, as well as those additives that are very important for the food safety and shelf life of the product.

Example product portfolio analysis (1/2)

	MEAT PREPARATION (raw)	carry over: if NOT made by name, generally ordered by raw materials		MEAT PREPARATION (cooked)	
E number	Meat preparation: 8.2 allowed	Table 2, coloring agent: excluded from carry over principle during preparation	carry over ?	Meat products 8.3.2 (heat treated)	Carry over (dyes are allowed here)
160c	No	Excluded for carry over	May not	Only in sausage, pate and terrines	Yes, allowed
150c	No	Excluded for carry over	May not	Only in sausage, pate and terrines	Yes, allowed
150a	No	Excluded for carry over over	May not	Only in sausage, pate and terrines	Yes, allowed
1422	No	No	Yes, allowed	Yes, for group 1	
1414	No	No	Yes, allowed	Yes, for group 1	
631	No	No	Yes, allowed	No	Yes, allowed
627	No	No	Yes, allowed	No	Yes, allowed
621	No	No	Yes, allowed	No	Yes, allowed
551	No	No	Yes, allowed	No	Yes, allowed
510	No	No	Yes, allowed	No	Yes, allowed
500	yes, with poultry meat	No	Yes, allowed	Yes, for group 1	
466	No	No	Yes, allowed	Yes, for group 1	
451	No	No	Yes, allowed	No	Yes, allowed
450	No	No	Yes, allowed	No	Yes, allowed

Example product portfolio analysis (2/2)

	MEAT PREPARATION(raw)	Carry over: if not made by name, generally ordered by raw materials		MEAT PREPARATION(cooked)	
E number	Meat preparation: 8.2 allowed	Table 2, coloring agent: excluded from carry over principle during preparation	carry over ?	Meat products 8.3.2 (heat treated)	Carry over (dyes are allowed here)
331	Yes, in the case of ground meat, prepackaged preparations of fresh ground meat to which ingredients other than additives or salt have been added.	no	Yes, allowed	Yes, for group 1	
316	no	no	Yes, allowed	Yes, in salted products and preserved products	Yes, allowed
301	Yes, in the case of ground meat, prepackaged preparations of fresh ground meat to which ingredients other than additives or salt have been added.	no	Yes, allowed	Yes, for group 1	
300	Yes, in the case of ground meat, prepackaged preparations of fresh ground meat to which ingredients other than additives or salt have been added.	no	Yes, allowed	Yes, for group 1	
270	Yes, in the case of ground meat, prepackaged preparations of fresh ground meat to which ingredients other than additives or salt have been added.	no	Yes, allowed	Yes, for group 1	
262	Yes, in the case of ground meat, prepackaged preparations of fresh ground meat to which ingredients other than additives or salt have been added.	no	Yes, allowed	Yes, for group 1	
260	Yes, in the case of ground meat, prepackaged preparations of fresh ground meat to which ingredients other than additives or salt have been added.	no	Yes, allowed	Yes, for group 1	
211	no	no	Yes, allowed	Yes, with surface treatment for fried meat products	Yes, allowed
210	no	no	Yes, allowed	Yes, with surface treatment for fried meat products	Yes, allowed
202	no	no	Yes, allowed	Yes, with surface treatment for fried meat products	Yes, allowed
150	No	Excluded for carry over	May not	Only in sausages, pates and terrines	Yes, allowed
124	no	Excluded for carry over	May not	no	Yes, allowed

QAssurance

NVWA

NVWA

1. Tracing
    - Properly recording the current method of tracing all normal products as well as any biological flow.
    - Describe any missing trace actions in more detail and record them in additional records.
    - Method of tracing closed weekly: demonstrably correct.
2. Additives
    - Raw materials, Recipes, End products up to date
    - 2 E-number analysis on this product portfolio
    - Keep E-number analysis up to date

NVWA

3. Microbiology
    - Check microbiological plan for legislation.
    - Check microbiological plan last year for compliance.
    - Carefully implement current year microbiological plan.

4. Listeria
    - Demonstrable compliance with info sheet 85 regarding Listeria.
    - Analysis of current product portfolio in which FSSP must be substantiated with, among others, why Challenge tests have or have not been carried out.
    - Describe the Listeria approach that demonstrably meets the legal requirements.

NVWA

5. STEC
    - 5A Using the product portfolio, analyze which raw products to be consumed can have STEC as a problem.
    - 5B Conform STEC to NVWA policy and guarantee these products regarding STEC
    - 5C Info sheet 64 of NVWA considered for STEC
6. EDP audit
    - 6A Administrations may be taken without any reason / suspicion

Food Safety Compliance
HACCP and Legislation

QAssurance B.V.
Van Nelleweg 1 - Rotterdam
TABAK 3.10

+31-(0)10-2004080
info@qassurance.com
www.qassurance.com