



# Identification and assessment of potential vulnerabilities in the poultry meat production chain to dangerous agents and substances

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## ΣChain

- ΣChain was a 3-year EC-project (2006 – 2009) with a total budget of €2,93 million
- 11 Partners from Universities, Research Institutes and Industry spread across the European Union, Norway and Brazil

## Objectives

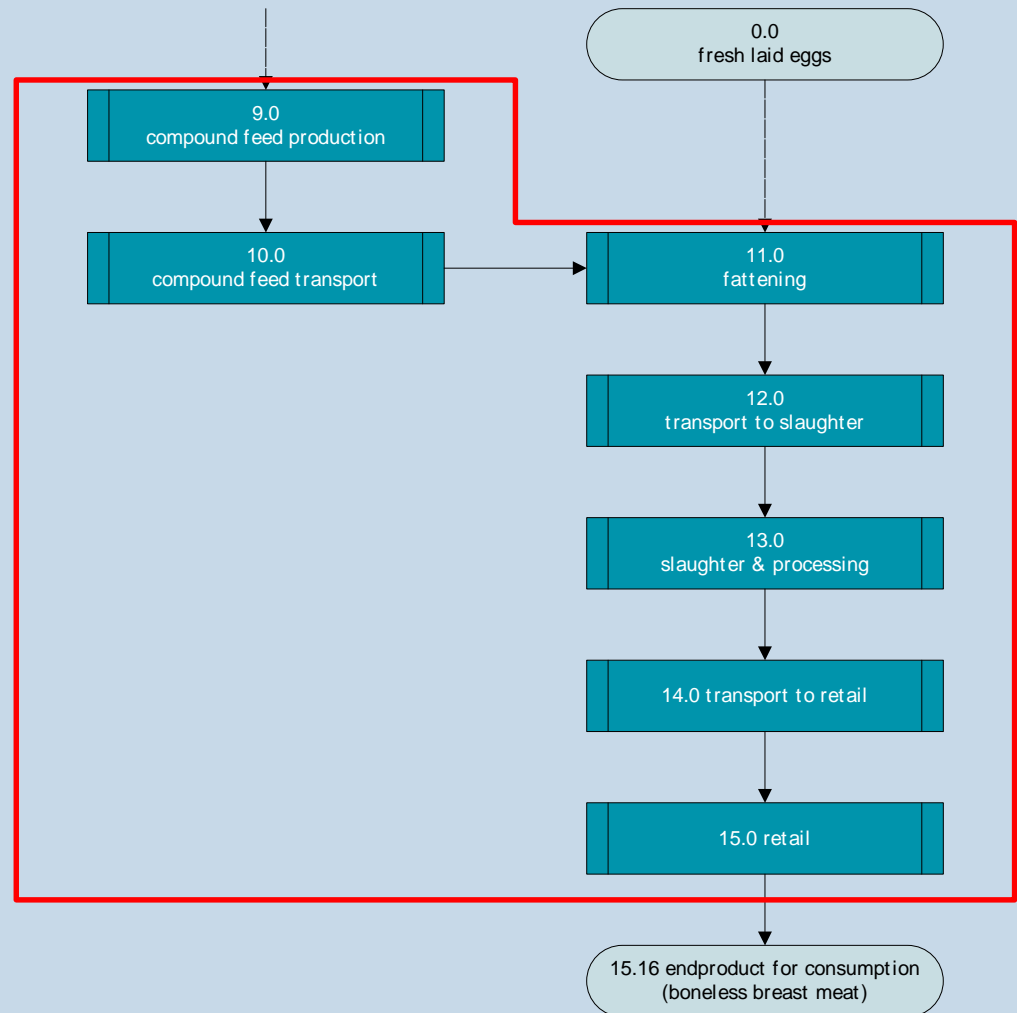
- To develop methodologies that will optimize the traceability process within food and feed chains with respect to **chain vulnerability to contamination**
- Deliverable: Stakeholders' Guide on the vulnerability of food and feed chains to dangerous agents and substances

## ΣChain Approach

- Four step procedure:
  1. Collecting **information**
  2. Evaluating available information, **identification of potentially vulnerable chain steps** (to contamination)
  3. **Assessing (prioritizing)** potentially vulnerable chain steps
  4. **Addressing** identified potentially vulnerable chains steps in order to possibly **decrease or eliminate** the vulnerability

# 1. Collecting information - prerequisite

- Fundamental understanding of processes, in- and outputs and interlinks in the chain as well as the direction and speed of the product flow
- “Chain mapping”



# 1. Collecting information

- Contaminants
  - *Salmonella spp.*, *Camphylobacter spp.*, *Listeria monocytogenes*, *E. coli*; VTEC; O157:H7
  - Influenza A;H5N1
  - Nicarbazin, Lasalocid, Narasin, Salinomycin, Monensin,
  - PCDD, PCDF, PCB
- Occurrence and dynamics in the chain
  - Entry points, Multiplication, Accumulation, Degradation, Exit, Control
- Analytical methods
  - Suitable to detect relevant contaminants in a given contaminant/matrix combination in compliance with EU-law (or national legislation)?
  - Currently used?

# 1. Collecting information

- The documentation/ data flow accompanying the product along the chain
  - Product identity, traceability, safety
  - Records, process parameter (e.g. temperature, humidity)
  - Data handling and transfer esp. at chain steps with inherent **change of responsibility** for or **ownership** of the product
- Physical and electronic tags
  - **Criteria** influencing **integrity, durability and readability** of tags:
    - Physical characteristics of the product
    - Manner of product flow
    - Shape, size and material of packaging
    - Ambient parameters of processing and storage
    - Speed and concurrence of product passage
    - Compatibility of tagging systems

## 2. Evaluating the available information, identification of potentially vulnerable chain steps

- A **chain step** is considered as **potentially vulnerable to contamination** if:
  - It is an entry point for contamination or contaminants are or might be present
  - Entering or present contaminants are not or might not be (sufficiently) controlled based on current control measures (incl. testing)
  - Information on the product, identification and/ or traceability of the product may or will get lost
  - Methods for data transfer will or might fail
  - Physical or electronic tags used are considered not appropriate or will or might get ineffective
- Set of “**potentially vulnerable**” **chain steps**

### 3. Assessing (prioritizing) potentially vulnerable chain steps

- FMEA (Failure Mode & Effect Analysis) – modified – rating procedure
  - Severity (1-10) viz. damage to public health
  - Likelihood of occurrence (1-5) viz. frequency of a vulnerability happening
  - Detectability (likelihood of detection) (1-3) viz. indicates whether a vulnerability will or might be detected
- $VPN1 = \text{Severity} \times \text{Likelihood} \times \text{Detectability} (1-150)$

No. of potentially vulnerable chain step	Description of chain step	Potential failure (contaminant name or tag/documentation failure)	Cause of failure	Current control measures in place	Sev	Lik	D	VPN 1	New control measures that could be put into place	Sev	New Lik	New D	VPN 2
9.01	Delivery of raw materials (feed chain)	PCDD/F	Contaminated feed additives e.g. zink oxide, copper sulphate etc.	In-house testing; 1-6 samples/year; end product Official control - residues	8	3	2	48	Testing each batch of feed additives at delivery	8	1	1	8

## 4. Addressing identified potentially vulnerable chains steps in order to possibly decrease or eliminate the vulnerability

- New control measures possibly influencing (decreasing) likelihood of occurrence and/ or (increasing) detectability
  - Likelihood of occurrence(1-5) **New Lik**
  - Detectability (likelihood of detection) (1-3) **New D**
- $VPN2 = \text{Severity} \times \text{Likelihood} \times \text{Detectability}$  (1-150)

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**Thank you for your attention!**