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Nederlandse Voedsel- en Warenautoriteit
Ministerie van Economische Zaken

Risk ranking in the red meat supply chain

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AF 56th meeting, 11 June 2015 (Riga)

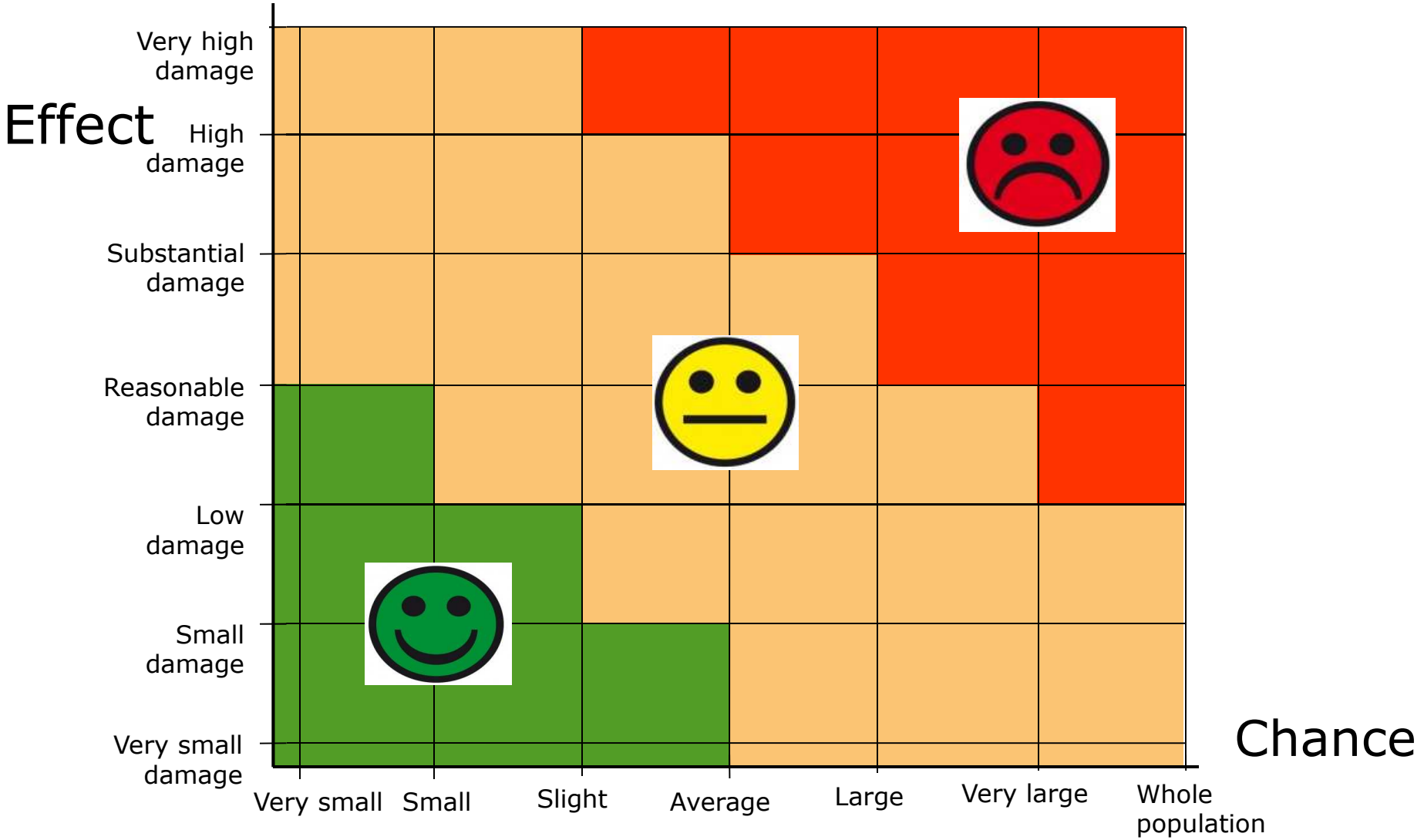
Risk ranking

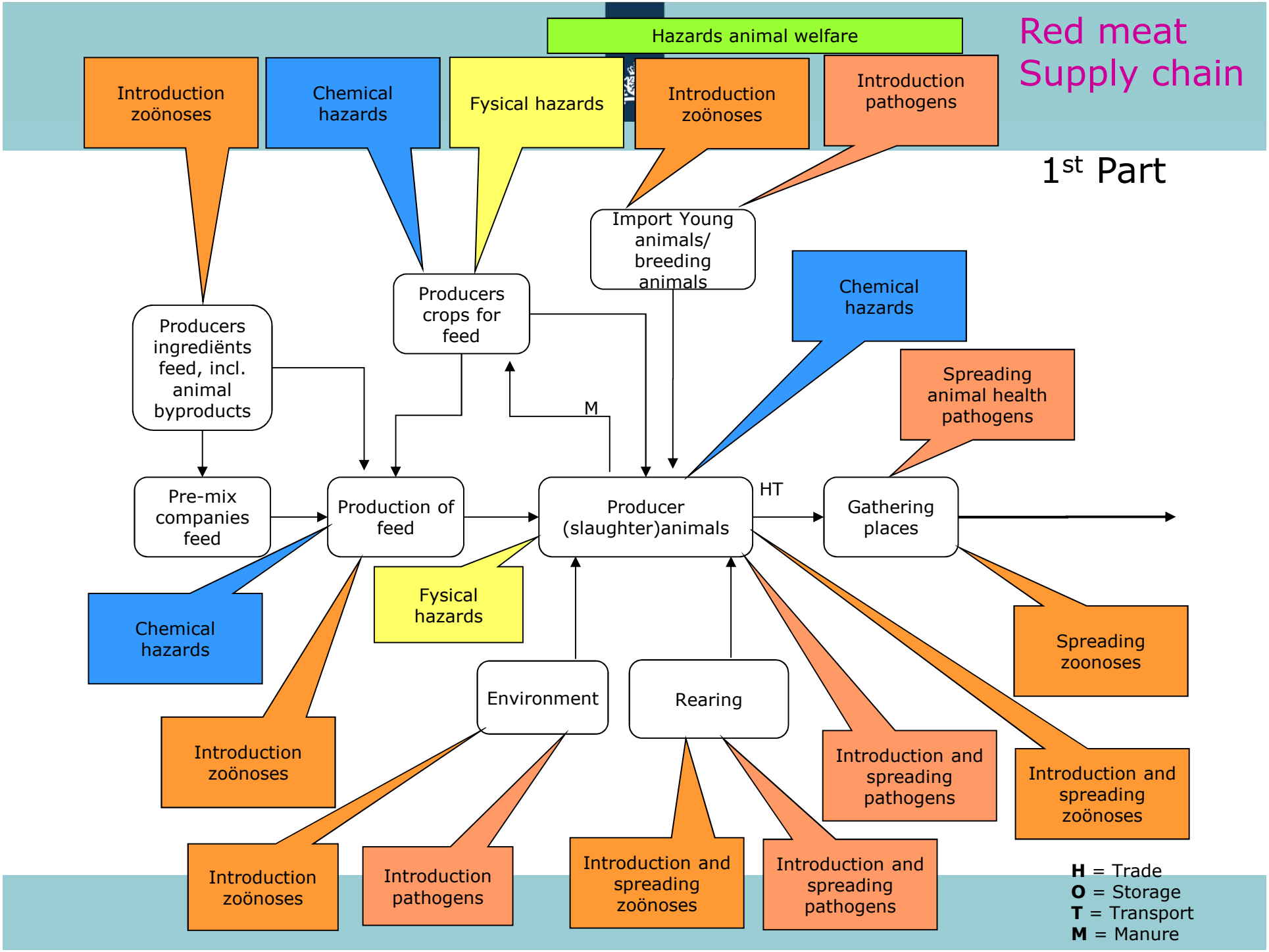
- Risk ranking has been recognized as starting point for risk-based priority setting and resource allocation at the level of risk management.

- Red meat supply chain risk analysis calculates backwards from societal values such as human health, plant- and animal health and animal welfare, identifies hazards and risks and provides advice on how to manage these risks.

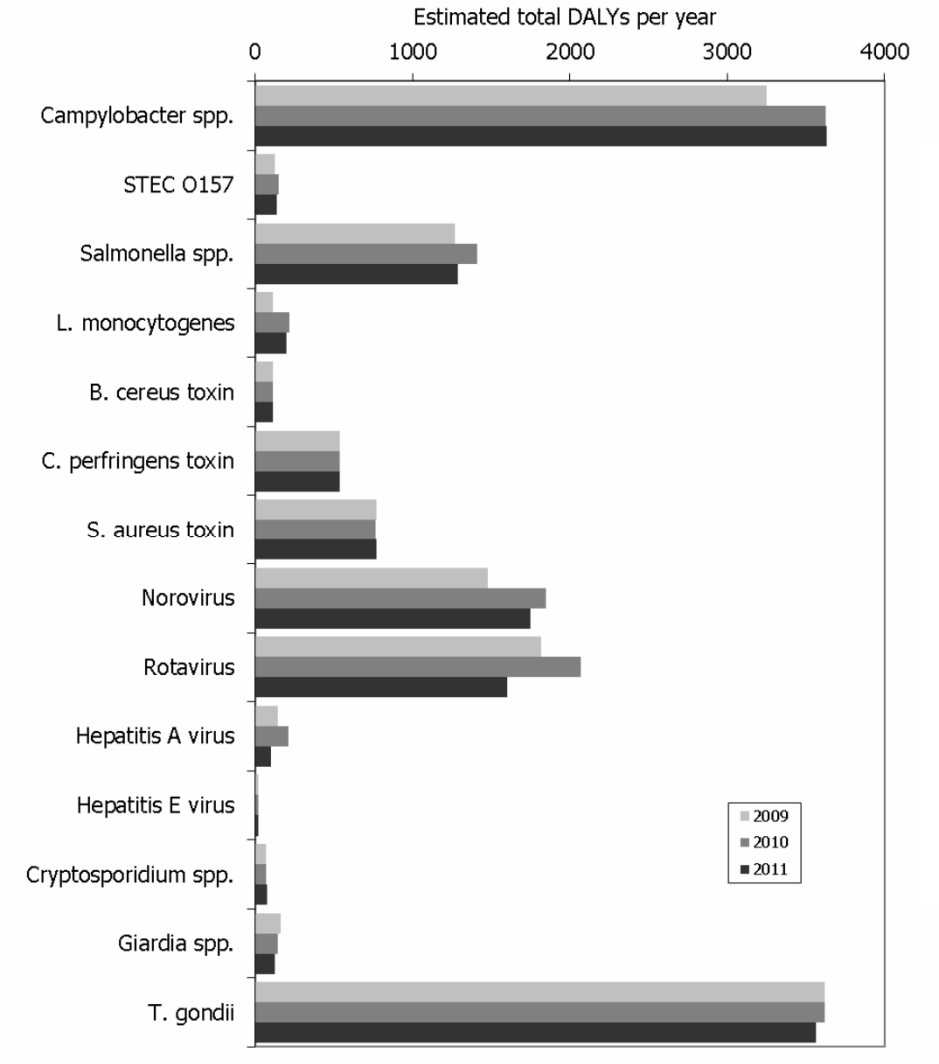
http://www.efsa.europa.eu/en/press/news/130627a.htm

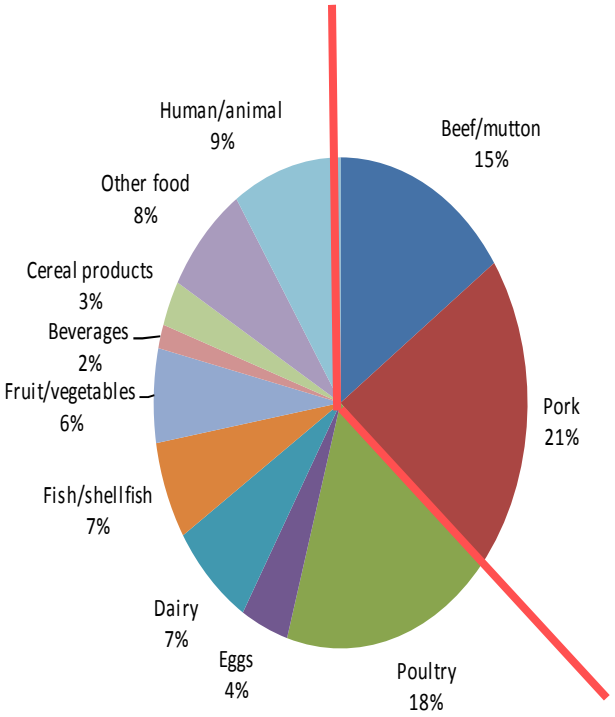
Risk matrix


Effect
Very high damage
High damage
Substantial damage
Reasonable damage
Low damage
Small damage
Very small damage
Very small
Small
Slight
Average
Large
Very large
Whole population
Chance

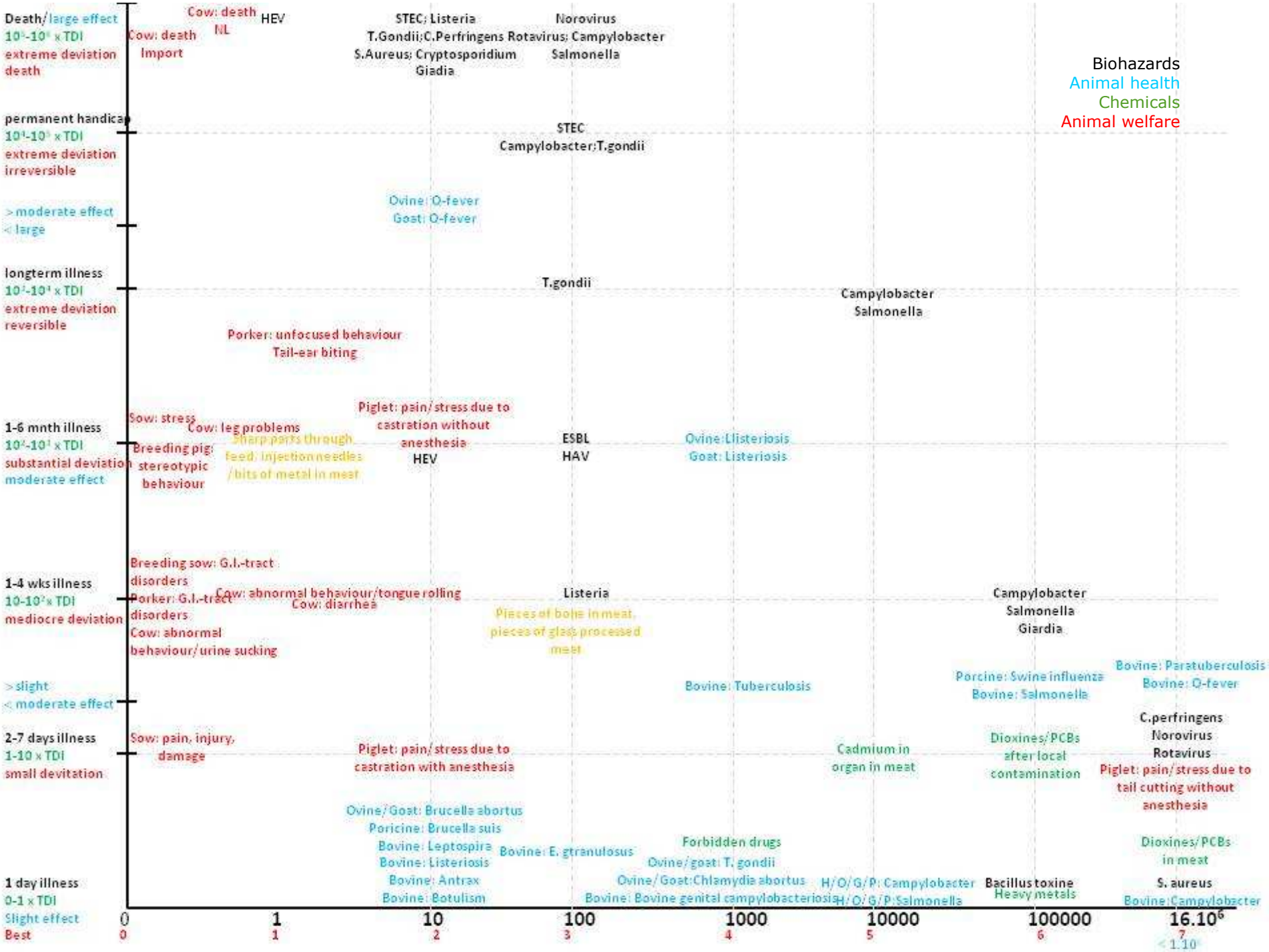

Red meat
Supply chain
1st Part
Hazards animal welfare
Introduction zoönoses
Chemical hazards
Fysical hazards
Introduction zoönoses
Introduction pathogens
Import Young animals/ breeding animals
Producers crops for feed
Producers ingrediënts feed, incl. animal byproducts
Chemical hazards
Spreading animal health pathogens
M
Pre-mix companies feed
Production of feed
Producer (slaughter)animals
HT
Gathering places
Chemical hazards
Fysical hazards
Spreading zoonoses
Environment
Rearing
Introduction zoönoses
Introduction and spreading pathogens
Introduction and spreading zoönoses
Introduction zoönoses
Introduction pathogens
Introduction and spreading zoönoses
Introduction and spreading pathogens
H = Trade
O = Storage
T = Transport
M = Manure

Disease burden





Source: A.H. Havelaar and M. Bouwknegt RIVM


Death/large effect
10³-10⁴ x TDI
extreme deviation
death
permanent handicap
10²-10³ x TDI
extreme deviation
irreversible
>moderate effect
< large
longterm illness
10¹-10² x TDI
extreme deviation
reversible
1-6 mnth illness
10⁰-10¹ x TDI
substantial deviation
moderate effect
1-4 wks illness
10-10² x TDI
mediocre deviation
>slight
< moderate effect
2-7 days illness
1-10 x TDI
small devitation
1 day illness
0-1 x TDI
Slight effect
Best
Cow: death
NL
HEV
Cow: death
Import
STEC; Listeria
T.Gondii;C.Perfringens
S.Aureus; Cryptosporidium
Giadia
Norovirus
Rotavirus; Campylobacter
Salmonella
Biohazards
Animal health
Chemicals
Animal welfare
STEC
Campylobacter;T.gondii
Ovine: Q-fever
Goat: Q-fever
T.gondii
Campylobacter
Salmonella
Porker: unfocused behaviour
Tail-ear biting
Sow: stress
Cow: leg problems
Breeding pig: stereotypic behaviour
Sharp parts through feed: injection needles / bits of metal in meat
Piglet: pain/stress due to castration without anesthesia
HEV
ESBL
HAV
Ovine: Llisteriosis
Goat: Listeriosis
Breeding sow: G.I.-tract disorders
Porker: G.I.-tract disorders
Cow: abnormal behaviour/urine sucking
Cow: abnormal behaviour/tongue rolling
Cow: diarrhea
Listeria
Pieces of bone in meat, pieces of glas processed meat
Campylobacter
Salmonella
Giardia
Bovine: Tuberculosis
Porcine: Swine influenza
Bovine: Salmonella
Bovine: Paratuberculosis
Bovine: Q-fever
C.perfringens
Norovirus
Rotavirus
Piglet: pain/stress due to tail cutting without anesthesia
Sow: pain, injury, damage
Piglet: pain/stress due to castration with anesthesia
Cadmium in organ in meat
Dioxines/PCBs after local contamination
Ovine/Goat: Brucella abortus
Poricine: Brucella suis
Bovine: Leptospira
Bovine: Listeriosis
Bovine: Antrax
Bovine: Botulism
Bovine: E. gtranulosus
Forbidden drugs
Ovine/goat: T. gondii
Ovine/Goat:Chlamydia abortus
Bovine: Bovine genital campylobacteriosis
H/O/G/P: Campylobacter
H/O/G/P:Salmonella
Bacillus toxine
Heavy metals
Dioxines/PCBs in meat
S. aureus
Bovine:Campylobacter
0
1
10
100
1000
10000
100000
16.10⁶
0
1
2
3
4
5
6
< 1.10⁷

Biohazards


Health Effect
Death
Permanent Handicap
Long-term illness
1-6 month illness
1-4 weeks illness
2-7 days illness
1 day sick
STEC
Listeria
T. gondii
C. perfringens
HEV
S. Aureus
Cryptosporidium
Giardia
Norovirus
Rotavirus
Campylobacter
Salmonella
STEC
Campylobacter
T. gondii
T. gondii
Campylobacter
Salmonella
HEV
ESBL
HAV
Listeria
Campylobacter
Salmonella
Giardia
C. perfringens
Norovirus
Rotavirus
Bacillus toxine
Staphylococcus aureus
1
10
100
1000
10.000
100.000
16.000.000
Exposed Numbers
Gets worse when enforcement is reduced
Gets better when enforcement is increased
Both

Biohazards

- Public health risks are almost exclusively caused by pathogenic microorganisms (i.e. mild temporary illness).
- Disease burden is caused by genera *Campylobacter* and *Salmonella*.
- Prevention of contamination with pathogens is most effective in primary stage; followed by improved slaughterhouse procedures (fecal spilling-over and cross-contamination).
- All red meat animals contribute to the disease burden observed.
- Cold stores hardly contribute to health risks as long as hygiene is controlled.

Chemical hazards

- Chemical and physical risks are marginal (adequately controlled).
- Occasionally there is very limited exposure to contaminants and veterinary medicines.
- Magnitude of risk of illegal use of antibiotics, growth promoters and other veterinary drugs/unlicensed feed is almost unknown.
- By reducing antibiotics in animal production it could increase the burden of disease in animals.

Advice

Advice of main issues, for example:

- *Put more effort in supervision of the initial stages;*
- *Emphasize microbiological food safety;*
- *Monitor violations of animal welfare laws;*
- *……..*

Synergy

Data and information position

What data is already available ?
What are the data gaps?

Data-analysis and data–structure (DWH)?
Data governance?

Thank you