



Interventions for the control of Salmonella on pig carcasses

- Danish experience

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Topics

- The Danish Salmonella Action Plan (briefly)
- The surveillance of herds (briefly)
- The general Salmonella surveillance of pork
- The Intensified Salmonella Control
- Salmonella along the slaughter line, experience



Foto: L&F

Salmonella Surveillance Programme

- Mandatory Salmonella control programme since 1995
- Control at all levels of the production chain
 - Feed
 - Breeder and multiplier herds
 - Sow herds
 - Salmonella declaration
 - Finisher herds
 - Salmonella penalties
 - Special hygiene slaughtering
 - Carcass surveillance
 - Intensified Salmonella control

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Salmonella Surveillance of slaughter pig herds

Monthly surveillance for Salmonella antibodies

Based on results, herds are assigned to three different levels every month:

Level 1: No or few seropositive samples

Level 2: Moderate proportion of seropositive samples

Level 3: High proportion of seropositive samples

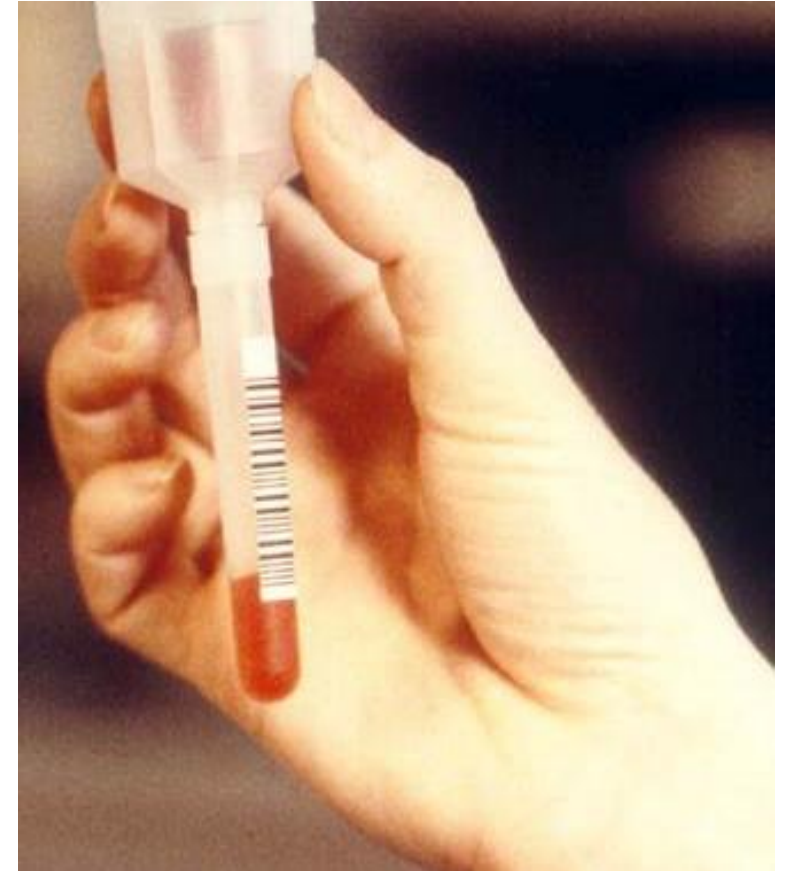


Foto: L&F

Special slaughter of pigs from Level 3 herds

- Special slaughter
- Hot water cabinet



Foto: DMRI, Teknologisk Institut

Surveillance of Salmonella on fresh carcasses

5 carcasses are sampled per slaughter day at each slaughterhouse

Each carcass is sampled at:

- 100 cm² on the hind leg near the tail
- 100 cm² near the sternum
- 100 cm² on the jowl
- 100 cm² mid-back / mid-dorsal region

Pooled to one sample = one result per day
(L.L. Sørensen, H. Wachmann et L. Alban, Vet Micro 2007)

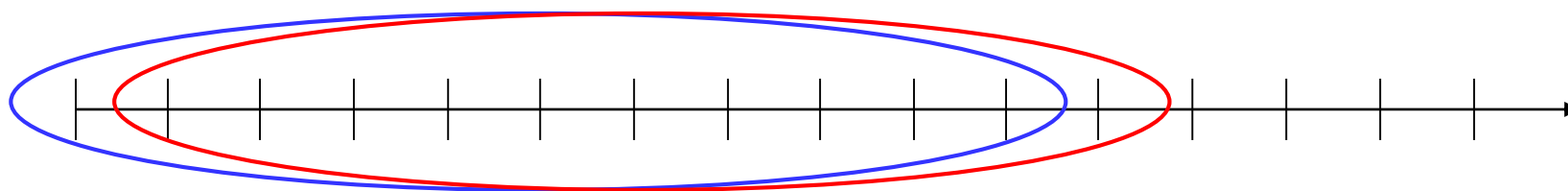
Conforming with US and EU requirements



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Surveillance of Salmonella on carcasses

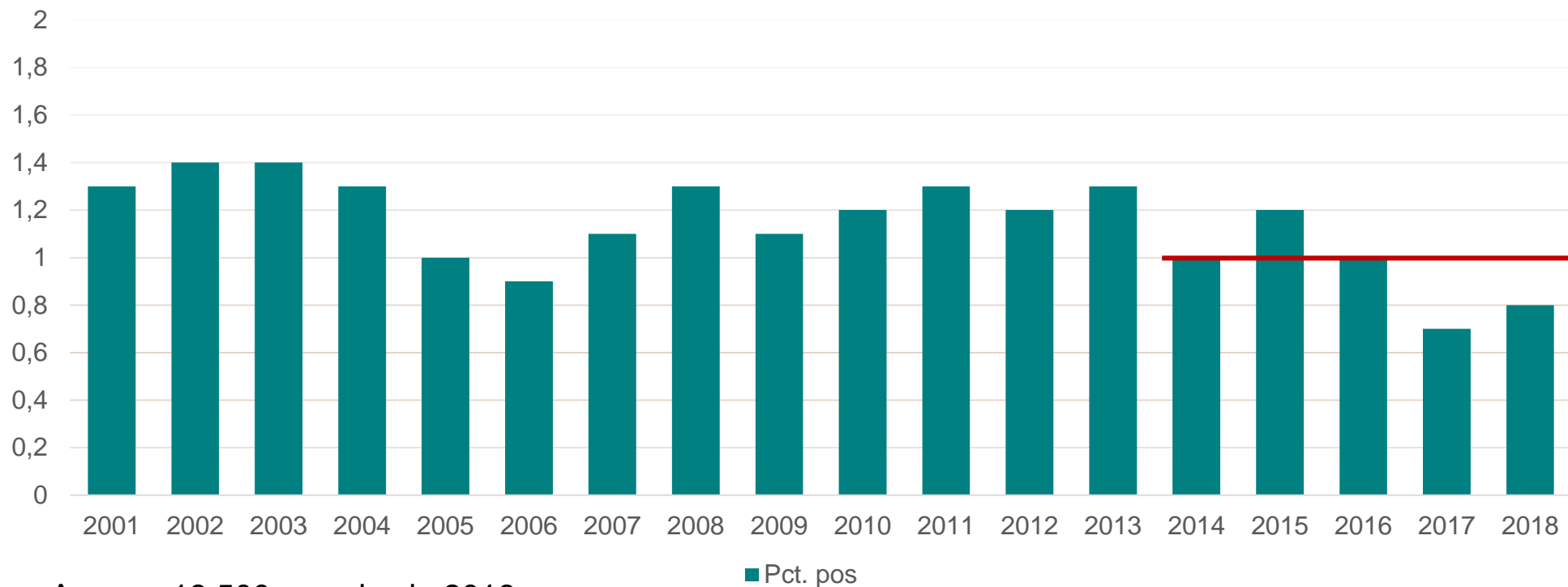
- The results are evaluated in a 'rolling window' for the latest 11 days of slaughter



- One positive pool is accepted
- If more than one positive sample is found – preventive actions must be taken

Prevalence on carcasses

Percent positive



Target: keep the prevalence at 1 percent or below (since 2014)

The Intensified Salmonella Control

- Based upon the same samples, but evaluated for the latest 12 month
- If the prevalence > 2.0 % in 4 out of 6 months, the slaughterhouse must start the Intensified Salmonella Control
- Work out and implement an action plan within 1 month
- Document a consistent Salmonella reduction within 6 month
- If not achieved, the veterinary authorities can demand further Salmonella reducing initiatives

The Intensified Control – how do we keep the overview?

Autnr	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	2019 Jan.	Feb.	Mar.	Apr.	May
A	259/5 0.6	258/6 0.8	259/6 0.8	258/6 0.8	261/6 0.8	262/5 0.6	259/6 0.8	262/6 0.8	263/6 0.8	266/6 0.8	263/5 0.6	262/6/1 0.8
B	273/16 1.9	271/23 2.8	273/24 2.9	273/25 3.1	275/24 2.9	274/27 3.3	274/28 3.4	274/30 3.6	275/28 3.4	275/25 3.0	273/24 2.9	269/23/0 2.9
C	267/11 1.4	265/11 1.4	265/9 1.1	264/8 1.0	263/9 1.1	266/9 1.1	263/9 1.1	264/9 1.1	262/7 0.9	261/7 0.9	256/6 0.8	253/6/0 0.8
D	259/13 1.7	257/14 1.8	258/14 1.8	257/15 1.9	261/19 2.4	259/20 2.6	259/20 2.6	258/20 2.6	259/20 2.6	263/18 2.3	260/18 2.3	256/20/3 2.6
E	251/6 0.8	250/7 0.9	251/9 1.2	251/9 1.2	253/11 1.4	255/11 1.4	257/11 1.4	257/13 1.7	258/15 1.9	261/14 1.8	259/15 1.9	257/15/1 1.9
F	247/12 1.6	247/13 1.8	247/13 1.8	246/15 2.0	248/15 2.0	249/15 2.0	249/15 2.0	248/18 2.4	249/16 2.1	246/15 2.0	248/14 1.9	249/14/0 1.9

When prevalence is increasing at the slaughterhouse

- Try to locate the problem on the slaughter line
 - Black line
 - White/clean line
- Try to locate the problem on the carcass
 - Skin side
 - Inside the carcass
- Is it a house infection?
 - Evaluate serotypes



Foto: Tican

Dehairing

- Important to use sufficient water
- The water may be cold or up to 60 °C
- But it is very important, that the water supply is sufficient

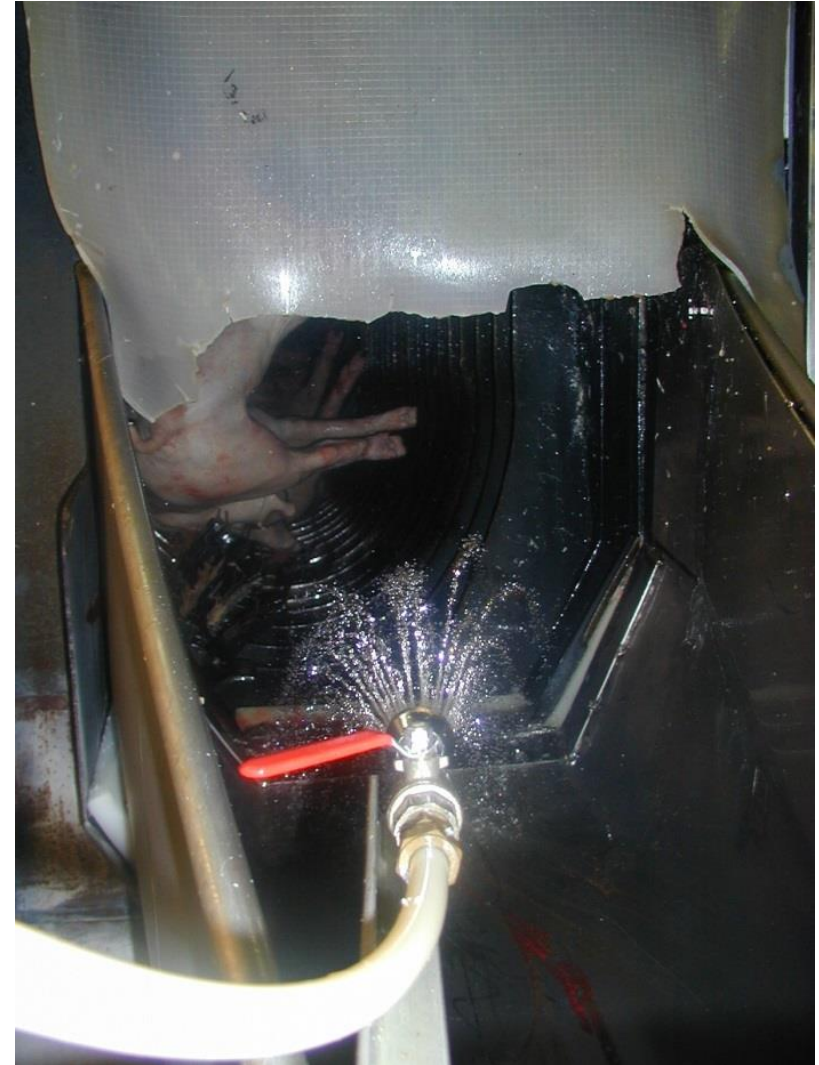


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Dehairing

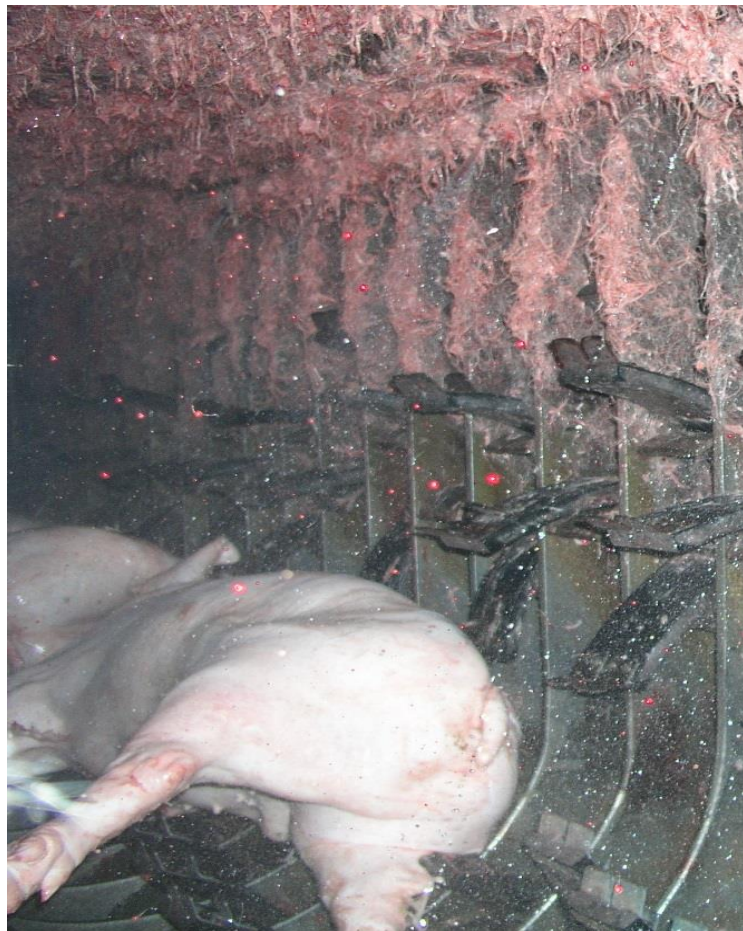


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- Salmonella and other pathogens can grow in the detritus. As an example up to 10^5 Salmonella per gram can be found in the detritus
- Carcasses should be without detritus, hair and manure after dehairing

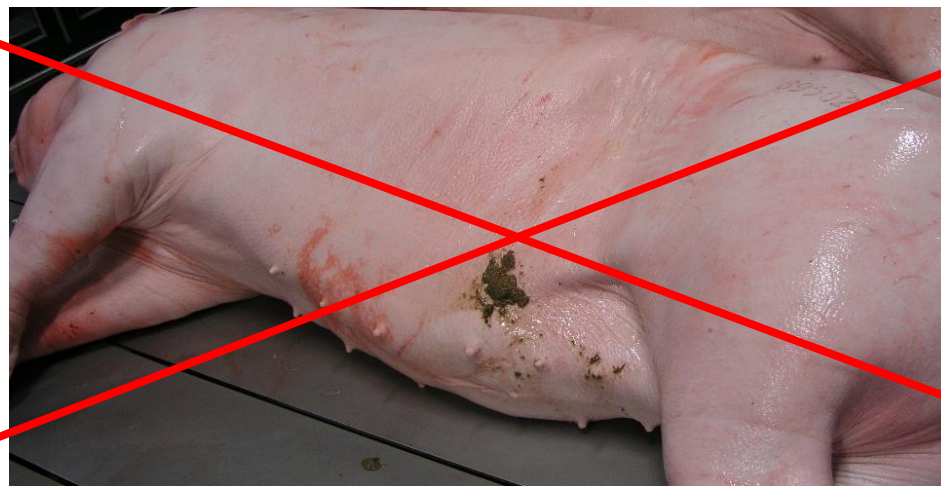


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Singeing or flaming

Singeing and flaming is a probability to reduce the prevalence of Salmonella on the carcasses, but then the proces must be optimal

- the carcasses must be as clean and dry as possible
- time/temperature
- no pale or soft areas



Foto: DMRI, Teknologisk Institut

Black scraping machine

- No harbouring of Salmonella
- If Salmonella is found, it has been carried through singeing from dehairing



Foto: DMRI, Teknologisk Institut

Clean slaughter line

- Rectum loosener
- Splitting saw, nozzles
- Ventilation shaft



Foto: DMRI, Teknologisk Institut

Equipment

- To keep the equipment in proper order, you should follow a service program as with your car
- After a certain number of carcasses, the equipment must have a service check, and you change rubber flaps, packings and similar
- Generally, problems occur, when the slaughter capacity is exceeded and / or the maintenance of the equipment is deficient
- Robots

Personel

Of course personel can also play a role in contaminating the carcasses with Salmonella

Keep a constant focus on

- procedures
- routines
- and (bad) habits

Make sure, that your staff know their importance

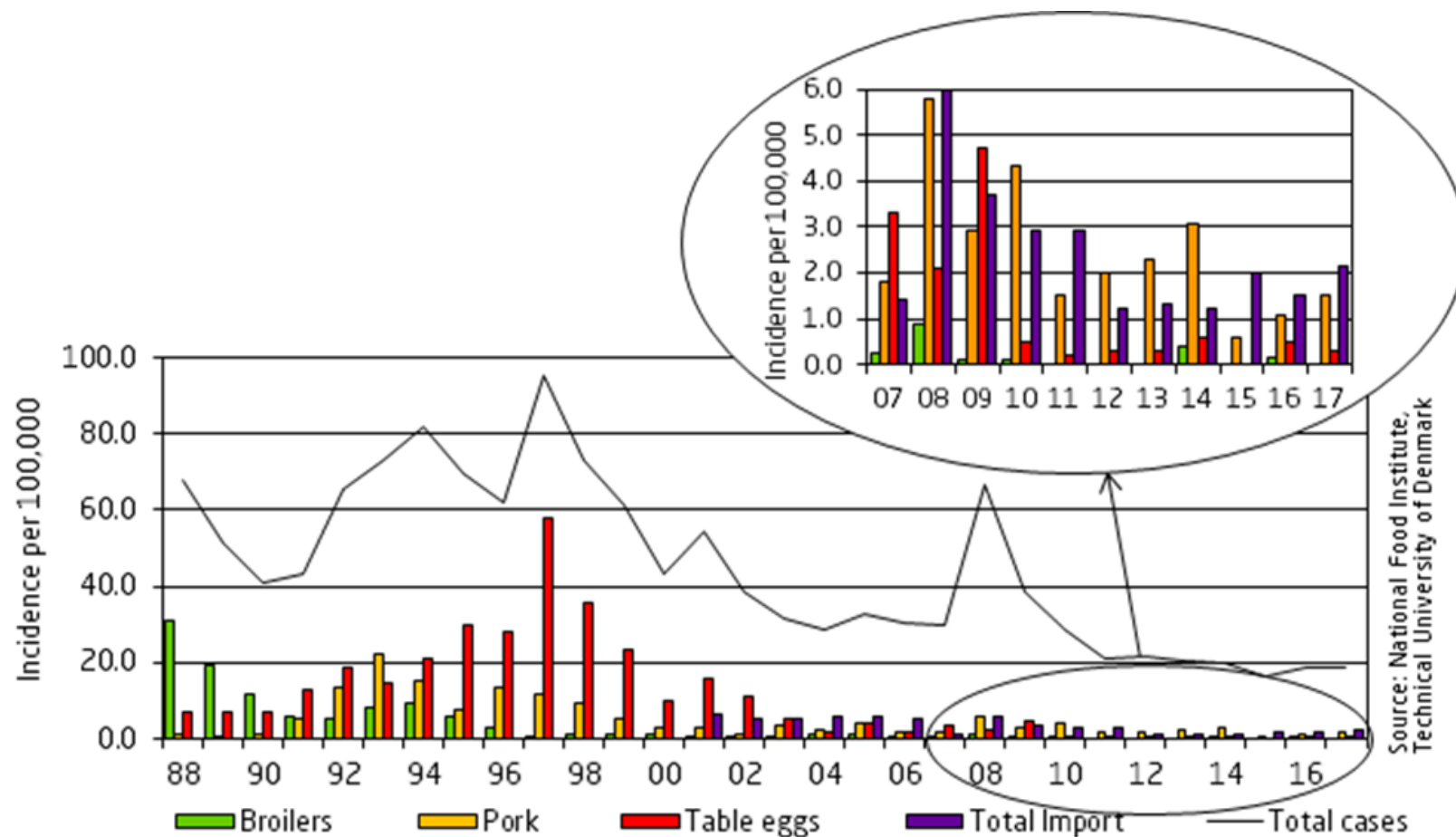


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Cooling

- The last possibility in the slaughterproces to reduce the prevalence of Salmonella
- The cooling proces must be optimal to ensure a reduction of 0.8 log (blast chilling)
The cooling capacity must not be exceeded.

Human cases of Salmonella infection



Thank you

Danish Agriculture & Food Council

