
SLU
SCIENCE AND EDUCATION FOR SUSTAINABLE LIFE

Animal welfare indicators at the slaughterhouse

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Why is animal welfare at slaughter important?

- A short section of life
- Very different to previous experiences

- Unfamiliar environment
- Unfamiliar animals
- Unfamiliar people

- Legislative requirements

Defining the question:

Animal welfare indicators…

- Animal based indicators
- Resource and management based indicators

- Both are necessary!

Animal welfare is mainly about prevention

- SOP (Standard Operating Procedures)
- AWO (animal Welfare Officer)
- CoC (Certificate of Competence)

- Animal-based indicators can tell us about how a certain system or activity works for the animals. But are they preventive?

- Outcome-based indicators, or input-based?

Some examples

Animal-based indicators:

- Behaviour at unloading and in driveways
- Feed consumption at lairage
- Behavioural signs of successful (or unsuccessful) stunning, such as absence of ceratain reflexes or absence of rhythmic breathing
- Absence of signs of life

Resource- and management-based indicators:

- Slopes at unloading, design of the driveways
- Type of weapon, cartridges, electrical current, gas composition and exposure time at stunning
- Stun-stick interval
- Type of knife used for bleeding.

Defining the question

At slaughter…

- Usually focussing on
  - Assessment of unconsciousness
  - Assessment of death

- However, indicators may be useful also at unloading, lairage, handling, and restraint, i.e. during the entire process.

Hence…

- I will discuss both animal-based and resource & management-based indicators
- I will discuss indicators used at unlaoding, lairage, handling, restraint, stunning and establishing that the animal is dead.

- Not exhaustive, just a selection of relevant examples.

Who will be using the indicators? Slaughterhouse personnel, official vets, others?

- Feasibility and repeatability of indicators, i.e. are they easy to learn and to use, easy to standardise (good inter-and intra rater agreement)?
- Reliability of indicators – do they show what we think that they show?

- Some indicators may be useful in scienentific studies, but not at a high through-put commercial slaughterhouse.

The slaughterhouse is not an island – what happens during transport matters

- Handling
- Pen design, group composition
- Driving mode, driver skills

- And then unloading upon arrival at the slaughterhouse.

- Input/output indicators?

Unloading

Input

- Training of personnel
- Use of tools
- Ventilation requirements

Output

- Signs of exhaustion at lairage
- Injuries, bruises

Handling of animals

Input:

- Electric goads / prods
- Other tools
- Design of driveways

Output:

- Behaviour of the animals
- Physical lesions from hitting and beating

Indicators related to animal handling

- The slaughterhouse is already there – difficult to chance the layout…
- Well trained and careful staff can still make a difference.
- How to see what's going on without being in the way or disturbing the flow?

Animal welfare indicators at lairage

Input:

- Pen design and maintenance – risk of injury?
- Mixing of animals…
- Stocking density
- Feed
- Water
- Ventilation

Output:

- Wounds and bruises
- Stress levels (meat quality)
- Mortality from heat stress

Restraint prior to stunning

Input:

- Type of restraint
- Duration of restraint
- Design - risk of stress and injury?

Output:

- Stress-related behaviours, such as balking, vocalizing, escape behaviours
- Injuries from the restraint system

Stunning and bleeding

- Stunning is crucial for animal welfare
- Proper bleeding is crucial for animal welfare

- Metods for stunning
- Related stun quality checks

- Methods for bleeding
- Checking that animals are bled and dead

Different stunning methods

- Captive bolt gun
- Rifle / safety rifle

- Electical stunning

- Gas stunning

Input: key parameters/indicators for each method and application, and species.

Output: signs of consciousness/unconsciousness for each method, and species.

Mechanical stunning

- Captive bolt gun
- Rifle / safety rifle
- Most species

Input indicators:

- Position and direction of the shot.
- Appropriate velocity, exit length and diameter of bolt according to animal size and species.
- Maximum stun to stick/kill interval(s).

- Position of the shot.
- Power and caliber of the cartridge.
- Type of projectile.

Output indicators:

Immediate collapse, No righting reflex, No vocalisation, No rhythmic breathing, No eye movements

Electrical stunning

- ”Head-only”
- Sheep, pigs, poultry
- Reversible

Output indicators:
Immediate collapse,
Tonic-clonic convulsions,
No righting reflex,
No vocalisation,
No rhythmic breathing

Input indicators:

- Minimum current (A or mA).
- Minimum voltage (V).
- Maximum frequency (Hz).
  Minimum time of exposure.
- Maximum stun-to-stick/kill interval(s).
- Frequency of calibration of the equipment.
- Optimisation of the current flow.
- Prevention of electrical shocks before stunning.
- Position and contact surface area of electrodes.

Gas stunning (carbon dioxide)

- Pigs and poultry
- Groupwise stunning
- Aversive

Input indicators:

- Carbon dioxide concentration.
- Duration of exposure.
- Quality of the gas.
- Temperature of the gas.

Output indicators:

Recumbency,
No righting reflex,
No vocalisation,
No rhythmic breathing
No eye movements

Bleeding

- To ensure death, also after potentially irreversible stunning methods
- Båda carotid arteries (neck cutting), or the central vessel (chest sticking)

Input indicators:
Stun-stick interval
Type of knife

Output indicators:
Amount of blood
Speed of blood flow
Absence of signs of life…

And this was only a brief overview…

- There is a lot of science-based information about input- and output-based indicators around.
- Feasibility may vary, depending on building construction/design, the skills of the personnel and the line speed.
- Should be established for each slaughterhouse, method and species.

Thank you for your attention!