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How to monitor stunning and bleeding efficiency after CO₂ stunning?



- Slaughter must legally spare animals any avoidable pain, distress or suffering. This implies that the stunning device renders the pigs unconscious as quickly as possible, and remains the pigs unconscious and insensible until death occurs.
- Animal-based indicators should be used to measure the effectiveness of stunning and bleeding. They should be tested with caution, preferably assessing the pigs immediately after ejection, after sticking and during bleeding / before further slaughtering.
- Signs of return of consciousness are recovery of breathing (incl. gasping), positive corneal reflexes, or spontaneous blinking of the eye lids.
- Signs of consciousness are a righting reflex, regular breathing, a reproducible reaction to pain stimuli, corneal or palpebral reflex tests, and vocalisations.

Recommended are thoroughly checks on a daily basis on 20% of the hourly slaughter performance, immediately after the ejection, approx. 40- 60 sec. after sticking and after bleeding.

Pigs classified as "Questionable" must be observed further or stunned again as a precaution (safety stunning).

Pigs classified as "Not OK" must be safely re-stunned.

If pigs are classified as "Not OK", a troubleshooting is carried out including the stunning protocol of the recording system of the stunning device. Systemic errors shall be corrected.

(Bsi Schwarzenbek, 2020)

Legal requirements



Council Regulation (EC) No 1099/2009: Requirements associated with handling and stunning at the time of slaughter: {Chapter II, Article 3, Point 1., Point 2.d}: General requirements for killing and related operations. {Chapter II, Article 5, Point 1., Point 3.}: Checks of efficiency of the stunning process. {Chapter II, Article 6, Point 2.b}: Standard Operating Procedures ensuring the effectiveness of stunning. {Chapter II, Article 7, Point 2.d}: Level and certificate of competence. {Chapter III, Article 16, Point 2.}: Monitoring procedures at slaughterhouses.

Note: Listed requirements are not comprehensive. Moreover, there might be stricter national legislation in place.

Inspection method (recommended)

- The official inspector assesses stunning efficacy after stunning, after sticking and during bleeding.
- If pigs show signs of an improper stunning efficiency, the inspector evaluates the Business Operators' SOPs concerning monitoring the stunning efficiency and pre-slaughter management.
- In case of infringements, the inspector reports findings to Business Operators and/or Animal Welfare Officers.
- In case of infringements, the inspector verifies the SOPs of the slaughterhouse and corrective actions are carried out to ensure the situation complies with legal requirements in the future.



Inspectors assess resource- and/or management-based indicators to evaluate compliance with Council Regulation 1099/2009. However, this should always be complemented with the evaluation of animal-based indicators to evaluate the welfare of pigs at slaughterhouses.

Check	OK	Questionable Shallow stunning, waking up is possible, continue to observe these pigs or re-stun "in case"	Not OK Animals must be re-stunned immediately, if any of these signs occur
Eyes			
Eyelid	does not close (spontaneously/ on touch)	closes once (spontaneously/ on touch)	closes and opens without touching regularly = spontaneous blinking
Cornea	touching is possible without eyelid closure	eyelid closure can be triggered 1-2 times	eyelid closure can be triggered regularly (+ presence of regular breathing movements)
Pupil	wide open and central	normal dilatation	narrows on exposure to light (+ presence of regular breathing movements)
Respiratory organs			
Nostrils	are motionless	move	move regularly (+ reactions at the eye or body movements)
Chest	motionless	single movement (1-2 times)	regular movements (+ reactions at the eye or body movements)
Mouth	closed, motionless	opens 1-4 times	opens regularly > 4x (+ eye or body movements), vocalisations
Body movements			
Body Movements	no movements, muscles relaxed	kicking during hoisting, curling of the forelegs reaction to bleeding	lifting of head, ongoing (running) movements, forelegs not hanging down or righting attempts when hanging on the rail
Signs of absence of life before further slaughtering			
Blood flow, movements and pupil	cessation of bleeding, relaxation of the body or absence of muscle tone/ no movements, dilated pupils	incomplete cessation of bleeding, incomplete relaxation of the body or preserved muscle tone/ movements, no dilated pupils	

Overall score:

"Not OK": Pigs if one line of eye, respiration or body movements is scored as "Not OK";

"Awake": Pigs if **more than one** of the signs of the eyes, respiratory organs or body movements is scored as "Not OK".

Source for the assessment method: [bsi Schwarzenbek, 2020](#)



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Federal Research Institute for Animal Health












EU Reference Centre
for Animal Welfare *Pigs*

If you have any questions or suggestions regarding this factsheet please contact info.pigs@eurcaw.eu



Please scan the QR codes to see video examples of classification into the three categories based on the assessment of the different organ systems.

Check	OK	Questionable	Not OK
Eyes			
Eyelid	Scan the QR code to watch these pigs showing no spontaneous blinking, no corneal reflex and a wide open pupil.  ©EURCAW-Pigs	Scan the QR code to watch a pig showing two positive corneal reflexes but the pupil central and dilatated.  ©WQ	Scan the QR code to watch this pig showing repeated spontaneous eyelid closures together with breathing movements (mouth openings).  ©Animal Equality
Cornea			
Pupil			
Respiratory organs			
Nostrils	Scan the QR code to watch these pigs showing motionless nostrils and chest and a closed and motionless mouth.  ©EURCAW-Pigs	Scan the QR code to watch pigs showing mouth opening (gasps) >4 x, but no other signs. In case of only 4 times mouth opening the pig would be scored questionable, otherwise NOT OK  ©WQ	Scan the QR code to watch this pig that shows regular mouth openings together with two times spontaneous blinking  ©Animal Equality
Chest			
Mouth			
Body movements			
Body Movements	Scan the QR code to watch these pigs with no movements and relaxed muscles.  ©EURCAW-Pigs	Pigs showing kicking during hoisting, curling of the forelegs reaction to bleeding.	Pigs lifting of head, ongoing (running) movements, forelegs not hanging down or righting attempts when hanging on the rail.
Signs of absence of life before further slaughtering			
Blood flow, movements and pupil	Scan the QR code to watch these pigs showing cessation of bleeding, relaxation of the body, absence of muscle tone, no movements and dilated pupils.  ©EURCAW-Pigs	Scan the QR code to watch a pig showing an incomplete relaxation of the body, a preserved muscle tone and movements.	 ©GenbaSolution



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