

1

Law

COUNCIL REGULATION (EC) No 1099/2009
of 24 September 2009
on the protection of animals at the time of killing

Official Journal of the European Union L 303/1

Next End

2


Regulation (EC) 1099/2009

...

Subject matter and scope

1. This Regulation lays down rules for the killing of animals bred or kept for the production of food, wool, skin, fur or other products as well as the killing of animals for the purpose of depopulation and for related operations.

...



Začiatok Predchádzajúci Ďalej Koniec

3

Regulation (EC) 1099/2009

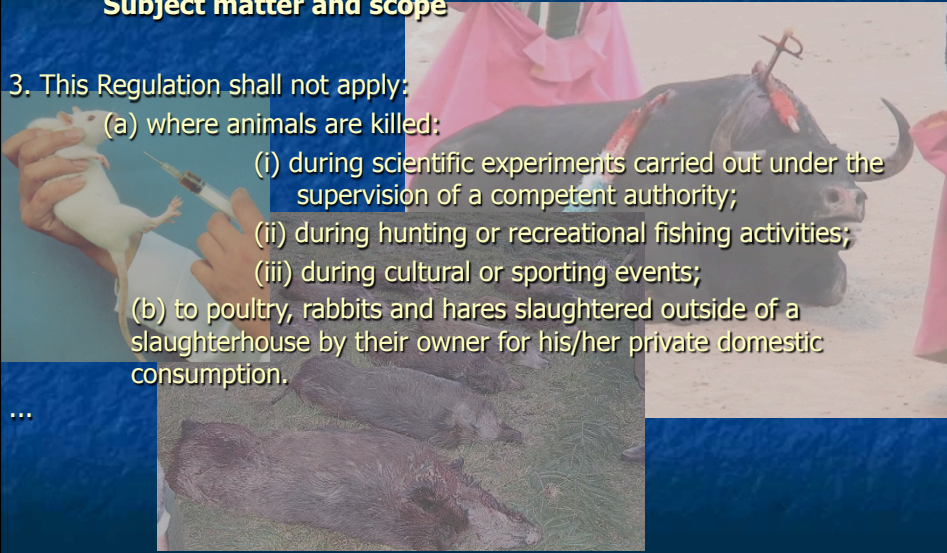
...

Subject matter and scope

3. This Regulation shall not apply:

- (a) where animals are killed:
 - (i) during scientific experiments carried out under the supervision of a competent authority;
 - (ii) during hunting or recreational fishing activities;
 - (iii) during cultural or sporting events;
- (b) to poultry, rabbits and hares slaughtered outside of a slaughterhouse by their owner for his/her private domestic consumption.

...



Start
Previous
Next
End

4

Regulation (EC) 1099/2009

Definitions

For the purposes of this Regulation, the following definitions shall apply:

- (a) 'killing' means any intentionally induced process which causes the death of an animal;
- (b) 'related operations' means operations such as handling, lairageing, restraining, stunning and bleeding of animals taking place in the context and at the location where they are to be killed;

...

- (j) 'slaughtering' means the killing of animals intended for human consumption;

Start
Previous
Next
End

5

Regulation (EC) 1099/2009

General requirements for killing and related operations

1. Animals shall be spared any avoidable pain, distress or suffering during their killing and related operations.

$\alpha = \omega$

Start Previous Next End

6

Regulation (EC) 1099/2009 - Duties of operators

General requirements for killing and related operations

2. For the purposes of paragraph 1, business operators shall, in particular, take the necessary measures to ensure that animals:

- (a) are provided with physical comfort and protection, in particular by being kept clean in adequate thermal conditions and prevented from falling or slipping;
- (b) are protected from injury;
- (c) are handled and housed taking into consideration their normal behaviour;
- (d) do not show signs of avoidable pain or fear or exhibit abnormal behaviour;
- (e) do not suffer from prolonged withdrawal of feed or water;
- (f) are prevented from avoidable interaction with other animals that could harm their welfare.

Start Previous Next End

7

Regulation (EC) 1099/2009 - Duties of operators

Standard operating procedures

1. Business operators shall plan in advance the killing of animals and related operations and shall carry them out in accordance with standard operating procedures.
2. Business operators shall draw up and implement such standard operating procedures to ensure that killing and related operations are carried out in accordance with Article 3(1) (*Animals shall be spared any avoidable pain, distress or suffering*). As regards stunning, the standard operating procedures shall:
 - (a) take into account the manufacturers' recommendations;
 - (b) define for each stunning method used, on the basis of available scientific evidence, the key parameters set out in Chapter I of Annex I ensuring their effectiveness to stun the animals;

Start Previous Next End

8

Regulation (EC) 1099/2009 - Duties of operators

Standard operating procedures

must include procedures for

- (a) the handling and care of animals before they are restrained;
- (b) the restraint of animals for the purpose of stunning or killing;
- (c) the stunning of animals;
- (d) the assessment of effective stunning;
- (e) the shackling or hoisting of live animals;
- (f) the bleeding of live animals;
- (g) the slaughtering in accordance with Article 4(4) (*slaughter prescribed by religious rites*).

Start Previous Next End

9

Regulation (EC) 1099/2009 - Duties of operators

Stunning methods

1. Animals shall only be killed after stunning in accordance with the methods and specific requirements related to the application of those methods set out in Annex I. The loss of consciousness and sensibility shall be maintained until the death of the animal.

...

§

4. In the case of animals subject to particular methods of slaughter prescribed by religious rites, the requirements of paragraph 1 shall not apply provided that the slaughter takes place in a slaughterhouse.

Start Previous Next End

10

Regulation (EC) 1099/2009 - Duties of operators

Level and certificate of competence

Killing and related operations shall only be carried out by persons with the appropriate level of competence to do so without causing the animals any avoidable pain, distress or suffering.

Start Previous Next End

11

Regulation (EC) 1099/2009

Level and certificate of competence

1. Killing and related operations shall only be carried out by persons with the appropriate level of competence to do so without causing the animals any avoidable pain, distress or suffering.

2. Business operators shall ensure that the following slaughter operations are only carried out by persons holding a certificate of competence for such operations demonstrating their ability to carry them out in accordance with the rules laid down in Regulation 1099/2009:


- (a) the handling and care of animals before they are restrained;
- (b) the restraint of animals for the purpose of stunning or killing;
- (c) the stunning of animals;
- (d) the assessment of effective stunning;
- (e) the shackling or hoisting of live animals;
- (f) the bleeding of live animals;
- (g) the slaughtering in accordance with particular methods of slaughter prescribed by religious rites.

Start Previous Next End

12

Related operations - restraining

'restraint' means the application to an animal of any procedure designed to restrict its movements sparing any avoidable pain, fear or agitation in order to facilitate effective stunning and killing;



Start Previous Next End

13 **Related operations - restraining**

The restraint equipment should be constructed so that it suits individual species and sizes of slaughtered animals.

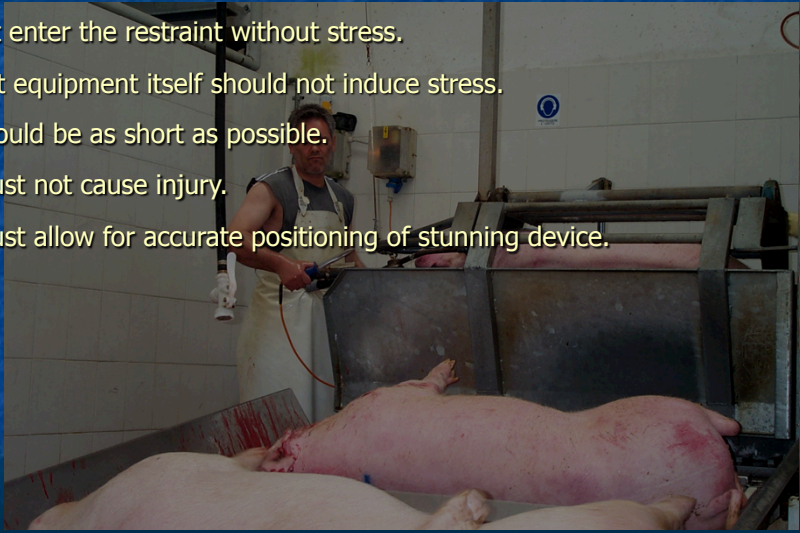
Animal must enter the restraint without stress.

The restraint equipment itself should not induce stress.

Restraint should be as short as possible.

Restraint must not cause injury.

Restraint must allow for accurate positioning of stunning device.



Start Previous Next End

14 **Related operations - restraining**

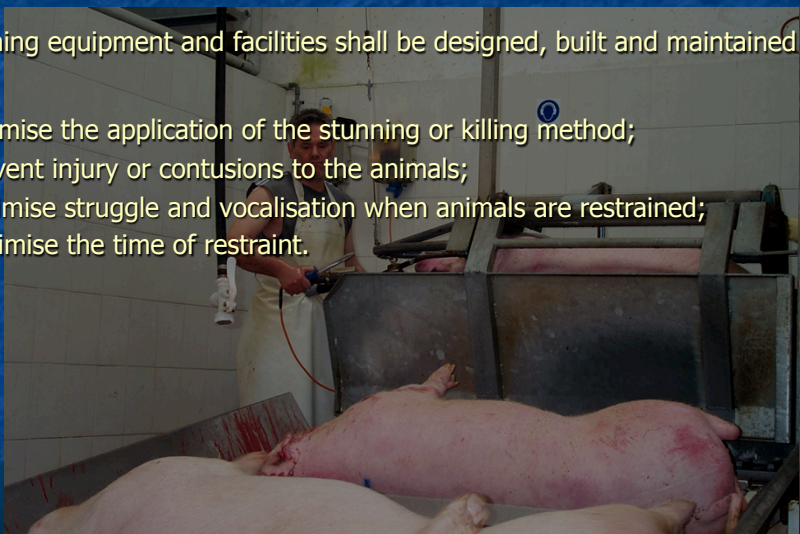
Regulation (EC) 1099/2009:

...

3.1. Restraining equipment and facilities shall be designed, built and maintained to:

- (a) optimise the application of the stunning or killing method;
- (b) prevent injury or contusions to the animals;
- (c) minimise struggle and vocalisation when animals are restrained;
- (d) minimise the time of restraint.

...




Start Previous Next End

15 Related operations - stunning



Start Previous Next End

16 Mechanical stunning



Important is:

- Accuracy
- Power

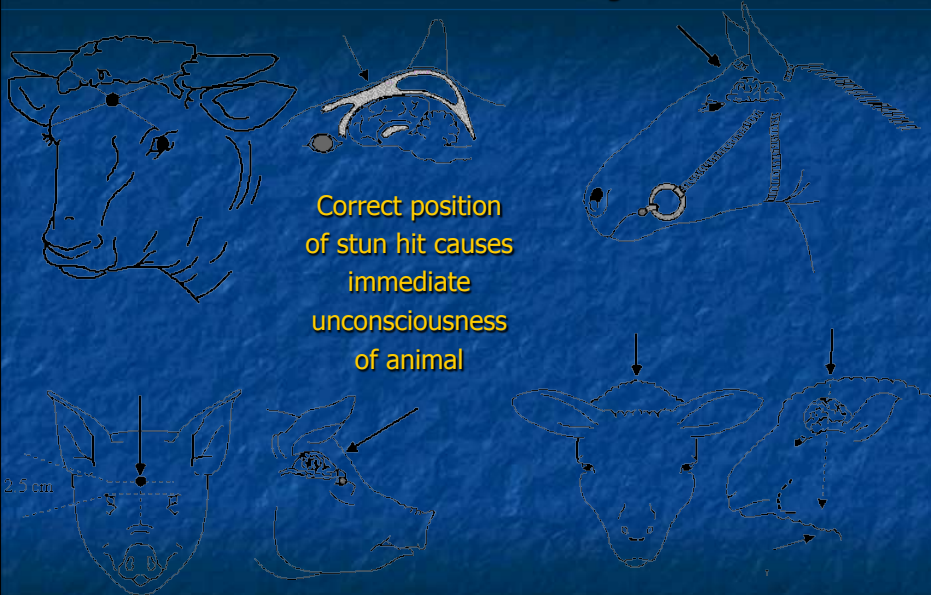
Mechanical stunning

- penetrating
- non penetrating

Start Previous Next End

17

Mechanical stunning



Correct position of stun hit causes immediate unconsciousness of animal


2.5 cm

Start Previous Next End

Detailed description: This slide illustrates the correct and incorrect positions for mechanical stunning on a cow's head. It features several diagrams: a top-down view of a cow's head with a dot indicating the correct stun point; a side view of a cow's head with an arrow pointing to the correct stun point; a side view of a horse's head with an arrow pointing to the correct stun point; a front view of a cow's head with arrows pointing to incorrect stun points; and a side view of a cow's head with arrows pointing to incorrect stun points. A vertical dimension line on the left side of the front view indicates a distance of 2.5 cm from the top of the head to the correct stun point.

18

Mechanical stunning



Correct position of stun hit causes immediate unconsciousness of animal

2.5 cm

The EFSA Journal (2004), 45, 1-29, Welfare aspects of the main systems of stunning and killing the main commercial species of animals

Start Previous Next End

Detailed description: This slide illustrates the correct position for mechanical stunning on a pig's skull. It features a diagram of a pig's skull with an arrow pointing to the correct stun point, which is located 4 cm from the top of the skull. A vertical dimension line on the left side of the skull diagram indicates a distance of 2.5 cm from the top of the skull to the correct stun point. The text 'The EFSA Journal (2004), 45, 1-29, Welfare aspects of the main systems of stunning and killing the main commercial species of animals' is located at the bottom right of the slide.

19


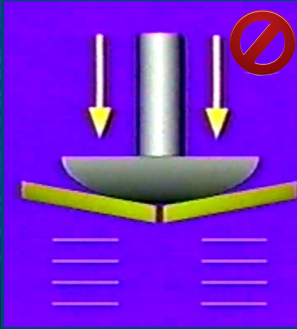
Mechanical stunning

Regulation 1099/2009:

Non-penetrative captive bolt device

When using this method business operators shall pay attention to avoid the fracture of the skull.

This method shall only be used for ruminants of less than 10 kg of live weight.

Start Previous Next End

20

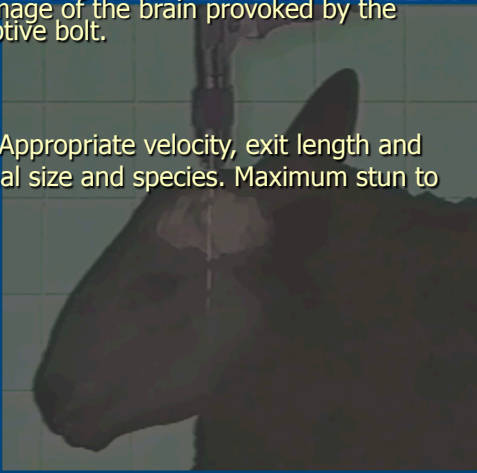
Mechanical stunning

Regulation 1099/2009:

1 - Penetrative captive bolt device

Causes severe and irreversible damage of the brain provoked by the shock and the penetration of a captive bolt.

Key parameters:
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).



Start Previous Next End

21

Mechanical stunning – mechanism

Loss of consciousness is caused because:

- The impact energy produces shock waves in the brain leading to depolarisation of neurons that are located away from the site of impact and disrupt normal functioning of ion channels.
- The impact produces rotational forces in the brain, causing shearing and discrete brain lesions; these disengage or disconnect nerve fibres in a centripetal fashion.
- Penetrating bolt destroys and causes trauma to the cerebral hemisphere and brainstem. It produces a large, deep, and well-defined haemorrhagic track with severe destruction and loss of neural tissue penetrates frequently involving the pons, medulla oblongata and caudal part of the cerebral hemispheres. It also may cause further widespread subdural or subarachnoid haemorrhages.
- Retracting bolt causes further due to negative pressure at collapse of cavity in the brain tissue.*

* Welfare aspects of animal stunning and killing methods. EFSA Report of the Scientific Panel for Animal Health and Welfare. EFSA 2004

Start Previous Next End

22

Mechanical stunning - verification

Signs of a correct stun:


- No corneal reflex.
- Shallow regular breathing.
- Open but glazed eyes.
- Typical onset of convulsions:
 - 1. phase – tonic convulsions: front legs stretched, hind legs flexed under the belly.
This phase is negligibly short in pigs.
 - 2. phase – clonic convulsions: the animal is shaking and kicking.

Start Previous Next End

23

Mechanical stunning

Signs of a correct stun:



Video provided by MHS FSA GB.

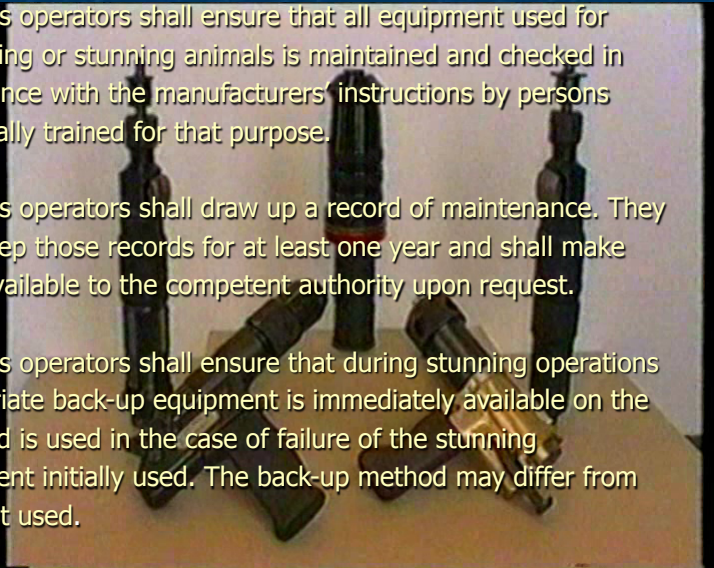
Start Previous Next End

24

Mechanical stunning - maintenance

Regulation (ES) 1099/2009:

- Business operators shall ensure that all equipment used for restraining or stunning animals is maintained and checked in accordance with the manufacturers' instructions by persons specifically trained for that purpose.
- Business operators shall draw up a record of maintenance. They shall keep those records for at least one year and shall make them available to the competent authority upon request.
- Business operators shall ensure that during stunning operations appropriate back-up equipment is immediately available on the spot and is used in the case of failure of the stunning equipment initially used. The back-up method may differ from that first used.



Start Previous Next End

25

Mechanical stunning - brain activity after stun

Effect of penetrating mechanical stun on brain activity

	Average time (s)	Span (s)
Onset of HALF*	10 ± 5	4-17
Duration of HALF	44 ± 20	21-58
Onset of <10 μV activity**	69 ± 1.5	67-71
Loss of SERS***	0	-
Strata VERS****	0	-

* High Amplitude Low Frequency waves – typical for deep sleep without dreams.
 ** Loss of brain activity (brain death)
 *** SERS Somatosensory Evoked Response – reaction on outside stimuli
 **** VERS Visual Evoked Response – reaction on visual stimuli

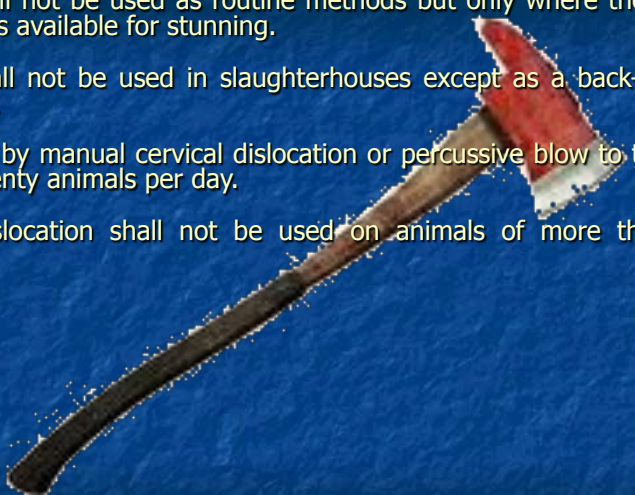
Adapted according: Welfare aspects of animal stunning and killing methods.
 EFSA Report of the Scientific Panel for Animal Health and Welfare. EFSA 2004

Start Previous Next End

26

Regulation (EC) 1099/2009 - cervical dislocation and percussive blow to the head


- These methods shall not be used as routine methods but only where there are no other methods available for stunning.
- These methods shall not be used in slaughterhouses except as a back-up method for stunning.
- No person shall kill by manual cervical dislocation or percussive blow to the head more than seventy animals per day.
- Manual cervical dislocation shall not be used on animals of more than three kg live weight.



Start Previous Next End

27

Electrical stunning



Stun

- with cardiac arrest
- without cardiac arrest

Important is

- position of electrodes
- current level
- voltage
- time of application

Start Previous Next End

28

Regulation (ES) 1099/2009 – electrical stunning

- Head-only electrical stunning
 - Exposure of the brain to a current generating a generalised epileptic form on the electro-encephalogram (EEG). Simple stunning. All species.
 - To be specified:
 - 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.

Start Previous Next End

29 **Electrical stunning**

Proper position of electrodes to ensure immediate unconsciousness

Start Previous Next End

30 **Regulation (ES) 1099/2009 – electrical stunning**

Head-only electrical stunning

- When using head-only electrical stunning, electrodes shall span the brain of the animal and be adapted to its size.
- Head-only electrical stunning shall be carried out in accordance with the minimum currents set out in Table 1.

Table 1 — Minimum currents for head-only electrical stunning

Animal category	Cattle < 6 months	Cattle and goats	Sheep	Pigs
> 6 months				
Minimum current	1,28 A	1,25 A	1,00 A	1,30 A

Start Previous Next End

31

Regulation (ES) 1099/2009 – electrical stunning

- Head-to-Body electrical stunning

Exposure of the body to a current generating at the same time a generalised epileptic form on the EEG and the fibrillation or the stopping of the heart. Simple stunning in case of slaughter. All species.

To be specified:

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

Start Previous Next End

32

Electrical stunning – head-to-body



Video provided by MHS FSA GB.

Start Previous Next End

33

Electrical stunning



Video provided by MHS FSA GB.

Start Previous Next End

34

Electrical stunning

Wave frequency and shape	Stunning interval	Average time (sec.) to appear		
		Rhythmic breathing	Corneal reflex	Reaction on pinch to snout
50 Hz sinus	3	41	47	57
1642 Hz square	3	39	38	47
1592 Hz sinus	3	36	37	46
50 Hz sinus	7	44	52	62
1642 Hz square	7	42	41	50
1592 Hz sinus	7	37	38	46

Welfare aspects of animal stunning and killing methods.
 EFSA Report of the Scientific Panel for Animal Health and Welfare. EFSA 2004

Start Previous Next End

35

Electrical stunning

Equipment maintenance and monitoring



The control panel features a green display showing 'KISTRUJ PRIPRAVEN' and 'STAN - AUTOMATICKY'. Below the display are three colored buttons (green, red, yellow) and a set of navigation buttons including 'MODE', 'PROGR', 'ENTER', and 'RESET'. At the bottom, there are four buttons labeled 'Start', 'Previous', 'Next', and 'End'.

The close-up of the device shows two digital displays, one showing '029.7' and the other '0013'. The device has a weathered, green-painted metal casing.

The wall-mounted device includes a pair of electrodes hanging from the top and a control box with a yellow warning triangle symbol.

36

Electrical stunning - verification

Signs of a correct stun:

- No corneal reflex.
- Shallow regular breathing.
- Shut eyes.
- Typical onset of convulsions:
 - 1. phase – tonic convulsions: front legs stretched, hind legs flexed under the belly.
 - 2. phase – clonic convulsions: the animal is shaking and kicking.
- No rhythmic breathing.

At the bottom, there are four buttons labeled 'Start', 'Previous', 'Next', and 'End'.

37

Electrical stunning - bleeding after stunning

Because the unconsciousness after electrical stunning lasts less than 1 minute
and
unconsciousness caused by loss of blood after bleeding cut begins after approx 20 seconds,

it is necessary to do the bleeding cut within 15-20 seconds after the stunning.

If the animal shows signs of consciousness, it is necessary to stun it again immediately.
Optimally, it would be blow to the head.

Start Previous Next End

38

Regulation (ES) 1099/2009 - Stunning in mixtures of gases

Carbon dioxide at high concentration

Direct or progressive exposure of conscious animals to a gas mixture containing more than 40 % carbon dioxide.
In the case of pigs, the minimum concentration of 80 % of carbon dioxide shall be used.

Under no circumstances shall gases enter into the chamber or the location where animals are to be stunned and killed in a way that it could create burns or excitement by freezing or lack of humidity.

The method may be used in pits, tunnels, containers or building previously sealed. Simple stunning in case of slaughter of pigs.

Start Previous Next End

39 **Regulation (ES) 1099/2009 - Stunning in mixtures of gases**

Carbon dioxide associated with inert gases

Direct or progressive exposure of conscious animals to a gas mixture containing up to 40 % of carbon dioxide associated with inert gases leading to anoxia.

Simple stunning for pigs if the duration of exposure to at least 30 % of carbon dioxide is of less than 7 minutes.

Start Previous Next End

40 **Stunning in mixtures of gases**

Unconsciousness is caused after decrease of pH in the animal body after dissolving the CO₂.

Important is:

- CO₂ concentration
- Time of exposure

Start Previous Next End

41

Stunning in mixtures of gases

Unconsciousness is caused after decrease of pH in the animal body after dissolving the CO₂.

Start Previous Next End

42

Stunning in mixtures of gases

Important is:

- CO₂ concentration
- Time of exposure

80 % CO₂ Anaesthesia Onset of spasms Death

0 10 20 30 40 50 60
Exposure time (seconds)

95 % CO₂ Anaesthesia Onset of spasms Death

0 10 20 30 40 50 60
Exposure time (seconds)


Modified according to
Wotton, S.: WELFARE AT STUNNING AND SLAUGHTER - RED MEAT ANIMALS. Carbon Dioxide stunning of pigs.
EU Veterinary Legislation Handbook, Chapter Animal Welfare, pp. 42-47,
University of Veterinary Medicine, Kosice, 2001. ISBN 80-88985-24-2

Start Previous Next End


43 **Stunning in mixtures of gases**

Important is:

- CO₂ concentration
- Time of exposure



CO₂ REGLER



Start
Previous
Next
End

44 **Stunning in mixtures of gases**

Important is:
Keep the interval from stunning to bleeding*.

Application of the CO ₂ @~ 84 % (vol.)	100 sec.	Maximum time until bleeding is 35 sec ¹ .
¹ Applies for all animals in the chamber		

* Holleben, K.V., Schütte, A., Von Wenzlawowicz, M.V., and Bostelmann, N., 2002. Call for veterinary action in the slaughterhouses - Deficient welfare at carbon dioxide stunning of pigs and captive bolt stunning of cattle. Fleischwirtschaft Int. (3), 8-10.


Start
Previous
Next
End

45

Stunning in mixtures of gases - verification

Signs of a correct stun:

- Shallow regular breathing or no breathing.
- No rhythmic breathing.
- No corneal reflex (not always reliable test)
- Shut eyes.
- Relaxed muscles without movements or spasm.



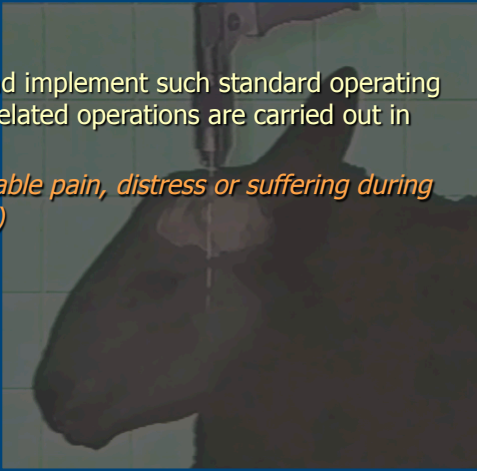
Start Previous Next End

46

Regulation (ES) 1099/2009 – General requirements

Standard operating procedures

1. Business operators shall plan in advance the killing of animals and related operations and shall carry them out in accordance with standard operating procedures.
2. Business operators shall draw up and implement such standard operating procedures to ensure that killing and related operations are carried out in accordance with Article 3(1).
(Animals shall be spared any avoidable pain, distress or suffering during their killing and related operations.)



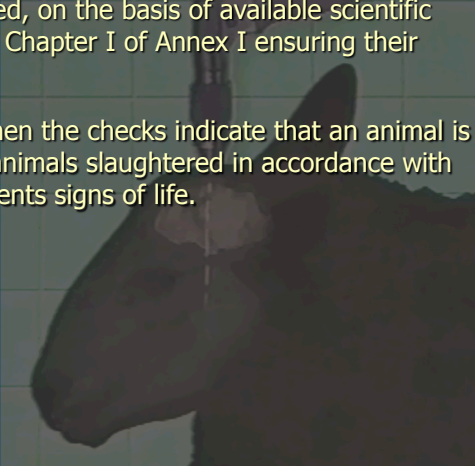
Start Previous Next End

47

Regulation (ES) 1099/2009 – General requirements

As regards stunning, the standard operating procedures shall:

- (a) take into account the manufacturers' recommendations;
- (b) define for each stunning method used, on the basis of available scientific evidence, the key parameters set out in Chapter I of Annex I ensuring their effectiveness to stun the animals;
- (c) specify the measures to be taken when the checks indicate that an animal is not properly stunned or, in the case of animals slaughtered in accordance with religious rites, that the animal still presents signs of life.



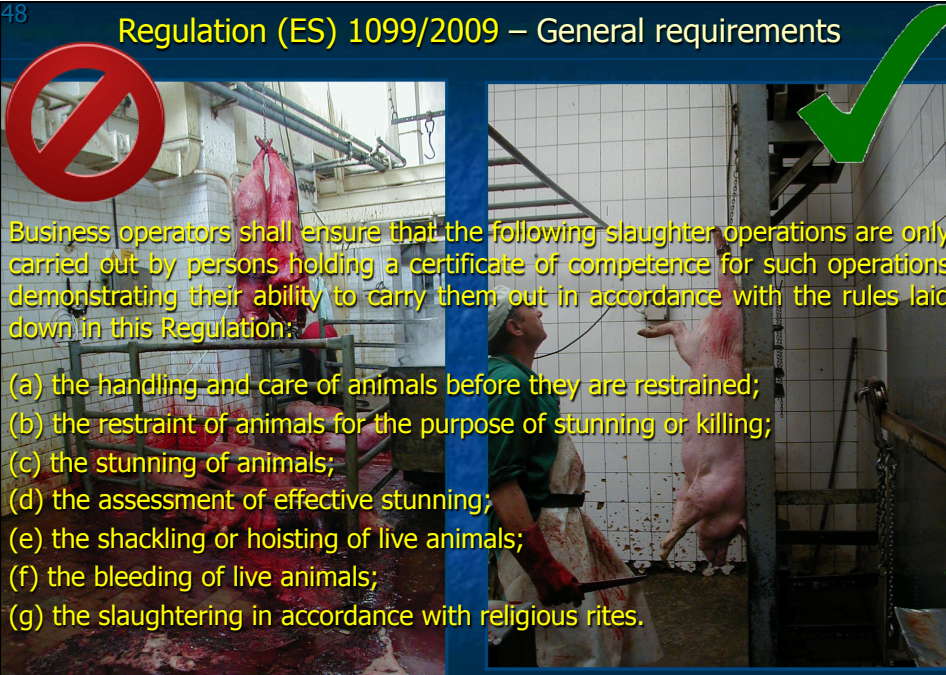
Start Previous Next End

48

Regulation (ES) 1099/2009 – General requirements

Business operators shall ensure that the following slaughter operations are only carried out by persons holding a certificate of competence for such operations demonstrating their ability to carry them out in accordance with the rules laid down in this Regulation:

- (a) the handling and care of animals before they are restrained;
- (b) the restraint of animals for the purpose of stunning or killing;
- (c) the stunning of animals;
- (d) the assessment of effective stunning;
- (e) the shackling or hoisting of live animals;
- (f) the bleeding of live animals;
- (g) the slaughtering in accordance with religious rites.



Start Previous Next End

49

Regulation (ES) 1099/2009 – General requirements

Bleeding of animals

- Where one person is responsible for the stunning, shackling, hoisting and bleeding of animals, that person shall carry out all those operations consecutively on one animal before carrying out any of them on another animal.
- In case of simple stunning or slaughter in accordance with religious rites, the two carotid arteries or the vessels from which they arise shall be systematically severed. Electrical stimulation shall only be performed once the unconsciousness of the animal has been verified. Further dressing or scalding shall only be performed once the absence of signs of life of the animal has been verified.

Start Previous Next End

50

Regulation (ES) 1099/2009 – General requirements



Start Previous Next End

51 Regulation (ES) 1099/2009 – Bleeding



Only unconscious animal may be bled. *

* With the exception of slaughter in accordance with religious rites.

Start Previous Next End

52 Regulation (ES) 1099/2009 – Bleeding

- Animals shall only be killed after stunning in accordance with the methods and specific requirements related to the application of those methods set out in Annex I.
- The loss of consciousness and sensibility shall be maintained until the death of the animal.
- The methods referred to in Annex I which do not result in instantaneous death (hereinafter referred to as simple stunning) shall be followed as quickly as possible by a procedure ensuring death such as bleeding, pithing, electrocution or prolonged exposure to anoxia.

Start Previous Next End

53

Regulation (ES) 1099/2009 – Bleeding

Business operators shall ensure that the following slaughter operations are only carried out by persons holding a certificate of competence for such operations demonstrating their ability to carry them out in accordance with the rules laid down in this Regulation:

- (a) the handling and care of animals before they are restrained;
- (b) the restraint of animals for the purpose of stunning or killing;
- (c) the stunning of animals;
- (d) the assessment of effective stunning;
- (e) the shackling or hoisting of live animals;
- (f) the bleeding of live animals;
- (g) the slaughtering in accordance with religious rites.

Start Previous Next End

54

Regulation (ES) 853/2004 – Slaughter hygiene

Stunning, bleeding, skinning, evisceration and other dressing must be carried out without undue delay and in a manner that avoids contaminating the meat. In particular:

- (a) the trachea and oesophagus must remain intact during bleeding, except in the case of slaughter according to a religious custom;
- (b) during the removal of hides and fleece:
 - (i) contact between the outside of the skin and the carcase must be prevented;
 - and
 - (ii) operators and equipment coming into contact with the outer surface of hides and fleece must not touch the meat;

Start Previous Next End

55

Bleeding

Animals can be bled

- Free lying
 Advantage: Bleeding is more thorough because the blood is pumped out by moving muscles.
 Disadvantage: More space required and more blood spilled on floor.



A photograph showing a pig lying in a metal trough. A person in a white apron is leaning over the trough, and blood is visible on the pig's side. The trough is part of a larger metal structure.


Start Previous Next End

56

Bleeding

Animals can be bled

- Shackled and hoisted
 Advantage: Easier handling with the animal, less space required, less blood spilled on floor.
 Disadvantage: Lower efficiency of bleeding because muscles under tension compress blood vessels and thus slow down blood flow.



A photograph showing a cow being bled. The cow is shackled and hoisted by a chain, hanging upside down. A person in a white uniform is visible in the background. A digital display shows 'TCR 10:00'.

Start Previous Next End

57

Bleeding

Council Regulation # 853/2004, Chapter IV: Slaughter Hygiene

(a) the trachea and oesophagus must remain intact during bleeding, except in the case of slaughter according to a religious custom;

The slide contains two anatomical diagrams. On the left is a cross-section of a neck with labels: 'Vertebrae' at the top, 'Muscles' on the sides, 'Neck artery (A. carotis)' on the right, 'Neck vein (V. jugularis)' on the right, 'Trachea' at the bottom, and 'Oesophagus' on the left. On the right is a detailed anatomical drawing of the neck and upper thorax, showing the heart, major blood vessels, and trachea. Labels include: 'a. intercostalis dorsalis', 'a. intercostalis superior', 'truncus costocervicalis', 'a. scapularis descendens', 'a. cervicalis profunda', 'a. vertebralis', 'corotis externa', 'a. cervicalis superficialis', 'a. subclavia', 'a. thoracica externa', 'truncus bicarotidis', 'sternum', 'truncus brachiocephalicus', 'truncus subclaviaris', 'a. thoracica interna', 'oesophagus', and 'trachea'. At the bottom of the drawing is the citation: 'Nisibrt, F. et al.: Veterinární anatomie 2, SZP Praha'.

Start Previous Next End

58

Bleeding

It is possible to bleed

- by cutting neck vessels

Advantages: Simpler cut

Disadvantages: Slower flow of the blood. In ruminants the a. vertebralis continues to supply blood to the brain and the onset of unconsciousness may be slowed down.

This slide features the same anatomical drawing of the neck and thorax as slide 57, but with a semi-transparent text box overlaid on the left side. The text box contains the text: 'It is possible to bleed', 'by cutting neck vessels', 'Advantages: Simpler cut', and 'Disadvantages: Slower flow of the blood. In ruminants the a. vertebralis continues to supply blood to the brain and the onset of unconsciousness may be slowed down.' The anatomical drawing is partially obscured by the text box.

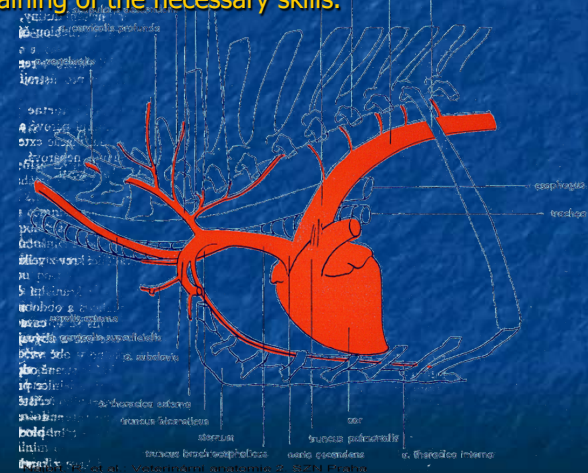
Start Previous Next End

59

Bleeding

It is possible to bleed

- by cutting vessels in the chest
 Advantage: Faster bleeding with faster onset of unconsciousness.
 Disadvantage: Training of the necessary skills.



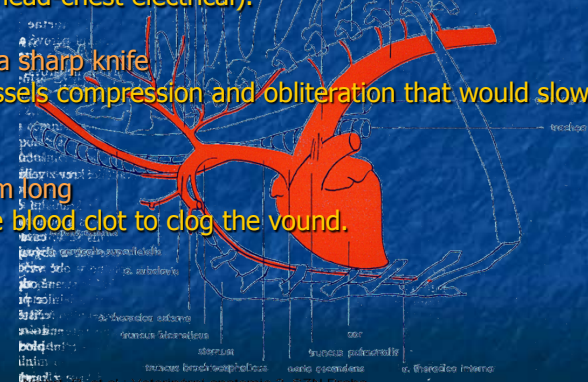
Start Previous Next End

60

Bleeding

Basics of proper bleeding:

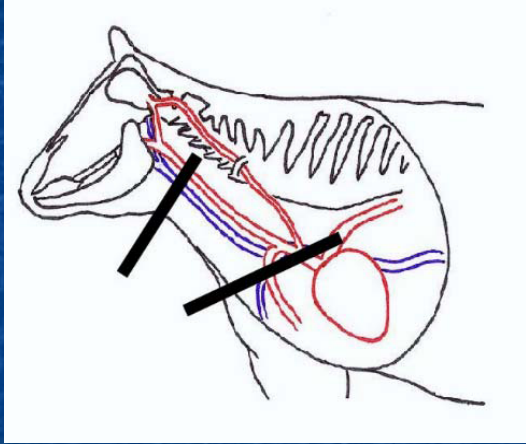
- Cut vessels as soon after the stun as possible
 - to keep animal unconscious from the stun until brain anoxia takes over and the unconsciousness continues until death of the animal;
 - to prevent the death of the animal before it dies from the sunning (mechanical, head-chest electrical).
- Cut vessels with a sharp knife
 - to prevent vessels compression and obliteration that would slow down the blood flow.
- Cut at least 10 cm long
 - to prevent the blood clot to clog the wound.



Start Previous Next End

61

Bleeding



The EFSA Journal (2004), 45, 1-29, Welfare aspects of the main systems of stunning and killing the main commercial species of animals

Start Previous Next End

62

Death of animal

Bleeding has finished when the animal does not show sign of life:

- It is not breathing
- and
- its heart is not beating.

Or

- It has brain destroyed
- and
- its heart is not beating.

Start Previous Next End

63

Smrt' zvierat'a



Start

Previous

End

End

