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COMMISSION IMPLEMENTING REGULATION (EU) 2026/1734

of 16 July 2026

amending Annex I to Council Regulation (EC) No 1099/2009 on the protection of animals at the time of killing as regards the authorisation of non-penetrative captive bolt stunning and nitrogen high expansion foam stunning

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Council Regulation (EC) No 1099/2009 of 24 September 2009 on the protection of animals at the time of killing ⁽¹⁾, and in particular Article 4(2) thereof,

Whereas:

- (1) Annex I to Regulation (EC) No 1099/2009 sets out the stunning methods to be used for stunning animals. Pursuant to Article 4(2) of Regulation (EC) No 1099/2009, Annex I to that Regulation may be amended to take account of scientific and technical progress on the basis of an opinion of the European Food Safety Authority ('the Authority') provided that the new method ensures a level of animal welfare at least equivalent to that ensured by the existing methods. The annex may be amended based on new scientific and technical information.
- (2) The non-penetrative captive bolt method uses a device with a 'mushroom-headed' bolt tip to impact the skull without entering the brain, causing unconsciousness of the animal due to brain concussion and, in case of neonates, death.
- (3) The Commission requested the Authority to provide opinions that would serve as sound scientific basis for future discussions at the level of the World Organisation for Animal Health (WOAH) in the context of the revision of the relevant standards on the welfare of animals at slaughter and at killing. Between 2019 and 2024, the Authority adopted a series of opinions on the welfare of different species of animals at slaughter and during killing.
- (4) In 2020, the Authority adopted an opinion on the welfare of pigs during killing for purposes other than slaughter ⁽²⁾ ('the Opinion on pigs'). Based on scientific studies on humane methods of euthanasia conducted on neonatal piglets killed on a farm, the opinion on pigs concludes in particular that:
 - non-penetrative captive bolt has been demonstrated to be a viable method of producing an immediate stun followed by death in neonatal piglets, and that
 - the method is effective and results in loss of consciousness only if used under specific conditions (in particular as regards the restraint, the shooting position of the device on the head, and the kinetic energy produced by the device).
- (5) In its Opinion on pigs, EFSA assessed data from different studies using non-penetrative captive bolt stunning mainly limited to piglets of up to 10,9 kg of live weight. The Opinion concludes that pneumatic non-penetrating captive-bolt gun powered to deliver a sufficient kinetic energy and applied on the correct position, provides immediate and irreversible loss of consciousness and brain death in piglets up to 10,9 kg of live weight and results in death in neonate piglets up to 5 kg of live weight. However, limited scientific evidence is available on the effectiveness of the non-penetrative captive bolt for causing death in piglets weighing more than 5 kg of live weight. That method can, therefore, be considered as killing method for piglets up to 5 kg of live weight and as simple stunning method when used for piglets between 5 and 10 kg.

⁽¹⁾ OJ L 303, 18.11.2009, p. 1, ELI: <http://data.europa.eu/eli/reg/2009/1099/oj>.

⁽²⁾ EFSA opinion on Welfare of pigs during killing for purposes other than slaughter, <https://doi.org/10.2903/j.efsa.2020.6195>.

- (6) Non-penetrative captive bolt stunning is already listed in Annex I to Regulation (EC) No 1099/2009 for categories of animals other than pigs. Based on the evidence provided in the Opinion on pigs, it is appropriate to amend Annex I to Regulation (EC) No 1099/2009 to allow its use as killing method for piglets up to 5 kg, and as simple stunning when used for piglets between 5 and 10 kg.
- (7) In 2024, the Authority adopted an opinion on the welfare of sheep and goats during killing for purposes other than slaughter ⁽³⁾ ('the Opinion on sheep and goats'). That Opinion concludes that the non-penetrative captive bolt causes unconsciousness due to brain concussion and death in lambs and goat kids up to 4,5 kg of live weight and is a reversible stunning method for lambs and goat kids between 4,5 and 10 kg of live weight. The Authority therefore recommends restricting the use of the non-penetrative captive bolt as a killing method for lambs and kid goats weighing up to 4,5 kg. For lambs and kid goats between 4,5 and 10 kg of live weight, non-penetrative captive bolt can be used as a simple stunning method.
- (8) Non-penetrative captive bolt is already listed in Annex I to Regulation (EC) No 1099/2009 for use in ruminants up to 10 kg, as simple stunning method. Based on the evidence provided in the Opinion on sheep and goats, and to ensure legal certainty, it is appropriate to amend Annex I to Regulation (EC) No 1099/2009 to allow its use as killing method for lambs and goat kids up to 4,5 kg of live weight and to lay down the specific requirements for the use of that method as regards piglets, lambs and kid goats.
- (9) Furthermore, in accordance with the EFSA Opinions on pigs and on sheep and goats, the use of non-penetrative captive bolt stunning should be subject to specific requirements that ensure either death or a loss of consciousness of the animal. In particular, it is necessary to specify the restrain and the shooting position of the device on the head of the animal.
- (10) In accordance with Article 4(2) of Regulation (EC) 1099/2009, any person interested in the authorisation of a new or modified stunning method may provide the necessary technical and scientific data. On that basis, the Commission is to request the Authority to assess the scientific or technical information and the equivalence or improvement of animal welfare in relation to the existing stunning methods.
- (11) On 22 December 2021, the Commission received a request from a business operator ('the applicant') to update Annex I to Regulation (EC) 1099/2009 to include the use of high-expansion foam using nitrogen for stunning and killing pigs and poultry. The applicant explained the equivalence in relation to existing methods in Annex I and provided a series of publications and technical information that substantiated the request.
- (12) On 13 May 2022 the Commission requested the Authority to provide a scientific opinion following this application.
- (13) On 3 June 2024 the Authority adopted an Opinion on the use of high expansion foam using nitrogen for stunning and killing pigs and poultry ⁽⁴⁾. That Opinion concludes in particular that:
- exposure of pigs to high expansion foam (expansion ratio 1:> 250) filled with nitrogen leading to anoxia (< 2 % by volume of residual oxygen) ensures a level of animal welfare at least equivalent to that ensured by exposure to carbon dioxide (CO₂) at high concentration,
 - exposure of poultry to high expansion foam (expansion ratio 1:> 250) filled with nitrogen leading to anoxia (< 2 % by volume of residual oxygen) provides a level of animal welfare at least equivalent to that provided by exposure to CO₂ at high concentration, especially during whole house gassing, and a level of animal welfare at least equivalent to that provided by electrocution using electrical water bath.

⁽³⁾ EFSA opinion on welfare of sheep and goats during killing for purposes other than slaughter, <https://doi.org/10.2903/j.efsa.2024.8835>.

⁽⁴⁾ EFSA opinion on the use of high expansion foam for stunning and killing pigs and poultry, <https://doi.org/10.2903/j.efsa.2024.8855>.

- (14) The data submitted by the applicant and assessed by the Authority, which is drawn from different studies on the use of nitrogen high expansion foam stunning cited in the Authority's opinion is limited to pigs of between 15 to 41 kg of live weight and laying hens and broiler chickens of all ages. There is no evidence that the use of that method for stunning or killing animals other than these categories of pigs and poultry provides a level of animal welfare at least equivalent to that ensured by exposure to CO₂ at high concentration.
- (15) Considering that nitrogen high expansion foam stunning is a method which is not listed in Annex I of Regulation (EC) No 1099/2009, and that it provides equivalent welfare to at least one of the approved methods, it is appropriate to list it in Annex I to Regulation (EC) No 1099/2009 only for the above-mentioned categories of animals.
- (16) In accordance with the EFSA opinion on the use of high expansion foam using nitrogen for stunning and killing pigs and poultry, nitrogen high expansion foam needs to be subject to specific requirements that ensure its effectiveness in causing loss of consciousness and death using containers for on-farm killing of pigs and poultry for purposes other than slaughter. It is therefore appropriate to amend Annex I to Regulation (EC) No 1099/2009 to lay down the specific requirements for the use of that method on pigs and poultry, in particular as regards oxygen concentration, exposure time, foam expansion ratio and foam production rate.
- (17) Therefore, Annex I to Regulation (EC) No 1099/2009 should be amended.
- (18) The measures provided for in this Regulation are in accordance with the opinion of the Standing Committee on Plants, Animals, Food and Feed,

HAS ADOPTED THIS REGULATION:

Article 1

Annex I to Regulation (EC) No 1099/2009 is amended in accordance with the Annex to this Regulation.

Article 2

This Regulation shall enter into force on the twentieth day following its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 16 July 2026.

For the Commission
The President
Ursula VON DER LEYEN

ANNEX

Annex I to Regulation (EC) No 1099/2009 is amended as follows:

1. Chapter I is amended as follows:

(a) in Table I, row 2 is replaced by the following:

No	Name	Description	Conditions of use	Key parameters	Specific requirements of Chapter II of this Annex
'2	Non-penetrative captive bolt device	Severe damage of the brain by the shock of a captive bolt without penetration. Killing of piglets up to 5 kg live weight, and of lambs and kid goats up to 4,5 kg live weight. Simple stunning of: — piglets between 5 kg and 10 kg, — ruminants up to 10 kg except lambs and kid goats up to 4,5 kg, — poultry, — rabbits — hares.	Ruminants up to 10 kg live weight. Piglets up to 10 kg live weight. Poultry, rabbits and hares. Slaughter, depopulation and other situations.	Position and direction of the shot. Appropriate velocity, kinetic energy, diameter and shape of bolt according to animal size and species. Strength of the cartridge used. Maximum stun to stick or kill interval(s).	Point 1.'

(b) in Table 3, the following row is added:

No	Name	Description	Conditions of use	Key parameters	Specific requirements of Chapter II of this Annex
'8	Nitrogen high expansion foam	Direct exposure of conscious animals in purpose-built containers to high expansion foam as a vehicle to carry nitrogen leading to anoxia by the reduction in available oxygen to less than 2 %.	Pigs of 15 to 41 kg live weight, laying hens and broiler chickens. Other situations than slaughter.	Oxygen concentration. Duration of exposure. Foam expansion ratio. Diameter of the bubbles and foam homogeneity. Foam production rate. Distribution of the foam.	Point 11'

No	Name	Description	Conditions of use	Key parameters	Specific requirements of Chapter II of this Annex
				Stocking density. Water temperature and nitrogen vaporisation. Foaming agent. Visibility of animals. Quality (softness or hardness) of the water.	

2. Chapter II is amended as follows:

(a) point 1 is replaced by the following:

‘1. *Non-penetrative captive bolt device*

When using this method in ruminants, business operators shall pay attention to avoid fracturing the skull.

In piglets, the device shall be applied with a single impact on the midline of the frontal-parietal bone. The body of the piglet shall be restrained, and the head shall rest on a hard surface.

In neonatal lambs and goat kids, the muzzle of the device shall be applied with a single impact on the midline behind the poll (that is to say, between the ears) with the chin tucked into the neck’.

(b) the following point 11 is added:

‘11. *Nitrogen high expansion foam*

The residual oxygen concentration shall be continuously monitored and be less than 2 % by volume until the animals are dead; the exposure time shall be at least 5 minutes for poultry and 7 minutes for pigs.

The foam expansion ratio shall be maintained at 1:> 250.

The diameter of the bubbles in 95 % of the foam shall be at least 10 millimetres and foam homogeneity shall be maintained.

The foam production rate shall be adequate to fill the container in less than 60 seconds.

The foam distribution within the container shall be uniform and without air pockets.

The stocking density within the container shall be adequate to establish uniform and simultaneous exposure of the animals to the anoxia.

The temperature of water supply shall be lukewarm, and the nitrogen shall be fully vapourised prior to reaching the foam generator.

The foaming agent shall not be harmful to the animals.

The foam shall be transparent, and observation of the animals shall not be obscured.’.