Annex 23

CHAPTER 7.5.

**ANIMAL WELFARE DURING SLAUGHTER**

[…]

Article 7.5.30.

**Electrical water-bath stunning for poultry**

1. Animal welfare concerns

In electrical water-bath [*stunning*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_etourdissement)poultry are inverted and shackled by the legs from a shackle line. The bird's head has direct contact with the water-bath, and an electric current is passed from the water through the bird to the leg shackle. [*Hazards*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_danger) that may prevent effective electrical [*stunning*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_etourdissement) are: lack of contact between head and water, differences in individual bird resistance, improper system grounding, pre-stun shocks due to wings contacting water before the head, and the use of inappropriate electrical parameters (low voltage/current or high frequency).

[*Hazards*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_danger) that increase the likelihood of animals experiencing pre-stun shocks are: poor handling at shackling, inappropriate line speed, physical contact between birds, incorrect angle of entry ramp, entry ramp wetted by charged water, incorrect water-bath height, and shallow immersion.

Factors affecting individual bird resistance include the resistance between the shackle and the leg (leg/shackle interface), shackling on top of a severed foot, shackling by one leg, poor shackle position, incorrect shackle size, dry shackles, scale on the shackle surface, and keratinised skin on the legs (e.g. older birds).

Where ~~insufficient~~ inappropriate electrical [*stunning*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_etourdissement)parameters are used, conscious animals are at risk of being electro-immobilised or paralysed causing [*pain*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_douleur)and suffering.

1. Animal-based and other measures

Multiple indicators should be used to determine whether a stun is effective and the animal is unconscious. Animal-based measures of an effective stun are: tonic-clonic seizures; apnoea; and absence of corneal or palpebral reflex.

Animal-based measures of ineffective stun or recovery of consciousness are: vocalisation; spontaneous blinking; righting reflex; presence of corneal or palpebral reflex; rhythmic breathing; spontaneous swallowing; and head shaking.

1. Recommendations

The height of the water-bath stunner should be adjusted so that the birds' heads are completely immersed in the water. Avoid distractions such as people walking under the birds because this can cause birds to pull up.

Personnel should watch for short or stunted birds as these birds will not be able to make contact with the water and will not be stunned. These birds should be stunned in the slaughter line (e.g. penetrative captive bolt) or removed and euthanised.

The rail of the shackle line should run smoothly. Sudden movement such as jolts, drops or sharp curves in the line may cause birds to flap and avoid the stunner.

To minimise any disturbance to birds during shackling, where shackles are wet to improve conductivity, they should be wetted only prior to birds' legs being placed in them.

Pre-stun shocks should be avoided and can be reduced by having a smooth shackle line and entry to the water-bath and by adjusting the water level of the bath to minimise overflow.

In the case of ineffective [*stunning*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_etourdissement) or recovery, animals should be re-stunned using a backup system or be killed immediately. Ineffective [*stunning*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_etourdissement) or return to consciousness should be systematically recorded and the cause of the failure identified and rectified.

[*Stunning*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_etourdissement) equipment should be used, cleaned, maintained and stored following the manufacturer's recommendations.

Constant current stunners should be preferred to constant voltage stunners because the former ensure that the minimum current is provided to the animals independently from their impedance.

Regular calibration of the equipment according to the manufacturer's procedure is recommended. Effectiveness of the [*stunning*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_etourdissement) should be monitored regularly.

[*Slaughterhouses/abattoirs*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_abattoir) should have standard operating procedures that define key operating parameters or follow the manufacturer's recommendations for [*stunning*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_etourdissement), such as:

* + water level;
  + number of birds in the water-bath;
  + contact between water and head, as well as between the legs and the leg shackle;
  + electrical parameters (current intensity [A], waveform type [AC and DC], voltage [V] and frequency [Hz]);
  + visual or auditory warning system to alert the operator to proper or improper function, such as a device that monitors and displays voltage and applied current.

Ensure an optimum combination of intensity, voltage and frequency (for DC) during electrical water-bath [*stunning*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_etourdissement)practices, to maximise the effectiveness of [*stunning*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_etourdissement). Lower frequencies ensure an effective stunning. Higher frequencies provide the lowest probability of a successful stun even at the highest intensity.

[*Hazards*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_danger) to [*animal welfare*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_bien_etre_animal) such as inversion of conscious birds, pre-stun shocks, and variability in electrical current delivered to each bird are inherent risks of electrical water-bath [*stunning*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_etourdissement). Thus, alternative [*stunning*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_etourdissement) systems which avoid these associated [*hazards*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_danger) should be preferred.

1. Species-specific recommendations

Effective electrical parameters should be based on scientific evidence for different species of birds.

Effective electrical parameters should be based on scientific data with field evidence on the welfare outcomes for different types and conditions of animals in accordance with point 5 of Article 7.1.4.

For water-bath [*stunning*](https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmfile=glossaire.htm#terme_etourdissement) depending on the frequency, ~~minimum~~ recommended ~~parameters~~ intensities ~~are recommended~~ for the following species are:

* + For frequency below 200 Hz:
    - 100 mA for chicken,
    - 250 mA for turkeys,
    - 130 mA for ducks and geese,
    - 45 mA for quails.
  + For frequency from 200 to 400 Hz:
    - 150 mA for chicken,
    - 400 mA for turkeys.
  + For frequency from 400-600 Hz:
    - 200 mA for chicken,
    - 400 mA for turkeys.

Birds should receive the current for at least 4 seconds.

For d~~D~~ucks, geese and quails ~~should not be stunned at~~ frequencies higher than 200 Hz will not achieve effective stunning and therefore are not recommended. ~~[under study].~~

For c~~C~~hicken and turkeys ~~should not be stunned at~~ frequencies higher than 600 Hz will not achieve effective stunning and therefore are not recommended. ~~[under study].~~

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