

## Reports and Comments

### EFSA Scientific Opinion on the welfare of cattle at slaughter

Since its formation in 2002, the European Food Safety Agency's (EFSA) Scientific Opinions (SOs) have been instrumental in the creation of legislation and guidelines for animal welfare. In the early 2000s, the EFSA panel on Animal Health and Welfare produced SOs upon which the current European legislation (Council Regulation [EC] No 1099/2009 on The Protection of Animals at the Time of Killing) was formed. EC 1099/2009 lays out the requirements and legal obligations for the killing of animals bred or kept for the production of food, wool, skin or other products. Since its implementation in 2009, further SOs have been produced by the EFSA, including one in 2013 specifically concentrating on cattle welfare during slaughter (EFSA 2013).

Meanwhile, the OIE (World Organisation for Animal Health), was working in parallel and has published analogous findings in its Terrestrial Animal Health Code, specifically within the chapters focusing on the slaughter of animals and killing for disease control. Subsequently, the OIE has created an *ad hoc* working group to revise these chapters. In order to provide a scientifically sound basis for future international discussions on the welfare of animals at the time of slaughter and killing, the EC requested the EFSA reviewed current scientific evidence. This led to the creation of the EFSA's latest SO on the welfare of commercial cattle, buffalo and bison at slaughter, which was published in November 2020.

In the 2020 EFSA SO on the welfare of cattle at slaughter, 'slaughter' is defined as killing animals for human consumption which takes place both within registered abattoirs and on-farm. The SO covers both stun and non-stun slaughter methods of killing. With respect to welfare, the physical health and comfort of animals was regarded along with psychological stress. By its very nature, the scope of the OIE is international, therefore the EFSA wrote this document with consideration of: the methods listed within 1099/2009, methods currently under development which are expected to become commercially applicable and additional methods known to the experts, providing the welfare aspects were satisfactorily described in scientific literature. One method briefly touched upon but discounted from the analysis due to lack of feasibility in a commercial setting, and knowledge of the associated welfare consequences, is the use of CO<sub>2</sub> for stunning cattle. As when OIE performed a similar task, some known methods of restraint and slaughter, not included in 1099/2009, were labelled 'unacceptable' due to strong welfare concerns, eg electro-immobilisation, rope casting and severing the brain-stem through the eye without prior stunning.

Four Terms of Reference were set out for the EFSA panel:

- Identify the animal welfare hazards and their possible origins;
- Define qualitative or measurable criteria to assess performance on animal welfare (animal-based measures);
- Provide preventative and corrective measures to address the hazards identified; and
- Point out specific hazards related to species or types of animals.

Three strategies were used to gather information and address each term of reference. The stages were literature search, consultation of member states' representatives, and expert opinion through working groups. The experience of animals undergoing slaughter was divided into three phases, each of which has its own chapter within the document:

- Phase 1, pre-slaughter (arrival, problems persisting from poor transport, lairage and handling);
- Phase 2, stunning and restraint (divided into electric stunning [subdivided into head to body and head only] and mechanical stunning [subdivided into penetrative or non-penetrative captive-bolt and free-bullet firearms]);
- Phase 3 bleeding (differentiating between bleeding following stunning, and restraint and bleeding for non-stunned animals).

The results for each phase are reported in their relevant chapters. The identification of hazards, potential welfare consequences, hazard origin, preventative and corrective measures for the hazards, along with animal-based welfare measures are described in detail. There are useful summary tables provided at the end of each section. Animals with specific needs, ie pregnant and lactating cows, young calves, breeding bulls, buffalo and bison are further addressed in the final section.

Twelve welfare consequences that cattle may be exposed to during slaughter were identified: heat stress, cold stress, fatigue, prolonged thirst, prolonged hunger, impeded movement, restriction of movements, resting problems, social stress, pain, fear and distress.

Animal-based measures were identified for all welfare consequences with the exception of prolonged thirst and hunger. Animal-based measures are often preferred during welfare assessments as they are seen to provide a more direct view of the animals' experiences. Some of the animal-based measures reported in the SO were similar to those recommended in the Welfare Quality® (2009) protocol for cattle (eg slips and falls), however some were novel (eg facial expression).

Altogether, 40 hazards were identified and characterised, mainly during stunning and bleeding. Almost all (39) originated from human error, ie lack of necessary skills and abilities to perform a task. Preventative and corrective measures were identified, and structural and managerial measures were determined to be crucial in prevention. Of all

phases, the most hazards (16) were identified for slaughter without stunning. These included unsuitable restraint equipment and serious welfare issues arising from human error (eg incomplete severing of carotid arteries and dressing cattle alive). The authors acknowledge that due to the nature of the non-stun slaughter methods, some welfare consequences are inherent and unavoidable. They state “pre-cut stunning is the only preventative measure for the welfare consequences associated with cutting” (p 82). However, some corrective measures to mitigate additional suffering during non-stun slaughter are suggested, eg chest sticking and immediate post-cut stunning. Effective chest sticking, as recommended by the Humane Slaughter Association, reduces the risk of carotid occlusions, thus improving blood loss and reducing time until death compared to a ventral neck incision.

Overall, the new EFSA SO on the welfare of cattle at slaughter is a substantial document and is clearly the result of a considerable work effort. However, it must be noted there are some issues which should be addressed in future versions. For example, some of the science backing the animal-based measures is dated, eg it is stated that cattle only vocalise when in distress. The citations for this are approximately 20 years old and there are more recent scientific papers (Ede *et al* 2019; Green *et al* 2019) showing vocalisation in cattle is a complex topic, performed for a variety of reasons, and may be associated with both positive and negative valence. The scientific evidence relating to efficacy of captive-bolt stunning of water buffalo described in the last chapter of the SO is mis-cited. The findings on skull thickness and shot position reported are not found in Gregory (2009), but rather Gregory *et al* (2009). Also, some of the animal-based measures suggested in this SO, such as ‘pain face’ still require further validation, especially in a slaughter situation, before they can be used as reliable and valid welfare indicators.

A particularly glaring error is found in section 3.2.4 in which appropriate equipment for killing using free bullet firearms is described. What is presumably a typo lists suitable shotgun bores as 0.12, 0.16, 0.20 and 0.28 when in fact it should be 12, 16, 20 and 28 (no decimal!). This mistake would not go unnoticed by an experienced firearms operator and it should not lead to any mistakes in the field, but is a fundamental error which needs to be corrected.

In summary, the new EFSA report on the welfare of cattle at slaughter ties together information compiled during a scientific literature review and expert opinion. It offers valuable insight into the experiences of cattle during slaughter in 2020. Serious welfare issues were identified, particularly for cattle undergoing non-stun slaughter, for which corrective measures and mitigations are sorely needed. Although much of the content is not novel, it is important for these documents to be reviewed and re-written regularly in order to keep up-to-date with current slaughter practices. Future documents in this series will likely be of particular interest to those in the slaughter industry if novel technologies, such as Single Pulse Ultra-High Current (SPUC), are developed and validated.

**EFSA Scientific Opinion on the Welfare of Cattle at Slaughter** (2020). A4, 107 pages. Published by the EFSA and available at <https://www.efsa.europa.eu/en/efsajournal/pub/6275>.

## References

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## Pests, vermin, alien species...

The Wild Animal Welfare Committee (WAWC) is an independent group that provides advice and evidence on the welfare of free-living wild animals in the UK. Part of WAWC’s activities involves publishing ‘Topic Papers’ which seek to introduce a particular wild animal welfare issue with the aim of “stimulating comment, suggestions for additions and further discussion.” Topic Papers are brief and laid out in a similar format in which a summary is first given on the issue of concern, followed by greater detail about the concern itself and the species affected. Possible risk-mitigating actions are also considered, as well as recommendations for stakeholders.

The first Topic Paper in the series considered the welfare issues surrounding animal reintroductions, and the latest addition seeks to tackle: ‘Value-laden language and its consequences for wild animal welfare’.

WAWC raises the importance of considering the connotations of the words that are used when referring to free-living animals. Language can intentionally, or unintentionally, create and perpetuate a cultural norm which, in turn, leads to social acceptance. WAWC outlines the welfare consequences associated with value-laden words such as ‘pest’, ‘alien’, ‘quarry species’, and ‘game species’ when referring to wild animals (an extensive glossary is included covering these terms, amongst others).

It has been generally accepted for many years that words such as ‘pest’ or ‘vermin’ may be used when describing rats and mice, and consequently, these animals are commonly killed with relatively little evidence that a problem is present, or that other methods of control have failed. WAWC comments that: