# THE WELFARE OF LIVESTOCK DURING TRANSPORT

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EUROPEAN FOOD SAFETY AUTHORITY

WOAH, Dublin, June 2023

# OVERVIEW OF SCIENTIFIC OPINIONS

**EFSA was requested to give an independent view on the welfare of free-moving animals during transport**

**Working group: 12 researchers** from EU (incl. UK), AUS, and NA

**Four opinions**

**Four main species**: horses, cattle, pigs, sheep

(+ sections on donkeys and goats)


SCIENTIFIC OPINION

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EFSA Journal

Welfare of cattle during transport

EFSA Panel on Animal Health and Welfare (AHAW),
Søren Saxmose Nielsen, Julio Alvarez, Dominique Joseph Bicout, Paolo Calistri, Elisabetta Canali, Julian Ashley Drewe, Bruno Garin-Bastuji, Jose Luis Gonzales Rojas, Christian Gortazar Schmidt, Virginie Michel, Miguel Ángel Miranda Chueca, Barbara Padalino, Paolo Pasquali, Helen Clare Roberts, Hans Spoolder, Karl Stahl, Antonio Velarde, Arvo Viltrop, Christoph Winckler, Bernadette Earley, Sandra Edwards, Luigi Faucitano, Sonia Martí, Genaro C Miranda de La Lama, Leonardo Nanni Costa, Peter T Thomsen, Sean Ashe, Lina Mur, Yves Van der Stede and Mette Herskin

**Abstract**

In the framework of its Farm to Fork Strategy, the Commission is undertaking a comprehensive evaluation of the animal welfare legislation. The present Opinion deals with protection of cattle (including calves) during transport. Welfare of cattle during transport by road is the main focus, but other means of transport are also covered. Current practices related to transport of cattle during the different stages (preparation, loading/unloading, transit and journey breaks) are described. Overall, 11 welfare consequences were identified as being highly relevant for the welfare of cattle during transport based on severity, duration and frequency of occurrence: group stress, handling stress, heat stress, injuries, motion stress, prolonged hunger, prolonged thirst, respiratory disorders, restriction of movement, resting problems and sensory overstimulation. These welfare consequences and their animal-based measures are described. A variety of hazards, mainly relating to inexperienced/untrained handlers, inappropriate handling, structural deficiencies of vehicles and facilities, poor driving conditions, unfavourable microclimatic and environmental conditions, and poor husbandry practices leading to these welfare consequences were identified. The Opinion contains general and specific conclusions relating to the different stages of transport for cattle. Recommendations to prevent hazards and to correct or mitigate welfare consequences have been developed. Recommendations were also developed to define quantitative thresholds for microclimatic conditions within the means of transport and spatial thresholds (minimum space allowance). The development of welfare consequences over time was assessed in relation to maximum journey duration. The Opinion covers specific animal transport scenarios identified by the European Commission relating to transport of unweaned calves, cull cows, the export of cattle by livestock vessels, the export of cattle by road, roll-on-roll-off ferries and 'special health status animals'; and lists welfare concerns associated with these.



**Keywords:** cattle, calves, animal welfare assessment, Farm to Fork Strategy, welfare consequences, animal-based measures, hazards, quantitative thresholds

**Requestor:** European Commission

**Question number:** EFSA-Q-2020-00481

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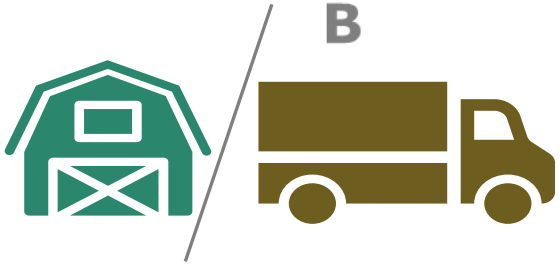
**Timeline**: June 2020 - June 2022

# OVERVIEW OF PRESENTATION

- Explain the structure of the opinions
- Selected conclusions

A

B



### Stage 1: Preparation

- Planning
- Feed removed
- Assessment of fitness for transport

### Stage 2: Loading/unloading

(*not covered today*)

- Animals enter or exit truck

### Stage 3: Transit

- Movement
- Breaks not intended to rest animals are included

### Stage 4: Journey breaks

- Breaks intended to rest animals
- In truck or unloaded

The phases were created only for the purpose of the opinions – to allow for a thorough assessment of animal welfare from pre-loading and until after unloading

# OVERALL STRUCTURE OF THE OPINIONS

**<u>Two types of assessment methodology</u>**

1. Road transport – the most common type of transport

   - Identification of highly relevant welfare consequences

   - **Conclusions** and **recommendations,** for example temperature, space, and assessment of development of welfare consequences over time.

2. Shorter sections dealing with other types of transport (air, vessels, roll-on-roll-off) and **specific scenarios** as mandated by EC, e.g., **unweaned calves and cattle/sheep transported in vessels**.

# PHASE 1: PREPARATION FOR TRANSPORT & FITNESS FOR TRANSPORT

**Conclusions and Recommendations**

- Assessment of fitness for transport is of utmost importance in the protection of animal welfare
- No scientific definition of the concept of being fit for transport exists – it should be properly defined
- Unfit often relates to health impairment, but also cover certain age groups or physiological stages – an overview of current guidelines and potential conditions are given
- In order to avoid doubt, professional groups (e.g., farmers, stockpersons, drivers, haulers, inspectors and veterinarians) should be well-educated and trained, and questions on responsibility between the groups should be clarified.

# 3. STAGE: TRANSIT

- *Starts when the ramp has been closed and ends when the first animal unloads.*
- *May include stationary periods, if their purpose is not to rest the animals.*
- **Even under favourable conditions, animals are exposed to potential stressors that can compromise their health and welfare.**

**Conclusions**

- Not all welfare consequences can be prevented
- For some of the hazards exposure will continue at least as long as the journey continues
- The severity of the welfare consequences depends on the exact conditions

# TRANSIT STAGE – MICROCLIMATIC CONDITIONS

- Microclimatic conditions inside vehicles are influenced by many factors of which **temperature** and **humidity** are most important.
- EFSA recommends to use sensors taking account a combination of temperature and humidity.
- Thermal comfort zone (TCZ): a zone of thermal well-being, the preferred or chosen environment.
- Thermoneutral zone (TNZ), the upper limit of which is **UCT =** the point above which an animal must significantly increase the use of physiological mechanisms to prevent a rise in body temperature above normal.
- Heat stress may start when animals are no longer in their thermal comfort zone.
- The risk and severity of heat stress is high when the thermal conditions reach the UCT.

| Animal category | TCZ | UCT |
|---|---|---|
| Horses | 20 | 25 |
| Sheep, shorn | 25 | 32 |
| Other sheep | | 28 |
| Cattle | | 25 |
| Weaners | 25 | 30 |
| Finishers | 22 | 25 |
| Sows | 20 | 22 |

**EFSA recommends that temperatures are kept below the upper threshold of the TCZ, and that temperatures should not exceed the UCT**

# TRANSIT STAGE – SPACE ALLOWANCE

- The minimum space allowance set by the first limiting factor that reduces the ability of animals to undertake relevant biological functions during transport.
- Biological functions: **adjust to truck movements, rest in typical position, get up/down**, eat, drink, thermoregulate
- Based on the use of an allometric equation [$A = k \times W^{2/3}$] (where A is area in $m^2$ per animal and W is liveweight in kg), used under housing conditions to calculate the physical space required.
- Starting point: physical space of the standing body.

| Animal category | Suggested minimum space allowance ($m^2$/animal) |
|---|---|
| Lamb, 12 kg | 0.19 |
| Sheep, 40 kg | 0.43 |
| Cattle, 400 kg | 1.84 |
| Weaner, 30 kg | 0.26 |
| Finisher, 110 kg | 0.62 |
| Sows, 240 kg | 1.04 |

**Space allowance recommended by EFSA when microclimatic conditions are kept below the UCT**

# TRANSIT STAGE – VERTICAL SPACE ALLOWANCE

- Low vertical space can be associated with reduced ventilation, lack of ability to move around, lack of space for natural movements
- *Across species the establishment of evidence-based thresholds constitutes a gap in knowledge*

| Animal category | Suggested minimum vertical space, cm |
|---|---|
| Sheep | At least 15 cm free space above animals in vehicles with mechanical ventilation and 30 cm in naturally ventilated vehicle |
| Horses | 75 cm above withers of tallest animal |
| Cattle | [wither height x 1.17 + 20 cm]<br>40 cm above withers of tallest animal |
| Pigs | |

# TRANSIT STAGE – JOURNEY DURATION

| Type of WC | WC | Development over time, h |
|---|---|---|
| Continuously present | Motion stress | |
| | Group stress | |
| | Resting problems | |
| Progressively developing | Thirst | Sheep: 12<br>Cattle: 9<br>Pigs: 8<br>Horses: 3 |
| | Hunger | Sheep: 12<br>Cattle: 12<br>Pigs: 12<br>Horses: 12 |
| Sporadic | Health conditions - pain and/or discomfort | |

**Based on evidence on continuous WC involving stress and negative affective states, for the benefit of animal welfare, journey duration should be kept to a minimum**

# JOURNEY BREAKS

- *In truck or in control post*
- Animals should be kept in TCZ
- Control posts involve biosecurity risks -> number of times animals stay there should be as low as possible
- Whether control posts in their current state fulfil their intended function is not known.
- Even though control posts conform to the current regulation, their use may be associated with animal welfare consequences.
- If a stay in a control post or similar should be beneficial for animal welfare, any journey break needs to be long enough for each animal to eat, drink and rest.

| | Horses | Cattle | Sheep | Pigs |
|---|---|---|---|---|
| **Stationary vehicle** | + | | | |
| **Animals unloaded** | + | + | + | + |
| **Group size maintained** | + | + | + | + |
| **Duration** | 12-24 h | 24 h | 16-24 h | 24 h |

**Recommendations**

The duration of a rest at a CP, allowing WCs from the transit stage to be mitigated, constitutes a gap in knowledge

Until evidence-based thresholds are established for the duration of rest periods, compliance with the current 24 h period is recommended

# SPECIFIC SCENARIO: EXPORT BY LIVESTOCK VESSELS

**Conclusions**

- Highly relevant WC overlap with road transport + additional concerns
- Waiting times at ports, starvation (sheep), heat stress, noxious gases, space requirements, motion stress and handling upon arrival.
- Some of the concerns identified for the export are difficult or impossible to control such as the handling upon arrival.
- **Research to evaluate the welfare of cattle when transported in livestock vessels is recommended.**

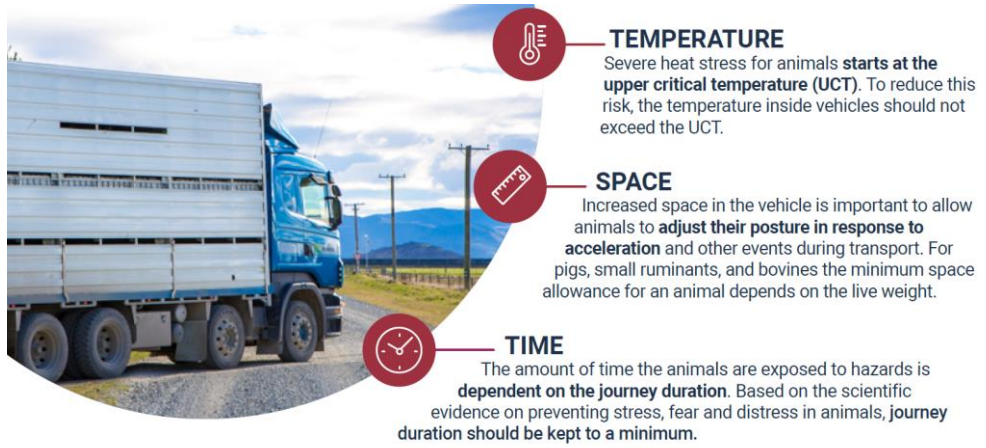
# UNWEANED CALVES

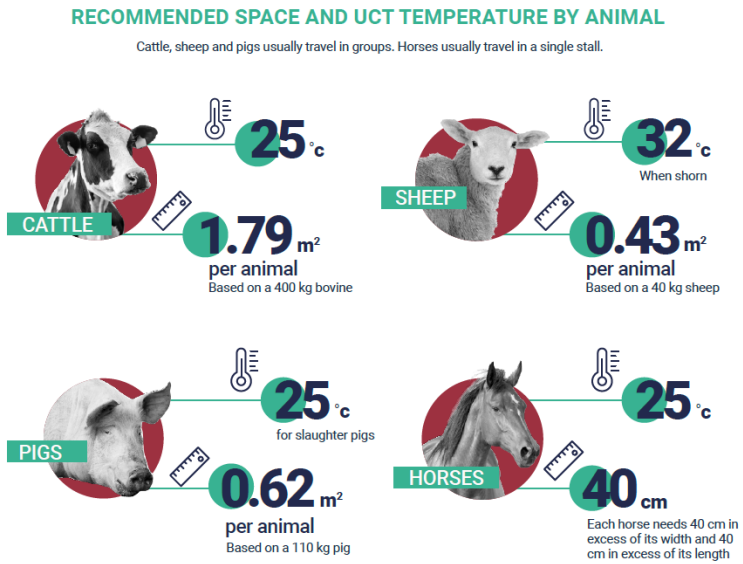
## Recommendations

- During transport, intervals between milk meals should not exceed 12 h, and not be less than 6 h.
- After a milk meal, calves should be allowed to rest (lying) in a calm place for 3 h to digest their meal.
- In order to allow calves to be loaded/unloaded and a 3-h post-meal rest, journeys should not exceed 8 h.
- Space allowance: K= 0.027 (0.37 $m^2$, 50 kg calf)
- Not exposed to temperatures higher than 25 C

# IN SUMMARY

- EFSA has assessed animal welfare during transport for horses, cattle, sheep and pigs
- The majority of the opinions deal with road transport – constitutes around 90%
- The opinions focus on non-juvenile animal categories – but also sections on for example weaners
- The opinions include animal categories such as unweaned calves and cattle/sheep transported in vessels



# Thank you

**Working group**

- Michael Cockram
- Nancy De Briyne
- Bernadette Earley
- Sandra Edwards
- Luigi Faucitano
- Sonia Marti
- Gennaro C Miranda de la Lama
- Leonardo Nanni Costa
- Barbara Padalino
- Clive Phillips
- Yolande Seddon
- Peter T Thomsen

**Sean Ashe**

Mariana Geffroy

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## Thank you for the attention

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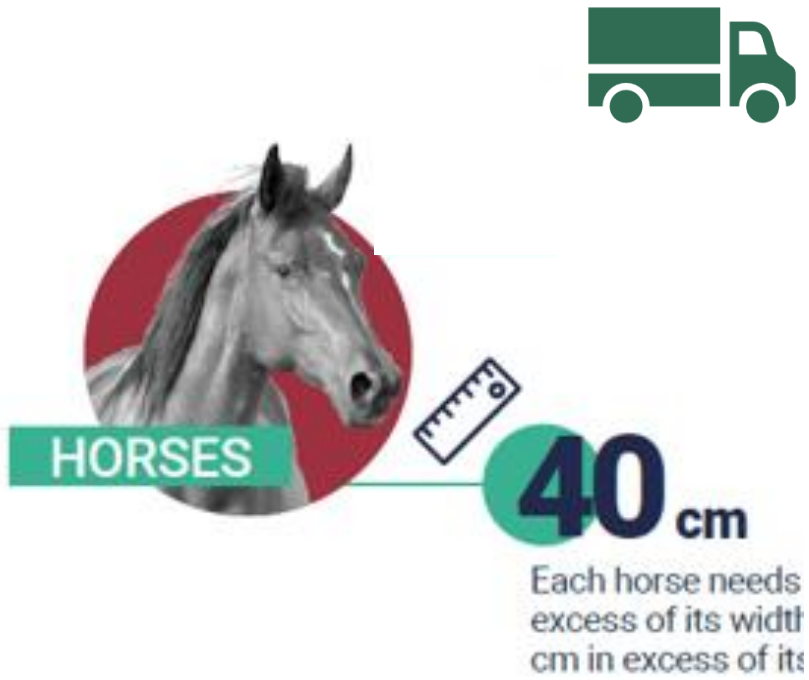
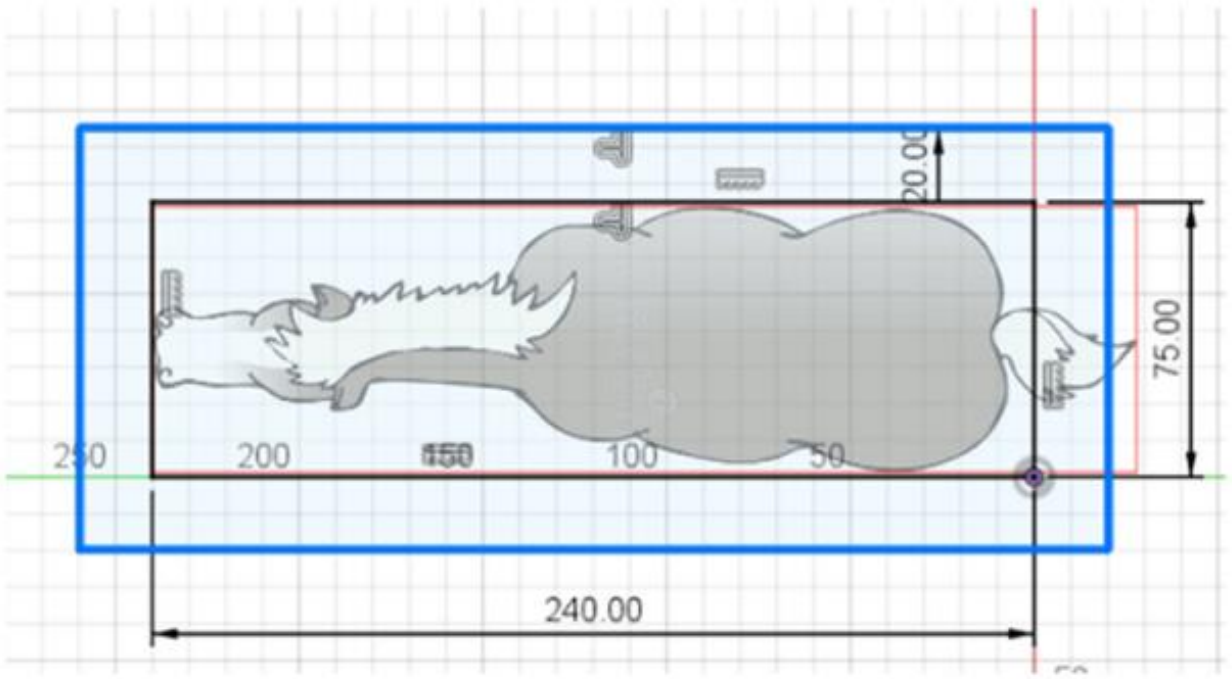
# THE MANDATE: IN ADDITION, SPECIFIC SCENARIOS

- **Export by livestock vessels:** cattle and sheep
- Export by road: cattle and sheep
- Roll-on-roll off (Ferries): cattle and sheep
- End-of-career animals – transport of dairy cows, breeding sows, and laying hens to slaughter
- **Unweaned calves** - Transport of unweaned calves over long journeys by road
- Transport of horses on long journeys to slaughterhouses
- Special health status animals - Transport of ruminants and pigs where unloading them before the final destination might jeopardize their health status.

# SPACE ALLOWANCE FOR HORSES




Drawing by Liv Cool

Horses transported in groups: no more than 200 kg/m$^2$

# THE EXPORT OF CATTLE AND SHEEP BY ROAD

## Conclusions

- Same as for road transport but very long journeys

Some concerns identified are difficult or impossible to control:

- Delays in leaving the EU
- No certified resting points along the journey
- The handling/treatment and the type of slaughter upon arrival.
- The actual legal protection of these animals after leaving the EU is unknown.

## Recommendations

- All the recommendations from road transport apply here

A

B

## Stage 1: Preparation

- Planning
- Feed removed
- Assessment of fitness for transport

## Stage 2: Loading

- Animals enter truck

## Stage 3: Journey

- Movement including breaks

## Stage 4: Arrival

- Stationary truck
- Waiting

## Stage 5: Unloading

- Animals exit truck


# TRANSPORT OF HORSES ON LONG JOURNEYS TO SLAUGHTERHOUSES

**Conclusions**

- The welfare consequences, hazards, preventive and corrective/mitigating measures same as for general transport
- Concerns specifically related to the exposure to the hazards due to the long journey time.
- The proportion of horses deemed unfit for transport at the point of origin has been reported to be an issue,
- Animals tend to be of lower value and less is invested in ensuring that conditions of transport are satisfactory

**Recommendations**

- Alignment with the general recommendations
- Unfamiliar horses should not be mixed in the transport vehicle
- Small groups are recommended when horses are transported loose.

# LOADING AND UNLOADING

- These phases are already regulated in 1/2005 (e.g., ramp angle).
- **Highly relevant WC**: handling stress, injuries, heat stress
- **Major hazards:** inappropriate handling, unsuitable facilities, sensory input (noise, sights smells), high temperatures
- Delays -> increased exposure to hazards
- Animals can be trained to this procedure


**Recommendations**

- Handlers should be educated and trained
- Facilities should be fit for purpose
- Delays should be avoided

# PREPARATION FOR TRANSPORT

- *All types of actions and animal management that take place during the interval from the decision to transport an animal until the initiation of loading*
- In short: gathering of the animals to holding facilities and keeping them there prior to transport itself
- Can be quite variable – depending on species, animal category, type of production, and also between EU member states
- Examples of highly relevant welfare consequences: **Handling stress, group stress**


**Conclusions and recommendations**

- An important phase that may predispose animals to WC throughout journeys (protocols should be developed)
- Education and training of handlers are important preventive measures
- Important hazard: mixing of animals
- Lack of access to water and/or feed will predispose animals to WC such as hunger and thirst in later stages