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OVERVIEW OF GOOD AND BEST PRACTICES

CATTLE



ANIMAL TRANSPORT GUIDES

Report submitted by the Transport Guides consortium,
led by Wageningen UR Livestock Research - April 4th 2016

Executive Summary

The objective of this report is to provide an overview from the 'grey' and scientific literature of good and best practices for animal welfare during transport. For the purpose of this report we define Good practices as procedures and processes that ensure compliance with requirements of legislation or regulations designed to protect the animals' welfare. Best Practices are defined as providing additional guidance on how procedures and operations can be improved to exceed any legally defined minimum welfare requirements. The report presents an analyses of the collected information for each of five species: cattle, horses, pigs, sheep and poultry. Each species chapter (or 'sub-report') comprises of an analyses of the practices identified, followed by an overview of all available practices presented in tabulated form. Both the analytical text and overview tables are structured according to the relevant chapters and articles in the Regulation. The report concludes with a presentation on two specific areas of interest: the costs associated with fitness-to-travel decisions, and a brief state of the art section on satellite navigation systems. A list of the references that were identified can be found at the end of the report. The findings in the report will be used to develop Guides to Good and Best Practices in the next steps of the project.

What the data on all species have in common is that the majority of recommendations is freely available online, and directly accessible to a large international audience. However, there is hardly any information on the level of impact each of the recommendations or publications has.

The available guidelines relating to means of transport are often generic, and apply to all species. There is general consensus in terms of vehicle design, particularly in relation to ventilation, but there is a lack of detailed information on how to operate these systems (perhaps with the exception of pig transport vehicles). Another aspect which is rarely described in all species is the design and use of drinkers on board vehicles for long journeys.

There is not a lot of information available on good and best practices regarding emergency situations and driving skills. There is also a lack of specific advice on long

journeys and the associated rest stops. Only limited recommendations are available on documentation to be carried on board, and on contingency plans.

Cattle

Thirty documents and sources specifically relating to the transport of bovines were identified, most of which concerned guidelines for good practice to ensure compliance with current legislation. Information on categories of vulnerable cattle (e.g. calves, cull cows, pregnant cows) is missing.

The topic of 'Fitness for Transport' is covered extensively, but there are no practical recommendations addressing how to take care of animals that are not fit for transport. It is also not clear how to identify pregnancy status of cows close to 90% of their gestation period, which are not allowed to be transported.

Loading and handling practices for bovines are well covered by the existing good and best practices, with the exception of calves and individual bulls.

Regarding space allowance on board several sources are available that provide information on the implementation of the legal requirements. Advice on the best way to assess and/or calculate space allowances, taking into account various influencing factors, was not found.

There are several documents addressing good practices relating to the watering and feeding intervals for cattle. What appears missing is information regarding implementation, operation and maintenance watering and feeding systems.

The management of the thermal environment by appropriate ventilation is addressed in several documents, but detailed information on fan or system specification and operation in relation to specified temperature limits is often lacking. There are general recommendations on how to minimise the risks of heat stress and cold stress.

Economic aspects of fitness to travel

Transport of unfit animals must be discouraged. To reduce the incidence of unfit animals being transported it is important that they can be identified before loading on to the vehicle. It is essential to have alternative management options to deal with these animals. There is still a lack of guidelines for determination of fitness for travel for sheep and poultry.

If unfit cull animals can be treated medically, the benefit/cost ratio can be positive. Euthanasia and emergency killing do not provide financial benefits, but only generate

costs, which are partly mitigated by subsidies. Non-compliance creates short term benefits, if the chance of getting caught is low, but will compromise the profitability of farmers and transport companies if enforcement is sufficiently high.

Satellite navigation systems

Regulation EC 1/2005 requires satellite navigation systems (SNS) to monitor travel and resting times. Suitable systems have been described in the literature, but there is no evidence of a systematic use by competent authorities nor transport organizers of these systems.

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1. Cattle: Key points of interest

An overview of good and best practices is listed in the table of paragraph 1.2. There are a number of key points of interest regarding the references used, as well as the practices themselves. They are presented and discussed below.

References

1. We identified a total of 30 sources / references. Of these, 15 documents cover two or more species and 15 documents described practices specifically for bovines (cattle). All references concern road transport only.
2. 23 of these documents were published in English and 7 were exclusively in French. EU documents are in English, translated in other languages and available on the internet.
3. We also identified documents published in Canada and the USA relating to general aspects of livestock transport, fitness to travel and transport in hot or cold weather.
4. No source specifically addresses the transportation categories of vulnerable cattle (e.g. calves, cull cows, pregnant cows).
5. Most of the sources describe good practices (i.e. how to meet the legal requirements). A small number (6-9) refer to best practices. Specific recommendations for improvements in current practices creating the basis for best practices are presented in an EFSA Opinion (ref 64).
6. Nine sources were published by Government agencies or competent authorities. Only 3 of these were of European origin – the remainder were from North America.
7. The majority of the sources included in this analysis were produced by stakeholder groups or consortia or as part of quality control or assurance schemes. The groups were composed of producers, trade organisations, transporters national organizations, veterinary organisations, NGOs and academic and research institutions.

8. One EU document was produced by a diverse consortium of partners, including NGO's and industry representatives (ref 066). This document concerns fitness to travel.
9. There was one publication from an experimental quality assurance programme (ref 100): it is an auto-diagnostic tool for transporters to self-evaluate the quality of transport regarding the welfare of animals. There is no information on the number of transport companies using this tool.
10. Only one document specifically aimed at enforcement was identified (ref 138, updated version of ref 104 in French), written by an NGO. This offers advice to police officers to help them support national Competent Authorities during road controls of trucks transporting animals.
11. Advice on good practices for transport is often presented in documents and sources primarily focussed on aspects of meat quality and food safety, including Quality Assurance Schemes (e.g. refs 78, 143 and ABM/ABP livestock standards). One guide is dedicated to the implementation of Regulation (EC) No 1099/2009 and was included due to specific section on unloading (ref 189 in French).
12. Most of the sources identified are available as hard copy (printed formats) or electronically from websites. Almost all documents in English are available on the internet, which makes them accessible to a wide number of stakeholders worldwide.
13. Specific sources have been identified which contain clear tables, pictures, diagrams and other images, supporting a better understanding of the written text to be usable by main target audience (e.g. transporters, drivers, animal handlers and slaughterhouse staff).
14. A significant gap in knowledge has been identified. No sources were identified that provide specific guidance to best practice for the transportation of recognised vulnerable groups of cattle i.e. calves and cull cattle
15. None of the sources described for cattle have been subject to critical impact analysis. Thus it is not possible to determine the influence of the advice, recommendations or practices upon animal welfare or the efficacy of different methods of presentation or media employed.

CONCLUSIONS: Thirty documents and sources specifically relating to the transport of bovines (cattle) were identified and selected for analysis. Most of these provide

guidelines for good practice that ensures compliance with current Regulations. We did not identify any sources specifically addressing the transportation categories of vulnerable cattle (e.g. calves, cull cows, pregnant cows). Most information is freely available online, but their level of use by the sector or their impact upon current practice and animal welfare is unknown.

Fitness to travel

16. There is one main European source of guidelines for fitness to travel, which was published after reaching consensus among many stakeholders (ref 066). This document covers all aspects of fitness for transport with a distinction between animals unfit for transport, questionable animals where veterinary advice is needed and animals considered fit for transport. This EU document was developed from an earlier French publication (ref 095).
17. This document does however not propose any practical solution when animals are unfit for transport. For example, there is no practical indication on how to identify pregnant cows which would have exceeded 90% of the gestation period.
18. UK guidelines (refs 010, 143) presented in QA schemes have clear recommendations to ensure compliance with the regulation and emphasise avoiding pressure to load unfit stock. These guidelines also recommend additional training of drivers to ensure good practice.
19. Fitness to travel is also addressed in a French Vademecum of the Regulation (ref 096). This document provides specific reminders that only animals with complete identification and transport documentation can be transported.
20. Fitness to transport is also addressed in one Canadian document and definitions are provided to help transporters (ref 37)

CONCLUSIONS: The current guidelines cover this topic extensively, but there are no practical recommendations addressing how to take care of animals that are not fit for transport. Neither is it clear how to identify pregnancy status of cows close to 90% of their gestation period. There is general agreement among a broad range of stakeholders on the criteria for assessment of fitness to travel.

Means of transport

21. There are guidelines for transport vehicles that address different aspects of vehicle design and operation. Most are specifically focussed on vehicles for the transportation of cattle (refs 10, 78, 161 and 143). These guides address the issues of adequate ventilation and temperature control, reducing radiant gain and vehicle cleansing and disinfection.
22. One document written by an NGO (ref 138 in French) and available online, is not specific for cattle but targets most livestock species. This document provides useful drawings of truck equipment and specifications, making it easily accessible to drivers and transporters, although originally targeted at police officers. In this document, requirements regarding the monitoring of opening and closing of trucks ramps are lacking, and part of the truck specifications are not best practices. For example, ramp barriers are not plain walls, temperature recorders are not properly indicated on the drawings and the requirement for a light coloured insulating roof is not indicated on the drawing for vehicles being used for long journeys.
23. The French Vademecum (ref 096) provides detailed reminders of all the requirements stipulated in the Regulation for vehicles to transport cattle and provides practical information regarding light levels (150 watts at each side of the compartment), bedding (preferentially straw but woodchips and sawdust are usable as well, homogeneously spread, 2kg/m² being recommended in most situations). It also gives the website address for the official list of approved detergents and disinfectants for the cleansing and disinfection of vehicles.
24. The EU HQCP Guide (ref 017) provides practical information on the cleaning procedures and disinfection of trucks.
25. The EU HQCP (Transport) guide (ref 017) gives details of the requirements for vehicles used to transport cattle. This document recommends providing 20 cm above the shoulder of the tallest cattle in the compartment.
26. None of the documents we collected gave any indication of the type of watering systems to be used for long distance transport according to the type of animals that are transported.
27. A limited number of sources available specifically address the means of transport for cattle. There are no conflicts in any of the recommendations considered. Some limited recommendations are available concerning the management of vehicle ventilation and temperature.

CONCLUSIONS: The currently available guidelines relating to means of transport are often generic i.e. may be applied to all species but are relevant to cattle. For long journeys the various codes and advice available are detailed in respect of vehicle design. We did not identify any conflicting recommendations. There is general consensus in terms of vehicle design, particularly in relation to ventilation requirements. However, there is a lack of detailed information on the actual operation of these systems. There is also limited information on the design and use of drinkers during long journeys.

Loading/unloading & handling

28. Several guidelines on how to load cattle have been collected. Most of them specifically address loading/unloading areas or ramp characteristics (refs 003, 078, 094, 096, 143, 165 and 166).
29. Five sources have been identified that recommend good practices during loading (refs 003, 078, 094, 096 and 143). These sources emphasise the importance of pre-transport deliberate familiarisation with handling and other animals, and care and attention when loading animals in difficult locations.
30. Unloading is specifically described in the context of slaughterhouses in FR guide with details on operating procedure and monitoring indicator (ref 189).
31. Two French sources deal with the correct handling of cattle (ref 085 and 188) and only one with specific handling recommendations for calves (ref 087 - video not available online).
32. Two sources (refs 165, 166) provide advice on all aspects of cattle transport including sections on loading and unloading cattle and calves and advice on assessing ramp angles.
33. Several guides (including non-European) draw attention to thermal issues and state that cattle should be protected from adverse weather, excessive heat or cold during loading and unloading (refs 003, 057, 152 and 189) to ensure good practice.
34. These same sources recommend the provision of additional protection from the effects of adverse weather during loading and unloading.
35. Loading/unloading areas are described in detail in 3 French guides (ref 085 , 086 and 189) and 1 EU Guide (ref 017). Ref 086 is a leaflet accessible on the internet

to farmers, assembly centre owners and transporters, which describes in detail (including drawings and plans) how to design and use a loading zone in various farm situations and according to the truck type. Ref 085 is a document on farm facilities which gives complementary information on loading zones and good loading practices in various farm situations. The document provides several drawings of raceways and facilities, with recommended dimensions. Ref 189 provides detailed recommendation for the layout of entrance and unloading area at slaughterhouses.

36. The EU HQCP Guide (ref 017) provides information and drawings on the use loading zones, with recommendations for good practices for handling cattle. The French leaflet for cattle at livestock markets (ref 188) also gives several recommendations on good handling practices, with detailed drawings and recommended halter systems to help guide cattle.
37. The practices which are forbidden when handling cattle are listed in all these documents, but only 3 references (ref 017, 096 and 188) indicate the proper use of electric handling tools (prods or goads) on adult animals. Only ref 188 gives any indication of the specific good practices to handle young calves. Ref 097 video (not available online) gives good videos of good and best practices for handling calves and adult cattle during transport.
38. Specific gaps in advice and recommendations have been identified. No document addresses the issue of the loading of individual bulls, especially at livestock markets.

CONCLUSION: Loading and handling are covered by the existing good and best practices. Some limited advice is available on loading of calves. There is no clear advice on the handling of individual bulls.

Emergency procedures

39. The EU Transport Guide (ref 017) gives one example of a contingency plan to be used in various emergency situations during road transport. Several emergency situations are not covered: calving during transport, emergency unloading of animals when no control post is close enough, biosecurity issues in long distance transport when part of the load must be unloaded and kept bio-secure.

CONCLUSIONS: More information is required to explain practical solutions in emergency situations, as well as good and best practices to take care of such situations.

Other issues

40. One source has emphasised the relationship between driver skill and the stress imposed on the animals in transit (ref 143).
41. Despite the importance of cleanliness of animals and vehicles in relation to health, disease and product quality, only one source provide advice on good practices for vehicle cleaning and disinfection (ref 143). It describes the requirement to access wash down facilities
42. Animal cleanliness can be improved by the provision of appropriate and adequate bedding (ref 078). Good practice indicates the use of straw as high quality and effective bedding and is preferred to alternatives such as shavings or sawdust.
43. It is suggested that good practice should include driver training that ensures that the individuals are aware of the necessity of ensuring that livestock (cattle) vehicles are given priority during roadside checks to minimise unnecessary delays (ref 10).

CONCLUSIONS: There are few sources or recommendations available that address issues such as good practices related to driving skills, vehicle cleaning and disinfection, bedding provision and dealing with incidents during transport.

Space allowances

44. Tables of the minimum space available for animals presented in the Regulation are described in several documents (ref 017, 094, 096, and 138). Only ref 096 provides tables that help interpret the Regulation provision, with various maximum possible numbers of animals according to various types of trucks and types of animals (available for cattle, sheep and goats). This document also indicates the need to take into account the maximum gross weight of the vehicle which may interfere with loading capacity, especially with larger animals.
45. The QMS guide (ref 165) advises drivers and transporters that the available space in a vehicle includes the space at head level, and recommends adequate space at head level to provide fresh air to all animals and to facilitate removal of excess

body heat. Another source recommends a minimum space of at least 20cm above the shoulder of the tallest cattle (ref 017)

46. Several sources (Refs 003, 010, 017, 047, 048, 143 and 152) present advice on the adjustment of space allowance in relation to prevailing weather conditions and the risk of heat and cold stress.
47. EFSA (ref 064) calculates space allowances using equations that account for journey duration, whether cattle have horns and other conditions.
48. Another source (ref 152) suggests taking in to account breed (tall and narrow versus short and wide), horned animals, and physiological status e.g. pregnant cows.

CONCLUSIONS: Several sources are available that provide information on the implementation of the legal requirements on space allowances. Advice on the best way to assess and/or calculate space allowances, taking into account various influencing factors, was not found.

Water and feeding

49. Most documents collected only refer to the requirements of the Regulation on watering and feeding intervals, with regards to the duration of transport (ref 096, 064 and 138).
50. Some non-European sources recommend attention to the quality of water provided to cattle in transit (ref 152)
51. None of the documentation provides any practical recommendation to determine when feeding is necessary during the 1h mid-journey rest with regards to transport conditions, temperature, or the categories of animals being transported.
52. No recommendations are provided on the way in which water should be provided during transport: e.g. watering systems and access, constant vs variable water level in the bowl, etc. Recommendations were proposed for animals in control posts (ref 017) but this cannot be easily transferred to trucks, as the circumstances are very different.
53. The same applies to feeding recommendations and feeding systems, according to the categories of animals.

CONCLUSIONS: The advice and recommendations relating to the watering and feeding intervals for cattle to be followed during transport are based on the legal requirements. Good practices are missing for implementation, operation and maintenance of watering and feeding systems.

Managing air flow and temperature

54. Many sources recognise the importance of ventilation in controlling the temperature within the transport space and thus minimising the risk of heat or cold stress in the transported animals (e.g. refs 003, 037, 047, 048, 064, 143, 152 and 161).
55. Much of the focus of these sources is on compliance with the Regulation. However, there are also useful suggestions relating to understanding the principles of ventilation and how optimising air flow through the vehicle can constitute good practice. Examples relate to the use of both passive and mechanical ventilation, strategies for dealing with stationary vehicles and links with space allowance.
56. Non-European sources (refs 048 and 152) recommend additional strategies to avoid heat and cold stress which include, reducing load densities, increasing ventilation, night transport, use of climate controlled vehicles, delaying transport until there are cooler temperatures haul livestock at night or early in the morning during hot weather.
57. Increased rate of inspection of cattle in transit in hot (or cold) conditions is recommended as good practice (refs 003, 057 and 064)
58. Some sources (refs 003, 010, 047, 048, and 0152) recommend interventions such as the provision of fans or spraying vehicles with water in hot conditions.

CONCLUSIONS: There is a general consensus that management of the thermal environment by appropriate ventilation is important to good welfare of cattle. In the case of mechanical ventilation of vehicles there is a lack of information on fan or system specification and operation in relation to specified temperature limits. There are no conflicts in the advice or recommendations provided. There are general recommendations on how to minimise the risks of heat stress and cold stress that may constitute the basis of guides to good practice.

Long journeys and rest stops

59. General advice is provided by sources produced in the UK applicable to all species and with specific applications to cattle and calves during long distance transport (refs 165 and 166).
60. One source provides general advice pertaining to long journeys (> 8 hours) in relation to rest stops (ref 017)
61. One non-European source (ref 152) provides guidance on “proper care on long journeys” with a focus on monitoring well-being and the provision of feed and water during long journeys. These approaches may be regarded as good practice.
62. Practical advice concerning the provision of food and water at rest stops is presented in one source (ref 017)

CONCLUSIONS: There is a lack of specific advice or recommendations for long journeys for cattle and for the associated rest stops.

Documentation

63. Several documents provide information on documentation which must be completed before and after transport, the documentation which must be kept on board, including training certificates, and which documents are required according to the type of transport (ref 138).
64. Ref 138 and ref 096 give practical information on completing the journey log. Similar advice is available in refs 165 and 166. Several of these sources contain also examples of how a journey log should be completed. These are based on the models provided in the Regulation.

CONCLUSIONS: Only limited advice and recommendations are available on documentation.

Contingency Plans

65. One Quality Assurance scheme (ref 10) presents advice relating to contingency plans and emphasises the importance of awareness and preparation.
66. The advice suggests close attention to vehicle breakdowns, and accidents, together with a list of emergency contacts.

67. An additional source (ref 143) indicates what a transporter must know what action to take in an emergency and presents a plan of the desired sequence of events and actions. These constitute good practice.

CONCLUSIONS: Only limited advice and recommendations are available concerning contingency plans.

2. Cattle: Overview table

Fitness for transport

Legislation (Regulation 1/2005)	Suggested good practice (improvement of compliance with the legislation)	Suggested best practice (upgraded standards)
<p>No animal shall be transported unless it is fit for the intended journey, and all animals shall be transported in conditions guaranteed not to cause them injury or unnecessary suffering</p> <p>Animals (...) shall not be considered fit for transport if they are pregnant females for whom 90% or more of the expected gestation period has already passed</p>	<p>(Ref 143) In the UK, the QMS guide to safe livestock transportation suggests:</p> <p>“The aim must be to provide the conditions that allow a driver to adequately inspect livestock at loading, and to provide a working attitude that does not pressurise the individual into carrying unfit stock.”</p> <p>(Ref 010) As regards to fitness for transport and the transport of casualty animals, the UK Red Tractor Assurance Livestock Transport Standards recommend the following:</p> <p>“Hauliers must have a copy of the Defra guidance on the Transport of Casualty Animals. It is recommended that a copy of this booklet be kept with the vehicle although the haulier must be able to demonstrate access to the document during the inspection. In some cases certain booklets are out of print at Defra in which case an order number from Defra is acceptable although access via the internet is also acceptable.</p> <p>Transporters can take measures to ensure that animals which are in a “satisfactory condition” before leaving their point of origin are delivered to the abattoir in the same satisfactory state. The following steps should be considered by the transporter when transferring animals from the point of origin to the abattoir/market:</p> <ul style="list-style-type: none"> • Ensure as far as possible that animals are protected from adverse weather conditions during loading. A wet coat serves to exacerbate contamination due to defaecation during transport. • Provide a transport vehicle which is maintained and cleaned to a suitable standard. • Provide adequate bedding in the transport vehicle. • Consideration should be given to the type of bedding used. • Attention should be given to unloading animals to ensure they are not exposed to adverse weather conditions. <p>It is advisable that transporters should be aware of the relevant regulations which relate to the transport of animals. Whilst it is not envisaged that the transporter should be obliged to rectify the condition of any animals with unsatisfactory coats, it is totally unacceptable that a transporter would bring about the contamination of animals which were loaded in a satisfactory condition, and subsequent to transporting them, they arrive at the abattoir in an unsatisfactory state i.e. it is the responsibility of the transporter to ensure that adequate and suitable transport is provided for the animals.</p> <p>Transporters should be prepared to offer assurances that they are capable and committed to fulfilling their role within the supply chain. If the producer and the transporter are not one and the same, the producer may wish to obtain a guarantee from the transporter to ensure he/she is prepared to fulfil their responsibility.”</p> <p>(Ref 037) In Canada, there are guidelines issued by the Canadian Food Inspection Agency to assist transporters in deciding whether an animal is fit for the intended transport.</p>	

	(Ref 066) The European Practical Guide to Fitness to travel for bovines covers all aspects of fitness for transport with a distinction among animals unfit for transport, questionable animals where veterinary advice is needed and animals considered fit for transport.	
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Means of transport

Legislation (Regulation 1/2005)	Suggested good practice (improvement of compliance with the legislation)	Suggested best practice (upgraded standards)
Means of transport should be designed in such a way to avoid suffering and injuries and additional vehicle provisions are required for long journeys.	<p>(Ref 094) Regarding the cleansing and disinfection of vehicles there is guidance to keep a logbook of when the vehicle was cleaned and what disinfectants were used.</p> <p>(Ref 143) In the UK, there is guidance on vehicle construction and operation including the use of vehicles with light coloured roofs to reduce the effects of solar gain (mandatory for vehicles transporting animals on long journeys over 8 hours).</p> <p>(Ref 010) The UK Red Tractor Assurance Livestock Transport Scheme provides guidance for the design of ventilation systems which should “be capable of keeping livestock in appropriate conditions, taking into consideration the species, length of journey, and weather conditions. Ventilation should be capable of being adjusted, or stocking densities reduced as required.”</p> <p>(Ref 078) The Food Standards Agency recommends that transporters provide vehicles which are: “Maintained and cleaned to a suitable standard. It is unacceptable that a dirty lorry should cause contamination of a clean-coated animal. Special consideration should be given to multi-tiered lorries. Such vehicles should be suitably designed, maintained and managed so that animals are protected from the elements and animals on the upper tiers do not cause contamination of animals on the lower tiers.”</p> <p>(Ref 161) In the UK Defra has issued detailed guidelines on the principles of vehicle ventilation to support good practice and appropriate vehicle design and operation</p> <p>(Ref 138) Useful general vehicle and equipment specifications are provided in a French NGO document</p> <p>(Ref 017) Practical information on cleaning and disinfection procedures for trucks has been presented in the EU HQCP Guide</p>	(Ref 096) It is suggested that a current list of approved and recommended treatments for the disinfection of trucks should be available.

Loading and unloading

Legislation (Regulation 1/2005)	Suggested good practice (improvement of compliance with the legislation)	Suggested best practice (upgraded standards)
<p>The loading and unloading facilities are adequately designed, constructed, maintained and operated so as to avoid injury and suffering and ensure the safety of the animals.</p>	<p>(Refs 094, 096, 100) French guidance re-iterates the legislation concerning ramp angles and provides additional information on security barriers, opening positions ramp materials, lighting characteristics etc. Further guidance considers the overall layout of the loading/unloading areas and provides practical recommendations on the positioning of the truck to make better use of animal behaviour and thus minimize the stress associated with loading (for example using straw bedding on slippery floorings) There is also a self-monitoring tool for transporters to assess the behaviour of cattle at loading and unloading.</p> <p>(Ref 143) Within the UK, the QMS guide to safe livestock transportation recommends that transporters give consideration to animal behaviour in relation to flight zones. They also suggest that: “The way in which animals react to transport will influence the degree of stress that the transport impacts on them. There are many aspects to be considered, including:</p> <ul style="list-style-type: none"> • Previous exposure to handling • Previous exposure to mixing with other animals • Previous physical exertion • Previous exposure to the elements (hot, cold, wind, daylight, noise) • The physiological state of the animal.” <p>(Ref 033) General advice is also available on avoiding excessive disturbance to stock during loading, carriage and unloading. The same source of information also outlines advice when transporting livestock in hot weather:</p> <ul style="list-style-type: none"> • Inspect the animals more frequently for signs of heat stress • Provide water or electrolyte solutions more frequently • Avoid penning animals in the hotter parts of the vehicle, these are located at the front end and higher levels of the vehicle • Increase the space allowance for the animals by at least 30% • Increase headroom above the animals to maximise air movement and increase the potential for heat exchange, removing tiers and decks where possible • Avoid travelling in the hotter parts of the day by planning the journey to take advantage of cooler conditions at night • Spray the vehicle with water to cool it down • Use a vehicle with light coloured roof to reduce the effects of solar gain (mandatory for vehicles transporting animals on long journeys over 8 hours) • Plan short and long journeys to avoid known delays such as road works and diversions <p>(Ref 078) The Food Standards Agency advise transporters to ensure as far as possible that animals are protected from adverse weather conditions during loading. A wet coat serves to exacerbate contamination due to defaecation during transport. Further, attention should be given to unloading animals to ensure they are not exposed to adverse weather conditions. It is advisable that transporters should be aware of the relevant regulations which relate to the transport of animals. Whilst it is not envisaged that the transporter should be obliged to rectify the condition of any animals with unsatisfactory coats, it is totally unacceptable that a transporter would bring about the contamination of animals which were loaded in a satisfactory condition, and</p>	

	<p>subsequent to transporting them, they arrive at the abattoir in an unsatisfactory state i.e. it is the responsibility of the transporter to ensure that adequate and suitable transport is provided for the animals.</p> <p>(Ref 152) The USDA Cattle and Swine Trucking Guide for Exporters recommend separation of animals when loading as follows:</p> <ul style="list-style-type: none"> • Under some circumstances an animal or group of animals may need to be separated from others in a load to avoid injury during transport. Some examples follow: • Separate different species and vastly different size animals. • Isolate pregnant animals. • Avoid mixing swine and cattle from different farms during transport to avoid fighting. • Segregate horned animals from hornless animals. <p>(Ref 057) When considering lactating cows, their optimal temperature is 5° to 15° C. Below 5° C cows need extra energy to stay warm. Over 21° C cows can start showing the first signs of heat stress, depending on the humidity of the air. The higher the humidity, the earlier cows get heat stress. The use fans when outside temperature is 18° C or higher is advised. Putting fans on in the barn when the temperature is 21° C and using cooling (sprinklers) when temperature goes over 28° C are also recommended.</p> <p>(Ref 189) The French guide for the implementation of Regulation (EC) No 1099/2009 present recommendation on the layout of the unloading area. Recommended operating procedure are detailed including good practices of handling and key point regarding animal welfare. Monitoring indicators (falling, vocalisation, use of electric prod) are provided to animal welfare officer for self-control.</p>	<p>(Ref 143) The Scottish Assured Haulage Standards recommend that additional care is taken when loading livestock containers over the 5th wheel coupling or step of articulated vehicles.</p> <p>(Ref 188) The French guide described specific procedure for the management of sick/injured animals at the arrival at slaughterhouses.</p>
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Handling

Legislation (Regulation 1/2005)	Suggested good practice (improvement of compliance with the legislation)	Suggested best practice (upgraded standards)
<p>The personnel handling animals are trained or competent as appropriate for this purpose and carry out their tasks without using violence or any method likely to cause unnecessary fear, injury or suffering.</p>	<p>(Refs 094, 096) National guidance in France describes practices which are forbidden when handling or loading cattle and provides practical information to transporters.</p> <p>(Ref 143) The UK based QMS Guide to Safe Livestock Transportation describes appropriate methods of handling thus:</p> <p>“The aim is to minimise the impact on the stock in your care, and this can be achieved by:</p> <ul style="list-style-type: none"> • Good preparation - clean, non-slip floors, no obstructions • Good communication - who does what, where, and when? • Good knowledge - how many stock, of what type? • Good equipment - suitable and well-maintained.” 	<p>(Ref 100) There are recommendations for best practices in the handling of cattle, making best use of cattle behaviour and social behaviour to move the animals in groups. There is also a self-monitoring tool for transporters to assess the behaviour of cattle at loading and unloading. A list of categories of animals that must be handled and transported separately to minimise stress and the risk of injury is available in several documents.</p> <p>Among the critical situations that should be addressed is the loading of male bulls, which is an issue which often leads to regulatory offenses at livestock markets as bulls are less nervous when handled among cows, even unfamiliar ones.</p>

Other specific issues

Legislation (Regulation 1/2005)	Suggested good practice (improvement of compliance with the legislation)	Suggested best practice (upgraded standards)
	<p>(Ref 143) Other specific issues are addressed in a number of UK documents. The Scotch Assured Haulage Standards require that all livestock hauliers must have access to wash out facilities to cleanse and disinfect their livestock containers. A current written agreement is required if using a third party's wash out facilities. Further, they require that drivers should not leave livestock unattended except in an emergency, when loading or unloading draw bar trailers, in a multiple pick up/drop off situation, or during breaks.</p> <p>With regard to vehicle hygiene, the QMS Guide to Safe Livestock Transportation identifies that there are many links in the chain of events that cause spread of disease. "Generally, livestock vehicles are not the weakest link in the chain, and standards of cleanliness on livestock vehicles are a good indicator of the hard work that goes into keeping the transport fleet clean. However, it is appreciated that the infrastructure for getting vehicles clean as soon as they are unloaded is not always perfect, and it is an essential element of planning that the driver is always knowledgeable about where the vehicle can be cleaned before the next pick-up".</p> <p>The same source recognises that "there is a good relationship between driver skill, the amount of stress on livestock, and also the profitability of the transport business. Smooth, consistent driving habits allow the animals to relax more during a journey than hard, erratic driving. Scientific study has shown that not only does a hard driving style increase measurable stress on the animals transported, but also significantly decreases meat quality".</p> <p>(Ref 010) The Red Tractor Assurance Livestock Transport Scheme recommends that the driver must ensure that during roadside checks they obtain priority over other vehicles. Priority must be obtained in the interest of Animal Welfare. You may also ask for priority in the case of delays caused by accidents but it may be outside the abilities of the emergency services to allow onward travel depending on the circumstances. Further, as regards bedding, the scheme requires that "bedding must be appropriate to the type of animal being transported and the length of the journey. Hauliers should know which type of bedding must be provided for which type of livestock".</p> <p>(Ref 078) The UK Food Standards Agency Red Meat Safety and Clean Livestock Policy (078) advises that transporters should provide adequate bedding in the transport vehicle. This will prevent the build-up of urine and faeces which could contaminate an otherwise clean coat. In providing adequate amounts of bedding for the journey certain factors need to be taken into account i.e. the length of the journey the time of year etc. Consideration should be given to the type of bedding used, i.e. sawdust and wood shavings have more capacity than straw to adhere to the coat, even when the coat is dry. Also, compared to straw, not only do these types of bedding have a greater ability to cause contamination of the carcass during dressing, but their ability to adhere to the carcass is greater than straw and therefore contamination by such is far more difficult to remove.</p> <p>(Refs 017, 188, 096, 097) The use of equipment for handling has been examined in a number of advice documents that detail the devices that are permitted and that are prohibited for the handling (loading/unloading) of cattle.</p>	

Space allowance

Legislation (Regulation 1/2005)	Suggested good practice (improvement of compliance with the legislation)	Suggested best practice (upgraded standards)
<p>Cattle must be given an adequate space allowance, expressed as m²/animal, which depends on their live weight.</p>	<p>(Refs 094, 096, 138) National guidance in France explains the mandatory stocking densities and provides practical recommendations as a range of the total number of animals that can be transported in each categories that can be transported in 4 types of trucks (type combining numbers of decks, trailer or semi-trailer).</p> <p>(Ref 096) Information on cattle behaviour during transport (lying bouts) helps to improve the knowledge of transporters and to motivate them to better implement the regulation regarding space availability.</p> <p>(Ref 010) The Red Tractor Assurance Livestock Transport Scheme requires that stocking densities must be appropriate to the species, size, weather conditions and length of journey. Animals must not be stocked in such a way that causes injury or compromises animal welfare. Stocking densities must be decreased in hot weather. Manual lifting internal ramps must not be included when calculating stocking densities.</p> <p>(Ref 152) The USDA Cattle and Swine Trucking Guide for Exporters identifies that “tight loading during hot weather will contribute to heat build-up and cause fatigue. Overly fatigued animals will tend to lie down at destination and they will be reluctant to eat and drink. Hot weather will increase death losses. Space allowance for cattle should also be reduced slightly during hot weather.”</p> <p>The same source recommends the use of good judgment “when deciding how many animals to put in a transport vehicle. Determinations can't be made by weight alone because animals vary in size and body shape.</p> <p>(Refs 010, 003, 048, 143, 152) Many factors influence how many animals can be loaded in a truck:</p> <ul style="list-style-type: none"> • Breeds that tend to be especially tall and narrow can be loaded more densely than breeds that tend to be short and wide. • Horned animals may need to be loaded less densely, because horns and tips can cause bruises; how much less depends on size and sharpness of horns. • Pregnant animals should be loaded less densely. They will require more room to get up if they go down.” <p>(Refs 064, 152, 165, 166) Space allowance should be adjusted allowance in relation to prevailing weather conditions and the risk of heat and cold stress. It is recommended that space allowance be re-calculated to account for journey duration, conditions and carriage of horned cattle</p>	

Watering and feeding

Legislation (Regulation 1/2005)	Suggested good practice (improvement of compliance with the legislation)	Suggested best practice (upgraded standards)
<p>When animals are transported, water, feed and rest have to be offered to the animals at suitable intervals and appropriate in quality and quantity to their species and size.</p>	<p>(Ref 152) The Cattle and Swine Trucking Guide for Exporters from the USDA considers the feed requirements of animals during transport and requires:</p> <ul style="list-style-type: none"> • “Provide mature cattle a diet consisting of 50 to 75 percent good-quality hay and 25 to 50 percent grain-based feed at rest stops, depending on the maturity of the animals. Avoid feeding green, succulent, concentrated, and high-energy feeds. However, feeder cattle that are acclimated to high energy feed may stay on that diet. Green or succulent feeds will cause animals’ manure to be wet. This may result in their soiling each other when they are in close proximity during transport. Soiling can result in excessive wind chill during cold weather. Concentrated feeds and high-energy feeds may cause mature cattle to have digestive problems. • Provide feeder calves a grain-based concentrate feed at rest stops. However, abrupt changes in their diet may cause them to become sick. So if calves are accustomed to eating hay, it should be included in their diet. • Give swine typical swine feed, consisting of ground corn with a soy base. This feed may be pelletized or ground. Be careful not to overfeed swine during rest stops, because it may cause them to become ill when transport resumes. • Withholding feed from swine for a few hours before departure will help avoid this”. <p>As regards watering:</p> <ul style="list-style-type: none"> • Provide livestock with good-quality, clean water at rest stops. High salinity will cause animals to drink more, possibly resulting in excess consumption. Water with a too low or too high pH can cause digestive upsets. Do not give water containing algae to animals. • Some species of algae are toxic. Some animals may shy away from chlorinated water. Be sure to carefully follow instructions for use of any chemicals that are added to water for purification. • Consider feeding animals before providing water. Some experienced cattle transporters prefer this because if cattle have immediate access to water, they may drink excessively and not eat. This is important during hot weather. • Give cattle access to water up to time of departure, but be careful not to let them drink excessively. Cattle that consume large amounts of water tend to become ill during transport. 	

Managing air flow and temperature

Legislation (Regulation 1/2005)	Suggested good practice (improvement of compliance with the legislation)	Suggested best practice (upgraded standards)
<p>Ventilation systems on means of transport by road shall be designed, constructed and maintained in such way that at any time during the journey, whether the means of transport is</p>	<p>(Refs 094, 096, 100) Guidance for French transporters is addressed in several documents with best practice available using self-monitoring of the behaviour of cattle during the resting period (e.g. respiratory behaviour, sweating, etc.). This is documented in a national self-monitoring tool for conveyers.</p> <p>(Ref 143) The Scotch Assured Haulage Standards require that drivers must give consideration at all times to ventilation including when the vehicle is stationary and during statutory driver breaks. The QMS Guide to safe livestock transportation give guidance about ventilation which states that:</p>	

<p>stationary or moving, they are capable of maintaining a range of temperature from 5 °C to 30 °C within the means of transport, for all animals, with a +/- 5 °C tolerance, depending of the outside temperature</p> <p>The ventilation system must be capable of ensuring even distribution throughout with a minimum airflow of nominal capacity of 60 M3/h/100 kg life weigh. It must be capable of operating for at least 4 hours, independently of the vehicle engine.</p> <p>Means of transport by road must be fitted with a temperature monitoring system as well as a means of recording such data. Sensors must be located in the parts be capable of the lorry which, depending on its design characteristics, are most likely to experience the worst climatic conditions. Temperature recordings obtained in such manner shall be dated and made available to the competent authority upon request</p> <p>Means of transport by road must be fitted with a warning system in order to alert the driver when the</p>	<p>“A steady supply of fresh air to all livestock on a vehicle is essential to support normal health, and to remove the excess moisture and heat that comes from the animals’ bodies. There is always a requirement for a minimum ventilation rate whatever the weather or animal conditions. The challenge for the transport sector is to provide adequate ventilation when a vehicle is stationary, and also when driving at 56mph on a cold morning. The first principle is to understand the temperature requirements of the livestock on board any particular journey, and to provide adequate openings on the vehicle to meet those requirements under the prevalent weather conditions”.</p> <p>(Ref 010) The Red Tractor Assurance Livestock Transport Scheme also considers ventilation of the vehicle and states: “Ventilation must be capable of keeping livestock in appropriate conditions, taking into consideration the species, length of journey, and weather conditions. Ventilation should be capable of being adjusted, or stocking densities reduced as required”.</p> <p>(Ref 161) In the UK Defra have produced “A guide to best practice for vehicle ventilation” which explains that ventilation is the main method for removing heat and moisture generated inside the vehicle by animals during transport. It also identifies that within the UK excessive heat is likely to be a greater problem for the animals than extreme cold.</p> <p>(Refs 078, 161) The Food Standards Agency Red Meat Safety and Clean Livestock policy adds extra information, largely gleaned from the Defra publication, explaining that: “When in motion, air tends to move from the back to the front of the vehicle. Active (mechanical) ventilation allows a greater opportunity to modify conditions around the animals than passive ventilation - especially on stationary vehicles. In hot weather, avoid parking in direct sunlight for prolonged periods. If practical, park passively ventilated vehicles at right angles to the wind direction, with sufficient apertures open, to optimise air movement through the container”.</p> <p>(Refs 047, 048) The Canadian Food Inspection Agency’s guide to transporting animals during cold weather conditions gives the following guidance:</p> <ul style="list-style-type: none"> • Adjusting load densities • Providing additional bedding or insulation • Increasing weather protection for animals on vehicles • Waiting for warmer temperatures <p>(Ref 078) A corresponding publication gives the following advice when transporting in hot and humid conditions:</p> <ul style="list-style-type: none"> • Reducing load densities • Increasing ventilation • Night transport • Use of climate controlled vehicles • Delaying transport until there are cooler temperatures <p>(Refs 152) The USDA Cattle and Swine Trucking Guide for Exporters gives guidance on transporting livestock in adverse weather conditions. It states that “Exposure to temperature extremes and other adverse weather can have a detrimental effect on livestock. Extremely high or low temperatures will stress animals, possibly causing excessive weight loss, illness, or death. Be sensitive to climatic conditions at animals’ origin and destination”</p> <p>In hot weather it recommends the following:</p> <ul style="list-style-type: none"> • Haul livestock at night or early in the morning during hot weather. • Occasionally it may be advisable to postpone transport until weather conditions become more favourable. • Use appropriate bedding material for hot weather. 	
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<p>temperature in the compartments where animals are located reaches the maximum or minimum limit.</p> <p>warning system in order to alert the driver when the temperature in the compartments where animals are located</p>	<ul style="list-style-type: none"> • Provide drinking water to animals as often as possible during hot weather. <p>Similarly, in cold weather it recommends:</p> <ul style="list-style-type: none"> • Protect livestock from wind chill during cold weather. • Air movement through trucks can be restricted by using side covers to partially block air movement through trailers. Be careful to maintain adequate ventilation. • Keep animals as dry as possible during cold weather. Shipment of wet animals may cause death from wind chill. Even the heavy coats of cattle will not protect them from wind chill when saturated. • Protect animals from prolonged exposure to freezing rain and sleet. Precipitation in this form can be deadly to animals. Even the thick coats of cattle will not protect them against chilling caused by saturation of freezing precipitation. <p>(Refs 048, 152) The optimal temperature for lactating cows is 5° to 15 ° C. Below 5° C cows need extra energy to stay warm. Over 21° C cows can start showing the first signs of heat stress, depending on the humidity of the air. The higher the humidity, the earlier cows get heat stress.</p> <p>(refs 003, 057, 064) It is essential to avoid excessive disturbance to stock during loading, carriage and unloading. During hot weather:-</p> <ul style="list-style-type: none"> • Inspect the animals more frequently for signs of heat stress • Provide water or electrolyte solutions more frequently • Avoid penning animals in the hotter parts of the vehicle, these are located at the front end and higher levels of the vehicle • Increase the space allowance for the animals by at least 30% • Increase headroom above the animals to maximise air movement and increase the potential for heat exchange, removing tiers and decks where possible • Avoid travelling in the hotter parts of the day by planning the journey to take advantage of cooler conditions at night • Spray the vehicle with water to cool it down • Use a vehicle with light coloured roof to reduce the effects of solar gain (mandatory for vehicles transporting animals on long journeys over 8 hours) • Plan short and long journeys to avoid known delays such as road works and diversions <p>(Refs 003, 010, 047, 048, 152) Recommended additional strategies to avoid heat and cold stress include, reducing load densities, Increasing ventilation, night transport, use of climate controlled vehicles, delaying transport until there are cooler temperatures haul livestock at night or early in the morning during hot weather.</p> <p>It is recommended that there is an increased rate of inspection of cattle in transit in hot (or cold) conditions is recommended as good practice.</p> <p>Other recommend interventions have been proposed such as the provision of fans or spraying vehicles with water in hot conditions</p>	
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Journey time

Legislation (Regulation 1/2005)	Suggested good practice (improvement of compliance with the legislation)	Suggested best practice (upgraded standards)
<p>Journey times for animals belonging to domestic Equidae, except registered Equidae, domestic animals of bovine, ovine, caprine and porcine species shall not exceed eight hours. This maximum journey time may be extended if additional requirements are met. After the journey time laid down, animals must be unloaded, fed and watered and be rested for at least 24 hours.</p>	<p>(Ref 152) The Cattle and Swine Trucking Guide for Exporters gives guidance on maximum transit times in the USA. They explain that when livestock are in transit too long, their health will be adversely affected. They recommend:</p> <ul style="list-style-type: none"> • Keep transit time to a minimum. • Trucks should be on the road as soon as possible after loading. • Maximum transit time depends on many factors such as weather, species, and condition of animals. • Anyone who plans a livestock shipment should be aware that more rest stops than necessary may not be beneficial. 	

Resting periods

Legislation (Regulation 1/2005)	Suggested good practice (improvement of compliance with the legislation)	Suggested best practice (upgraded standards)
<p>The watering and feeding intervals, journey times and rest periods when using road vehicles which meet the additional requirements for long journeys are defined as follows:</p> <p>(a) Unweaned calves, lambs, kids and foals which are still on a milk diet and unweaned piglets must, after nine hours of travel, be given a rest period of at least one hour sufficient in particular for them to be given liquid and if necessary fed. After this rest period, they may be transported for a further nine hours;</p> <p>...</p> <p>(d) All other animals of the of bovine, ovine and caprine species must, after 14 hours of travel, be given a rest period of at least one hour sufficient for them in particular to be given liquid and if necessary fed. After this rest period, they may be transported for a further 14 hours. After the journey time laid down, animals must be unloaded, fed and watered and be rested for at least 24 hours.</p>	<p>(Refs 094, 138, 096, 098) The mandatory journey times are explained in French guidance but there is no published best practice guidance. There is a lack of practical information on the way of giving liquid to the animals and on the need of feeding the animals.</p> <p>(Ref 152) The USA guidance explains that rest stops are facilities where animals in transit for extended periods can be rested, fed and watered during their journey. These facilities have holding pens and equipment to unload and reload stock. These pens may be located indoors or outdoors. Feed and water are usually provided by the operators. Improper feeding, watering, or poor care at rest stops can adversely affect stock. However, requirements of individual groups of animals vary, so feeding and watering practices should be determined on a case-by-case basis.</p>	

Provisions for long journeys

Legislation (Regulation 1/2005)	Suggested good practice (improvement of compliance with the legislation)	Suggested best practice (upgraded standards)
<p>Provisions for long journeys require vehicles to meet a range of criteria relating to design, structure, floor, bedding, carriage of feed, provision of partitions. Also water supply, ventilation, temperature monitoring and navigation systems.</p>	<p>(Ref 152) In the USA, guidance on the assurance of proper care on long journeys considers the following:</p> <ul style="list-style-type: none"> • Having an attendant accompany large shipments to assure that animals are properly cared for. The attendant can make sure that livestock are supplied adequate food and water at rest stops, and that they are given sufficient rest time. • Be certain that feeding and watering facilities are adequate for the type of stock being transported. Calves may not be able to eat or drink from dispensers made for larger animals. Range animals may not drink freely from troughs or small water dispensers. If rest facilities are not adequate, a rest stop may serve only to prolong transport stress. • Be certain rest facilities' managers take precautions to prevent spread of disease. Animal holding facilities should be kept reasonably clean and, when necessary, disinfected. <p>(Refs 017, 152, 165, 166) Further advice and recommendations relating to journey times has been provided by a number of sources. For example the provision of attendants on long journeys to inspect animals and to ensure provision of feed and water.</p>	

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