

EURCAW European Union Reference Centre for Animal Welfare for Poultry and other small farmed animals

Question to the Centre

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Key words: Skeletal damage

Level: Slaughter

Type of production: Broiler chicken

Questions and answers from the Centre

<u>Question from the requestor</u>: a specific question on traumatism assessment protocols for broilers (intensive and free range).

I would like to request information, on protocols to assess at slaughterhouse, the levels of traumatism on broilers (intensive and free-range broilers). We would like to access not only the percentage of traumatisms but also the extension and the age of lesion. This is important to evaluate where the lesion took place (farm level/transport/slaughterhouse). We would also like to ask if you could send us some studies on this specific topic. This information is going to be used to improve our Broiler AW evaluation system at slaughterhouse and to design an experimental study, on free range broilers AW indicators, with the University

Centre's answer:

In response to your query, we would like to draw your attention to the document "Network document on the Welfare of Poultry During Transport to Slaughter" (Annex 1). This consensus document was drafted by a working group of Member State experts to facilitate improvements in maintenance, monitoring, recording and enforcement of animal welfare standards during commercial transportation of poultry. A central consideration is, of course, compliance with Regulation 1/2005 and other relevant legislation. The working group, back in 2015, was coordinated by Desmond Maguire at the FVO and uploaded in CIRCAB where you can find the document translated in all the official languages of the EU.

For the purpose of your query, you can find indications in the chapter; "Carrying out Post-Mortem Checks

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on injuries related to the Transport of Poultry" (Annex 1, page 9).

Here you will find general information and detailed guidance on where and how to carry out checks on the slaughter line, how to differentiate between processing damage and injury, calculating method of the percentage of injuries detected on the slaughter line and how to determine the time of the injury and where it occurred.

General information

Traumatic lesions in broilers include scratches, bruises, joint dislocations and bone fractures.

Scratches. Scratches are caused by the claws of broilers as a result from bird to bird contact due to aggressive disputes, panic movement/excitation or due to huddling when seeking thermal comfort (Vieira *et al.*, 2012). Fraser, 1985 showed that scratching behaviour has been linked to young birds that tend to exhibit high activity levels, unlike older animals that spend more time resting. On the contrary, Pilecco *et al.*, 2011 found that the prevalence of scratches was higher among oldest birds with greater severity which suggests that there could be recrudescence in their activity level in certain cases (Gouveia *et al.*, 2009). Moreover, the prevalence of scratches on farm is positively correlated to the stocking density (Elfadil *et al.*, 1996; Allain *et al.*, 2009; Villarroel *et al.*, 2018), but also to abrupt temperature changes, fasting and water deprivation. Some other factors are also predisposing to scratching occurrence like both broiler's genetics and sex in relation to differences in temperament and level of feather coverage at a certain age (Pilecco *et al.*, 2011). Despite differences than females, authors hypothesized that it was linked to a more aggressive behaviour.

In a study from Allain *et al.* (2009), most carcasses from 48 flocks showed scratches (79.7 \pm 13.1%), but this might be due to the fact that all scratches of any severity and even of small size where recorded. In a similar population studied by Mirabito *et al.* (2007) it was shown that only 25% of the observed scratches were severe and corresponded to a deep lesions. Therefore, we would recommend taking into account the severity of the scratches using a more restrictive definition, based for example on the one proposed by Elfadil *et al.* (1996) who only noted severe scratches, defined as at least a deep cut (with rupture of skin), or three superficial ones.

Scratches could also result from transportation and processing conditions. Indeed, their prevalence is influenced by the distance travelled between the poultry farm and the processing plant and by the waiting time for slaughter (Gouveia *et al.*, 2009). Besides, high outside temperatures also tend to increase occurrence of scratches (Villarroel *et al.*, 2018). The positive association between occurrence of scratches and travel distance is probably the result of birds trying to move around each other (Villarroel *et al.*, 2018).

The raise in frequency of scratches also increase the occurrence of infected scratches with inflammatory process and this, may lead to ruptured skin in the defeathering equipment at slaughterhouse (Vieira *et al.*, 2012).

Bruises. Bruises can occur only when a broiler is alive, as a consequence of injury or haemorrhage. The potential causes for bruises are excessively high stocking density in the poultry house and most probably poor handling during catching and crating (Kittelsen *et al.*, 2018). Moreover, the type of transport crates, the stocking density per crate, the transport time, lairage time, shackling and the age and sex of the birds

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can be risk factors impacting frequency of bruises (Taylor and Helbacka, 1968). The most frequently affected parts are the breast, wings and legs (Nijdam *et al.*, 2004). Before slaughter, bruises occur mostly following catching, transport and shackling of the birds (Kranen *et al.*, 2000). In the study of Gouveia *et al.* (2009), bruises were more common in birds reared in free-range systems than in indoor systems. The authors hypothesized that the bruises were more frequent with free-range birds because they were less familiar with human contact and may have been more fearful, stressed and agitated during catching. It can also be hypothesized that these chickens are from more mobile genotypes therefore more prone scratch conspecifics.

Dislocations and fractures. Joint dislocations and bone fractures are not frequent at farm level in broilers. However, these injuries occur quite often during catching, crating and shackling broilers in the slaughter plant due to poor handling practices (Vieira, 2012). In addition, these injuries may occur post-mortem due to mechanical treatment of carcasses (Kettlewell and Turner, 1985).

Estimating the time of the injury and where it occurred

Bruises that appear ante-mortem may not be visible when the animal is alive due to the presence of feathers that cover the skin and impair visibility. However, they can be assessed post-mortem in plucked carcasses. It should be stressed that there is the possibility of finding post-mortem artefacts (*i.e.*, bruise-like lesions) when evaluating bruises (Strappini *et al.*, 2009). Indeed, at the abattoir, bruises should be distinguished from haemorrhages in wing and breast due to vascular engorgement or haemorrhagic petechiae. Vascular engorgement might occur for local blood congestion caused by waterbath stunning. Moreover, waterbath stunning can lead to haemorrhagic petechiae occurring in the breast and legs with prevalence depending on the electrical parameters used. Therefore, these artefacts caused by the waterbath stunning can lead to misinterpretation and require careful assessment (Vanezis, 2001).

In 'real' bruises, it is possible to estimate the period passed after the injury occurred based on its colour (Table 1). Thus, bruises found at slaughterhouse that occurred at rearing are light green, yellow-green and light-yellow coloured (\geq 24 hours) whereas bruises caused during catching and transportation (< 12 hours) are from intense dark red to purple colour (Gregory, 1992). Additionally, bruises caused during shackling are less than 2 minutes old and can be distinguished for being bright red in colour and smaller than one centimetre (Bremmer and Johnston, 1996). However, this method for estimating the onset of bruises has its limitations. First, Northcutt *et al.* (2000) found that bruise colour in broilers is affected by location. In this sense, while wing and leg bruises become lighter with the time, breast bruises become darker. Second, visual perception of yellow colour changes between observers leading to a low reliability and accuracy for estimating bruise age older than 48h (Hughes *et al.*, 2006). However, broilers usually do not spend more than 24 hours from catching to being slaughtered. Therefore, bruises from light purple to yellow are most likely to be caused at the farm level.

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Table 1. Colour of bruises in relation to time since the injury was inflicted (Gregory, 1992)

Estimate age of contusion	Colour of the bruise
2 minutes	Red
12 hours	Dark red / Purple
24 hours	Light purple
36 hours	Light green / Purple
48 hours	Yellow – green - purple
72 hours	Yellow – green
96 hours	Light yellow
120 hours	Normal

Estimating the time when a bone fracture occurred ante-mortem is linked to the bruise colour found in the muscular tissue around the fracture. Bone fractures caused by mechanical treatment of carcasses have no associated bruise.

Method to carry out checks on the slaughter line

So far, to our knowledge, there is no method in literature to score injuries in broilers on the slaughter line.

The network document on the Welfare of Poultry During Transport to Slaughter (Annex 1) contains information on how to perform checks on traumatic lesions. Annex 5 and 6 of this report provide a grid of scoring catching injuries and a photographic illustration of bruising, respectively.

To answer the query, a method to carry out checks should be based on post-mortem visual assessment of defeathered broilers to assess scratches (*i.e.*, occurrence and severity) and bruise characteristics (*i.e.*, extent, site of bruising, colour, appearance and severity, or a combination) on the slaughter line. This visual assessment of scratches could be counted only when the scratches are deep cut or three superficial ones as recommended by Elfadil *et al.* (1996). On the other hand, in case of bruise assessment, several factors should be taken into consideration: 1) only those larger than 2 cm; 2) the site of bruising (*e.g.*, wing, breast, leg); 3) its approximate date based on its colour ("recent" if it is reddish, "not recent" if it is yellowish) and 4) bruise grading classification based on the severity of the injured area, could be as follows: 'grade 1', when the damaged area involves only subcutaneous tissues; 'grade 2', when the lesion affects subcutaneous and muscular tissue and 'grade 3' when the bruise is severe and include bone fracture or dislocation. With regards to the sample size to inspect, information is provided below. A list of steps for carrying out practical targeted checks is provided in the following:

- 1. Select a good view position to count the injuries after defeathering of broilers at a position where the wings, thigh, back and legs of the bird are clearly visible.
- 2. Record the date and time of departure from the holding and the time of inspection so that the age of the injury can be correlated with the transport times.
- 3. Assess if the bird has scratches on the back.
- 4. Assess and score bruises only larger than 2cm based on the aforementioned grades of severity and

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dating.

- 5. Record the results and the location of the bruise.
- 6. Calculate the percentage of each kind of injury to know its prevalence.

Consideration on prevalence and sample size

The recording of traumatic lesions can be done by observing an entire population or by taking a representative sample of it. The determination of a prevalence by sampling is less time consuming since it allows observing only a portion of the target population. In case the objective is to assess the prevalence of lesions at a geographic level (MS, region) or at a slaughterhouse level, the sampling protocol developed by EFSA (2013) can be used.

When the objective is to evaluate a flock, then the control can have different objectives:

- Detect if the prevalence is below a certain 'level' called design prevalence (*e.g.*, 1%)
- Estimate a prevalence within a given level of accuracy (*e.g.*, 1.2% ± 0.2)

General statement on sampling: the representativity of a sample is ensured by random sampling and the size of the sample will influence the accuracy of the result (the bigger the sample, the more accurate the result).

The sample size which is needed to be able to determine if the prevalence is lower than a certain threshold, for example 1%, is smaller than the sample size needed to estimate a prevalence around 1% with for example 10% relative precision.

When you assess a prevalence with a sample, it allows you to assess the prevalence in the population (*e.g.*, the flock) expressed with a confidence interval (CI):

Where p is the prevalence you find, q = (1 - p) and n is the sample size. Therefore, by knowing *a priori* the expected prevalence you want to assess and the precision you want, you can deduct the sample size. There are existing calculating tools¹ and also books (Toma *et al.*, 1996; Dohoo *et al.*, 2009) providing tables with correspondence between population size, expected prevalence, precision and sample size (for estimating a prevalence) and with the correspondence of design prevalence to detect, population size and sample size.

Examples

As an example, when the population is large (and the sample < 10% of the population), to detect an expected prevalence of 1% with 30% relative accuracy you need 4,226 animals to score (it means that the result will be something like $1\pm0.3\%$) and to detect expected prevalence of 15% with 30% accuracy you will need 242 animals to inspect (the results being around $15\pm5\%$). On the other hand, to be able to say if

¹ <u>http://www.raosoft.com/samplesize.html;</u> <u>https://www.surveysystem.com/sscalc.htm</u>

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the prevalence in the flock is over 1% or not, you will need to score 300 animals. If you find no animal with lesion, you will only be able to say that the prevalence in the flock is below 1%.

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Annex 1:

Integral Network document on the Welfare of Poultry During Transport to Slaughter (English version), including annexe 5 and 6.

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Network document on the Welfare of Poultry During Transport to Slaughter

REV 2 11/12/2015

Introduction

The Report from the European Commission to the European Parliament and the Council of 10 November 2011 on the impact of Council Regulation (EC) No 1/2005 on the protection of animals during transport (COM (2011) 700 final) concluded that enforcement of this Regulation remains a major challenge, partly because of differences in interpretation of the requirements and because of lack of controls by the Member States. The report also indicated that, amongst other actions, the Commission will consider increased co-operation and communication with the Competent Authorities of the Member States, by collecting and analysing information on difficulties and sharing experiences on possible solutions related to the implementation of the Regulation. This report is available on the DG SANTE website at:

http://ec.europa.eu/food/animal/welfare/transport/docs/10112011_report_en.pdf

National Contact Points (NCP) of the Member States responsible for the implementation of Regulation 1/2005 on the welfare of animals during transport and the Commission services agreed to discuss a number of issues with a view to finding a common approach throughout the European Union. Following contact point meetings it was noted that despite the fact that there were significant welfare problems with the transport of poultry, many Member States were not actually carrying out any or very limited targeted checks on this trade; those that were found quite high levels of potential suffering and non-compliances with European legislation and Member States wanted to identify and share best practices.

This consensus document has therefore been drafted by Member State experts to facilitate improvements in the maintenance, monitoring, recording and enforcement of animal welfare standards during the commercial transportation of poultry. A central consideration is, of course, compliance with Regulation 1/2005 and other relevant legislation.

The document will inform Competent Authorities, their agents, business operators and other bodies, as to the nature and causes of the major risks to welfare during the immediate pre-slaughter stage of poultry production (with a major emphasis upon broiler chickens). In addition the information provided may guide Competent Authorities and other agencies in the identification and gathering of scientific evidence that might support any enforcement activity.

However, it should be stressed that all the scientific evidence underpinning "Best Practice" should first and foremost constitute the basis of better training, education and professional development for all involved in the production, transport and slaughter systems. Implementation of best practices requires awareness and commitment from all levels of the Competent Authority so that those requiring specific training to implement it are fully supported.

Risk identification and assessment based upon this information should be the primary route to risk reduction. Improved practices through early and effective intervention with emphasis upon the demonstrable link between improved poultry welfare at this latter stage of the production chain and increased productivity, should improve production efficiency and profitability.

It is important to take action to minimise the potential suffering of birds transported to slaughter. At the level of the Member States this should also involve laying down a strategy to progressively lower the intervention level at which the number or percentage of birds arriving dead at the slaughterhouse is deemed acceptable.

Implementation of the risk reduction strategies through heightened awareness and enforcement should be a win-win outcome for improved welfare of the birds; improved financial returns for business operators and more targeted official controls.

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Objectives

This document is intended to:

- Facilitate improvements in the maintenance, monitoring, recording and enforcement of animal welfare standards during the commercial transportation of poultry, with a central consideration being, compliance with Regulation 1/2005 and other relevant legislation by:
- Identifying risk factors to prioritise planning of controls
- Providing example(s) of methodology and best practice to organise controls
- Guide and support Competent Authorities in prioritising, organising and carrying out more effective controls on the welfare of poultry during transport by reducing the risk of likely injury or undue suffering, improving transport conditions for all poultry transported to slaughter and reducing the number of birds arriving dead at the slaughterhouse;
- Assist Competent Authorities and others affected by Regulation (EC) No 1/2005 to arrive at a common approach to implementing certain of its provisions;
- Promote existing knowledge and be used as a training tool to raise animal welfare standards and improve economic performance.

Annexes are attached which give additional background information and provide examples of checklists and templates that can be used to target and carry out official controls.

Risk based planning of official controls of animal welfare during transport of poultry

Context

When birds for slaughter arrive at the slaughterhouse they have been subjected to a wide range of potential stressors during the journey. These stressors may, in turn, produce a spectrum of physiological and pathophysiological effects that may be associated with mild discomfort or distress through to severe distress and suffering, overt injury and mortality, all of which lead to decreases in meat quality and economic loss.

Responsibilities

The responsibility for the chain of the transport of poultry can be complex. Starting from the catching of the birds until they are slaughtered this may involve one single or many different identified parties (see Annex 7) such as the organiser of the journey, keeper of the birds, the catchers, the driver, transporter, and the slaughterhouse business operator.

In whichever way the overall responsibilities for the transport chain are assigned, those identified must comply with the legal requirements and take whatever actions are necessary to ensure that poultry are transported under satisfactory conditions and that their welfare requirements are respected up until the time of slaughter.

Usually, the Business Operator at the slaughterhouse has the main responsibility as the transport organiser and will be the main point of contact for all the other interlocutors in the transport of birds to slaughter.

It is the Official Veterinarian's responsibility to carry out inspections and audit the Business Operator's controls and if necessary take action (either personally or with the help of other bodies) to enforce the welfare conditions under which the birds are transported and slaughtered.

Whilst it is understood that the responsibility for carrying out official controls on the transport of poultry can be shared amongst a number of authorities with very different systems in Member States and that national legislation may differ in relation to the organisation and imposition of sanctions, a generic description of the various responsibilities for animal welfare during poultry transport laid down in European legislation is indicated in Annex 10. This may assist Competent Authorities and Business Operators to identify responsibilities for the different stages.

Carrying out a Baseline Assessment to reduce the Risks for Poultry Transported to Slaughter – Identifying risk factors

A useful starting point to improve the conditions under which commercial poultry are transported to slaughter is an identification and assessment of the potential risks involved in this activity and the undertaking of subsequent actions to address them.

To do this, a risk priority sheet and a risk matrix have been drafted and are attached in Annexes 1 & 2 respectively. The risk priority sheet gives a categorisation of risk for activities associated with the transport of poultry to slaughter and is linked with the risk matrix. The risk matrix gives additional information on responsibilities, potential adverse consequences and where to find relevant information on potential risks.

Annexes 1 & 2 can be used by Central or Regional levels of the Competent Authority to carry out a baseline assessment of the potential risks relating to the transport of poultry to slaughter, the results of which could then feed in to a cumulative scoring system for the planning and organisation of official controls. Action can then be taken to reduce the highest known risks in certain slaughterhouses.

Annexes 1 & 2 can also be used by Business Operators to assess the risks applying to individual slaughterhouses and transport operations to improve the welfare of birds arriving for slaughter e.g. reviewing the use of predictive and real-time weather data; the types of vehicles regularly used, policies for using curtains, policies for setting stocking density, and assessment of catching team indicators/performance against welfare outcomes and production statistics etc.

In any case it is recommended that Competent Authorities involve Business Operators at an early stage in any strategy to address animal welfare problems. At the level of the slaughterhouse the Animal Welfare Officer may be particularly valuable in helping to collect the data for the welfare assessments.

It is important that the risks relating to the transport of poultry are identified by Business Operators. These risks should be included in their standard operating procedures for the whole of the transport chain. Responsibilities, training, planning and contingency planning and corrective actions in the event of failures in implementation or unforeseen events should all be in place. Corrective actions should be taken by Business Operators where risks can be mitigated or reduced and contingency plans should be put in place if absent. The Competent Authority must take into account the reliability of Business Operators' own checks in relation to the transport of poultry to the slaughterhouse.

The legal basis for taking action to minimise each of the identified risks in Annexes 1 & 2 is given in Annex 7. Annex 7 lists the requirements of Regulation 1/2005 and certain other extracts from relevant EU legislation relating to the transport of poultry. Each of the risks in Annexes 2 has been assigned legal references which correspond to the numbering of the legal basis in Annex 7.

Carrying out Practical animal welfare controls on the transport of poultry

If a baseline assessment has been carried out on the risk factors applying to each slaughterhouse consideration could be given to applying a scoring system to the cumulative risks described in Annex 1 and 2; action can then be taken to reduce the known risks.

However, at every slaughterhouse circumstances leading to higher risk for poultry welfare will occur from time to time and officials should be aware of these in order that they can intervene to ensure the welfare of poultry being transported is safeguarded and that all the actors are identified in the event of enforcement action being

required. The following sequence may be used for carrying out practical targeted checks. These steps are then explained below.

- When to target a consignment: based on major risks using Annex 3
- Where to look on a vehicle: the best locations to inspect and sample birds using Annex 8 and 9, for prompt detection of compromised welfare
- Carrying out and recording the results of the physical checks on vehicles and in lairage and relevant documentary checks using Annexes 4 & 4A
- Carrying out post-mortem examination to assess bruising and fractures using Annexes 5 and 6.

Which consignments to choose for further investigation

The key feature for identifying consignments for further investigation is early identification of risk from readily available information and data. For those occasions when stronger enforcement might possibly be required, appropriate preparations for evidence collection and validation should be made as well.

A decision tree flowchart is attached in Annex 3 that allows the Competent Authority or their agents to pursue these processes effectively. Within this structure there are basic requirements for data and evidence collection that will ensure the risk is quantified and any alleged infringement may be adequately characterised, described, quantified and recorded where possible.

Annexes 1-3 list five key triggers which would be one or more of the following:

- Anticipated (weather forecasts) or actual extreme weather conditions (very hot, very cold, floods, snow, storms etc.)¹;
- Known long journeys;
- Unexpected high mortalities or birds dead-on-arrival on previous similar journeys or on previous days (usually linked to adverse weather);
- Certain poultry types or vulnerable loads e.g. spent laying hens, farms with high mortality or poor health status;
- Transporters with a record of infringement or vehicles that are poorly maintained or designed.

Using these key triggers can help to focus inspection resources to those occasions when the chance of detecting increasing numbers of birds dead-on-arrival or birds suffering on the vehicle or in the lairage is more likely. It must be stressed that it is not suggested this procedure should be carried out for routine ante-mortem inspection, though it could be adapted for that purpose.

Additional risks which could be taken into consideration before deciding to inspect birds on the vehicle and then proceeding to a physical examination of a sample of the birds when they have been unloaded are listed in Annex 1 and more detail is given in Annex 2.

Assessment of Birds found Dead on Arrival

In many cases it may be proposed that a large increase in the percentage of birds found dead-on-arrival (DOA) is indicative of compromised welfare and imposed stress in both birds that died and indeed at least some of those that survived.

In the majority of productions systems it is not possible to get the percentage of birds found dead-on-arrival for a specific load soon after unloading is completed. This can cause a problem for officials and business

¹ it is recommended that from a consignment the first vehicle be checked. If necessary more can be checked, preferably immediately upon arrival.

operators when the data is not usually available until unloading and processing are completed and the records have been compiled by the business operator. However, an indication that numbers of birds dead on arrival might become high can be given when the welfare check at arrival or the numbers of birds dead on arrival after slaughtering a small part of the consignment reveal problems.

Information from bird dead-on-arrival figures may be, in most cases, a historical record to be used in the overall risk analysis presented in the previous section and explained in more detail here.

The DOAs from previous loads from the same origin on the same day may be a "trigger", or generally elevated DOAs from all origins of previous consignments on the same day may be an indication of problems. Even high DOAs the day before (regardless of origin) if the weather conditions are the same should give rise to concern for the Business Operator and help to identify a recently arrived or soon to arrive consignment for inspection/investigation.

Therefore, there should be careful use of DOA data as a trigger. Where elevated numbers of birds dead-onarrival are recorded (particularly if recorded by load) this should be investigated through subsequent loads on that day or from the same origin. There may also need to be specific arrangements made for carrying out investigations where there is usually little access to live birds e.g. conveyer and gas stunning systems.

It will be necessary to work closely with the Business Operator to accurately establish the number of birds found dead-on-arrival. This can be carried out as part of the control (Annex 4) of the selected consignment. It should be borne in mind that help from the Animal Welfare Officer to obtain and feedback DOA data and from lairage staff (forklift driver for example) will be needed in order to keep track of the stacks of crates and to count the dead birds to provide the Competent Authority with an accurate dead-on-arrival figure for the consignment. This figure will also need to be broken down by its location into front, middle, or rear of the vehicle, and upper or lower modules (i.e. 6 areas), or even to highlight stacks from different vehicles.

As a major source of such problems is the thermal microenvironment to which the birds are exposed upon the vehicle this topic should receive particular attention when carrying out targeted controls. However, it is only after a full investigation that heat or cold stress might be indicated as the source of the problem e.g. 100 birds found dead-on-arrival of which 90 were identified as having travelled in areas of the vehicle(s) where heat stress is more prevalent. If none of the 100 birds found dead-on-arrival was in these areas then another problem is more likely (health status or type of birds etc.).

Where to look on the vehicle

See Annexes 8 and 9. In general: for most vehicle configurations the warm thermal core of the vehicle is to the front and top. Cooler areas are found at the rear of the vehicle. A guide to sampling for thermal stress on poultry vehicles is attached in Annex 8. This illustrates the most likely locations to sample on poultry vehicles when meteorological and other indicators suggest there is a higher chance of a problem occurring. Additional information on vehicle types and ventilation flows is attached in Annex 9.

Carrying out the check

Once the decision has been taken to inspect a particular vehicle in detail the OV, ideally accompanied by the Animal Welfare Officer (who performs an animal welfare check at arrival, as is laid down in Regulation (EC) No 1099/2009) should examine birds on the vehicle as soon after arrival as possible (even if they can't be removed from the containers). It may thus be necessary for the OV to supervise and undertake these activities while a second person completes the remainder of the examination of the rest of the load.

An inspection of the periphery of the vehicle in those locations indicated in Annex 8 should be undertaken. It should be possible to assess from a brief inspection of the peripheral modules the condition of the poultry within these exterior crates It should be borne in mind that these birds will probably have been subject to more airflow than those further in to the interior of the vehicle and therefore may represent birds in better

condition than those in the interior of the load. Should these birds present in poor condition the decision to perform a more detailed examination of a selection of birds can be taken².

If the birds are in satisfactory condition this should be recorded and the inspection is finished.

Recording the results of the physical check

A form for recording the results of a more detailed examination of birds that have been unloaded from the vehicle is attached in Annex 4. It records the results of a physical examination of a sample of birds and requires a description of their clinical condition, any injuries and their location, and information on the conditions on the vehicle, in the lairage, in the crates etc. at the time of the examination. It also lists documentation that should be reviewed and recorded, if necessary, after the physical examination. See section below: Recording the results of documentary checks.

Equipment to carry out the check

Prior to the detailed examination of live birds and carcases, OVs should prepare an evidence kit ideally containing:

- Torchlight, ladder, digital voice recorder; digital camera/video camera to photograph birds, transport containers, curtaining of vehicles and vehicle location in yard or lairage;
- Ambient temperature and humidity recording equipment, rectal thermometer. For these and all other measuring equipment, certificates of calibration can be obtained at the time of purchase and internal calibrations performed as required or external calibration as required by each Member State;
- Pad to sketch location of birds in vehicle and vehicle in yard;
- Official notebook Carcase submission protocols, laboratory agreements and packaging materials;
- Blood sampling equipment (if the OV is competent at sampling and has the facilities to process the samples on site).

Recording the results of documentary checks

In order to reinforce the results of physical examinations it is crucial that there is an in-depth examination of documentary information such as journey records, meteorological records and relevant business operator data. Annex 4 can be used to record the results of such documentary checks.

The total number of "dead-on-arrivals" for the journey should be recorded, as should the carcass rejections and down-gradings. Where possible, carcasses from "dead-on-arrivals" or rejections should be obtained and photographed and subjected to post-mortem examination.

Details of the journey should be obtained in terms of route, duration, departure and arrival times, mandatory driver breaks, events or incidents that might affect the birds (e.g. breakdowns, accidents or delays). The OV or other official may "request" the tachograph from the vehicle. If "not available" this item may be sought by the appropriate authorities or the court in the event of a subsequent prosecution. A thorough assessment of external environments throughout the journey should be obtained by liaison with the appropriate government meteorological office or weather station (local if possible).

All notes must be signed, timed and dated by the person making the observations immediately upon completion. It is desirable that they are witnessed by a third party (e.g. the official veterinarian's colleague/assistant) and by a representative of the Company. For those occasions when stronger enforcement might be required the authenticity of the notes and records must be beyond question. It is suggested that those responsible for these tasks and their managers should follow existing enforcement (including provision

² Taking blood samples can be very beneficial if: physical conditions indicate a possible prosecution; Official Veterinarians are competent to do it; and it doesn't compromise the remainder of the load. Body temperature can also be measured .

of a written report) procedures and seek legal advice in advance to establish the precise legal requirements for such record taking and keeping.

Carrying out *Post-Mortem* Checks on injuries related to the Transport of Poultry

Context

Another area of growing NGO, political and media interest in the transport of poultry is the percentage of animals which arrive at slaughterhouses with catching or transport related injuries which will have caused a range of suffering from minor bruising to major fractures. The downgrading of carcases due to bruising and fractures is also of major financial interest to the business operator.

The results of initial assessments run by two Member States Competent Authorities to investigate the current practices involved in catching and loading poultry have indicated that when slaughter processing damage has been excluded, injury figures resulting from transport and catching injuries were higher³ than they had expected. Under these circumstances the contributors to this document saw it as important to have a strategy, based on this experience to minimise the potential injuries and suffering of the birds, raise awareness of this issue, engage and discuss outcomes with business operators, and to set a baseline for improving the situation.

Experience with scoring for foot pad and hock lesions has shown that improvements can be made in the incidence of these conditions when: a system is in place to provide accurate feedback information to the owner; the presence of lesions trigger economic losses or their absence gives rise to a premium payment or other types of incentives; and there is effective intervention through official and/or business operator controls driving the change. A similar approach could therefore be used with catching or transport related injuries.

Intervention strategies for taking enforcement action when the percentage of injuries observed at postmortem is above a set level have therefore been laid down and trialled in a number of Member States.

Two of the difficulties encountered during these projects were that:

- there was no practical method of checking and recording catching injuries and
- it is difficult to identify at which stage of transport the lesions occur and therefore distinguish between catching injuries, transport injuries and production damage.

In response to these challenges, a methodology was developed in one Member State to establish standard criteria for assessing and recording catching injuries during focussed Competent Authority campaigns. This involves a standardised approach for official veterinarians to perform a visual count of injuries on the slaughter line for 5-10 minutes per day during defined campaigns using a simplified checklist and sampling one flock per day. The intervention level for enforcement regarding injuries in this particular system is over 2% of large bruises (more than 3cm) to wings, legs or breasts but there is no standard EU wide intervention level set.

This methodology has been adapted and illustrated in this document. Competent Authorities and business operators are encouraged to discuss whether it could be utilised as one in a selection of tools outlined above to gather baseline information and to reduce the number of birds injured or found dead on arrival thus improving poultry welfare outcomes and increasing business profitability.

The first section below contains an overview of the method which has been developed for counting catching injuries. Annex 5 provides a form for recording the results of targeted checks on the slaughter line. Annex 6 provides photographic examples of differences between various types of injury and damage which can occur.

³ But in line with EFSA journal 2011.

General information

Various scientific opinions concur that bruises can be assessed on the basis of their colour. The size and colour of bruises provides an insight into their age. This can assist in distinguishing between recent bruises and much older ones which have occurred during catching operations. Bruises of one centimetre or smaller, which are bright red in colour, are less than two minutes old (Bremmer and Johnston 1996). This means that these haemorrhages are more likely to have occurred during the slaughter process and after the animal was unconscious or dead at which point the haemorrhages are very small.

The EFSA 2011 report on Transport⁴ points to catching and handling as major causes of trauma during the transport of poultry and on this basis the position is taken that the majority of injuries originate from this cause and not the vehicle journey itself. In this methodology, the journey is viewed as a possible aggravation to the initial trauma and this may be investigated by interviewing the driver to enquire if there are circumstances which would have exacerbated the condition of birds e.g. acute stops; traffic jams; extremely bad roads, and the condition of containers.

Scientific literature suggests that bleeding can be evaluated by colour. Greening of bruises begins 12-14 hours after injury. Thus, it may be possible to distinguish from earlier bleeding events, which have occurred, on farm, during catching or possibly during transport in those circumstances where total transport time is more than 12 hours (which may occur more frequently for the transport of spent hens).

Estimate age of bleeding	Colour of the bruise
2 min	Red
12 h	Dark red-purple
24 h	Light green - purple
36 h	Yellow-green-purple
48 h	Yellow-green
72 h	Yellow-orange
96 h	Light yellow
120 h	Normal

Table 1: Colour of bruises in relation to duration of injury (Bremmer and Johnston, 1996)

Difference between processing damage and injury

Process-induced damage occurs during stunning when the animals are/or should be unconscious or after death. This damage is considered as process-induced and is not considered as animal welfare issue. This can be seen on the slaughter line. Process-induced damage will only incur very small bruises (< 1 cm), which are light red in colour, and are very fresh.⁵ These will have occurred in the slaughterhouse during the slaughter process (for example, while the unconscious animals were being moved and turned over in the gas stunner).

Injuries occur before stunning either on farm or during loading, transport or unloading and shackling. One of the photographs in Annex 6 illustrates the difference in the case of a luxation caused by injury and one caused by process-induced damage. Tilting of containers and moving live birds over conveyer belts can aggravate transport injuries and cause new injuries too. In slaughterhouses (those with gas stunning of birds in their containers/crates) without tilting and/or moving of live birds over conveyer belts less dark red small injuries are seen.

When to carry out Checks on the Slaughter Line

These targeted checks can be carried out for the purposes of a baseline study to gauge the level of injuries in a Member State, or, if an intervention level has already been set, as a means for monitoring incidence levels, engaging the business operator and as a last resort in carrying out enforcement action if necessary.

⁴ Scientific Opinion Concerning the Welfare of Animals during Transport, EFSA Panel on Animal Health and Welfare (AHAW). EFSA Journal 2011; 9(1):1966

⁵ This section is based upon a Member States' findings, is not backed up by research and is not compulsory, merely an exhortation to establish the level of injuries in slaughterhouses to try to reduce levels of injury and improve animal welfare outcomes and meat quality.

The reasons for selecting a particular flock for post-mortem examination would be primarily based on lairage or slaughter line indications (of live animals in the case of waterbath stunning) of higher than normal levels of injuries to birds or historical data from previous consignments. In addition, many of the risk factors for transport laid down in Annex 1 would equally apply to the potential for bruising and other injuries in birds delivered for slaughter e.g. :

- Known long journeys;
- Unexpected high mortalities or birds dead-on-arrival on previous similar journeys earlier that day or on previous days (usually linked to adverse weather- on hot journeys there may be behavioural activities which give rise to scratches on the skin or compression injuries as well);
- Certain poultry types or vulnerable loads e.g. spent laying hens, farms with high mortality or poor health status;
- Transporters with a record of infringement or vehicles that are poorly maintained or designed.

How to carry out Checks on the slaughter line

The following sequence lists the steps for carrying out practical targeted checks. These steps are then explained below.

- Select a good viewing position to count the injuries⁶
- Select a flock to count based on visual inspection results or other reasons
- Count only injuries of 3 centimetres or more (record only one injury per bird even if multiple seen)
- Count for a full two minutes and record the results in Annex 5
- Repeat the process for the same flock and record the results in Annex 5

As the person performing the check does not have sufficient time to observe every flock as a standard procedure, it is important to make a selection. If the Official Veterinarian or Assistant sees that there is a high incidence of catching injuries per flock, or has doubts, he or she can do a count.

It is important to count for an unbroken period of two minutes.

Analysis has revealed that turning the animals over can cause minor injuries. Thus, in order to obtain a reliable result of more serious injuries, only injuries of 3 centimetres diameter or more are counted. As contusions, fractures or luxations in live animals are associated with bruises, the count focuses exclusively on bruises.

Bruising occurs during catching operations, transport and possibly when the animals are turned over. Bruises which are counted as catching injuries are a dark red colour and, in terms of size the following should be recorded as an animal with bruising:

• large (diffused) bruises of at least 3 centimetres in the wing, thigh or body.

It was observed in the course of counting operations that the number of injuries per count (in the same flock) can vary. Sometimes no catching injuries can be seen for a while, and sometimes they appear to come all at once. In order to obtain a reliable picture of the entire flock, counting should be done twice: for example, at the beginning and at the end of the flock. The results can be used to obtain an average. This means that two counts of two minutes each have to be carried out. In large flocks these counts have to be repeated (each

⁶ E.g. selecting a counting place where the slaughter-line makes a slight turn (at a position with enough light after plucking and before the poste-mortem examination)) could be helpful as the turn may make the birds spread their wings and thus make it easier to evaluate the injuries from a breast-side view.

hour). For enforcement the results of counting must be in line with the overall post-mortem inspection results and records for the whole flock which support the prevalence of the injuries detected.

Calculating the percentage of injuries detected on the slaughter line

The conveyor-belt speed in the slaughterhouse allows the counts to be calculated as a percentage. For example:

- a slaughterhouse has a conveyor-belt speed of 200 birds per minute,
- the count takes two minutes,
- the count is 8.

The calculation is as follows: 200*2 minutes = 400 birds. 8/400*100% = 2% with catching or other injuries.

How to proceed with the findings from the count will depend on the intervention level set and intervention policy in place in each Member State.

Calculating the time of the injury and where it occurred

It is important that the date and time of departure from the holding and the time of inspection are filled in on Annex 5, so that the age of the injury can be correlated with the transport times and estimated. For example:

- Time of departure from the holding is 4 a.m.
- Inspection takes place at 10.30 a.m.

The task of loading the birds began at about 3 a.m. (about 1 hour per lorry). This means that any injuries caused during the transporting of the birds will be a maximum of about 7½ hours old.

Literature

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Annexes

Annex 1	Risk Priorities
Annex 2	Risk Based Matrix
Annex 3	Flowchart to Identify Consignments for Further Investigation
Annex 4	Recording Results of controls on Vehicles and Lairages
Annex 4A	Supporting Text for Enforcement Reports
Annex 5	Recording Catching Injuries
Annex 6	Post-Mortem Examinations for Bruising
Annex 7	Relevant Legal Bases for Animal Welfare during Transport of Poultry
Annex 8	A guide to Sampling for Thermal Stress
Annex 9	Ventilation in the Transport of Poultry to Slaughter
Annex 10	Legal Responsibilities in the Transport of Poultry up until Slaughter

Risk Based Priorities for Controls of animal welfare during transport of poultry for slaughter Annex 1

No.	HIGHEST IDENTIFIED RISKS	POTENTIAL CONSEQUENCES and SYMPTOMS	PRIORITY
1	Anticipated (weather forecasts) or actual extreme weather	> heat stress, muscle damage, Suffering, > mortality. Risk of hypo	High (8-10)
	conditions (very hot, very cold, floods, snow, storms etc)	and hyperthermia (including paradoxical heat stress). Poor meat	
		quality	
2	Journeys with duration > 4 hours (>2 hours in poor thermal	> heat stress, muscle damage, Suffering, > mortality, poor meat	High (8-10)
	conditions: hot and humid or very cold)	quality	
3	Unexpected high mortalities or Dead on Arrivals on previous	Suffering, increased injuries, mortality, poor meat quality	High (8-10
	similar journeys earlier that day or on previous days		
4	Transporters with a record of infringement or vehicles that	Higher than average possibility of reoccurrence of non-compliance	High (8-10)
	are poorly maintained or designed		
5	Certain poultry types or vulnerable loads e.g. spent laying	Less tolerance to transport, suffering, increased mortality, poor	High (8-10)
	hens, ducks, geese, turkeys, heavy broilers etc, farms with	meat quality	
	high mortality or poor health status		
	5 · · · · · · · · · · · · · · · · · · ·		

	ADDITIONAL RISKS	POTENTIAL CONSEQUENCES and SYMPTOMS	PRIORITY
6	Lairage equipment, design and logistics (time spent) that increase risk of high thermal loads. Wet Lairage Environment Post Transport Temperature/humidity dependant results	Increasing risk of thermal stress to birds kept in stacked modules in lairage: Heat stress or Serious risk of hypothermia, poor meat quality	High (8-10)
7	No Quality System or Standard Operating Procedures (SOPs) for catching and records of training available	Use of untrained catching teams. Poor handling of birds- injuries, fractures, overloading	High (8-10))

8	Poorly designed, maintained, or damaged	crates or with	Higher risk of	trapping injuries,	crushing, lowered he	ad height:	High (8-10)
	slippery floors		Suffering, incre	ased mortality			

	ADDITIONAL RISKS	POTENTIAL CONSEQUENCES and SYMPTOMS	PRIORITY
9	(Un)modified passively ventilated vehicles	(In)sufficient ventilation margins to compensate for poor environmental conditions or >Stocking Density on vehicle	Medium (4-7) to High (8-10)
10	Unknown transporters	No history available to assess previous performance	Medium (4-7)
11	Poor Module Design including newer integrated loading systems	Higher risk of impeded ventilation over/around birds, heat stress, Higher risk of trapping injuries, suffering, increased mortality	<mark>Medium (4-7)</mark>
12	Low levels of Enforcement Action in Slaughterhouse	Lack of enforcement and poor welfare	Medium (4-7
13	Modified passively ventilated vehicles	Improved ventilation margins to compensate for poor environmental conditions or > Stocking Density on vehicle	<mark>Low (1-3) to</mark> Medium (4-7)
14	Age of vehicles (over 5 years)	Risk of > % breakdowns- more chance of stationary birds heat stress, suffering, increased mortality	Low (1-3)
15	Fan ventilated vehicles	Additionally improved ventilation margins to compensate for poor environmental conditions or > Stocking Density on vehicle	Very low <mark>to low</mark> <mark>(1-3)</mark>

Item 16 may need to be investigated as part of enforcement action taken by the Competent Authority as a result of birds arriving at slaughterhouse in poor condition, with high rates of bruising and fractures. These items may need to be referred to agricultural or other departments/agencies to carry out an investigation or a specific visit to other potentially responsible parties such as farmers, catchers and transporters.

16	Inappropriate adjustment, operation & maintenance of	Poor handling of birds- speed of cage loading and stop/start nature	High (8-10)
	mechanical catching machine. No Business Operator	of cage loading leading to injuries, fractures, overloading	
	Standard Operating Procedures in place.		

					Ann	ex 2
	Responsibility ¹	Highest Identified Risks	Potential Adverse Consequences and Symptoms	Information Source	Priority	Legal Base Ref in Annex 7
1	Keeper Transporter Business Operator (Scheduler/Organiser)	Anticipated (weather forecasts) or actual extreme weather conditions (very hot, very cold, floods, snow, storms etc.) Absence of reliance on meteorological forecasting in Business Operator Standard Operating Procedure covering all year variable weather conditions (extreme events) and preventative actions for altering stocking density accordingly, and/or inappropriate or lack of changes to curtain configuration etc. Hot conditions High thermal loads consisting of elevated temperatures and humidity, e.g. container temperatures over 24°C (assuming relative humidity of 70% or higher) or Cold conditions Low ambient temperature and high air speeds (exacerbated by wetting of birds). Poor ventilation – inappropriate distribution of air flow. Container temperatures (paradoxical heat stress) over 24°C (assuming relative humidity of 70% or higher) caused by inappropriate curtaining For cull laying hens external temperatures lower than 15°C* may cause them thermal stress in passively ventilated open vehicles.	Rising heat stress*, Suffering, increased mortality Risk of hypo* and hyperthermia* (paradoxical heat stress) dependent upon external temperature, length of journey*, effectiveness of curtaining muscle damage*, * refers to background information on page 9 on the potential effect of poor animal welfare conditions during transport on meat quality outcomes	Reliable meteorological sources Business Operator Standard Operating Procedures Transport Standard Operating Procedures or contingency plans Business Operator (Animal Welfare Officer. delegated lairage staff) Official Veterinarian	High (8-10)	50, 52, 62, 64, 65, 69 to 75

¹ There are many legal obligations for one or a combination of the responsible parties below to fulfil in the transport of poultry to slaughter. At different stages in the journey different responsibilities apply-hence the reason for listing a number of different actors- this applies throughout this document.

					Ann	ex 2
	Responsibility ¹	Highest Identified Risks	Potential Adverse Consequences and Symptoms	Information Source	Priority	Legal Base Ref in Annex 7
2	Keeper Transporter Business Operator (Scheduler/Organiser)	Journeys for broilers with duration of more than 4 hours (journeys of >2 hours in poor thermal conditions are high risk e.g. in hot and humid weather <u>Reasons:</u> Interrupted journeys Slaughterhouses receiving consignments of poultry from longer distances due to trade flows: geographical constraints and integrated companies both rearing and processing birds New suppliers Keepers avoiding local enforcement controls (e.g. mandatory lowering of stocking density due to excessive mortality, high footpad dermatitis score etc)	Suffering, increased mortality linked with journeys more than 4 hours Higher incidence of heat stress*, muscle damage*. If journey more than 12 hours- difficulties with practicalities of feeding and watering leading to hygiene issues	Transport Documents (Art 4, 1/2005 & Tachograph Business Operator (Scheduler/Organiser) Data at Competent Authority/local level/Business Operator: can indicate enforcement action taken or "new" supplier to that Business Operator. Organisation of vertically integrated producers and slaughterhouses. Origin of poultry (distances) in Intra- Union Health certificate, and journey documents Extent and main operators of Intra Union trade	High (8-10)	11, 12, 13, 14, 17, 18, 44, 45, 62, 86, 107, 108, 109

	ΑΑ					ex 2
	Responsibility ¹	Highest Identified Risks	Potential Adverse Consequences and Symptoms	Information Source	Priority	Legal Base Ref in Annex 7
3	Business Operator Official Veterinarian	Unexpected high mortalities or Dead on Arrivals on previous similar journeys earlier that day or on previous days Previous negative farm findings: (on farm problems may be dealt with through other controls)	More than average possibility of reoccurrence of poor animal welfare practices	Business Operator Standard Operating Procedures Official Veterinarian	High (8-10)	2, 86, 89, 90, 102 to 105, 106 to 109
4	Transporters Business Operator	Transporters with a record of infringement or vehicles that are poorly maintained or designed	More than average possibility of reoccurrence of non-compliance	Information from National Contact Points (Cross border information) Competent Authority, Regional Competent Authority Official Veterinarian	High (8-10)	1, 6, 11, 21, 22

					Ann	ex 2
	Responsibility ¹ Highest Identified Risks		Potential Adverse Consequences and Symptoms	Information Source	Priority	Legal Base Ref in Annex 7
5	Keeper Catchers Transporters (drivers) Business Operator lairage staff	Certain poultry types or vulnerable loads e.g. spent laying hens, ducks, geese, turkeys, heavy broilers etc, farms with high mortality or poor health status 1 Transport of heavy broilers, also broiler breeders/ heavy turkeys, eg turkey breeders ducks and geese (especially for <i>foie gras.</i> , quails and partridges etc) 2 Transport of cull laying hens, Poor feather cover Brittle bones & difficult/awkward Catching environment Very low economic value Longer distances to Slaughterhouse willing to process the birds Presence of existing unhealed fractures More likely longer feed (water) withdrawal period at farm 3 Transport of birds infected with salmonella, other <i>spp</i> : Longer waiting period in lairage	 1 Catching injuries High rate of wing and leg fractures, higher risk of transport stress, > risk of breakage, damaging of crates > thermal stress Suffering, increased mortality Poor meat quality, losses and inefficiency* 2 Cages not conducive to easy catching, higher rates of wing/leg fractures Longer journeys Poor tolerance to transport (rain, wind chill) - metabolic fatigue, exhaustion of energy reserves*, postural problems – injury, asphyxiation Suffering, increased mortality 3 Potentially compromised tolerance to transport Suffering, increased mortality 	Business Operator Competent Authority Competent Authority regional or local Official Veterinarian	High (8-10)	11 to 18, 33, 38, 44, 46, 47, 49 to 52, 54, 57, 60, 61, 62, 64, 86

					Ann	ex 2
	Responsibility ¹	Highest Identified Risks	Potential Adverse Consequences and Symptoms	Information Source	Priority	Legal Base Ref in Annex 7
	Business Operator (Animal Welfare Officer)	Lairage equipment, design and logistics (time spent) that increase risk of high thermal loads consisting of elevated temperatures and humidity, e.g.: associated with inadequate mechanical ventilation and delays before slaughter	Increasing risk of thermal stress* to birds kept in stacked modules in lairage	Transporters Business Operator (Animal Welfare Officer) Official Veterinarian	High (8-10)	76 to 78, 81, 82, 93 to 96, 103, 105
6	Business Operator (Animal Welfare Officer) Competent Authority Official Veterinarian	Wet Environment Post Transport Wetting of birds after journey in lairage (Use of misting systems or over spray from cleaning crates and lorries) saturating air (especially above 20°C) inhibiting heat loss through panting Bearing in mind lack of feather cover and metabolic weakness, this is crucial for cull laying hens	Temperature/humidity dependant results High lairage humidity / water vapour density will cause heat stress* in warm to hot weather if module stacks not well ventilated Serious risk of hypothermia* dependent upon external temperature, length of journey and time spent in lairage	Business Operator Standard Operating Procedures Business Operator (Animal Welfare Officer, delegated lairage staff) Official Veterinarian	High (8-10)	76, 81, 82, 93 to 95, 98 100 to 102
7	Business Operator Transporter Catching and loading teams Keeper	No Quality System or Standard Operating Procedures in place for: - satisfactory training provided to individuals in the catching and loading teams and records available of that training - catching, loading and transporting birds - comparison of catching teams statistics - adjusting stocking density, in line with weather forecast - and taking corrective actions in event of anomalies	More than average possibility of reoccurrence of non-compliances and poor animal welfare practices	Keeper Transporter Standard Operating Procedures Business Operator Standard Operating Procedures Business Operator analysis of catching team records	High (8-10)	11, 15, 16, 31, 33, 36, 38, 50, 58, 62, 64, 65, 70, 73, 84, 87, 88

					Ann	ex 2
	Responsibility ¹	Highest Identified Risks	Potential Adverse Consequences and Symptoms	Information Source	Priority	Legal Base Ref in Annex 7
8	Keepers Catchers Transporters Business Operator	Poorly designed, maintained or damaged crates or with slippery floors	Higher risk of trapping injuries, crushing lowered head height Suffering, increased mortality	Transporters Business Operator Official Veterinarian	High (8-10)	38, 49 to 51, 54, 65, 67,68
9	Keeper Transporters Business Operator	Unmodified passively ventilated vehicles See Annex 9 for further details	Insufficient ventilation margins to compensate for poor environmental or >stocking density on vehicle	Vehicle Manufacturer Transporters Business Operator Official Veterinarian	Medium (4-7) to High (8-10)	49, 50, 52, 57, 62, 65, 69, 70, 71
10	Keeper Transporters Business Operator	Unknown transporters	No history available to assess previous performance	Business Operator Official Veterinarian	Medium (4-7)	1, 6, 21 to 23, 42 to 45
11	Keepers Catchers Transporters Business Operator	Poor module design, including newer integrated loading systems 5 tier crate units Modular drawer systems	Higher risk of impeded ventilation over/around birds, heat stress* Causes difficulties to catchers to load upper layer Higher risk of trapping injuries, suffering, increased mortality	Transporters Business Operator Official Veterinarian	Medium (4-7)	33, 38, 49 to 57, 60 to 62, 65, 68, 69, 104, 105

					Ann	ex 2	
	Responsibility ¹	Highest Identified Risks	Potential Adverse Consequences and Symptoms	Information Source	Priority	Leg Ba Ref Ann	gal ise f in iex 7
12	Competent Authority, Competent Authority regional or local	Low levels of Enforcement Action in Slaughterhouse	Permissive attitude and consequent poor welfare	Competent Authority supervisory reports across all Slaughterhouses including visits, audits and enforcement action taken	Medium (4-7)	86 92, 108,	to 106, 109
13	Keeper Transporters Business Operator	Modified passively ventilated vehicles (defined air inlets and outlets) See Annex 9 for further details	Insufficient ventilation margins to compensate for poor environmental or >stocking density on vehicle	Vehicle Manufacturer Transporters Business Operator Official Veterinarian	Low (1-3) to Medium (4-7)	49, 52, 62, 69, 71	50, 57, 65, 70,
14	Transporters Business Operator	Age of vehicles (over 5 years)	Wear and tear: risk of > % breakdowns- more chance of stationary birds heat stress* Suffering, increased mortality	Transporters Business Operator Official Veterinarian	Low (1-3)	49 57, 62,6 69, 71	to 5, 70,
15	Keeper Transporters Business Operator	Fan ventilated vehicles See Annex 9 for further details	Insufficient ventilation margins to compensate for poor environmental or >stocking density on vehicle	Vehicle Manufacturer Transporters Business Operator Official Veterinarian	Very Low to Low (1-3)	49, 52, 62, 69, 71	50, 57, 65, 70,
16	Keeper Catching Team Business Operator	Inappropriate adjustment, operation & maintenance of mechanical catching machine. No Business Operator Standard Operating Procedures in place	Poor handling of birds - speed of cage loading and stop/start nature of cage loading leading to injuries, fractures, overloading	Catching machine Manufacturer Catching Team Business Operator	High (8-10)	11, 10 31, 36, 58, 62, 87,8	15, 6, 33, 38, 61, 64, 38

Annex 2

Item 16 may need to be investigated as part of enforcement action taken by the Competent Authority as a result of birds arriving at slaughterhouse in poor condition, with high rates of bruising and fractures. These items may need to be referred to agricultural or other departments/agencies to carry out an investigation or a specific visit to other potentially responsible parties such as farmers, catchers and transporters.

Broilers	Modern, rapidly growing strains of meat poultry exhibit an elevated incidence of spontaneous or idiopathic myopathy ("White striping", PSE and wooden breast) and an increased susceptibility to stress induced myopathy	Rapidly growing lines of birds may exhibit a reduced thermoregulatory capacity compared to their genetic predecessors and may thus be more susceptible to heat stress in transport and to consequent problems, including muscle damage, acid-base disturbances and reduced meat quality		
Longer journeys	Ali et al. (2008) have reported that problems of paler meat were associated with longer transport times	Y Weight loss of broiler chickens in transport has been found to be related to journey duratic Birds of initial body weight <2.0 kg lost 47, 64 and 106 g of body weight on journeys of 1, 2 and hours duration, respectively. For heavier birds (>2.5 kg), the corresponding figures were 93, 1 and 141 g, respectively.		
Temperature	The temperature at the point of loading or crating of broilers and subsequently in transport exerts a profound effect upon mortality and meat quality	The imposition of thermal loads upon the birds in transport will result in moderate to severe thermal stress and consequent reduced welfare, increased mortality due to either heat or cold stress and induced pathology, including muscle damage and associated changes in product quality		
High temperatures	in the case of broilers, they recommended an upper temperature limit of 24 °C for on-board temperature	weightlossthroughincreased increased incidence of PSE meat at slaughterdemand for evaporative heat loss.This increased incidence of PSE meat at slaughterreducesproductdeliveryweightandsignificantdehydrationwill compromisebirdwelfare and affect product quality		
Low temperatures	Ambient temperatures of 0 °C or below during transpo incidence of dark, firm and dry (DFD) breast meat ² .	ortation caused cold stress sufficient to reduce deep body temperature in broilers, increased the		

* Meat Quality issues (from EFSA, 2011: Scientific Opinion Concerning the Welfare of Animals during Transport. EFSA Journal 2011; 9(1): 1966.)

The above information on Meat Quality is also valid for turkeys according to other relevant scientific studies

² This is exacerbated by longer periods of feed withdrawal

Flowchart to Identify Consignments for Further Investigation Annex 3



Recording Results of Controls on Vehicles and in Lairages¹

Annex 4

Information may be recorded below when it is suspected that welfare has been compromised in transit due to detection of one or more key risk indicators (see Annex 3). It is clear that not all of the information indicated below: data; samples and evidence can be collected on every occasion but every effort should be made to obtain as much as possible if the initial findings indicate compromised animal welfare. If the initial findings indicate the birds are in satisfactory condition, this should also be recorded and the inspection is finished.

Key Risk Indicator(s)	Weather	Journey length*	Previous	high	Poultry types*	Transporters/vehicles	* Birds arriving in
Targeting Consignment	conditions*		mortaliti	es on			poor condition*
*circle as appropriate			arriva	1			
	-						
General Identifying Info	rmation						
Slaughtarhausa Nama:			ELL Hoolth M	ark Numb	0.01		
Farmer/Supplier Name			LOTICALLITIM	Farm/h	olding Identificatio	n number: Batch	/house Number ·
Load number of fro	m batch/house						
Inspection upon arrival Yes	/ No.* Arrival tin	ne of vehicle at slaughte	erhouse?		Or in lairage?		
		5			_ 0 _		
General Clinical Appear	ance of poultry	in selected crates/v	/ehicle or lai	rage:		Satisfactor	y? Yes / No*
Distribution and number of	dead, moribund,	injured birds, their loca	tion and prope	ortion of t	oirds affected:		
Describe general impressio	n of birds thoir l	a a haviaur (huddling/ah	ivering (ponting	a ata \ an	d abusisal conditi	an luuat (dirtu (akin aalaur	variation in size ate)
their location on the vehicle	East the body of	urface temperature ² : an	ivering/partin	ig etc.) ai	d record below the	temperature of a minimu	n of 5 birds
their location on the vehicle	. Teer the body st	indee temperature , an	ia, ii necessary	, take and			
Position in vard/lairage, if r	elevant ³ :		Photo	graphs ta	ken: Yes / No*		
If the birds are in s	atisfactory c	ondition this sho	ould be re	cordeo	and the insi	pection is finished	
Mark Sampling Location	n(s) with Bird N	0.					
	()		_	_			
		nformation on (minim	um) 5 sample	birds for	possible enforcem	ient	
Bird Number ⁴ : Indicate	if 1	2	2		3	4	5
live, dead (carcas	e						
labelled?)							
General appearance:	1			1			

live, dead (carcase			
labelled?)			
General appearance:			
stressed or normal Panting			
(severity), standing, pale etc			
Skin colour (comb/wattles)			
Pupillary condition			
Respiratory signs			
Posture			
Wetting			
Distribution of faeces on			
birds			
Degree of emaciation			
Behaviour ⁵			
Body temperature ⁶			
Photograph taken Yes/No			
Post Mortem			
Findings			

¹ Crates in lairage may be inspected, if they can be traced back to the vehicle.

⁵ Huddling, shivering, panting, increased scrabbling

 $^{^{2}}$ T 41°C; heat stress means suffering, and at T \geq 45°C the animals die after some time (during transport, fast-growing heavy chicks often cannot keep their temperature stable for more than 150 minutes). Heat production per 2Kg chicken: 10-15W; for a load of 7500 animals: 75 -112KW of heat.

³ E.g. are the birds, containers or vehicles in direct sunlight or exposed to rain, snow or wind.

⁴ The entry of data relating to the clinical examination of five birds would be the minimum number for recording evidence. This would not be the number of birds sampled/assessed at the start of the investigation.

⁶ For a representative sample e.g. 5 stressed and 5 normal birds. Records of body temperature of birds at different locations in the load should be obtained where practical for comparison (e.g. from birds that are shivering at the periphery and from other birds in the warmer front/centre of the load).

Welfare checks on arrival by the slaughterhouse's animal welfare official or appropriate employee		
Were these checks carried out?		
Vhat were the findings of the slaughterhouse staff member responsible for		
ne welfare checks on arrival?		
What measures were taken in relation to this consignment?		
/hat measures were taken to prevent a repeat of the incident? E.g.:		
lapting plans, planning fewer animals per load, shade during loading,		
ntilation during loading, loading at night, keeping vehicles moving until		
ey can be unloaded. Quick slaughter after arrival at slaughterhouse.		
ditional fans at the slaughterhouse, effective air conditioning in arrival hall.		
e you immediately informed of poor animal welfare?		

Information on Meteorological Conditions at the time of the Journey ⁷					
Record the weather conditions for the journey and the time of arrival:					
temperature, humidity, wind speed and wind chill;					
Were these conditions forecast?					
Temperature and humidity at slaughterhouse arrival (if animals remain in					
yard):					
Temperature and humidity in lairage					

Information	on the Journey
Transporter	
Transporter name:	
Authorisation number:	
Driver Name:	
Certificate of Competence number:	
Transport driving licence number:	
Vehicle Identification or Chassis/Numbers:	
Tractor Unit: Trailer Unit:	
Type of Vehicle*: Passively ventilated: unmodified? modified? Fan?	
With/without curtains?	
FCI route planning; weighing note	
Journey time, and possibly its route; tachograph information (later)	
Circumstances (stops/traffic jams?/delays)	
Slaughterhouse operator and (or) transport organiser	
Is there a slaughter plan, loading plan and extreme weather emergency plan,	
and have these been annlied?	

Ante-Mortem Screening by Competent Authority Staff
Where do you perform the checks (in the yard, upon entry or in the hall?
How long has the vehicle been there? Are containers still on the vehicle?)
How long do the unloaded containers remain in the arrival hall?
Do you have anything to say about the means of transport and the use of the
curtains?
As soon as the curtains are open: what do you observe about the animals
(dead animals visible? if so where in the load; do you see heat stress? if so in
which section of the animals? How is this revealed?)
Impression of load density?
Are the animals kept in adequate thermal conditions?
Is the waiting time so long or are the conditions in the hall so bad that this
increases suffering or causes death ?
Do you see dying animals?
Is there cooling and ventilation at the level of the containers? - Or do the
animals remain there only briefly (e.g. < $\frac{1}{2}$ hour) thereby keeping death at
the slaughterhouse to a minimum?

⁷ A thorough assessment of external environments throughout the journey should be obtained by liaison with the appropriate government meteorological office or weather station (local if possible).

SUPPORTING LEGAL TEXT FOR ENFORCEMENT REPORTS ANNEX 4A

The sections of text in italics below may be edited and copied as required into a report on findings and completed with the other factual information (see Annex 4) and supporting documentation (food chain information document, flock assessment, rejection certificate, etc.):

Legal Requirements for Transport: "No person shall transport animals or cause animals to be transported in a way likely to cause injury or undue suffering to them¹. Regulation (EC) no 1/2005, art 3, No animal shall be transported unless it is fit for the intended journey, and all animals shall be transported in conditions <u>guaranteed</u> not to cause them injury or unnecessary suffering", Annex I, 1.

"There was non-compliance with these articles because during my inspection:

at the slaughterhouse (name, date and time), there was found to be an increased rate of mortality $(...\%)^2$ or undue suffering $(>...\%)^3$ among the broilers (transported by means of transport ... registration number, from ... flock ID). The suffering and death are in my veterinary opinion due to the weather conditions (temperature > ... °C, humidity >... %). During the transportation of these broilers, the unfavourable weather conditions were not sufficiently taken into account, causing the animals unnecessary suffering and injury.

Because I ascertained that (for example): 'the load was not reduced/not reduced sufficiently to prevent heat stress; or the length of the journey was not kept to a minimum and the needs of the animals were not met during the journey; and/or the transport was not carried out without delay and the welfare of the animals was not properly maintained (various parts of Regulation (EC) no 1/2005 Article 3)".

Legal requirements at slaughterhouses:

the animals are provided with physical comfort and protection by being kept clean in adequate thermal conditions..., Regulation (EC) No 1099/2009Article 3(2)(a));

and/or the animals are unloaded as quickly as possible after arrival and subsequently slaughtered without undue delay (art 15(1), Annex III, 1.2); and/or

the welfare needs of the consignment of animals are systematically assessed by the animal welfare officer or.. upon arrival at the slaughterhouse in order to identify the priorities, in particular by determining which animals have specific welfare needs and the corresponding measures to be taken (art 15(1),Annex III, 1.1).

"There was non-compliance with the articles mentioned above because I saw that e.g. the animals were gasping for breath in their containers on the vehicle ..., but they were not immediately unloaded or provided with extra ventilation; the animals had to wait for ... hours at the slaughterhouse while it was warm and humid in the waiting area, and not every container was provided with extra ventilation). I saw ... containers out of range of the fan(s)".

¹ Infringement of the introductory wording to Article 3 of Regulation (EC) No 1/2005 (and Annex I, Chapter I, point 1). It is not always possible to specify which additional requirements of Article 3 have not been fulfilled, but it may be, for example, 3(a), 3(c) or 3(f), and this may be attributed to 'insufficient coordination' by the organiser (often the slaughterhouse) (see Article 5(3)(a)), or to the transporter (the slaughterhouse can also be the transporter, and the slaughterhouse operator can also be the organiser) (see Article 6(3)).

 $^{^2}$ > X % for broilers (average dead on arrival in 2013: X %) and for chickens (average dead on arrival in 2013: X %)

* = information from business operator/Competent Authority ** = Circle the applicable

This flock was chosen at random / this flock was sele	ected because there was evidence of injury**
Slaughterhouse health mark number nr*	
Slaughterdate	
Slaughterhouse Flock identification number*	
Number of the poultry house*	
Name of farm/farmer*	
Live weight of birds*	
Date & Time of Farm departure Date & Time of Slaughterhouse arrival	
Container / tray / box ** Condition of containers	
Number of animals/container or tray (planning):	
Catching: manual or machine* Catching Team name* Catching machine brand*	
Live animals mechanically unloaded and tilted?	yes/no**

Slaughterhouse line speed(s): Indicate which line, if more than one		
Catching injuries (1/2005/EC)	Broilers/hens/ducks/other species **	% of animals
Number of animals with bruises greater than 3 cm ¹ after 2 minute count. Start time:		
Number of animals with bruises greater than 3 cm after 2 minute count. Start time:		
Average after counting twice ² :		
egree and distribution of injuries Add crosses (+, ++, +++), below to indicate the extent and distribution of body injuries for the sample observed		and
Leg bruises		
Wing bruises		
Breast bruises		
Other extensive injuries		

Name of official:		Date
Authorisation Nr		
Organisation:		
Official Address:		
Copy to business operator yes/no**	These inspection results are used for	Official Stamp
	enforcement: yes/no**	

Nota bene: in selected flocks, for effective enforcement, the results of counting will have to be in line with the overall *post-mortem* inspection results and flock records should support the prevalence of the injuries detected above. More information will need to be gathered to demonstrate this. See over page.

¹ Bruises which are counted as catching injuries are dark red in colour and, as regards size, are large and diffuse and greater than 3 cm on the wings, legs or body. Note: only one major injury per animal is to be counted!

² In large flocks these counts should be repeated.

- Observations on flock in the means of transport: visibly injured animals and % DOA?
- Observations on flock in unloaded containers in the lairage.
- Observations after suspending live animals: high % animals with drooping wings and/or haemorrhages?
- Observations after stunning on the rail, and before and after plucking
- What was the *post-mortem* inspection result?
- Other: such as comments regarding the age of the injuries and additional information on the nature of the injuries.
- Are photographs available of the observations? Specify.

Annex 6



This photograph illustrates the difference between process damage on the left and catching/transport injuries.

Small bright red bruises are fresh (< 1 minute) and occur during stunning (stunned animals) or processing (for example plucking)

Dislocation: process damage

Dislocation: due to injury

Haemorrhages





Fracture Haemorrhage, with underlying breakage



An example of the appearance at the slaughter line. A clear example of an open fracture with bleeding.

Annex 7

Relevant Legal Basis for Animal Welfare during Transport of Poultry for Slaughter

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	<u>General</u>
	Article 3 of Regulation (EC) No 882/2004
	General obligations with regard to the organisation of official controls
1.	1. Member States shall ensure that official controls are carried out regularly, on a risk basis and with appropriate frequency, so as to achieve the objectives of this Regulation taking account of:
	(a) identified risks associated with animals, feed or food, feed or food businesses, the use of feed or food or any process, material, substance, activity or operation that may influence feed or food safety, animal health or animal welfare;
2.	(b) feed or food business operators' past record as regards compliance with feed or food law or with animal health and animal welfare rules;
3.	(c) the reliability of any own checks that have already been carried out;
4.	and
	(d) any information that might indicate non-compliance.
5.	2. Official controls shall be carried out without prior warning, except in cases such as audits where prior notification of the feed or food business operator is necessary. Official controls may also be carried out on an ad hoc basis.
6.	3. Official controls shall be carried out at any of the stages of production, processing and distribution of feed or food and of animals and animal products. They shall include controls on feed and food businesses, on the use of feed and food, on the storage of feed and food, on any process, material, substance, activity or operation including transport applied to feed or food and on live animals , required to achieve the objectives of this Regulation.
7.	4. Official controls shall be applied, with the same care, to exports outside the Community, to the placing on the market within the Community and to introductions from third countries into the territories referred to in Annex I.
8.	5. Member States shall take all necessary measures to ensure that products intended for dispatch to another Member State are controlled with the same care as those intended to be placed on the market in their own territory.
9.	6. The competent authority of the Member State of destination may check compliance of feed and food with feed and food law by means of non-discriminatory checks. To the extent

	strictly passes for the organisation of the official controls. Momber States may ask
	strictly necessary for the organisation of the official controls, Member States may ask
	operators who have goods delivered to them from another Member State to report the
	arrival of such goods.
10	7. If, during a check carried out at the place of destination or during storage or transport, a
	Member State establishes non-compliance, it shall take the appropriate measures, which
	may include re-dispatch to the Member State of origin
	may molade re dispaten to the member state of ongin.
	Article 3 of Regulation (EC) No. 1/2005
	Article 5 of Regulation (LC) NO 1/2005
	General conditions for the transport of animals
11	No person shall transport animals or cause animals to be transported in a way likely to cause
ΤT	injuny or undue suffering to them
	injury of undue suffering to them.
	In addition, the following conditions shall be complied with:
	in addition, the following conditions shall be complied with.
10	(a) all necessary arrangements have been made in advance to minimise the length of the
17	(a) an necessary analycements have been made in advance to minimise the length of the
	journey and meet animals needs during the journey;
4.2	(b) the animals are fit for the journey:
13	(b) the animals are lit for the journey,
14	(c) the means of transport are designed, constructed, maintained and operated so as to
	avoid injury and suffering and ensure the safety of the animals;
15	(d) the loading and unloading facilities are adequately designed, constructed, maintained and
10	operated so as to avoid injury and suffering and ensure the safety of the animals;
16	(e) the personnel handling animals are trained or competent as appropriate for this purpose
10	and carry out their tasks without using violence or any method likely to cause unnecessary
	fear injury or suffering
17	(f) the transport is carried out without delay to the place of destination and the welfare
1/	conditions of the animals are regularly checked and appropriately maintained:
	conditions of the animals are regularly enceded and appropriately maintained,
10	(g) sufficient floor area and height is provided for the animals, appropriate to their size and
19	the intended journey:
	the intended journey,
10	(b) water feed and rest are offered to the animals at suitable intervals and are appropriate in
19	(ii) water, reed and rest are oriered to the animals at suitable intervals and are appropriate in
	quality and quantity to their species and size.
	Training
	n uning.
20	Recital 14 of Regulation (EC) No 1/2005
20	
	Poor welfare is often due to lack of education. Therefore, training should be a prerequisite
	for any person handing animals during transport and training should be provided only by
	for any person handing animals during transport and training should be provided only by

	organisations approved by the competent authorities.
	Article 6 of Regulation (EC) No 1/2005
	Transporters
21	3. Transporters shall transport animals in accordance with the technical rules set out in Annex I.
22	4. Transporters shall entrust the handling of the animals to personnel who have received training on the relevant provisions of Annexes I and II.
23	5. No person shall drive, or act as an attendant on a road vehicle transporting domestic Equidae or domestic animals of bovine, ovine, caprine or porcine species or poultry unless he holds a certificate of competence pursuant to Article 17(2). The certificate of competence shall be made available to the competent authority when the animals are transported.
	ANNEX IV of Regulation (EC) No 1/2005
24	1. Road drivers and attendants as referred to in Article 6(5) and Article 17(1) shall have successfully completed the training as provided for in paragraph 2 and have passed an examination approved by the competent authority, which shall ensure that examiners are independent.
25	2. The training courses referred to in paragraph 1 shall include at least the technical and administrative aspects of Community legislation concerning the protection of animals during transport and in particular the following items:
26	(a) Articles 3 and 4 and Annexes I and II;(b) animal physiology and in particular drinking and feeding needs, animal behaviour and the concept of stress;
27	(c) practical aspects of handling of animals;
28	(d) impact of driving behaviour on the welfare of the transported animals and on the quality of meat;
29	(e) emergency care for animals;
30	(f) safety considerations for personnel handling animals.
	Article 4 of Council Directive 2007/43/EC
	Training and guidance for persons dealing with chickens
31	1. Member States shall ensure that keepers who are natural persons have received sufficient training in their tasks and that appropriate training courses are available.

32	2. The training courses referred to in paragraph 1 shall focus on welfare aspects and cover in
_	particular the matters listed in Annex IV.
	C. The summer or because shall arguide instructions and suideness on the valuant original
33	6. The owner or keeper shall provide instructions and guidance on the relevant animal
	welfare requirements, including those concerning the methods of culling practised in
	holdings, to persons employed or engaged by them to attend to chickens or to catch and
	load them.
	ANNEX IV of Council Directive 2007/42/EC
	ANNEX IV OF COUNCIL DIrective 2007/45/EC
	TRAINING
34	The training courses referred to in Article 4(2) shall at least cover Community legislation
0.	concerning the protection of chickens and in particular the following matters:
	(a) Annexes I and II;
25	(b) physiology, in particular drinking and feeding needs, animal behaviour and the concept of
50	stress.
36	(c) the practical aspects of the careful handling of chickens, and catching, loading and
	transport;
37	(d) emergency care for chickens, emergency killing and culling;
	ON THE FADM
	UN THE FARM
	Article 8 of Regulation (EC) No 1/2005
	<u>Keepers</u>
20	1. Keepers of animals at the place of departure transfer or destination shall ensure that the
38	technical rules set out in Chapters I and III, section 1, of Annex I in respect of the animals
	being transported are met.
39	2. Keepers shall check all animals arriving at a place of transit or a place of destination and
	determine if the animals are or have been subject to a long journey between Member States
	and with third countries. []
	ANNEX L of Council Directive 2007/13/EC
	ANNULATOR COUNCIL DIRECTIVE 2007/43/LC
	In addition to the relevant provisions of other relevant Community legislation, the following
	requirements shall apply:
	Feeding

40	2. Feed shall be either continuously available or be meal fed and must not be withdrawn from chickens more than 12 hours before the expected slaughter time.
	Ventilation and heating
41	4. Ventilation shall be sufficient to avoid overheating and, where necessary, in combination with heating systems to remove excessive moisture.
	Transport Planning
	Article 5 of Regulation (EC) No 1/2005
	Planning obligations for the transport of animals
42	1. No person shall contract or subcontract the transport of animals except to transporters authorised in accordance with Article 10(1) or Article 11(1).
43	2. Transporters shall identify a natural person responsible for the transport and ensure that information on the planning, execution and completion of the part of the journey under their control can be obtained at any time.
44	3. Organisers shall ensure that for each journey:
	(a) the welfare of the animals is not compromised by insufficient coordination of the different parts of the journey; and the weather conditions are taken into account; and
45	(b) a natural person is responsible for providing information on the planning, execution and completion of the journey to the competent authority at any time.
	Fitness for transport
	Annex I, chapter I of Regulation (EC) No 1/2005
46	1. 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.
47	2. Animals that are injured or that present physiological weaknesses or pathological processes shall not be considered fit for transport and in particular if:
	(a) they are unable to move independently without pain or to walk unassisted;
	(b) they present a severe open wound, or prolapse;
48	3. However, sick or injured animals may be considered fit for transport if they are:
	(a) slightly injured or ill and transport would not cause additional suffering; in cases of doubt, veterinary advice shall be sought;
	Provisions for all means of transport

	Annex I, Chapter II of Regulation (EC) No 1/2005
49	1.1. Means of transport, containers and their fittings shall be designed, constructed, maintained and operated so as to:
	(a) avoid injury and suffering and to ensure the safety of the animals;
50	(b) protect the animals from inclement weather, extreme temperatures and adverse changes in climatic conditions;
51	(d) prevent the animals escaping or falling out and be able to withstand the stresses of movements;
52	(e) ensure that air quality and quantity appropriate to the species transported can be maintained;
53	(f) provide access to the animals to allow them to be inspected and cared for;
54	(g) present a flooring surface that is anti-slip;
55	(h) present a flooring surface that minimises the leakage of urine or faeces;
56	(i) provide a means of lighting sufficient for inspection and care of the animals during transport.
57	1.2. Sufficient space shall be provided inside the animals' compartment and at each of its levels to ensure that there is adequate ventilation above the animals when they are in a naturally standing position ^{1,2} without on any account hindering their natural movement.
	TRANSPORT PRACTICES
	Annex I, Chapter III of Regulation (EC) No 1/2005
	1. Loading, unloading and handling
	Facilities and procedures

¹ To note also that: Art. 6 point 2 of the European Convention for the protection of animals during international transports states: *each animal should be able to assume its natural standing position for transport however these conditions will normally not apply to poultry except for day-old chicks*

² To note also: "The welfare of animals during transport" Scientific Report of the Scientific Panel on Animal Health and Welfare on a request from the Commission related to the welfare of animals during transport (Question N° EFSA-Q-2003-094) Adopted on 30th March 2004" http://www.efsa.europa.eu/sites/default/files/scientific output/files/main_documents/44.pdf

58	1.3. Facilities for loading and unloading, including the flooring, shall be designed, constructed, maintained and operated so as to:		
	(a) prevent injury and suffering and minimise excitement and distress during animal movements as well as to ensure the safety of the animals. In particular, surfaces shall not be slippery and lateral protections shall be provided so as to prevent animals from escaping;		
59	1.6. Appropriate lighting shall be provided during loading and unloading.		
60	1.7. When containers loaded with animals are placed one on top of the other on the means of transport, the necessary precautions shall be taken:		
	(a) to avoid, or in the case of poultry, rabbits and fur animals, to limit urine and faeces falling on the animals placed underneath;		
	(b) to ensure stability of the containers;		
	(c) to ensure that ventilation is not impeded.		
	2. During transport		
61	2.1. Space allowances shall at least comply with the figures laid down, in respect of the animals and the means of transport referred to, in Chapter VII.		
62	2.6. Sufficient ventilation shall be provided to ensure that the needs of the animals are fully met taking into account in particular the number and type of the animals to be transported and the expected weather conditions during the journey. Containers shall be stored in a way which does not impede their ventilation.		
63	2.7. During transport, animals shall be offered water, feed and the opportunity to rest as appropriate to their species and age, at suitable intervals and in particular as referred to in Chapter V. If not otherwise specified, Mammals and Birds shall be fed at least every 24 hours and watered at least every 12 hours. The water and feed shall be of good quality and presented to the animals in a way which minimises contamination.		
	Annex I, Chapter VII of Regulation (EC) No 1/2005		
	Space Allowances E. Poultry		
64	Densities applicable to the transport of poultry in containers Minimum floor areas shall be provided as follows:		
	Category	Area in cm2	
	Day-old chicks	21 — 25 per chick	

-		
	Poultry other than day-old chicks: weight in kg	Area in cm2 per kg
	< 1,6	180 — 200
	1,6 to < 3	160
	3 to < 5	115
	> 5	105
	These figures may vary depending not only or	the weight and size of the hirds but also on
	their physical condition, the meteorological con	nditions and the likely journey time.
	COUNCIL OF EUROPE RECOMMENDATION NO TO MEMBER STATES ON THE TRANSPORT OF	. R (90) 6 OF THE COMMITTEE OF MINISTERS POULTRY III.1.1., III.1, Chapter III
65	Construction and design. The openings of cor projections so as to reduce the risk of the bir Receptacles, vehicles, fittings, etc. must be st designed so as to prevent the birds escaping o legs or wings. On the other hand, containers allow adequate ventilation and air space for th	ntainers must be sufficiently large and free of ds being injured when they are placed inside. rong enough to contain the birds' weight and r falling out, and to avoid protrusion of heads, shall permit inspection of the birds and must e birds inside.
66	Containers shall be marked with a statement or symbol indicating the presence of live birds and a sign indicating the correct upright position.	
67	⁷ Containers must be maintained in a good state of repair at all times and any sharp edges or protrusions with which the birds may come into contact must be adequately padded or removed entirely.	
68	The following indicative figures are considered to be satisfactory for the height inside the transport container:	
	Category	Cm
	Day-old chicks	10
	Poultry approx. 1 kg	20 to 23
	Poultry 1 kg to 4 kg	24 to 33
	Poultry more than 4 kg	34 and more
	COUNCIL OF EUROPE RECOMMENDATION NO TO MEMBER STATES ON THE TRANSPORT OF	. R (90) 6 OF THE COMMITTEE OF MINISTERS POULTRY III.1.5., III.1, Chapter III
69	Ventilation. The air circulation in transport unit	s should be such as:
0.5	- to provide enough oxygen for the birds,	
	- to remove smell and gases, and	
	- to control temperature and humidity.	
70	Adequate ventilation/fresh air supply shall be p the birds being carried and the climatic condition	provided, considering the number and size of ons expected for the journey.

71	The supply of fresh air must be checked regularly and adjusted when necessary, but the birds shall not be placed in excessive draughts. It should be borne in mind that insufficient spacing can prevent the loss of heat produced by the birds and interfere with the circulation of air between containers and boxes. Stacking and placing of containers must be done in a way which guarantees good ventilation of the whole load as well as of every individual container or box.
72	For day-old chicks this can be achieved by keeping a distance of at least 5 cm between the sides of the boxes and other boxes or one of the side walls of the vehicle. Between the box at the bottom of the stack and the loading floor a distance of at least 3 cm is advised. Between the top box and the roof of the vehicle a distance of at least 17 cm is advised. The side walls and the top of the boxes must contain ventilation holes of about 1 cm ² . The boxes may be subdivided into compartments and should be so constructed that they can be stacked in a way that allows a good air exchange between the box and its surroundings.
	COUNCIL OF EUROPE RECOMMENDATION No. R (90) 6 OF THE COMMITTEE OF MINISTERS TO MEMBER STATES ON THE TRANSPORT OF POULTRY III.1.6., III.1, Chapter III
73	Temperature. When poultry are to be transported in very hot or cold conditions, care should be taken to avoid exposing the birds to extreme temperatures; special consideration should be given to the construction of the transport unit, its mechanism for ventilation and for regulating the temperature, the speed of travel, the number of stops to be made en route as well as the number and age of the birds being carried.
74	In hot temperatures it is recommended to keep the centre row on the vehicle clear.
75	Within the transport unit the temperature for day-old chicks may not drop below 16°C and may not rise above 24°C. The temperature within the boxes may not exceed 37°C. Temperature regulation within the transport unit should at all times be possible for the person in charge or the driver. For this purpose, a temperature detecting system is necessary.
	COUNCIL OF EUROPE RECOMMENDATION No. R (90) 6 OF THE COMMITTEE OF MINISTERS TO MEMBER STATES ON THE TRANSPORT OF POULTRY IV.1.1, IV.1, Chapter IV Unloading
76	Care. On arrival at their destination, poultry should be unloaded from their transport containers as soon as possible. Where early unloading is not possible, a vehicle carrying poultry should be parked so as to protect the birds from extremes of weather whilst ensuring adequate ventilation. Such ventilation could also be provided by driving the vehicle around.
77	Containers shall be unloaded horizontally, preferably by mechanical means, and always with care. Birds shall be removed from them individually, with care being taken to prevent injuries such as broken legs and wings. Birds which escape shall be caught immediately.
78	Birds for slaughter should be slaughtered as soon as possible; such birds, when they are visibly ill or injured, shall be killed immediately.

79	Birds which are not to be slaughtered on arrival should be examined closely at unloading and veterinary assistance obtained if necessary; the birds should be offered food and water as soon as possible. After prolonged periods of transport the health of these birds should be		
	monitored for four or five days.		
80	If at the destination a new diet is given, a gradual changeover is recommended.		
	COUNCIL OF EUROPE RECOMMENDATION No. R (90) 6 OF THE COMMITTEE OF MINISTERS		
	TO MEMBER STATES ON THE TRANSPORT OF POULTRY, IV.2, Chapter IV Facilities		
81	Facilities for adequate unloading should be at hand. It is preferable to unload containers		
	from vehicles by mechanical means instead of human labour. Mechanical ventilation should		
	be at hand for waiting periods in hot weather.		
82	Care. For birds which are not to be slaughtered, suitable facilities should be provided on		
	arrival for rest and recovery as well as for feeding and watering.		
	Article 22 of Regulation (EC) No 1/2005		
	Delay during transport		
	Delay during transport		
83	1. The competent authority shall take the necessary measures to prevent or reduce to a minimum any delay during transport or suffering by animals when unforeseeable		
	circumstances impede the application of this Regulation. The competent authority shall		
	ensure that special arrangements are made at the place of transfers, exit points and border		
	inspection posts to give priority to the transport of animals.		
84	2. No consignment of animals shall be detained during transport unless it is strictly necessary		
	for the welfare of the animals or reasons of public safety. No undue delay shall occur		
	between the completion of the loading and departure. If any consignment of animals has to		
	that appropriate arrangements are made for the care of the animals and, where necessary,		
	their feeding, watering, unloading and accommodation.		
	Annex L. Chapter V of Regulation (FC) No 1/2005		
	Watering and Feeding Intervals, journey times and resting periods		
85	2.1. For poultry, domestic birds and domestic rabbits, suitable food and water shall be		
	available in adequate quantities, save in the case of a journey lasting less than:		
	(a) 12 hours disregarding loading and unloading time; or		
	(b) 24 hours for chicks of all species, provided that it is completed within 72 hours after		
	hatching.		

	IN THE SLAUGHTERHOUSE		
	Annex II, Section II, paragraph 2.f of Regulation (EC) No 853/2004		
	Objectives of HACCP based procedures		
86	SECTION II: 1. Food business operators operating slaughterhouses must ensure that the procedures that they have put in place in accordance with the general requirements of Article 5 of Regulation (EC) No 852/2004 meet the requirements that the hazard analysis shows to be necessary and the specific requirements listed in point 2. The procedures must guarantee that each animal or, where appropriate, each lot of animals accepted onto the slaughterhouse premises: (f) is in a satisfactory state as regards welfare on arrival at the slaughterhouse		
87	Annex III, Section I, Chapter I, 1.of Regulation (EC) No 853/2004 Food business operators transporting live animals to slaughterhouses must ensure that during collection and transport, animals are handled carefully without causing unnecessary distress.		
88	 Article 4 of Regulation (EC) No 854/2004 FBO Assistance to Competent Authorities General principles for official controls in respect of all products of animal origin falling within the scope of this Regulation 1. Member States shall ensure that food business operators offer all assistance needed to ensure that official controls carried out by the competent authority can be performed effectively They shall in particular: give access to all buildings, premises, installations or other infrastructures; make available any documentation and record required under the present regulation or considered necessary by the competent authority for judging the situation. 		
89	Competent Authority official controls 2. The competent authority shall carry out official controls to verify food business operators' compliance with the requirements of: (a) Regulation (EC) No 852/2004; (b) Regulation (EC) No 853/2004;		
90	Annex I of Regulation 854/2004 <u>Chapter II 'Inspection Tasks', C:</u> The official veterinarian is to verify compliance with relevant Community and national rules on animal welfare, such as rules concerning the protection of animals at the time of		

	slaughter and during transport."	
91	CHAPTER IV: DECISIONS CONCERNING ANIMAL WELFARE	
	3. Where appropriate, the official veterinarian is to inform other competent authorities of welfare problems.	
92	4. When the official veterinarian discovers that rules concerning the protection of animals during transport are not being respected, he or she is to take necessary measures in accordance with the relevant Community legislation.	
93	Council Directive 93/119/EC on the protection of animals at the time of slaughter or killing	
	Requirements for the movement and lairaging of animals in slaughterhouses 1. Every slaughterhouse coming into operation after 30 June 1994 must have suitable equipment and facilities available for the purpose of unloading animals from means of transport, and all existing slaughterhouses must comply with these requirements by 1 January 1996.	
94	7. In addition to complying with requirements already laid down in Community rules, lairages must have:	
	 adequate ventilation, taking into account the extremes of temperature and humidity which may be expected. Where mechanical means of ventilation are required, provision must be made for emergency back-up facilities in the event of breakdown, 	
95	 artificial lighting at a level sufficient to permit inspection of all animals at any time; if necessary, adequate back-up lighting must be available, 	
	Article 14 of Regulation (EC) No 1099/2009	
	Layout, construction and equipment of slaughterhouses	
96	1. Business operators shall ensure that the layout and construction of slaughterhouses and the equipment used therein comply with the rules set out in Annex II (for new slaughterhouses after 1/1/2013 and for all slaughterhouses by 1/1/2019).	
97	2. For the purposes of this Regulation, business operators shall, when requested, submit to the competent authority referred to in Article 4 of Regulation (EC) No 853/2004 for each slaughterhouse at least the following:	
	(c) the maximum capacity for each lairage area.	
	The competent authority shall assess the information submitted by the operator in accordance with the first subparagraph when approving the slaughterhouse.	
	Annex II of Regulation (EC) No 1099/2009	
	LAYOUT, CONSTRUCTION AND EQUIPMENT OF SLAUGHTERHOUSES (as referred to in Article 14)	

98	1.1. Ventilation systems shall be designed, constructed and maintained so that the welfare of the animals is constantly ensured, taking into account the expected range of weather conditions.		
99	1.2. Where mechanical means of ventilation are required, provision shall be made for an alarm and emergency backup facilities in the event of breakdown.		
100	1.3. Lairage facilities shall be designed and constructed so as to minimise the risk of injuries to the animals and the occurrence of sudden noises.		
101	1.4. Lairage facilities shall be designed and constructed so as to facilitate the inspection of the animals. Adequate fixed or portable lighting shall be provided to enable the inspection of animals at any time.		
	Annex III of Regulation (EC) No 1099/2009		
	Operational Rules for Slaughterhouses		
	(as referred to in Article 15)		
102	1.1. The welfare conditions of each consignment of animals shall be systematically assessed by the animal welfare officer or a person reporting directly to the animal welfare officer upon arrival in order to identify the priorities in particular by determining which animals		
	have specific welfare needs and the corresponding measures to be taken		
103	1.2. Animals shall be unloaded as quickly as possible after arrival and subsequently		
105	slaughtered without undue delay.		
	Animals which have not been slaughtered within 12 hours of their arrival shall be fed, and		
	subsequently given moderate amounts of food at appropriate intervals. In such cases, the		
	guarantees a level of comfort appropriate to the species and the number of animals		
	concerned. This material shall guarantee an efficient drainage or ensure adequate absorption		
	of urine and faeces.		
104	1.3. Containers in which animals are transported shall be kept in good order, handled with care, in particular if they have a perforated or flexible bottom, and:		
	(a) shall not be thrown, dropped, or knocked over;		
	(b) where possible, shall be loaded and unloaded horizontally and mechanically; Whenever possible animals shall be unloaded individually.		
105	1.4. When containers are put one on top of the other, the necessary precautions shall be		
	taken: (a) to limit urine and faeces falling on the animals placed underneath;		
	(b) to ensure stability of the containers;		
	(c) to ensure that ventilation is not impeded.		
	Article 3 of Council Directive 2007/43/EC		
	Requirements for the keeping of chickens		
106	1. The Member States shall ensure that:		
	(b) the required inspections and the monitoring and follow-up, including those provided for		
	in Annex III, are carried out by the competent authority or the official veterinarian.		
	ANNEX III of Council Directive 2007/43/EC		
	Monitoring and follow up at the slaughterhouse (as referred to in Article 3(1))		

107	1. <i>Mortality</i> 1.2. Under the supervision of the official veterinarian these data as well as the number of broilers dead on arrival shall be recorded, indicating the holding and the house of the holding. The plausibility of the data and of the cumulative daily mortality rate shall be checked taking into account the number of broilers slaughtered and the number of broilers dead on arrival at the slaughterhouse.
108	2. Post-mortem inspection In the context of the controls performed under the Regulation (EC) No 854/2004, the official veterinarian shall evaluate the results of the post-mortem inspection to identify other
	possible indications of poor welfare conditions such as abnormal levels of contact dermatitis, parasitism and systemic illness in the holding or the unit of the house of the holding of origin.
109	3. Communication of results If the mortality rate as referred to in paragraph 1 or the results of the post-mortem inspection as referred to in paragraph 2 are consistent with poor animal welfare conditions, the official veterinarian shall communicate the data to the owner or keeper of the animals and to the competent authority. Appropriate actions shall be taken by the owner or the keeper of the animals and by the competent authority.

A guide to sampling for thermal stress on Poultry Vehicles Annex 8

This document has been drafted to assist official veterinarians and others in carrying out official controls. It indicates the potentially problematic areas on vehicles transporting poultry for slaughter and encourages proactive monitoring. It should be read in conjunction with the document *Ventilation in the Transport of Poultry to Slaughter* (Annex 9) which gives reasons for the air flows encountered in common vehicle designs. The diagrams below are *indicative* of the potential zones of thermal stress generated in moving poultry vehicles. This information can discussed with Business Operators and used to prioritise the locations for *ante-mortem* inspections on vehicles during transport and at arrival in slaughterhouses in order to gain a baseline of the thermal conditions under which poultry are transported. Targeted risk based controls, if necessary, could be instigated to improve animal welfare, decrease transport losses, and improve meat quality.

Airflow and Thermal risk zones for passively ventilated single vehicles and road trains in motion

The most basic design where the vehicle operates without curtains in warmer weather and with (usually) nonpermeable curtains in colder weather. Road Train is the name given to the combination of a fixed vehicle towing a trailer or a number of trailers.

When in motion, air tends to move from the back to the front of the vehicle. At standstill (e.g. loading, delays during transport, delays at unloading, etc.) heat and moisture will tend to accumulate in the entire load and problems in any of the hotspots illustrated below may be exacerbated depending on the duration of the standstill. In completely open vehicles in motion the entry and exit of air over the entire surface will make internal ventilation complex but the general principles described will apply.



This area may become a cold zone in winter if insufficient or inappropriate curtaining is applied

Problems associated with the general principles indicated above may be amplified by thermal extremes or other factors. These can be meteorological conditions themselves or by inappropriate business operator/driver responses or lack of response to the meteorological conditions. Or, the general principles indicated above may be diminished by vehicle designs (using modified passively ventilated vehicles or fan assisted vehicles) and/or appropriate business operator responses.

For example: on warm humid days the heat and moisture load imposed in the thermal core of a poultry vehicle or trailer will be greater than on an average or cool day. Using curtains under these conditions would most likely exacerbate the problem. Under cold conditions, the judicious use of curtains* would be merited in order to prevent the birds freezing at the rear of the vehicle. But, one would also have to consider the possibility of overheating the birds in the zone where they could become potentially very warm at the front and top of vehicles.

* If curtains are modified with perforated mesh, air inlets / outlets can be anticipated through the curtains.

Airflow and Thermal risk zones for modified passively ventilated single vehicles and road trains in motion

A modified vehicle design where the vehicle operates without curtains in hot weather and with either nonpermeable or air (but not water) permeable curtains, or solid (detachable) sides with apertures in colder weather.

Vehicles modified in this way have defined inlets and outlets to enhance the flow of air entering and exiting the vehicle (when the load is enclosed by curtains) following established natural air pressure gradients.



If curtains are modified with perforated mesh, air outlet can be anticipated through the curtains too.

Airflow and Thermal risk zones for fan ventilated single vehicles and road trains in motion

The general principles for the thermal risk zones are similar in all the vehicle types. However, air circulation and ventilation rate may be better controlled in fan ventilated vehicles. Mechanical ventilation systems are more efficient if designed to exploit motion induced pressure gradients but removal of heat and moisture may be improved by mechanical ventilation whether air extraction or forced air entry is employed. The general rule would be that the risk of heat stress will be greatest close to the final air exit points and of cold stress close to air entry points in all types of vehicle.

Ventilation in the Transport of Poultry to Slaughter Annex 9

Ventilation within poultry transport vehicles is extremely important to remove the heat and moisture produced by animals during transport. A broiler bird of 2kg produces approximately 10-15W so common commercial vehicle payloads of 6500 birds will be producing in the region of 65-98 KW of heat.

Vehicle designs and Airflow

Most vehicles used for the transportation of poultry are passively ventilated. Dependent upon geographical location and weather conditions these vehicles may run "open" or may be fitted with side curtains to protect the birds. In some areas of Europe solid sided or closed vehicles with mechanical ventilation may be employed

Passively ventilated vehicles

For all vehicle types the basic physical principles governing air flow around and through the vehicle are similar. Air flow over the surface of the vehicle results in a pressure gradient in which there is lower pressure towards the front sides of the vehicle than at the rear sides and tail. There may be higher pressure on the front (forward face or headboard). The net effect is that in a passively ventilated configuration air movement will tend to involve entry of air towards the rear, forward movement of air towards the front of the vehicle and exit of air at the front sides of the structure. It is important to stress that for all passively ventilated vehicles when the vehicle is stationary there is no driving force for ventilation other than buoyancy or free convection or external factors e.g. cross winds.

Non-curtained (open)

In fully open vehicles the principles above will apply but the flow is more difficult to predict or quantify as there are many routes through which air can enter and leave the load despite the pressure profile. Factors such as vehicle speed and the effects of wind (speed and direction) will influence volume of air flow in the load and its distribution. Because external factors cannot be controlled there is little opportunity to control movement of air or regulate ventilation within non-curtained (open) passively ventilated vehicles.

Curtained (closed)

Curtain sided vehicles may be operated in curtains open or closed configurations depending upon the external conditions. Curtains may be open (or removed from the vehicle) in warm or summer conditions and may be closed in cooler or winter conditions or when rain or snow might penetrate the load. For curtains open configuration see above. When curtains are closed then the pressure field around the vehicle drives the passive ventilation as described above i.e. air will tend to enter towards the rear of the vehicle and exit towards the front side of the load. The presence of the curtains prohibits air entry and exit along the sides of the vehicle and the route for air flow will be determined by the location of any openings in the structure (e.g. gaps under or around the curtains and the rear tailboard if this has openings). This results in a heterogeneous distribution of thermal conditions within the load. These principles apply also to vehicles upon which transport containers may be individually sheeted or curtained. In this latter situation there are more apertures or openings for air exchange between load and exterior but air flow will be governed by the pressure profile. The air flow distribution in the load may be more complex

than in the presence of a single curtain on each side of the vehicle but similar problems may be encountered.

Improved ventilation strategies:

1. Modified passively ventilated vehicles

Vehicles and curtains may be modified in order to exploit the pressure driven passive ventilation on moving vehicles and the load to maximise the efficiency of the ventilation regime for removal of heat and moisture. A modified design can better define and optimise air inlets and outlets whilst also taking advantage of the protection of the load by the presence of curtains. As above, if modified vehicles operate either without curtains or with curtains open then they constitute open vehicles.

Two specific types of modification may be employed. The structure and permeability of curtains may be altered and/or the trailer structure may be modified to enhance the efficiency of air entry or exit driven by the pressure profiles.

Thus, replacing solid curtains with curtains containing permeable sections will facilitate air movement. The use of permeable mesh sections allows air exchange but will exclude or limit water ingress. Permeable curtains may be used on the sides of the vehicle and/or at the rear. Various designs and configurations are in current commercial use e.g. lateral permeable strip sections running the full length of the vehicle.

Ventilation may be further modified by optimisation of air extraction towards the front of passively ventilated vehicles by the creation of an "effective plenum chamber" behind the front headboard. The sides of this plenum are left open and correspond to the position of the low pressure region on the moving vehicle. Enhanced and preferential air extraction takes place through this defined outlet. The coupled use of this strategy with perforated or permeable curtains greatly improves and controls the passive ventilation of the load.

A number of vehicle or trailer designs using these approaches are currently in commercial use.

Some vehicles in colder countries may have solid sides with defined inlet and outlet apertures which may function in a similar manner to modified curtained vehicles but give more thermal protection during cold weather.

2. Mechanically (fan) ventilated vehicles

A modified vehicle design where the movement of air into, within, and out of the vehicle container is controlled by a combination of suitably positioned mechanical fans of sufficient capacity, and natural apertures which should enhance established natural air pressure gradients. Optimum design exploits the pressure profiles described above in terms of controlled and defined air inlets and outlets but practical design constraints and operational issues may influence the final positions of extraction fans and permeable air inlets. A major advantage of mechanical ventilation is that air flow may be adjusted in response to external conditions, number of birds transported and their physiological requirements. These vehicles have the major advantage that the ventilation is not dependent upon vehicle movement.

3. Controlled environment vehicles

Controlled environment vehicles are not common in the EU for the transport of poultry for slaughter. Controlled environment or air conditioned vehicles or trailers can regulate or modify internal thermal conditions by appropriate heating or cooling. These are typically used for the transport of day old chicks. They have the major advantage that the internal environment may be controlled precisely regardless of external weather or thermal conditions and does not rely upon vehicle movement. Clearly the cost of such vehicles and their running and maintenance will exceed that of vehicles that rely upon passive or mechanical ventilation to control the internal conditions.

How does air flow when these vehicles are stationary?

For all of these vehicles, with the exception of controlled environment vehicles, and fan ventilated vehicles, the flow of air through the load is minimal when stationary. For all passively ventilated vehicles when the vehicle is stationary there is no driving force for ventilation other than buoyancy or free convection or external factors e.g. cross winds. The buoyancy and free convection regimes will tend to create a thermal gradient within the load with the upper locations being warmer than those below. In more open configurations cross winds may provide some beneficial effects. The problems when stationary will be exacerbated in vehicles operating with tightly fastened curtains with minimal gaps for air to enter, exit and circulate within the load.

It is essential to:

- limit, where possible, through careful planning, the chances of journey standstills caused by traffic or other disturbances
- have contingency measures in place to provide emergency natural ventilation when vehicles are stationary e.g. opening curtains and apertures where possible
- avoid parking in direct sunlight for prolonged periods in hot weather
- if practical, park passively ventilated vehicles at right angles to the wind direction, with sufficient apertures open, to optimise air movement through the container
- ensure the requirement of Regulation 853/2004 regarding the provision of covered lairage facilities are in place
- ensure the requirements for adequate ventilation (pre-existing under Directive 93/119/EC) are complied with
- make effective use of assisted ventilation/truck bays
- be aware that modern breeds of poultry do not return to normal body temperature immediately after the initial causes of thermal stress have been addressed and will still require high management inputs to prevent further discomfort and suffering

Legal responsibilities¹ during transport

Loading	Fitness: keeper / transporter/driver ²	Art. 8(1) (Annex I Chapter I)
		/Art. 3 (b)
	Handling: keeper / transporter/ catching company ³	Art. 8(1) (Annex I Chapter I +III, part 1) + Dir 2007/43 Art. 4(6)
		/ Art. 3 (e)
		Art 6 (3), Annex I (transporter)
	Loading equipment + cages and truck conditions: transporter	Art 6 (3) (transporter)
		Annex I, Chapter II
		Art. 3 (c), (d)
Journey	Transporter authorised + good planning and coordination of different parts of journey and weather conditions + natural person available to Comp. Authority at any time: organiser ⁴	Art. 5(1) + (3)(a) + (3)(b)
	Accompanying documents + transport practices (and for as long as animals <u>are</u> in the means of transport) + qualified staff: transporter	Art. 4 + Art 6 (3) + (4)
Unloading	Promptly + Assess welfare on arrival + adequate handling/equip.: slaughterhouse business operator	Regulation (EC) No. 1099/2009 Art6 (1), Annex III: (1.2) + (1.1) + (1.3)(b)
		Art. 8(1) (Annex I chapter III, part 1) Reg 1/2005
		Regulation (EC) No. 853/2004 Annex II, Section II,; under 1, 2f and 3 (Specific HACCP procedure "welfare at arrival")
Lairage	Business operator (Slaughterhouse)	Regulation (EC) No. 1099/2009 however, some aspects of Regulation (EC) No 1/2005 remain in force until all poultry are unloaded ⁵ from their crates

¹ Articles quoted refer always to Regulation (EC) No 1/2005 except when/if another is indicated.

4 Organiser in poultry transport is very often the business operator/slaughterhouse (rather than a separate transporter/organiser)

² Both transporter and/ or driver is accountable in the case of infringements, depending on the issue

³ Depending upon the infringement, enforcement of the legislation regarding the responsibilities of the catching crew may be possible.

⁵ Regulation 1/2005 is not completely clear about "unloading". Most poultry are first unloaded from the vehicle and after lairaging unloaded from their crates. In some countries transport is defined as ending after unloading the animals from their crates (art 2, w Regulation 1/2005). However, dependent upon the system in place) in the vast majority of situations it will be the slaughterhouse which is in practice responsible for carrying out the transfer of crates/modules from the vehicles to the lairage and then the subsequent unloading of birds to the slaughter line or transferring crates direct to the slaughter line in systems with mechanical unloading.