COMMENTS ON THE PROPOSED AMENDMENTS TO THE HEALTH OF ANIMALS REGULATIONS

PART XII
TRANSPORTATION OF ANIMALS

BCSPCA - OSPCA - CFHS

August 1, 2006

Canadian Federation of Humane Societies

BCSPCA

TABLE OF CONTENTS

ACKNOWLEDGEMENTS……...3
INTRODUCTION....……..…4
RECOMMENDATIONS BY SECTION OF THE REGULATIONS…….……..……...6
Application……...6
Sick, Pregnant, and Unfit Animals…….……..……7
Loading and Unloading Equipment……..…10
Prohibition of Overcrowding……..12
Horses……13
Cattle…….……14
Pigs……..……....……..15
Poultry...……..……..15
Cervids……..16
Segregation…….……17
Horses……17
Chickens……..……..17
Cervids……..17
Protection of Animals from Injury or Sickness…….…….19
Food and Water for Animals in Transit…….…….21
Cattle……...…..21
Pigs…….……...21
Horses……...…..22
Chickens……..……...22
Rabbits……..…….22
Reports of Injured Animals……..…….…….25
FURTHER RECOMMENDATIONS….……..……....…..26
Enforcement……...26
Driver Training and Insurance…….…..26
Research……..……..…..27
APPENDIX A: BODY CONDITION SCORE FOR DAIRY CATTLE……....…...…28
APPENDIX B: BODY CONDITION SCORE FOR HORSES……..……....…...…29
APPENDIX C: GAIT SCORE FOR DAIRY CATTLE ……....…...…30
REFERENCES……....……31

ACKNOWLEDGEMENTS

The British Columbia Society for the Prevention of Cruelty to Animals, the Ontario Society for the Prevention of Cruelty to Animals, and the Canadian Federation of Humane Societies wish to thank the Animal Welfare Foundation of Canada for its contribution of funding towards the development of this report. We also extend our gratitude to Dr. Hank Classen, Dr. Terry Whiting, Dr. Ernie Olfort, Ms. Penny Lawliss, Mr. Ian MacMillan, and Ms. Joy Ripley for their advice at various stages of the preparation of this document.

INTRODUCTION

The British Columbia Society for the Prevention of Cruelty to Animals (BCSPCA), the Ontario Society for the Prevention of Cruelty to Animals (OSPCA), and the Canadian Federation of Humane Societies (CFHS) have developed the following comments with the aim of providing science-based recommendations for changes to the current Regulations of the Transportation of Animals. The recommendations found in this document represent what our organizations believe are reasonable and practical requests for changes to be made to the regulations. These recommendations are supported by published research and are representative of both voluntary and regulatory standards of animal transportation in other developed nations.

In preparing these regulations, we have taken note of the fact that farm animals are transported daily, all across Canada. At any given time, day or night, hundreds of trucks are carrying thousands of animals on our roads. Transporters range from commercial operators who make their living transporting farm animals to one-time buyers who need to get one animal home from a neighbour. Equipment ranges from state-of-the-art machinery to 50-year-old technology, tri-axles to half-tons, and goosenecks to minivans. Drivers may have experience with tens of thousands of animals or with only one or two, and the entire range of scenarios in-between. Regulations must be designed so that every one of these individuals can comply with them. Changes to the regulations must be proactive from an animal welfare perspective and must also be practical and enforceable. They must also be advertised widely to the industry to ensure that all types of animal transporters are made aware of the changes made.

We strongly believe that the Government of Canada bears a responsibility to its citizens to ensure the care and welfare of animals during transportation. The act of transporting animals creates a high risk both for animal suffering and for susceptibility to and transfer of disease. Accordingly, the grounds for governmental responsibility to the public on this issue are two-fold, as both animal welfare and food safety are at risk.

Transportation is stressful for animals and generally compromises their welfare, as has been demonstrated by numerous scientific studies[1]. These studies have used a variety of methods for evaluating stress and welfare, including behavioural parameters, pathological parameters (such as incidence of injury and post-transport infectious disease and mortality rates), and physiological parameters (such as heart rate, serum and saliva cortisol, and immune cell proliferation). Compromised welfare may result from any one of a number of the following factors, or from compounded effects:

- Animal factors – the anatomy and physiology of the animal (based on species, age, sex and health status);
- Personnel factors – animal handling during loading and unloading, driving skill and care;
- Predictable transportation factors – type and design of vehicle, loading density of animals, approximate length of journey;
- Dynamic transportation factors – climate (temperature and weather), road conditions, traffic conditions.

In order to ensure that animal welfare is not compromised during transportation, all of these factors need to be considered before each trip. While many animal transporters take these factors into account and refuse to sacrifice the welfare of their animals for the sake of convenience or monetary gain, some do not. Accordingly, regulations are required in order to protect animals from suffering during transportation. Canada must establish itself as a world leader in developing science-based animal welfare regulations. The comments that follow represent recommendations for amendments to the Regulations – amendments which are essential for the adequate protection of animals during transportation.

[1] e.g. Beef cattle: Tarrant and Grandin, 2000;
Dairy Calves: Sartorelli et al., 1992;
Horses: Waran and Cuddleford, 1995;
Pigs: Geverink et al, 1998;
Broiler chickens: Weeks and Nicol, 2000;
Cervids: Grigor et al, 1998.

RECOMMENDATIONS BY SECTION OF THE REGULATIONS

Application

Background

Animals are regularly transported from farms in Canada to the USA, for feeding and/or slaughter. Transport or slaughter of these animals may not be in accordance with Canadian law, but little can be done to ensure that our standards are being adhered to once animals have crossed the border. For example, rabbits are regularly transported from Manitoba to California; at this time, US law does not require rabbits to be rendered unconscious prior to bleeding. In this case, a regulation preventing the transport of animals to jurisdictions where they would not be slaughtered in accordance with the Canadian Meat Inspection Regulations would prevent inhumane slaughter of these animals. Additionally, total transport time of animals leaving Canada should be taken into consideration. Transport of animals for durations longer than our law permits should be prohibited, even if only a small portion of the journey takes place within Canada.

Recommendation 1.

The regulations should prohibit the transport of animals out of Canada, when evidence exists to indicate that the animals will be transported, handled, or slaughtered in a manner that would contravene Canadian laws once leaving the country. If feasible, inspectors should be authorized to place a "stop transport order" on such shipments of animals.

Sick, Pregnant, and Unfit Animals

Background

We urge the CFIA to insert the current Compromised Animal Policy directly into these regulations. Moreover, the criteria for an animal to be designated as compromised should be expanded to include conditions other than non-ambulation. These criteria could be included in a Schedule to the Regulations, perhaps in the form of a decision tree appropriate for use by producers, haulers and inspectors; this kind of system is already in place in Ontario.

As is described by European Union's Food Safety Authority's Scientific Panel on Animal Health and Animal Welfare (AHAW, 2004):

> "If sick, injured or dead animals are found, the person responsible needs clear knowledge of, or instructions about what to do. It is important that records are kept and made available to the competent authority, for example to veterinary inspectors, of all sick, injured or dead animals, including any disposed of during a journey. Where the animals are transported to slaughter, the abattoir as well as the owner of the animals will need a copy of the record. If an animal is found to be sick or injured on a journey, humane killing on the vehicle will sometimes be required. Hence, the responsible person on the vehicle will need to carry, and be trained in the use of, equipment for humane killing of the species carried."

Recommendation 2a.

Animals deemed compromised (unfit for transport) should not be permitted to be transported without permission from an inspector, unless they are transported directly to a veterinarian for medical treatment or euthanasia.

Recommendation 2b.

Animals deemed compromised should include those identified by the European Union Food Safety Authority's Scientific Panel on Animal Health and Animal Welfare (AHAW, 2004)[1]. These are:

- Animals that have given birth in the preceding [7 days]
- Newborn animals in which the navel has not completely healed, e.g. not dried/fallen off
- Mammals or birds that are, because of serious disease or injury, unable to walk unaided onto the container or vehicle (e.g. without the use of electric goads or dragging) or which can be expected not to be capable of unaided locomotion after transport, such as:
    - Animals which are unable to rise to a standing position but will eat and drink
    - Animals that experience severe pain when moving e.g. animals with broken extremities (such as broken horns or limbs) or a broken pelvis
    - Animals with large, deep wounds
    - Animals with severe haemorrhages
    - Animals with severe system disorders
    - Animals that are only able to stand after being forced (e.g. very weak, fatigued, or emaciated animals) or fish which are unable to maintain their normal position in the water
    - Animals that are lame to such a degree that they can put little or no weight on one of their legs
    - Animals with a uterine prolapse
    - Animals that have just* undergone an on-farm operation such as dehorning, beak-trimming, [or castration]
    - Animals with visible cardiovascular or respiratory disorders, e.g. those demonstrating forced inhalation, respiratory distress, or gasping for air.
    - Animals with severe inflammation, e.g. due to mastitis or pneumonia
    - Animals that lack coordination, e.g. animals that have difficulties keeping their balance, animals that have been given sedative drugs
    - Animals that have an obviously disturbed reaction to their environment, e.g. extreme agitation, disorder of nervous system, intoxication
    - Animals with a substantial rectal prolapse
    - Animals with significant damage to living tissue

*within the preceding 48 hours

Recommendation 2c.

Further, we recommend that animals be classified as compromised if they:

- are cattle or pigs under 28 days of age (Knowles et al, 1995; SCAHAW[1], 2002); or
- score 2 or less on a 1-5 scale of body condition (BCS) such as Edmondson's for dairy cattle (1989; Appendix A) or 3 or less on a 1-9 BCS scale such as Henneke's for horses (1983; Appendix B); or
- score 4-5 on a 1-5 gait scale, such as Flower and Weary's for dairy cattle (2006; Appendix C).
- demonstrate obvious signs or symptoms of any contagious or infectious disease or illness.

Special consideration must be also afforded to spent hens as these animals are frequently injured during loading and are generally more susceptible to transport stress (see *Food and Water for Animals in Transit*).

Recommendation 3.

Animals should be scored for health and fitness at "staging points" such as auction yards, ports and borders (provincial and national), in order to identify compromised animals. Body condition score (BCS), lameness score, and general animal health should be assessed at these points. It is the responsibility of the transporter to refuse loading of compromised animals; accordingly, producers and transporters should score animals before they leave the origin farm.

Loading and Unloading Equipment

Background

Loading and unloading are typically the most stressful aspects of transportation[2]. Electric prods cause acute stress in pigs, increasing animals' heart rates by an average of 150% (van Putten and Elshof, 1978), and have been shown to significantly compromise carcass quality (Guise and Penny, 1989). More recently, Allison et al (2006) reported substantial behavioural and physiological signs of stress in pigs loaded using an electric goad. Grandin (1997) and Richardson (2001) demonstrated a similar effect in cattle, the former using behavioural measures, and the latter using physiological signs of stress (e.g. heart rate and immunological factors). Matthews (2000) recommended against using electric goads on cervids due to the exaggerated responses of these animals, which may lead to injury of goaded animals, conspecifics, or handlers (Matthews 2000).

Recommendation 4.

Handling methods that cause pain , bruising, and bone breakages should be prohibited, unless necessary in emergencies, when animal or human safety is at risk. Examples of such practices include:

- the use of sticks or canes on the face, genitalia, udder, spine, legs or any bony protrusions
- the practice of breaking the facial bones of boars prior to transportation ("boar bashing")
- the use of electric prods
- the use of painful methods for controlling horses, such as twitches (SCAHAW, 2002) or chains under the lips
- the catching of sheep by their fleece (Cockram and Lee, 1991)
- the catching of chickens by their wings, necks, or by only one leg (AHAW, 2004)

[2] e.g. Dairy calves: Agnes et al, 1990; Kent and Ewbank, 1983;
Sheep: Broom et al, 1996; Knowles et al, 1995; Hall and Bradshaw, 1998;
Horses: Waran and Cuddeford, 1995;
Pigs: Bradshaw et al, 1996;
Cervids: Goddard, 1998.

Recommendation 5.

Maximum slope of loading/unloading ramps indicated in the Recommended Code of Practice – Transportation (RCOP – Transportation) are supported by science and should be made mandatory:

- Pigs: 20º (supported by Lambooij, 2000; Phillips et al, 1988)
- Sheep, Goats and Cervids: 35º
- Cattle: 25º -- although less steep ramps (e.g. 11º) are preferable (Grandin 2000)
- Horses: 30º

Prohibition of Overcrowding

Background

The loading densities recommended by the RCOP – Transportation are not strictly based on experimental research and are generally greater than the recommended or mandatory densities in other developed countries. Stress and discomfort are caused by high temperatures within the load, regardless of species. Accordingly, loading density should be decreased at high ambient temperatures and humidities.

Recommendation 6.

"Humidex" ratings, which incorporate temperature and humidity should be developed and inserted into the regulations and loading density should be lowered by 25% when humidex readings are above a threshold value. We appreciate the difficulties associated with adherence to and enforcement of such a regulation due to unpredictable climatic conditions; however, transporters should be required to consider the

Recommendation 7.

Loading density charts similar to those provided in the Recommended Code of Practice for the Care and Handling of Farm Animals (RCOP) – Transportation should be incorporated into the Regulation. These figures could be expressed in body weight per foot of running deck, if easier for the industry to implement.

Recommendation 8.

The density of each load should be posted on the side of the conveyance or in another clear manner that facilitates inspection.

While little research has been conducted on the effects of group size on welfare during transport, one study found that dairy cattle transported in smaller pens demonstrate lower heart rates (Eldridge and Winfield, 1988). Serious consideration should also be afforded to the orientation of animals within the load. For

example, several studies have indicated that horses experience significantly less stress when transported facing rearward than forward (Waran et al, 1996; Clark et al, 1993).

Recommendation 9.

Cross-gates (partitions) should be made mandatory in order to create smaller groups of animals; maximum group sizes should be designated as follows:

- adult horses – 8 animals
- adult cattle – 8 animals (SCAHAW, 2002)
- calves – 15 animals
- adult pigs – 15 animals
- piglets – 32 animals
- sheep or goats – 32 animals
- cervids – 8 animals (Matthews 2000)

Cross-gates should be solid and should extend from the floor to the height of the tallest animal, in order to prevent animals from slipping under or attempting to climb over them.

Horses

The loading density chart for horses in the RCOP – Transportation represents the high end of actual loading densities in Canada (Whiting, 1999). However, at a density within this recommended range (1.28m^2/animal – no animal weights indicated), incidence of falling and injury is greater than at a density much lower than the recommended range (2.23m^2/animal) (Collins et al, 2000).

Recommendation 10.

As research (cited above) has demonstrated that horse welfare is improved at loading densities lower than those described in the RCOP – Transportation, we propose that lower densities would be appropriate for inclusion in these regulations. We recommend that the following equation, proposed by the FAWC (1991), be used to determine maximum allowable loading densities for horses:

$A = 0.021W^{(0.67)}$, where A = space allowance (in m^2) and W = body weight (in kg).

Cattle

We perceive the most serious welfare risk related to animals falling during transport not to be the falling itself, but the inability of animals to resume a standing position once they have fallen. Tarrant and others (1988) found that risk to 400kg adult cattle of falling and subsequent inability to stand up (with associated injuries) were greater at a loading density higher than the RCOP (0.89 m^2/animal; 449 kg/m^2) than at a lower density (1.39 m^2/animal; 288 kg/m^2). In this study, overstocking was more responsible for animals falling than was the nature of the footing.

Loading beef cattle for transport above the density recommended in the RCOP – Transport seriously compromises their welfare according to Tarrant et al (1992). This was demonstrated for cattle between 537 and 900kg live-weight, stocked at densities above 550 kg/m^2.

The RCOP – Transportation recommends loading densities for cattle that are greater than most other developed nations (e.g. European Union, United States, Australia, New Zealand), particularly for large cattle (e.g. > 500kg).

Recommendation 11.

We recommend that the following equation, proposed by the FAWC (1991), be used to determine maximum allowable loading densities for cattle:

$A = 0.021W^{(0.67)}$, where A = space allowance (in m^2) and W = body weight (in kg).

Recommendation 12.

Loading density should be lowered by 10% for each of the following conditions:

- if dairy cattle are being transported, as these animals take up more space;
- if horned animals are being transported, in order to reduce injury and bruising (Grandin in FAWC, 2002).
- if adult cattle are being transported for longer than 12 hours or calves for longer than 8 hours (as cattle prefer to lie down during transport – e.g. Knowles et al., 1997 and 1999)

Pigs

Pigs transported for longer than four hours clearly prefer to lie down. If insufficient space is provided, they will compete for this space, causing stress and increasing the risk of injury. This activity also raises the ambient temperature and increases energy expenditure of the animals, resulting in greater liveweight losses (Warriss, 1998). Warriss et al have demonstrated that loading densities of both 293kg/m^2 and 246.4kg/m^2 are extremely crowded and allow for very little animal movement of adult-sized pigs (1998). The RCOP – Transportation recommends that pigs this size be loaded at densities between 250 and 285kg/m^2 for adult-sized pigs (e.g. >70kg).

Recommendation 13.

We recommend that the following equation, proposed by SCAHAW (2002), be used to determine maximum allowable loading densities for pigs:

$A = 0.0192W^{(0.67)}$, where A = space allowance (in m^2) and W = body weight (in kg).

Poultry

The RCOP – Transportation suggest a loading density of 63 kg/m^2 for broiler chickens and 98 kg/m^2 for broiler turkeys.

Recommendation 14.

We recommend that the following equation, proposed by the FAWC (1991), be used to determine maximum allowable loading densities for poultry:

$A = 0.021W^{(0.67)}$, where A = space allowance (in m^2) and W = body weight (in kg).

This would equate to a density of 59.85 kg/m^2 for a 2kg chicken.

During hot weather, or when conveyances must be tarped to protect birds towards the outside of the container from inclement weather, the middle section of the conveyance should be left empty to prevent suffering of birds at the thermal core of the conveyance.

Cervids

Matthews et al (2000) and Waas et al (1997) both recommended maximum stocking densities for deer that coincide with the RCOP – Transportation. Densities higher than those provided in the RCOP – Transportation have been shown to significantly increase physiological signs of stress (heart rate, plasma lactate, plasma cortisol, non-esterified fatty acids (NEFA), cytokines (CK), sodium, osmolality) (Waas et al., 1997; Grigor et al., 1998a). Waas et al found evidence of significantly greater physiological stress in red deer at a density higher than the RCOP – Transportation ($0.38m^2$ per 84kg animal) than at two lower densities.

Recommendation 15.

We recommend that the following equation, proposed by the FAWC (1991), be used to determine maximum allowable loading densities for cervids:

$A = 0.021W^{(0.67)}$, where A = space allowance (in m^2) and W = body weight (in kg).

Segregation

Our recommendations on this section refer primarily to the provision of vertical space for animals in transport.

Recommendation 16.

Minimum height specifications should be included for all species. At the very least, Section 142(a) must be reworded to ensure that sufficient vertical space is provided to allow animals to stand with their head raised in a normal position. This avoids the argument that the "natural standing position" of an animal is with its head lowered as if grazing.

Horses

Recommendation 17.

The ceiling height should be no less than 1.25 times the withers height of the animal (RCOP – Transportation, 2001). Horses should not be permitted to be carried in multi-level trucks. These regulations should be publicized to producers, haulers, and trailer manufacturers.

Chickens

Recommendation 18.

The height of crates/trays/drawers for carrying chickens should be no less than 18cm.

Cervids

Recommendation 19.

The ceiling height of conveyances for carrying cervids should be no less than:

- $1.53m^2$ for cervids of 45 - 100kg
- $1.22m^2$ for cervids of 45 - 74kg
- $1.00m^2$ for cervids weighing less than 45kg (Haigh and Hudson, 1993).

Recommendation 20.

Cervids of different ages or gender should not be mixed (Matthews 2000). Further, stags in rut should be segregated from other animals. Stags with velvet antlers longer than 6cm should also be segregated to prevent pain during this sensitive time of antler development.

Protection of Animals from Injury or Sickness

Background

Research performed by Classen et al (2002) has demonstrated that it is virtually impossible to provide adequate ventilation on commercial poultry conveyances, while also protecting animals towards the sides of the conveyance from cold weather. Outcomes of the research currently being conducted at the University of Saskatchewan into ventilation of poultry trucks should be applied by industry as soon as appropriate vehicle ventilations systems have been designed (Cochran et al, 2006).

Inadequate ventilation of conveyances used to transport pigs significantly increases pig mortality (Christensen and Barton Gade, 1999). Moreover, this paper concluded that active ventilation is necessary for adequate air flow when transport vehicles are at rest. Randall (1993) also concluded that vehicles carrying pigs, cattle, and sheep should be actively ventilated, to maintain temperatures in the load within the animals' thermoneutral zone.

Recommendation 21.

Presently, inadequate ventilation is a common problem in animal transport. The CFIA should call for greater research and innovation into the design of trucks that are able to provide adequate ventilation for animals. We strongly recommend that the use of ventilation systems on board trucks be mandatory for transportation of animals in Canada.

Recommendation 22.

Any new conveyances constructed should be equipped with movable panels that can be opened to provide drivers, inspectors, or other personnel with a suitable view of all animals in the conveyance for the purpose of evaluating their fitness.

Recommendation 23.

Regulations should require that conveyance exhaust stacks are constructed in such a manner to prevent exhaust fumes from entering the trailer during normal travel.

Recommendation 24.

As travel sickness is a source of considerable stress and poor meat quality in pigs, conveyances used to transport pigs for longer than 8 hours should be fitted with air suspension on all axles, in order to minimize these effects (Randall et al, 1996)

Food and Water for Animals in Transit

Background

In the European Union, a region comparable in size to Canada, most species are not permitted to be transported for longer than 8 hours, unless transporters meet several conditions that preserve animal welfare on longer trips. Transporters wishing to carry animals for longer than this duration must demonstrate that their vehicles meet certain specifications that provide improved transport conditions, and must provide emergency contingency plans. For transporters who meet these conditions, maximum transport times are:

- 9 hours for unweaned animals
- 24 hours for pigs and horses (if they are provided with continuous access to water)
- 28 hours for cattle, sheep, and goats (if a mid-journey stop for rest, feed, and water for at least one hour is included)

If longer journeys are required for these species, animals must be unloaded, fed, watered, and rested at a "staging point" for at least 24 hours after the journey times described above have elapsed. Poultry and rabbits must be fed and watered at "suitable intervals" if journeys are longer than 12 hours (not including loading and unloading time).

Cattle

Knowles et al (1999) found that after 24 hours of transport cattle exhibit elevated plasma cortisol levels, indicating that they are substantially stressed. Cattle deprived of food and water for 14 hours will demonstrate vigorous attempts to gain access to food and water, when given the opportunity (Chupin et al, 2000).

Pigs

All transportation is stressful to pigs as has been demonstrated by numerous studies (e.g. Geverink et al, 1998; Bradshaw et al, 1996). Pigs become dehydrated after long journeys, with severe dehydration setting in after 24 hours of transport (Brown et al, 1999).

Horses

Journeys longer than 8-12 hours have consistently proven to be stressful, as measured by immune factors (e.g. Anderson et al, 1985; Traub-Dargatz et al, 1988; Chrisman et al, 1992; Oikawa and Kusunose, 1995). Journeys longer than 24 hours have the most dramatic impact on horse welfare, causing the most dramatic weight losses, muscle fatigue, and dehydration, among other physiological measures of stress (Stull, 1999; Stull and Rodiek, 2000).

Chickens

The length of journey greatly affects mortality in broiler chickens – Warriss et al (1992) found that mortality of broiler chickens increased with transport time (from one hour to six hours). The most significant increases in mortality occurred after 4 and 6 hours of transport. The extensive literature review conducted by AHAW (2004) found "no evidence that deprivation of water before crating [of poultry] is beneficial to ultimate meat hygiene".

Spent hens suffer high injury rates during conventional housing, depopulation, and transportation. Broken bone incidences of 24% (assessed after depopulation but before transportation; Gregory et al, 1990) and 29% (assessed after depopulation and transportation; Gregory and Wilkins, 1989) have been reported in the UK. One Canadian study found broken bone incidence of 11% in birds prior to depopulation and a further 10% incidence after depopulation and transportation (Budgell and Silverside, 2004). Accordingly, special consideration must be afforded to spent hens.

Rabbits

Transport of rabbits for longer than 6 hours is extremely stressful – plasma cortisol levels demonstrate a five-fold increase after this length of journey and body weight losses are three times higher for rabbits transported for 7 hours compared to just one hour (Canali et al 2000; Luzi et al, 1992).

Recommendation 25.

Maximum allowable transport times need to be reduced. We recommend that the following regulations on maximum transport times be adopted for phase-in over a reasonable period of time.

No animals should be permitted to be transported for longer than 8 hours, unless the conveyance meets the following conditions:

- there is sufficient bedding on the floor of the vehicle to allow animals to lie comfortably;
- the transporting vehicle carries appropriate feed for the animal species transported and for the journey time;
- there is direct access to the animals;
- adequate ventilation is possible which may be adjusted depending on the temperature (inside and outside);
- there are moveable panels for creating separate compartments;
- vehicles are equipped for connection to a water supply during stops;
- in the case of vehicles for transporting pigs, sufficient water is carried for watering during the journey.

For vehicles that meet these standards, we recommend that the following maximum transport durations without rest, feed or water be adopted:

Ruminants: 24 hours, unless they are:

- lactating females or culled breeding animals, in which case the maximum transport duration should be 12 hours

Pigs and Horses: 16 hours, unless they are:

- culled breeding animals, in which case the maximum transport duration should be 8 hours

Poultry and Rabbits: 12 hours, unless the poultry are:

- chicks of any species under 72 hours of age, in which case the maximum transport duration should be 24 hours. If a source of water is provided to chicks in transit, they could be permitted to be transported for longer periods.

Unweaned* animals of any species: 8 hours

* Refers to nutritional weaning from a liquid diet, not social weaning from the dam.

Recommendation 26.

Animals must be provided with access to water until the time of loading and to feed within five hours of loading, regardless of the length of journey. This should apply equally to the point of origin property or to any property used to hold animals during transit to the final destination, such as resting points and auction yards. Mammalian species should also be provided with water immediately at the end of all journeys.

Reports of Injured Animals

Recommendation 27.

We propose that this regulation not be limited to air and sea carriers. The operator of every conveyance carrying animals should be responsible for reporting the nature of any deaths or severe injuries to animals, which occurred in transit.

FURTHER RECOMMENDATIONS

Enforcement

Background

No matter how progressive regulations are, they are relatively ineffective if there is no way to enforce them. Because the CFIA oversees a broad range of health and animal issues, there is not always adequate funding for farm animal transport inspectors.

Recommendation 28.

We recommend that more funding be provided – either from within CFIA or from the Ministry of Agriculture – to facilitate increased inspector activity and sufficient enforcement of these regulations.

Driver Training and Insurance

Background

As demonstrated by Kenny and Tarrant (1987a and b) and Tarrant et al (1988), the ability of cattle to maintain balance while being transported is strongly related to unpredictable motions of the vehicle. Approximately 86% of the cases of loss of balance occur due to cornering, braking, acceleration, gear change, swaying of the truck, or a combination of these events. Bradshaw et al (1996) also demonstrated that rough journeys caused greater stress in pigs (using plasma cortisol) than did smooth journeys. Ruiz de la Torre et al (2001) found similar results with lambs (using heart rate and plasma cortisol). Similar results have been obtained for sheep (Cockram et al 2004). Accordingly, it is vital that drivers (1) select a route that minimizes these events and (2) are adequately trained to reduce the impact of these events on the animals.

Recommendation 29.

Drivers of conveyances should receive training and certification in safe driving techniques, animal handling, and emergency actions in much the same way that drivers of hazardous materials are required to complete specialized training in that field.

Recommendation 30.

Animal transporters must not be permitted to insure against losses due to mortality, bruising, bone breakage, "dark, firm, and dry" (DFD) or "pale, soft, exudative" (PSE) meat as this diminishes the incentives for these individuals to provide good animal welfare during transportation. Such a regulation would not prevent transporters from using normal vehicle insurance against road accidents.

Research

Further to these specific comments, the BCSPCA, OSPCA, and CFHS wish to call for an increase in dedicated funding for research on the welfare of animals during transportation in Canada.

APPENDIX A: BODY CONDITION SCORE FOR DAIRY CATTLE

The scorer assesses the following 8 body regions of each cow:

- spinous processes
- region between spinous and transverse processes
- transverse processes
- overhanging shelf of transverse processes
- tuber coxae (hooks) and tuber ischii (pins) of the pelvis
- region between each pelvic hook and pin
- region between the hooks
- region between the tail-head and pelvic pin

The scorer assigned an overall body condition score to the animal on a scale of 1 to 5, using 0.25 increments, where:

1 = severe underconditioning (emaciated)

2 = definition of the body frame is obvious

3 = body frame and fat covering are well-balanced

4 = body frame is less visible than fat covering

5 = severe overconditioning (obese)

Edmonson et al., 1989

APPENDIX B: BODY CONDITION SCORE FOR HORSES

Fat cover is scored on six major areas of the animal: neck, withers, (where the neck ends and the back begins), the shoulder area, ribs, loins, and the tail-head.

Score Description:

1 - Poor:

Emaciated. Prominent spinous processes, ribs, tai-lhead and hooks and pins. Noticeable bone structure on withers, shoulders and neck. No fatty tissues can be palpated.

2 - Very Thin:

Emaciated. Slight fat covering over base of spinous processes. Transverse processes of lumbar vertebrae feel rounded. Prominent spinous processes, ribs, tail-head and hooks and pins. Withers, shoulders and neck structures faintly discernible.

3 - Thin:

Fat built up about halfway on spinous processes, transverse processes cannot be felt. Slight fat cover over ribs. Spinous processes and ribs easily discernible. Tai-head prominent, but individual vertebrae cannot be visually identified. Hook bones appear rounded, but easily discernible. Pin bones not distinguishable. Withers, shoulders and neck accentuated.

4 -Moderately Thin:

Negative crease along back. Faint outline of ribs discernible. Tail-head prominence depends on conformation, fat can be felt around it. Hook bones not discernible. Withers, shoulders and neck not obviously thin.

5 - Moderate:

Back is level. Ribs cannot be visually distinguished, but can be easily felt. Fat around tail-head beginning to feel spongy. Withers appear rounded over spinous processes. Shoulders and neck blend smoothly into body.

6 - Moderate to Fleshy:

May have slight crease down back. Fat over ribs feels spongy. Fat around tai-lhead feels soft. Fat beginning to be deposited along the sides of the withers, behind the shoulders and along the sides of the neck.

7 - Fleshy:

May have crease down back. Individual ribs can be felt, but noticeable filling between ribs with fat. Fat around tail-head is soft. Fat deposits along withers, behind shoulders and along the neck.

8 - Fat:

Crease down back. Difficult to palpate ribs. Fat around tail-head very soft. Area along withers filled with fat. Area behind shoulder filled in flush. Noticeable thickening of neck. Fat deposited along inner buttocks.

9- Extremely Fat:

Obvious crease down back. Patchy fat appearing over ribs. Bulging fat around tail-head, along withers, behind shoulders and along neck. Fat along inner buttocks may rub together. Flank filled in flush.

Henneke, 1983; Tarleton State Texas University

APPENDIX C: GAIT SCORE FOR DAIRY CATTLE

Score	Description	Behavioral criteria
1.0	Smooth and fluid movement	Flat back Steady head carriage Hind hooves land on or in front of fore-hooves (track-up) Joints flex freely Symmetrical gait All legs bear weight equally
2.0	Imperfect locomotion but ability to move freely not diminished	Flat or mildly arched back Steady head carriage Hind hooves do not track up perfectly Joints slightly stiff Slightly asymmetric gait All legs bear weight equally
3.0	Capable of locomotion but ability to move freely is compromised	Arched back Steady head carriage Hind hooves do not track-up Joints show signs of stiffness Asymmetric gait Slight limp can be discerned
4.0	Ability to move freely is obviously diminished	Obvious arched back Head bobs slightly Hind hooves do not track-up Joints are stiff and strides are hesitant Asymmetric gait Reluctant to bear weight on at least one limb but still uses that limb in locomotion
5.0	Ability to move is severely restricted and must be vigorously encouraged to move	Extremely arched back Obvious head bob Poor tracking-up with short strides Obvious joint stiffness characterized by lack of joint flexion with very hesitant and deliberate strides Asymmetric gait Inability to bear weight on one or more limbs

Flower and Weary, 2006

REFERENCES

Agnes, F., P. Sartorelli, B.H. Abdi, and A. Locatelli. 1990. Effect of transport loading or noise on blood biochemical variables in calves. Am. J. Vet. Res. 51:1679-1681.

Anderson, N.V., DeBowes, R.m., Nyrop, K.A. and Dayton, A.D. 1985. Mononuclear phagocytes of transport-stressed horses with viral respiratory tract infection. Am. J. Vet. Res. 46: 2272.

Animal Health and Welfare Panel (AHAW). 2004. The welfare of animals during transport. European Food Safety Authority. Accepted on March 30th. Available at: http://www.efsa.eu.int

Allison, C. P., A. L. Marr, N. L. Berry, D. B. Anderson, D. J. Ivers, L. F. Richardson, K. Keffaber, R. C. Johnson and M. E. Doumit. 2006. Effects of halothane sensitivity on mobility status and blood metabolites of HAL-1843-normal pigs after rigorous handling J. Anim. Sci. 84:1015-1021

Bradshaw, R.H., R.F. Parrot, M.L. Forsling, J.A. Goode, D.M. Lloyd, R.G. Rodway, and D.M. Broom. 1996. Stress and travel sickness in pigs: effects of road transport on plasma concentrations of cortisol, beta-endorphin and lysine vasopressin. Animal Science 63:507-516.

Brown, S.N., Knowles, T.G., Edwards, J.E., Warriss, P.D. 1999. Behavioural and physiological responses of pigs to being transported for up to 24 hours followed by six hours recovery in lairage. Vet. Rec. 145(15):421-426.

Budgell, K. L. and F. G. Silversides, 2004. Bone breakage in three strains of end-of-lay hens. Can. J. An. Sci. 84:745-747.

Canadian Agri-Food Research Council (CARC). 2001. Recommended code of practice for the care and handling of farm animals. Transportation. Available at: http://www.carc-crac.ca

Canali, C., S. Diverio, A. Barone, A. Dal Bosco, and V. Beghelli. 2000. The effect of transport and slaughter on rabbits reared in two different production systems. Pp. 511-517. In: Proceedings of 7° World Rabbit Congress, Valencia, Spain, July 4-7th.

Chrisman, M.V., Hodgson, D.R., Bayly, W.M., and H.D. Liggit. 1992. Effects of transport on constituents of bronchoalveolar lavage fluid from horses. Cornell Vet. 82: 233-246.

Christensen, L. and P. Barton Gade. 1999. Temperature profile in double-decker transporters and some consequences for pig welfare during transport. Occ. Publ. Br. Soc. Anim. Sci. No. 23. Farm Animal Welfare – Who Writes the Rules? 125-128.

Chupin, J.M., Savignac, C., Aupiais, A. ,and J. Lucbert. 2000. Le transport de longue duree des bovines vivants. Rencontres Recherches Ruminants. 7:80.

Clark, D.K., T.H. Friend, and G. Dellmeir. 1993. The effect of orientation during trailer transport on heart rate, cortisol and balance in horses. Appl. Anim. Behav. Sci. 38:179-189.

Classen, H.L. T. Knezacek, G.P. Audren, S. Stephens T. Crowe, E.M. Barber, A. A. Olkowski, M.A. Mitchell and P.J. Kettlewell. 2002. Studies on broiler chicken transportation in Saskatchewan. Poultry Extension Service. University of Saskatchewan. Project SDAF#19990256-24BX.

Cochran, S. L.. Hui, K. P. C Crowe, T. G. Bligh, K. Classen, H. L. and E. M. Barber. 2006. Assessing the performance of an actively heated and ventilated broiler transport prototype. Poultry Science Association 2006 Annual Meeting – Abstracts of Papers. p. 83.

Cockram, M.S. and R.A. Lee. 1991. Some preslaughter factors affecting the occurrence of bruising in sheep. British Veterinary Journal 147:120-125.

Cockram, M.S., E.M. Baxter, L.A. Smith, S. Bell, C.M. Howard, R.J. Prescott, and M.A. Mitchell. 2004. Effect of driver behaviour, driving events and road type on the stability and resting behaviour of sheep in transit. Anim. Sci. 79:165-176.

Collins, M.N., T.H. Friend, F.D. Jousan, and S.C. Chen. 2000. Effects of density and displacement, falls, injurieds, and orientation during horse transportation. Appl. Anim. Behav. Sci. 67:169-179.

Edmonson, A. J., I. J. Lean, L. D. Weaver, T. Farver, and G. Webster. 1989. A body condition scoring chart for holstein dairy cows. J. Dairy Sci. 72:68-78.

Eldridge, G.A. and C.G. Winfield. 1988. The behavior and bruising of cattle during transport at different space allowances. Aust. J. Exp. Agric. 28: 695-698.

Farm Animal Welfare Council (FAWC). 1991. Report on the European Commission Proposals on the Transport of Animals. London: MAFF Publications.

Federation of Veterinarians of Europe (FVE). 2001. Transport of Live Animals. Opinion paper. Available at: http://www.fve.org

Flower, F.C. and D.M. Weary. 2006. Effect of hoof pathologies on subjective assessments of dairy cow gait. J. Dairy Sci. 89:139–146.

Geverink, N.A., R.H. Bradshaw, E. Lambooij, V.R. Wiegant, D.M. Broom. 1998. Effects of simulated lairage conditions on the physiology and behaviour of pigs. Vet Rec. 143:241-244.

Goddard, P.J. 1998. The welfare of deer. Acta Veterinaria Hungarica 46:395-404.

Grandin , T. 2000. Handling and welfare of livestock in slaughter plants. Pp. 409-439. In: Livestock Handling and Transport. Ed. T. Grandin. CABI Publishing, New York.

Grigor, P.N., P.J. Goddard., C.A. Littlewood., and A.J. MacDonald. 1998. The behavioural and physiological reactions of farmed red deer to transport: effects of road type and journey time. Appl. Anim. Behav. Sci. 56:263-279.

Guise, J. and R.H.C. Penny. 1989. Factors affecting the welfare, carcass and meat quality of pigs. Anim. Prod. 49:517-521.

Hall, S.J.G. and R.H. Bradshaw. 1998. Welfare aspects of transport by road of sheep and pigs. J. Appl. Anim. Welf. Sci. 1:235-254.

Kenny, F.J. and P.V. Tarrant. 1987a. The physiological and behavioural-responses of crossbred Friesen steers to short-haul transport by road. Livest. Prod. Sci. 17:63-75.

Kenny, F.J. and P.V. Tarrant. 1987b. The reaction of young bulls to short-haul road transport. Appl. Anim. Behav. Sci. 17:209-227.

Kent, J.E. and R. Ewbank. 1983. The effects of road transportation on the blood-constituents and behaviour of calves .1. 6 months old. Br. Vet. J. 139:228-235.

Knowles, T.G., S.N. Brown, P.D. Warriss, A.J. Phillips, S.K. Doland, P. Hunt, J.E. Ford, J.E. Edwards, and P.E. Watkins. 1995. Effects on sheep of transport by road for up to 24 hours. Vet. Rec. 136:431-438.

Knowles, T.G., P.D. Warriss, S.N. Brown, J.E. Edwards, P.E. Watkins, and A.J. Phillips. 1997. Effects on calves less than one month old of feeding or not feeding them during road transport of up to 24 hours. Vet. Rec. 140:116-124.

Knowles, T.G., P.D. Warriss, S.N. Brown, and J.E. Edwards. 1999. Effects on cattle of transportation by road for up to 31 hours. Vet. Rec. 145: 575-582.

Lambooij, E. 2000. Transport of Pigs. Pp. 275-296. In: Livestock Handling and Transport. Ed. T. Grandin. CABI Publishing, New York.

Luzi, F., E. Heinzi, C. Crimella, and M. Verga. 1992. Influence of transport on some production parameters in rabbits. J. Appl. Rabbit Res. 15:758-765.

Matthews, L.R. 2000. Deer Handling and Transport. Pp. 331-362. In: Livestock Handling and Transport. Ed. T. Grandin. CABI Publishing, New York.

Oikawa, M. and Kusunose, R.. 1995. Some epidemiological aspects of equine respiratory disease associated with transport. J. Equine. Sci. 6:25-29.

Phillips, P.A., B.K. Thompson, and D. Fraser. 1988. Preference tests of ramp design for young pigs. Can. J. Anim. Sci. 68:41-48.

Phillips, W.A., P.E. Juniewicz, M.T. Zavy, and D.L. Vontungelin. 1989. The effect of the stress and weaning and transport on white blood-cell patterns and fibrinogen concentration of beef-calves of different genotypes. Can. J. Anim. Sci. 69:333-340.

Randall, J. M. 1993. Environmental parameters necessary to define comfort for pigs, cattle and sheep in livestock transporters. Anim. Prod. 57:299-307.

Ruiz del Torre, J.L. Velarde, A., Diestre, A., Gispert, M., Hall, S.J.F., Broom, D.M., and X. Manteca. 2001. Effects of vehicle movement during transport on the stress response and meat quality of sheep. Veterinary Record. 148:227-229.

Sartorelli, P., S. Dominoni, and F. Agnes. 1992. Influence of duration of simulated transport on plasma stress markers in the calf. J. Vet. Med. A. 39:401-403.

Scientific Committee on Animal Health and Animal Welfare. (SCAHAW). 2004. Council Regulation (EC) No 1/2005 on the protection of animals during transport and related operations and amending directives. Available at: http://ec.europa.eu/comm/food

Stull, C.L. 1999. Responses of horses to trailer design, duration, and floor area during commercial transportation to slaughter. J. Anim. Sci. 77:2925-2933.

Stull, C.L. and A.V. Rodiek. 2000. Physiological responses of horses to 24 hours of transportation using a commercial van during summer conditions. J. Anim. Sci. 78:1458-1466.

Tarrant, P.V., F.J. Kenny, and D. Harrington. 1988. The effect of stocking density during 4 hour transport to slaughter on behavior, blood-constituents and carcass bruising in Friesen steers. Meat Sci. 24:209-222

Tarrant, P.V., F.J. Kenny, D. Harrington, and M. Murphy. 1992. Long-distance transportation of steers to slaughter – effect of stocking density on physiology, behavior and carcass quality. Livest. Prod. Sci. 30:223-238.

Tarrant, V. and T. Grandin. 2000. Cattle Transport. Pp. 151-173. In: Livestock Handling and Transport. Ed. T. Grandin. CABI Publishing, New York.

Traub-Dargatz, J.L., McLinnon, A.O., Bruyninckz, W.J.., Thrall, M.A., Jones, R.L., and A.M.N. Blancquaert. 1988. Effect of transportation stress on bronchoalveolar lavage fluid analysis in female horses. Am. J. Vet. Res. 49:1026-1029.

van Putten, G. and W.J. Elshof. 1978. Observations on the effect of transport on the well being and lean quality of slaughter pigs. Anim. Reg. Stud. 1:247-271.

Waas, J.R., J.R. Ingram, L.R. Matthews. 1997. Physiological responses of red deer (*Cervus elaphus*) to conditions experienced during road transport. Physiol. Behav. 61:931-938.

Waran, N.K. and D. Cuddleford. 1995. Effects of loading and transport on the heart rate and behaviour of horses. Appl. Anim. Behav. Sci. 43:71-81.

Waran, N.K., V. Robertson, D. Cuddeford, A. Kokoszko, and D.J. Marlin. 1996. Effects of transporting horses facing either forwards or backwards on their behaviour and heart rate. Vet. Rec. 139:7-11.

Warriss, P.D., E.A. Bevis, S.N. Brown, and J.E. Edwards. 1992. Longer journeys to processing plants are associated with higher mortality in broiler chickens. Br. Poultry Sci. 33: 201-206.

Warriss, P.D. 1998. Choosing appropriate space allowances for slaughter pigs transported by road: a review. Vet Rec. 142:449-454.

Weeks, C. and C. Nicol. 2000. Poultry handling and transport. In: Livestock Handling and Transport. Ed. T. Grandin. CABI Publishing, New York.

Whiting, T. 1999. Maximum loading density of loose horses. Can. J. Anim. Aci. 79:115-118.