

# Evolution of the proposed federal slaughter horse transport regulations

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**ABSTRACT:** Horsemeat consumption became popular in many European countries after World War II, and horsemeat continues today to be a delicacy product. The United States is a major source country for these markets. Although the number of horses slaughtered in the United States has been decreasing since the 1980s, the animal protection organizations and the public have focused their attention on the transport conditions of these horses to slaughter and have demanded federal regulations. The issues included the use of double-deck trailers, stocking density, transit durations, water and feed deprivation, and the shipping of horses

that are unfit to travel. The USDA, Animal and Plant Health Inspection Service in 1997 began awarding special research contracts aimed at generating scientific data to support science- and performance-based regulations. Scientists, animal protection organizations, the veterinary community, slaughter facility managers, an auction representative, and the USDA met in 1998 to recommend possible regulations for the transport of horses to slaughter based on the scientific findings. This approach, with both limitations and advantages, may serve as a model for other agricultural issues, especially those lacking in available scientific information.

Key Words: Horses, Regulations, Transport, Welfare

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## Introduction

Horsemeat consumption became popular after World War II with lower-income people in Europe, where beef was scarce, and old or lame draft horses were processed for affordable meat. Horsemeat was sought for its high iron content and leanness. Today, horsemeat in Europe is considered a delicacy and associated with costly prices. However, countries such as the United Kingdom, United States, and Canada never accepted horsemeat in their diets (Reece et al., 2000). Because the horsemeat market has continued today, companies outside of North America have organized in countries such as the United States and Canada, where large horse populations exist, to supply meat products to their consumers. Prior to 1979, horses were shipped live on ocean barges to be slaughtered in Europe. Due to the high mortality and other unsuitable transport conditions, the federal law (Provision to Export Administration Act, section 7(j)) prohibited the international transport by ship of live horses for slaughter and human consumption. Thus, foreign companies began investing in Canadian and U.S. slaughter horse facilities to export prod-

ucts. In the early 1990s, there was an outcry from the animal protection organizations to regulate the transport by truck of horses to USDA-approved slaughter facilities. Articles began to appear in magazines and newspapers, and the public became aware of the issues. Although the primary issue was transportation conditions, other issues surfaced concerning the cultural difference in horsemeat consumption, the classification of the horse as pet or commodity, the thriving trade in stolen horses going to slaughter, and the overbreeding of horses to produce surpluses (Motavalli, 1992). These accounts reached broader audiences in 1995 when a television exposé created with the assistance of the Humane Society of the United States was aired on the transportation and slaughter of horses with horrific details of an apprehended truck in New York carrying horses to slaughter in Canada (Bollinger, 1994).

## Discussion

### *Background Statistics*

The slaughter horse trade has been and continues to be a relatively small industry compared to the beef and swine industries. The number of horses in the United States that are slaughtered for human consumption at USDA-inspected facilities has gradually declined over the last decade. In 1992, approximately 243,000 horses were processed, compared with 62,813 horses in 1999. Additionally, Canada in 1997 reported 64,519 horses

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slaughtered, and Europe processed in 1998 approximately 140,000 horses for human consumption (USDA, 1999).

The combination of the limited population of horses along with the decreasing number of horses slaughtered annually had an impact on the number of slaughter plants in the United States. In the 1980s, during the peak in the slaughter horse industry, there were 16 federally inspected plants throughout the United States. In 1994, there were seven facilities, and in 1999 this had decreased to three facilities, two in Texas and one in Nebraska. Currently, in Canada, there are three processing facilities, one each in Quebec, Alberta, and Ontario. Thus, there is a need for transporting these horses economically over long distances to the few existing processing facilities (Reece et al., 2000).

### *Foreign Markets*

As the markets become more global, other countries with substantial or growing horse populations are contributing to the market supply. The major exporters currently are the United States, Canada, Australia, New Zealand, and, to a lesser extent, Mexico and a few South American countries. The importers of horsemeat products are Japan, which prefers draft horse meat, Italy (18- to 24-mo-old horses), France (10- to 12-yr-old horses), Switzerland (2- to 3-yr-old horses), and Belgium (no draft horses) (Sellnow, 1999).

The United States is not alone in contemplating transportation issues and regulations for slaughter horses. Canada has addressed the issues through observational studies and voluntary transportation codes (CARC, 1998). Their guidelines were drafted by a review committee consisting of representatives from the agricultural community, animal protection groups, veterinarians, animal scientists, federal and provincial governments, and other interested individuals. Interestingly, the double-deck ("pot-belly") trailer is currently allowed with the recommendation that there is 2.5 cm of head clearance for each hand (10.16 cm) of height at the withers (Whiting, 1999).

In the European Union (EU), Poland is the major source country for slaughter facilities in France and Italy. The European Commission Directive of 1995 was implemented in 1998 and was designed to protect horses during transport. The maximum journey duration is 8 h, after which time horses must be offloaded and fed and watered for 24 h. A network of resting places in the EU is currently being developed. However, there are reports in Eastern Europe that compliance is marginal and that horses are transported greater distances on poorly maintained roads to avoid regulations. Approximately 5% arrive dead at the slaughter facilities (RSPCA, 1999).

### *Myths and Research Issues*

Many other issues, whether fact or myth, were also fed into the U.S. public media, such as the idea that

slaughter horse candidates included young and healthy horses (which may have more suitable roles as riding horses), helpless foals, and treasured wild mustangs (Bollinger, 1994). Shipping conditions were also questioned; and it was reported that horses were shipped in crowded conditions without feed and water on double-deck or "pot-belly" trailers with limited head room. This was considered a cruel and inhumane practice by some. And the methods of slaughter were highlighted, with reference to horses being killed for human consumption in a cruel and inhumane manner using 10-cm spikes (Motavalli, 1992).

As with some animal welfare issues, the realistic issues in slaughter horse transport needed to be identified and separated from the overdramatized and sensationalist stories. Additionally, the USDA/Animal Plant Health Inspection Service (APHIS), under the leadership of Joan Arnoldi and Tim Cordes, wanted to base the regulations on scientific data and recommendations. Thus, APHIS appropriated funds in 1997 to Colorado State University under the guidance of Temple Grandin (Grandin et al., 1999), Texas A&M University, with the direction of Ted Friend (Friend et al., 1998; Gibbs and Friend, 1999, 2000; Collins et al., 2000; Friend, 2000) and the University of California, Davis, with researcher Carolyn Stull (Stull, 1999, 2000; Stull and Rodiek, 2000). These three teams worked independently on different, but somewhat overlapping, issues of the industry, including the maximum transit time (how long should horses be allowed to travel?), water deprivation (what is an acceptable period of time without feed and water?), defining "unfit to travel" (what physical conditions of the horse are unsuitable for traveling loose in small groups?), trailer design (is the double-deck trailer suitable to transport horses?), and stocking density (what is the ideal floor space necessary for a horse to maintain balance and arrive in a healthy, uninjured state?; this has economic implications for long-distance transporters).

The documentation of the types and the physical condition of horses procured for slaughter was important in drafting regulations for humane transport. Data collected on 306 horses being shipped to slaughter indicated that two-thirds of the horses were either Quarter Horse or Thoroughbred breeds with an average age of  $11.4 \pm 0.4$  yr. The mean weight was  $432 \pm 3$  kg, with a body condition score on a 9-point scale (Henneke et al., 1983) of  $5.6 \pm 0.08$ . These data identified the slaughter horse candidate as a middle-aged, moderately fleshy Quarter Horse or Thoroughbred (Stull, 1999). Physical condition of the horses was assessed in a survey to identify serious welfare problems in 1,008 horses that arrived at U.S. slaughter plants. Only 1.5% of the horses were unfit for travel, with pretransit conditions such as emaciation, fractured limbs, laminitis, or weakness. Thus, 92% of the horses arrived in good condition. The proportion of owner neglect and abuse (6%) prior to loading was much greater than the number of injur-

ies (2%) that occurred during marketing and transport (Grandin et al., 1999).

The straight-deck and the two-tiered (“pot-belly”) trailers are the two designs of trailers with capacity of more than 15 animals that commonly transport horses to slaughter. The two-tiered trailer has the capacity to carry 44 horses, providing an economic advantage compared to the straight-deck trailer, with a capacity of 38 horses. The limited head room in the two-tiered trailers has received the attention of animal advocate groups (Bollinger, 1994). In a study comparing these two types of trailers, physiological stress indices in horses ( $n = 306$ ) traveling to slaughter were greater ( $P < 0.05$ ) in those traveling in straight-deck vs two-tiered trailers. This difference may be due to heat stress, because rubber padding lined the interior walls of the straight-deck trailers, limiting the ventilation capacity and adding to the heat load. However, the number of lacerations and abrasions sustained during transport was 3.5 times greater ( $P < 0.05$ ) in the horses traveling in two-tiered (29.2%) compared to straight-deck (8.0%) trailers. The face/head was the most likely area of injury; 58% of the injuries occurred on this part of the body (Stull, 1999). These data clearly show the impact of trailer design on body location and number of injuries during the transportation process.

Because water deprivation during transit and possible dehydration, especially during the summer months, was a concern, several studies assisted in determining the appropriate duration of transit. This is especially important because slaughter facilities are limited in number and duration of travel may be excessive for some horses located in areas without a facility or traveling into Canada for processing. In two studies, dehydration traits were measured in horses ( $n = 306$ ) under commercial transport to slaughter (Stull, 1999) and using university-owned horses ( $n = 30$ ) in watered and unwatered groups during long-term road transport (Friend et al., 1998; Friend, 2000). The results of both studies reported an incremental rise in dehydration traits throughout 24 h of transport. During summer months, clinical dehydration may become evident beyond 24 to 27 h of transport.

Watering of horses is a common practice in vans used primarily to transport show and race horses in individual compartments. Water consumption was measured in 15 horses during a 24-h trip in a commercial van on California’s interstate highways during the hot summer conditions (Stull and Rodiek, 2000). Horses consumed 91% of the  $22.7 \pm 6.4$  L of water after 12 h of a 24-h trip. In another study during Texas summer conditions using a single-deck semi-trailer fitted with an on-board water trough, all horses drank after 12 h of water deprivation, provided that horses were permitted adequate room to maneuver to access the troughs (Gibbs and Friend, 2000).

Proper loading density is important from an economic standpoint but may have welfare implications for individual horses. Both physiological and injury data have

been used to examine loading density. The floor space in commercial two-tiered and straight-deck trailers traveling to slaughter facilities provided between 1.14 and 1.54 m<sup>2</sup>/horse. Responses of pre- and post-transit physiological data analyzed for weight loss and immunological and stress indices demonstrated smaller responses ( $P < 0.05$ ) for horses provided with a high floor area (1.40 to 1.54 m<sup>2</sup>/horse) than for those with a low floor area (1.14 to 1.31 m<sup>2</sup>/horse). However, injuries increased twofold ( $P < 0.05$ ) in horses provided with a high floor area (29%) compared with a low floor area (12%) while in transit to slaughter (Stull, 1999). In contradiction to these results, horses undergoing short-duration transport (25 min) using severe driving conditions of hard braking, rapid acceleration, and severe turns showed more injuries and falling incidences under conditions of high stocking density (1.28 m<sup>2</sup>/horse) vs low stocking density (2.23 m<sup>2</sup>/horse) (Collins et al., 2000). Thus, recommendations for stocking density may depend on several factors, including road conditions, driving maneuvers, weather, sorting and compatibility of horses, and flooring.

### *Application of Research Results*

The application of the research results to the development of regulations has both benefits and limitations. Each project had very focused objectives in order to formulate science-based regulations. The projects were multidisciplinary, covering the disciplines of physiology, behavior, pathology, immunology, and clinical chemistry and hematology. However, more basic than that were the descriptive data of the different factors of the industry (e.g., slaughter horse candidates, stocking density used, trailer design, and transit duration) to ascertain current and factual aspects of the industry (Grandin et al., 1999; Stull, 1999).

Deadlines for finishing projects were strictly adhered to in order to progress toward timely regulations. One-year, special contracts were issued to the researchers over several years. This ensured that data would be generated on a timely basis. Because one of the challenges of the projects was meeting the contract deadline, the use of readily available scientific methodology and techniques was essential. There was a very limited opportunity to develop new “cutting-edge” methods or techniques.

As one of the researchers, I felt great satisfaction that the results would be used immediately in the formulation of the regulations. However, using the multidisciplinary approach, results were generated that complemented each other as well as contradicted each other. An example of contradicting results was described above in studies examining appropriate stocking density (Collins et al., 2000) or floor area (Stull, 1999). Thus, researchers had to grapple with prioritizing the results to benefit the welfare of the transported horses.

In the spring of 1998, the American Horse Council and the American Horse Protection Association organized two meetings to discuss the research results and came to a consensus on the content of the proposed rules. One representative from the USDA, American Humane Association, Humane Society of the United States, the American Association of Equine Practitioners, the three managers of the slaughter plants, an auction representative, and the three researchers discussed practical and enforceable regulations based on the data presented. The science assisted in focusing the discussions on an objective platform (Reece et al., 2000).

The benefits are enormous with this type of scientific approach to developing regulations. In order for regulations to benefit most horses in the slaughter horse transport system, the particular characteristics of the system had to be identified and separated from the myths. This was a combination of industry input, research results, and other USDA statistical data. This basic information served as a platform for objective decision making by most all parties. With truckers, horse buyers, and auction and processing plant management participating in the collection of data, and the animal protection organizations participating during the discussion of the presentation of the data, there was stakeholder buy-in to the process.

And finally, the well-being of the horses transported to slaughter is the primary beneficiary of the research and regulations. This direct application of research to an industry need in such a short time period is extremely satisfying to the researchers and other interested parties. Because the goal of slaughter plant managers is to supply a quality meat product, the arrival of horses in better physical shape with less stress and dehydration will be beneficial in complementing their goals.

### Implications

The process used in developing slaughter horse transport regulations may be a model for other future welfare issues and provides a more substantial platform for regulations both domestically and globally, because the decisions were largely based on science. The media have, and will have, a strong influence in forming the public's perception and garnering the attention of legislators. Animal protection organizations will continue to link their ability to lobby either state or federal policy makers into addressing the issues. Because there is a

dearth of scientific studies examining many of the animal agricultural issues, government agencies may provide resources in the future for researchers to gather objective data in developing and proposing regulations. As animal scientists, many of us will have the opportunity to become involved in this type of rewarding research and education.

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