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THE UNINTENDED CONSEQUENCES OF A BAN ON THE HUMANE SLAUGHTER (PROCESSING) OF HORSES IN THE UNITED STATES

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Executive Summary

Federal legislation has been proposed to amend the *Horse Protection Act* to prohibit the shipping, transporting, moving, delivering, receiving, possessing, purchasing, selling, or donation of horses and other equines to be humanely slaughtered (processed) for human consumption, and for other purposes. The intent of the legislation is to enact a ban in the United States on processing horses for human consumption. The legislation does not provide fiscal support that would likely be needed to respond to an ever increasing number of unwanted, neglected, and abused horses. Often times horse neglect and abuse cases originate from a lack of economic resources needed to adequately maintain a horse's health. While everyone fully supports and is committed to the humane treatment of all horses, there are unintended consequences of banning horse processing.

The purpose of this paper is to identify and review the unintended consequences of a ban in the United States on the processing of horses for human consumption:

1. The potential for a large number of abandoned or unwanted horses is substantial.

2. Public animal rescue facilities are currently saturated with unwanted horses. No funding has been allocated to manage a large increase in horses that will likely become the responsibility of these facilities.

3. Cost of maintaining unwanted horses accumulates over time:
   - A conservative estimate of the total cost of caring for unwanted horses, based upon 2005 statistics, is $220 million;
   - Cumulative annual maintenance costs of otherwise processed horses, since the year 2000, would have exceeded more than $513 million in 2005.

4. The export value of horse meat for human consumption was approximately $26 million. A ban on processing would eliminate these annual revenues.

5. The option of rendering equine carcasses is decreasing. Private-land burial and disposal in landfills have a negative impact on the environment.

6. The Bureau of Land Management's Wild Horse and Burro Adoption Program may be negatively impacted by a ban on horse processing. BLM horses and an increasing number of unwanted horses will be competing for adoption homes.

Horse processing facilities offer a humane end-of-life option for approximately 1% of the United States horse population. Tens of thousands of horses could be neglected or abandoned if a processing ban were imposed.

The direct economic impact and future unintended–and currently unaccounted for–economic impact of banning horse processing for human consumption are substantial. Proponents have not addressed the inevitable costs of such a ban. Horse owners will realize a direct impact from lower horse sale prices. Local and state governments will be adversely impacted by increased costs of regulation and care of unwanted or neglected horses.

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Welfare Considerations of a Ban on Horse Processing

Numerous roles for horses exist in our society, from recreational to agricultural uses. Horses are also owned for companionship or pleasure without the intention of contributing to the human food supply. However, horses are considered livestock (U.S. Congress, 2002). Welfare considerations for horses are problematic since society today expects the treatment and standard of care for horses to be similar to what they have come to expect for family pets, such as dogs and cats. This is true even though horses are often housed, fed, transported and handled much like other livestock. Due to their large body size, required expertise in handling and care, and the subsequent cost of care these expectations for horses may not be realistic. In most communities, services and resources equivalent to that received by dogs and cats do not currently exist for horses.

A difficult decision facing horse owners is when and how to end a horse's life. It is the responsibility of the owner, in consultation with the attending veterinarian, to ensure the horse's life ends painlessly and with minimal distress. The term euthanasia is derived from the Greek terms "eu", meaning good, and "thanatos," meaning death. A good death is one that occurs with minimal pain and at the appropriate time in the horse's life as to prevent unnecessary pain and suffering (Lenz, 2004).

The American Veterinary Medical Association reports two accepted methods of euthanasia for horses:

1. Overdose of a barbiturate anesthesia, most commonly sodium pentobarbital, administered with a sedative;

2. A physical method of euthanasia from a gunshot or penetrating captive bolt causing trauma to the cerebral hemisphere and brainstem resulting in an immediate painless and humane death.

The estimated United States horse population is 9.2 million (AHC, 2005); approximately 1% are marketed annually to processing for human consumption. This sub-population of horses has been characterized by several studies (Stull, 1999; McGee et al., 2006). Observational studies show that "riding" horses were the majority of candidates for processing as opposed to draft or "wild" horses (Table 1). In a survey, horses at processing plants had substantially poorer foot and body condition and proved less sound than horses observed at sales facilities. These characteristics demonstrate symptoms of lack of care and/or chronic pathological conditions. These horses may experience chronic pain, lack adequate nutrition and vaccinations and suffer from the absence of common care practices such as routine parasite or dental programs. Processing plants in the United States assist in maintaining a level of horse welfare by preventing old and/or unsound working/riding horses from further neglect or abuse (McGee et al., 2001). Owners with economic constraints may not be able to provide long-term, quality care. Thus, the horse's health and welfare could be compromised or progress to a neglected condition if a ban on horse processing were imposed.

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Table 1. Classification of Auction Horses* (McGee et. al. 2001)

Classification	n=	%
BLM Mustang (official freeze branded)	2	< 1%
Carriage Horses	49	3%
Draft Horses	36	2%
Native American reservation (branded)	3	< 1%
Mules or Donkeys	95	7%
Mustangs**	14	1%
Pony or Miniature	163	11%
Race Horses Off Racetrack	21	1%
Riding Horses***	1,090	74%

* At the auctions there were 0% horses observed in the following categories – fattened feedlot horse of unknown origin and fattened feedlot horse of known origin.

** These horses typically had a classic phenotype: heavy feet, large head and a large compact body. Industry refers to this body type as a mustang or mustang type horse. Often these horses are feral.

*** Riding horses include various breeds of horse.

Animal Control Facilities

Neglected animals, including horses, are reportable to animal control agencies at the local community level in most areas in the United States. Animal control and protection service in the U.S. consists of both not-for-profit and government organizations. Animal control agencies are entities of city and county government and are usually administered by the police or sheriff's department, agricultural commissioner, or public works/park department. Taxes, service fees, and licensing fees provide funding for animal control agencies. The limited resources of animal control agencies are primarily used for control of dogs and cats in their community. Animal control agencies vary from having no facilities with little or no personnel expertise, to extensive shelter facilities–designed for horses–with trained personnel. Following a ban on horse processing, local communities will expect these agencies to respond and be responsible for abandoned and neglected horses on a level equivalent to current dog and cat programs. Most agencies will need to generate larger resources, educate their personnel, acquire facilities for housing horses, and reallocate their limited funds to include horses and support veterinary services to properly care for abandoned and neglected horses in their communities.

Data published on the number of horse neglect cases from the years 1994 and 1995 in California showed there were a total of 2,177 malnutrition cases, with 321 horses impounded for periods ranging from 15 days to 7 months. The average cost for impounding was $10.50 per day or $225 per month. The most common reason (67% response) for horse neglect was owner ignorance, with economic hardship as the second leading cause. Litigation costs averaged $5,735 per case (Witham et al., 1998). The cost of litigation for cases involving animals is a consideration for the regulatory agencies in proceeding with animal neglect cases. Without the option and economic incentive to process horses, the number of animal neglect cases may double or triple in local communities.

Not all local animal control agencies have the capacity to expand their programs, facilities, and personnel to accommodate abandoned and neglected horses, resulting in additional public and horse health risks. Neglected horses pose a disease risk to the general horse population and

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the public's health by hosting or transmitting diseases. Without proper vaccination programs, zoonotic diseases such as West Nile virus, encephalitis, rabies, or tetanus can occur, elevating the risk of illness to both humans and other horses. The risk of insect-borne diseases, such as Lyme disease (tick) and West Nile virus (mosquitoes), increases without effective pest control. Manure disposal on a premise may be unacceptable, such that manure runoff pollutes surface and ground water with nutrients (ammonia, nitrogen, and organic matter) or disease-causing bacteria (cryptosporidium, salmonella, or giardia). Horses without proper care and compromised health serve as a host or transmit diseases that are infectious to people or other animals. The number of horses as potential hosts and vectors of diseases infectious to humans and other animals will increase with a ban on processing.

Economic Considerations of a Ban on Horse Processing

Horses have many uses in America today. Perhaps the most visible use is in sport, which includes racing, rodeo, cutting and other competitive disciplines. The majority of horses are used for pleasure riding and recreational use. Horses are still used for work on ranches, farms, riding schools, and for carriage rides. In addition, many other countries and cultures worldwide use horses as a food source.

The processing of horses in the United States for the export of meat, and other products, continues to be a highly contentious issue. While value judgments on this issue abound, economic implications of a proposed ban also exist. Economic impact, environmental impact, and the unintended national and international consequences are discussed in the following sections.

Industry Facts

The "Economic Impact of the Horse Industry in the United States," commissioned by the American Horse Council, estimates the horse industry contributes $39 billion in direct economic impact on the United States economy. In 2005, 94,037 horses were processed in the U.S. That is well below the 345,900 processed in 1990. The United States exports live horses, meat and horse products. Over the past decade, the U.S. exported horses to more than 60 countries, with Japan, Mexico and Canada being the primary destinations by value (USDA-FAS, 2006). Horse meat exports go primarily to the European Union (EU) countries of Belgium and France.

A horse processing ban will impact the horse industry and the economy in four major areas:

1. Cost of maintaining unwanted horses;
2. Building and improving infrastructure to sustain unwanted horses;
3. Environmental impact of horse euthanasia and carcass disposition;
4. Revenue loss from the sale and export of horsemeat.

Costs of Unwanted Horses: Maintenance Until Natural Death

Approximately 65,000 – 95,000 horses are processed for food export each year in the United States (FATUS, 2006). A conservative estimate of the total economic impact of a ban on horse processing for export has been reported to be $152 million to $222 million per year (North et al., 2005). The number of unwanted horses is almost certain to increase as the problem compounds each year as unwanted horses are not processed but become the responsibility of

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owners, not-for-profit organizations, or local governments. Consequently, the cost to owners and taxpayers from a ban on the processing of horses could quickly reach billions of dollars.

As previously mentioned animal control facilities, predominantly established to care for small animals, would be faced with the challenge of accommodating horses. The costs to train large animal handlers, purchase land, develop facilities and secure additional equipment would total tens of millions of dollars.

The fact is low to moderate income families own horses, not only the wealthy and affluent. Approximately 45% of horse owners have an annual household income between $25,000 and $75,000 (AHC, 2005). A small change in the average horse owner's economic status may result in the inability to provide their horse an appropriate standard of care. Eventually, there may be a need to sell a horse which has become a financial hardship. If unable to sell, these owners may not have the financial resources required to send their horse to a professional to retrain for an alternative use. Nor might they be financially able or willing to euthanize and dispose of the horse due to the high cost.

Other horses may have limited usefulness due to infirmities or behavioral disorders. This type of horse will not attract a buyer. If an abundance of these horses become available, then saturation of the rescue/adoption/retirement market will likely result. This will lead to higher demand for rescue/adoption/retirement facilities.

If processing is no longer an option, owners' choices are reduced. This reduction in management options may lead to substandard levels of care, neglect, or even abandonment. In fact, a source of many feral horses and burros in America's wild horse inventory is due to abandonment.

Costs of Unwanted Horses: Infrastructure

In recent years there has been an emergence of horse rescue/adoption/retirement organizations responding to an increasing number of neglected, abandoned, and/or unwanted horses. Funding remains a critical issue for these organizations striving to provide an adequate standard of care. The goals of these organizations are to rescue, rehabilitate, retrain, and redistribute, via sale or adoption, the horses over which the rescue/adoption/retirement facilities assume control. Further, due to the long natural life span of horses, approximately 30 years, rescue/adoption/retirement facilities face a potentially prolonged, costly ownership period for each horse they obtain.

The cost to maintain an unwanted horse until its natural death averages $2,340 per year per horse (North et al., 2005). Using a conservative estimate of a useful life of 20 years, followed by an 11 year retirement period, the average maintenance cost for retirement could be as high as $25,740. This estimate does not include veterinary costs incurred if the horse is sick or injured. For many individuals, maintaining the horse until natural death would be cost prohibitive.

For rescue/adoption/retirement facilities, the financial costs can, and will quickly, overcome the capacity of the facility to meet the need of an increasing number of neglected, abandoned, and/or unwanted horses. An anecdotal point of evidence is illustrated by the Indiana Horse Rescue South which has been taking in abused and neglected horses since April 2005. The rescue will have to close if it does not receive private financial support. "Since April the couple have emptied their bank accounts into the not-for-profit organization, they said, going through $30,000 in savings and an inheritance" (Hall, 2006).

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There are costs to the horse industry from a ban on horse processing. The most obvious is the direct annual maintenance cost of unwanted horses that would have been disposed of through processing. Table 2 presents the calculated annual and cumulative maintenance cost of horses processed since the year 2000.

Table 2. Annual and Cumulative Maintenance Costs

Year	Number Processed	Annual Maintenance Cost $[1]	Cumulative Annual Maintenance Cost $[2]
2000	47,703	111,625,020	n/a
2001	56,332	131,816,880	221,116,896
2002	41,490	97,086,600	273,980,117
2003	49,639	116,155,260	335,339,353
2004	65,779	153,922,860	422,194,343
2005[3]	75,173	175,904,820	513,660,294

[1] Annual maintenance cost per horse of $2,340.
[2] Assumes an 80% survival rate per year; for example 32.8% of the number of horses processed in 2000 require a maintenance cost in 2005.
[3] As of October 22, 2005.

The annual maintenance cost represents the cost to maintain the inventory of unwanted horses that would otherwise be processed. Dependent on the number of horses processed, the annual cost ranges from $97 million in 2002, to $175.9 million in 2005. The annual cost, however, understates the total cost required, because horses that would have been processed in previous years now remain in the horse population. Using a rough estimate that eighty percent of the previous years' horse inventory survived, the cumulative annual maintenance cost would have exceeded $513 million dollars in 2005–the annual cost to maintain the horse inventory that would have been disposed of through processing.

Environmental Impact of a Horse Processing Ban

A significant management issue is the safe and proper disposal of horse carcasses to eliminate hazards to people or other animals. Recent disease outbreaks including Foot-and-Mouth disease, Avian Influenza, exotic Newcastle disease, and Bovine Spongiform Encephalopathy (BSE; mad cow disease) have heightened the awareness of potential carcass disposal issues and highlight the need for safe and economical methods for disposal of animal carcasses (AVMA, 2004).

States and local regulations dictate potential carcass disposal methods:

1. Burial
2. Rendering
3. Disposal at a land fill
4. Incineration
5. Composting
6. Bio-digestion

Burial options are dictated by local restrictions concerning ground and surface water contamination, distance restrictions from neighbors, proximity to previous burial sites and depth of burial requirements. Due to the large size of a hole required to bury a horse, a backhoe

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tractor is needed and costs can range from $300 to more than $500. The burial option is becoming increasingly restrictive due to negative environmental externalities created by decomposing horse carcasses.

Rendering is becoming less available as an option for horse carcass disposal. Rendering processes animal carcasses into usable proteins and fats that were once commonly used in animal feeds. Disease concerns, primarily with BSE, have decreased the marketability of rendered products. Rendering will not destroy the BSE prions and incinerators have to operate at extremely high temperatures to effectively inactivate the prions (AVMA, 2004). Although horses are not BSE carriers, it is the declining market in rendered products and thus the decline in the number of rendering plants reduces options for horse carcass disposal. There is also some concern with the presence of barbiturate residues, in rendered products, from chemically euthanized horses. For the limited areas where rendering is a disposal option, the cost for the rendering company to pick up the carcass ranges from $75 to $250 or more.

Disposal at landfills is also becoming increasingly difficult. Local regulations and the rules of the individual firms operating the landfill dictate disposal options. Landfills that accept horse carcasses will likely have a drop-off charge.

Incineration is a bio-secure method of carcass disposal, but it is costly. The cost to incinerate a horse ranges from $600 to $2,000 depending on fuel costs (Lenz, 2004). Incinerators must conform to air pollution regulations.

Composting horse carcasses is a disposal method currently being tested. Significant negative environmental externalities can be generated from a composting site. These include potential water contamination, nuisance odor from decaying carcasses, inadequate disease control, and the required surface application of the end compost product which may not be pathogen free. Composting is not likely to become a widespread option of carcass disposal.

An emerging technology is bio-digestion using alkaline hydrolysis to hydrolyze the animal carcass into a sterile aqueous solution. Some veterinary colleges and animal research facilities use this technology for carcass disposal. Although this is the most environmentally friendly and bio-secure disposal option, it is not a widely available disposal option for most horse owners. For areas where it is an option, it will likely have a substantial drop-off cost to dispose of the carcass.

For all disposal methods, except for on-site burial, transportation of the horse carcass to the disposal site creates issues pertaining to cost, disease transmission and potential exposure to the public of deceased animals. The increasing cost and difficulty of carcass disposal is emerging as a significant issue for horse owners with limited financial capacity to care for an unwanted horse. Eliminating horse processing as an option for unwanted horses will increase the demand on the already constrained methods of horse carcass disposal and creates a new source of negative environmental externalities. Bio-digesters are few in number. Incinerators are more common; however, increasing fuel costs eliminate this disposal option for many horse owners. The availability of rendering as an option is decreasing. This leaves burial and landfills as the most viable disposal option for low valued horses and creates a potential source of negative environmental impact.

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Costs of Unwanted Horses: Loss of Value

The value of United States horsemeat sold for processing in 2002 was approximately $26 million (FATUS, 2003). A federal ban on processing horses for meat export will eliminate these revenues completely. An even larger negative economic impact is that unwanted horses, which in the past could have been sold for processing, will now become a cost to the horse owner as he/she would be required to dispose of the horse in some other way. The loss in revenue is now combined with an expense for disposal of the horse. The result is all horses become somewhat less valuable. Eliminating the possibility of selling a horse for processing was estimated to decrease the value by approximately $304 per horse (North et al., 2005). These authors suggest if a processing ban is imposed, the annual decrease in value for horses that would have been processed in the United States would be between $19.7 and $28.8 million. These figures represent an extremely conservative estimate of the financial impact of a processing ban, as they account only for the direct loss in revenues to horse owners who would have sold their horses for processing. The figures do not represent the effect on horse prices in general, or the cost of disposing of unwanted horses by some other method.

Potential Political Ramifications of Eliminating a Protein Source Currently Provided by the U.S.

Worldwide production of horsemeat has grown to 720,000 metric tons (MT) in 2005, which is up 38% since 1990. This is equivalent to 4.7 million horses, up from 2.8 million horses in 1990. In predominantly English speaking countries (such as the United States, Canada, United Kingdom, etc.) the consumption of horse meat is minimal; a cultural tradition does not include horses as food. Yet those countries are often exporters of horsemeat to non-Anglo countries that do consume this protein source. The leading horsemeat consumers appear to be the Chinese, who annually process an equivalent of 15% of the total United States horse population to provide their population with protein (FAO Database, 2006).

Nutritionally, four ounces (4 oz) of horsemeat contains 20% greater protein than high quality beef cuts (sirloin), 25% less fat, nearly 20% less sodium, double the iron and 1 mg less cholesterol than a 4 oz serving of beef sirloin (ARS-USDA, 2006). When compared to ground beef, horsemeat has 55% more protein, 25% less fat, 30% less cholesterol and 27% less sodium.

Net importers are mostly non-Anglo populations (e.g., Japan, France, Italy, Mexico, and China). Many European countries increased horsemeat consumption in the face of the BSE problems with beef.

FAO-UN reports 2004 U.S. imports of horsemeat at zero, while we exported 12,000 MT. Thirty-one (31) countries reporting horsemeat production increased their production by 500,000 horses from 1997 to 2005. The leading producers of horsemeat are China, Mexico, Argentina and Brazil. The first two have substantial ethnic populations in the United States. United States horsemeat export volume peaked in 1989 (at 59,000 MT) coincident with the BSE scare. The U.S. share of world exports is often less than 0.5%. Imports to the United States have been less than 1% of our exports and by 2004 were 0, while our exports were 12,000 MT primarily to Belgium and France (FAO – UN, 2006). Poland exported nearly the same level as the U.S. in 2004.

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Where does the horsemeat go? Japan was a big market in the early 1980s (52,000 MT/year) but that has decreased to 6,000 to 8,000 MT. Recently, EU-15 imported 20 – 30% more horsemeat during the early part of the BSE crisis (1987 – 1990) but has subsided to pre-BSE levels of 107,000 MT in 2004. EU-15 wide imports are double their exports. In France horsemeat imports have fallen from 57,000 MT in 1980 to 27,000 MT in 2004, while their import-export ratio has fallen from 50% to 3 to 1. Italians are now importers of 22,000 MT of horsemeat, nearly the level of France. Brazil and Argentina export more than 20,000 MT but receive little in imports. The Dutch and Belgium-Luxemburg are big net importers, while Poland is a major net exporter (11,000 MT).

Table 3. Major Horsemeat Production Countries 2005 Annual and World Totals

Country	Animals	Production in M Tons
Italy	213,000	48,000
Mexico	626,000	78,876
Kazakhstan	340,000	55,100
Kyrgyzstan	150,000	25,000
China	1,700,000	204,000
Brazil	162,000	21,200
Argentina	255,000	55,600
Mongolia	310,000	38,000
Worldwide	**4,727,829**	**720,168**

Source: FAO-UN Horticultural Database

If United States policy were to forbid selling to food commerce, there may be potential political ramifications. Americans do not eat horsemeat, but others do. The largest consumption areas are developing countries. Loss of U.S. horses as a protein source will deprive many less fortunate and far older cultures than ours of a substantial food source.

Increase in Competition for the Wild Horse Adoption Program

An increased supply of low-value horses due to a processing ban will also create direct competition with the Bureau of Land Management's (BLM) National Wild Horse and Burro Adoption Program. The BLM has been working diligently to create a viable adoption program for BLM horses removed from national public lands. The BLM program will be negatively impacted by the increased competition for adoption placement between BLM horses and unwanted horses that would have otherwise been processed. This will increase the cost of the BLM program if they have a larger inventory of BLM horses to maintain due to lower adoption rates. The BLM enforces strict standards of care for horses in their control, whereas there are few, if any, governmental regulations in place specifically for rescue/adoption/retirement facilities.

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Humane Handling at U.S. Processing Facilities is Highly Regulated

The United States is not a market for horsemeat for human consumption, nonetheless, humane handling of processed horses is more likely to occur in the U.S. than many other countries. In the U.S. the United States Department of Agriculture oversees horse processing. The likelihood of imposing U.S. humane standards for animal treatment and handling on other countries seems remote. Less wealthy nations will tolerate impositions to their operations if they have market access (e.g. west Mexico, fresh fruits and vegetables. However, with horse processing, the U.S., England, Ireland, Scotland, and Canada have no market opportunity to dissuade practices–which we consider unfavorable–in the rest of the world. Humane processing conditions can be imposed by the U.S. government only in the United States. Therefore, the welfare of horses would be better served if processing occurred in the U.S. versus most other countries.

Conclusion

The direct economic impact and future unintended–and currently unaccounted for– economic impact of banning horse processing for human consumption are substantial. Proponents have not addressed the inevitable costs of such a ban. Horse processing facilities offer a humane option for approximately 1% of the United States horse population. Welfare of the horse is the primary concern; tens of thousands of horses could be neglected or abandoned if a processing ban were imposed. Local and state governments will also be adversely impacted as a result of the proposed ban. Horse owners will feel a direct impact from lower horse sale prices. The severe economic consequences of a ban on processing can not be ignored, and must be addressed.

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References

American Association of Equine Practitioners (AAEP). "American Association of Equine Practitioners' guidelines of humane euthanasia." Kentucky: 2004

American Horse Council (AHC). "Horse Industry Statistics." 2003. <www.horsecouncil.org/statistics.htm > [Date accessed: [2/15/2006].

American Horse Council Factsheet (AHC). 2005. <www.horsecouncil.org/statistics.htm > [Date accessed: [2/15/2006].

American Quarter Horse Association (AQHA). "Understanding your Options for the Unwanted or Unusable Horse." Texas: 2005

ARS-USDA, "National Nutrient Database for Standard Reference for 2004," Release #18, 2004. < http://www.ars.usda.gov/main/main.htm> [Date accessed: [3/01/2006].

American Veterinary Medical Association (AVMA). AVMA News 2004. 7/15/2004. <http://www.avma.org/onlnews/javma/jul04/040715aa.asp > [Date accessed: [3/1/2006].

Byars, T. D., et al. "Retirement and Adoption Farms: A Step in the Right Direction AAEP Proceedings." AAEP Proceedings, Vol. 50 (2004): 171-182.

FAO Database, United Nations, 2004. Agricultural Data. <http://faostat.fao.org/faostat/collections?version=ext&hasbulk=0&subset=agriculture> [Date accessed: [2/28/2006].

FAO-UN Database and USDA-SIS, "Horse Aids Report", from Int'l. Generic Horse Assoc-IGHA. < http://fermat.nap.edu/execsumm_pdf/1588> [Date accessed: [2/28/2006].

FAO-UN Database and USDA-SIS, "Horse Aids Report", from Int'l Generic Horse Assoc.-IGHA. < http://fermat.nap.edu/execsumm_pdf/1588> [Date accessed: [3/01/2006].

FATUS – FR exports, "Chilled, Frozen (Updated 2001 March 8) Foreign Agricultural Trade of the United States". 10/1/2003 <: www.fas.usda.gov/Ustrade/ > [Date accessed: [2/28/2006].

Gray, Lydia F., "The Veterinarian's Role in Equine Neglect: Recognizing and Responding." AAEP Proceedings, Vol. 50. (2004):183-190.

Hall, Christopher, "Horse-Rescue Operation in Harrison Could Close." The Courier Journal Louisville, Kentucky, 1/9/2006

Lenz, T. R., "An overview of Acceptable Euthanasia Procedures, Carcass Disposal Options, and Equine Slaughter Legislation." AAEP proceedings, Vol. 50. (2004): 191-195.

Lohnes, Robin C., "Impact of the BLM Adopt A Horse and Burro Program on the Domestic Horse Market and the "Unwanted" Horse." AAEP proceedings, Vol. 50. (2004): 168-170.

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McGee, J.L. Lanier, and T. Grandin, "Characterizations of horses at auctions in slaughter plants." 2001 Animal Sciences Research Report. The Department of Animal Sciences, Colorado State University. <http://equineextension.colostate.edu/articles/auctionhorses.html.> [Date accessed: [2/23/2006].

Messer, Nat T., "The Plight of the Unwanted Horse: Scope of the Problem." AAEP proceedings, Vol. 50 (2004):165-167

North, Michael S., DeeVon Bailey and Ruby A. Ward, "The Potential Impact of a Proposed Ban on the Sale of U.S.Horses for Slaughter for Human Consumption." Journal of Agribusiness, 23:1(2005) 1-17.

Sellnow, L., "Horse Slaughter." Blood-Horse 2004:1254-1255.

Stull, C.L., "Responses of Horses to Trailer Design, Duration and Floor Area During Commercial Transportation to Slaughter." Journal of Animal Science. 77(1999): 2925-2933.

United States Congress. Animal Health Protection Act.
Subtitle E of Title X of the Farm Security and Rural Investment Act of 2002.
Public Law 107-171: Washington DC, May 13, 2002.
<http://agriculture.senate.gov/Legislation/Compilations/AgMisc/AHPA.pdf >
[Date accessed: [May 1, 2006].

United States Department of Agriculture (USDA), Cordes, T, et al. The Final Rule. The Animal and Plant Inspection Service, Washington DC, 2002.

United States Department of Agriculture (USDA), FAS. Trade database. 2006. < http://www.fas.usda.gov/ >. [Date accessed: [2/28/2006].

United States Department of Agriculture (USDA), NASS. Census of Agriculture. 2002. <http://www.nass.usda.gov/index.asp />. [Date accessed: [3/01/2006].

Witham, C. L., C.L Stull and D.W. Hird. "A California Survey Concerning Chronic Equine Malnutrition." Journal of Equine Veterinary Science. 18(1) 1998: 6-7.

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