

PETA'S BASIC CARE STANDARDS FOR DAIRY-FARMED COWS

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EXECUTIVE SUMMARY

PETA's Basic Care Standards for Dairy Farmed Cows is based on a compilation of the dairy industry's stated best practices on animal welfare and minimum care recommendations and current on-farm best practices by select farms. The document is intended to facilitate PETA's work with corporations in order to prioritize and focus on the most urgent animal welfare issues facing U.S. dairy farmers. The standards highlighted here must meet the following criteria:

1. Adoption of the standard is fundamental to preventing the most egregious pain and suffering among cows used by the dairy industry.
2. The standard is widely recognized by industry and animal welfare experts as easy and inexpensive for dairy farmers to implement, regardless of their size or resources.

The full set of standards that PETA recommends for immediate adoption is as follows:

1. No tail-docking
2. No dehorning
3. Decreasing lameness and other major health problems in cows by:
 - a. Prohibiting the use of rBGH/rBST
 - b. Maintaining sanitary facilities
 - c. Installing nonslip flooring and allowing frequent pasture access to ensure foot health
 - d. Providing regular foot care and immediate treatment for lameness
 - e. Providing adequate bedding with appropriate replacement/cleaning
4. Group housing for calves, without tethering
5. Immediate euthanasia for non-ambulatory cows, when appropriate medical treatment is unavailable or there is no chance of recovery
6. Annual third-party, transparent audits with unannounced audits permitted at any time

ANIMAL WELFARE ISSUES FACING DAIRY FARMS

While the popular image of a dairy farm has historically been bucolic rolling pastures dotted with contented cows chewing their cud, the reality for many cows on today's dairy farms is bleak. Confined to concrete pens; mired in mud, muck, and manure; forced to endure painful mutilations without the small grace of anesthetics; dosed with growth hormones and drugs; pushed to produce more milk than their bodies were designed for and suffering the body-breaking results: mastitis, lameness, exhaustion, and premature death.

Fewer Cows, More Milk

Cows have a natural lifespan of about 20 years, but the stress caused by the conditions on factory farms renders cows worthless to the dairy industry by the age of 4 or 5, at which time they are sent to slaughter. While the number of farms with cows used for dairy has decreased almost 90 percent from 1950 and the number of cows has decreased from 13 million to 9 million in the same time period, milk production has increased, from 116 billion pounds of milk per year in 1950 to 185 billion pounds in 2007.

Normally, cows would produce only enough milk to meet the needs of their calves (around 16 pounds per day), but genetic manipulation, antibiotics, and hormones are used to force each cow to produce more than 20,000 pounds of milk each year (an average of 54 pounds per day). As ruminants, cows should never be fed animal products, but cows at conventional dairy operations are fed high-protein diets—which may include meal containing ground up chickens, pigs, and other animals—because their natural diet of grass would not provide the nutrients that they need to produce such massive amounts of milk.

In addition to the radical diet and genetic manipulations, the “fewer cows, more milk” incongruity can be attributed to a shift toward large-scale dairy factory farms. Three decades ago, the average U.S. dairy herd size was 29 cows. Today, that number is 139 and rising rapidly. The largest herds are made up of more than 15,000 cows, and herds of 1,000 to 5,000 cows are common.

Prevalence of Disease

There is a high prevalence of disease in cows used by the dairy industry. In 2006, the last year that the U.S. Department of Agriculture (USDA) conducted a full-scale survey of the U.S. dairy industry:

- Ninety-three percent of dairy operations with fewer than 100 cows and 100 percent of operations with more than 100 cows reported incidents of clinical mastitis, with 17.5 percent of cows on large farms (more than 500 cows) reported to be suffering from this painful inflammation of the udder.
- Thirty-eight percent of dairy operations with fewer than 100 cows reported incidents of respiratory problems, while 98.1 percent and 100 percent of operations with 100 to 499 and more than 500 cows, respectively, reported observing these problems in cows.
- Dairy farmers reported that 14 percent of cows on dairy operations of all sizes suffer from lameness.

The USDA's survey of the condition of the dairy industry, published in 2007, paints a stark picture:

Of permanently removed cows, 26.3 percent were removed for reproductive problems and 23.0 percent for udder or mastitis problems. Lameness or injury and poor production not related to other listed problems led to the permanent removal of 16.0 and 16.1 percent of cows, respectively. ...

...

Scours, diarrhea, or other digestive problems accounted for the highest percentage of unweaned heifer deaths (56.5 percent), followed by respiratory problems (22.5 percent). For weaned heifers, respiratory disease was the single largest cause of death (46.5 percent) **The single largest cause of cow deaths was lameness or injury (20.0 percent)**, followed by mastitis (16.5 percent), calving problems (15.2 percent), and unknown reasons (15.0 percent). [*emphasis added*]

a. Percentage of operations by producer-identified health problems occurring in cows during 2006, and by herd size:

Producer-Identified Health Problem	Percent Operations							
	Herd Size (Number of Cows)							
	Small (Fewer than 100)		Medium (100-499)		Large (500 or More)		All Operations	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	
Clinical mastitis	93.0	(1.0)	100.0	(-)	100.0	(-)	94.9	(0.8)
Lameness	83.4	(1.4)	100.0	(-)	100.0	(-)	87.9	(1.0)
Respiratory problems	38.0	(1.7)	98.1	(0.8)	100.0	(-)	51.5	(1.4)
Retained placenta (more than 24 hours)	76.9	(1.5)	99.7	(0.2)	100.0	(-)	82.6	(1.2)
Infertility problems (not pregnant 150 days after calving)	78.2	(1.5)	99.2	(0.4)	100.0	(-)	83.5	(1.1)
Other reproductive problems (e.g., dystocia, metritis)	31.0	(1.6)	58.1	(2.2)	67.4	(2.7)	38.8	(1.3)
Diarrhea for more than 48 hours	28.7	(1.6)	51.0	(2.3)	72.6	(2.8)	35.7	(1.3)
Milk fever	77.9	(1.5)	100.0	(-)	100.0	(-)	83.5	(1.2)
Displaced abomasum	51.2	(1.7)	98.9	(0.4)	100.0	(-)	62.3	(1.4)
Neurological problems	7.6	(1.0)	18.1	(1.7)	23.5	(2.3)	10.7	(0.8)
Other health-related problems	7.4	(1.0)	8.3	(1.3)	10.0	(1.7)	7.7	(0.8)

b. Percentage of cows* by producer-identified health problems occurring in cows during 2006, and by herd size:

Producer-Identified Health Problem	Percent Cows*							
	Herd Size (Number of Cows)							
	Small (Fewer than 100)		Medium (100-499)		Large (500 or More)		All Operations	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	
Clinical mastitis	16.5	(0.5)	14.8	(0.6)	17.5	(1.0)	16.5	(0.5)
Lameness	13.2	(0.5)	15.6	(0.6)	13.5	(0.8)	14.0	(0.4)
Respiratory problems	2.5	(0.2)	4.1	(0.3)	3.4	(0.3)	3.3	(0.1)
Retained placenta (more than 24 hours)	8.9	(0.3)	8.9	(0.3)	6.4	(0.4)	7.8	(0.2)
Infertility problems (not pregnant 150 days after calving)	10.8	(0.4)	13.2	(0.5)	14.1	(0.6)	12.9	(0.3)
Other reproductive problems (e.g., dystocia, metritis)	3.4	(0.2)	5.0	(0.3)	5.0	(0.5)	4.6	(0.3)
Diarrhea for more than 48 hours	3.9	(0.5)	2.5	(0.3)	1.6	(0.1)	2.5	(0.2)
Milk fever	6.6	(0.2)	5.9	(0.3)	3.0	(0.2)	4.9	(0.1)
Displaced abomasum	3.6	(0.2)	4.8	(0.2)	2.5	(0.2)	3.5	(0.1)
Neurological problems	0.3	(0.0)	0.3	(0.0)	0.2	(0.0)	0.3	(0.0)
Other health-related problems	0.8	(0.2)	1.0	(0.4)	0.2	(0.0)	0.6	(0.1)

*As a percentage of January 1, 2007, cow inventory

These facts are particularly troubling when one considers that some of the most common and painful ailments (including mastitis and lameness) are easily avoided when simple, preventative measures are taken and proper husbandry procedures are in place and enforced.

Through undercover investigations, industry research, and advice from animal welfare experts, PETA has identified six key areas responsible for causing the most pain and suffering to cows used for dairy production on factory farms. The solutions—many of which have already been

adopted by some in the dairy industry—are simple to implement, cost relatively little money, and will prevent immeasurable suffering at a time when consumers are demanding and expecting more humane practices from producers.

SELECT EXAMPLES OF DAIRY FARM OPERATIONAL IMPROVEMENTS

With 75,000 dairy operations in the U.S. and no significant national, enforceable on-farm animal welfare laws or standards in place, the quality of animal welfare in the dairy industry falls across a broad spectrum, from non-existent to somewhat more rigorous. In this section, we will highlight a few select examples of operations and organizations that have adopted transparent and more humane animal welfare standards. Each of the six PETA-recommended standards is already in use by individuals and/or required by organizations within the dairy industry, as evidenced below.

Producers and Organizations Universally Condemn Tail-Docking

The American Veterinary Medical Association (AVMA), the American Association of Bovine Practitioners, the American Society for the Prevention of Cruelty to Animals, the National Milk Producers Federation’s FARM program, and renowned animal behaviorists, including Dr. Temple Grandin¹, all oppose the practice of tail-docking. In addition, many producers have moved away from the practice, including the CROPP Cooperative, supplier of Organic Valley dairy products, whose animal care standards state, “Cattle should be allowed to exhibit natural behavior, which maximizes their well being. Removing the tail can result in chronic pain and provides no benefit to the animal.” Therefore, “Tail docking is prohibited due to pain and suffering and the animal’s consequent inability to swish flies.”

Reducing Lameness and Disease

Many cooperative dairy organizations or standards-based programs sponsored by animal welfare or veterinary organizations already require member farmers to adhere to some or all of PETA’s recommendations, including the Animal Welfare Institute (AWI)’s Animal Welfare Approved program, which has approved farms in 42 U.S. states and Canada.

It is universally understood that all dairy operations, regardless of their organic designation, need a herd health plan to address the quality of facilities and care. The National Dairy Animal Well-Being Initiative, a report and guidelines put together by the National Milk Producers Federation (NMPF), states that it is critical to have a written herd health plan, developed in consultation with the herd veterinarian, and that it should specifically address “protocols for prevention, detection and action for mastitis and lameness.” NMPF recommends that “[f]acilities should be designed and maintained so animals can be moved in a manner that reduces the risk of slips, falls

¹Dr. Grandin is a professor of animal science at Colorado State University and an internationally renowned animal welfare expert. She has served as a consultant on slaughter standards and other animal welfare standards for clients such as the U.S. Department of Agriculture, the American Meat Institute, and major companies such as Burger King and Wendy’s.

and collisions” and that “[a]dult cattle should be given space to stand and lie down, be provided an environment that is clean and dry and be protected from seasonal weather extremes. Facilities should be designed, constructed and maintained to reduce the risk of injury and the development of leg lesions.” AWI requires all animals to be maintained at a body score of 2 or above on a 1 to 5 scale or 4 or above on a 1 to 9 scale, meaning that only minimal signs of lameness are present, if at all. While PETA’s standards do not specifically require an official herd health plan, the existence of such a plan may address PETA’s recommended actions and is encouraged.

Three important factors affecting lameness rates are sanitation, flooring, and foot care. Each will be discussed in detail below. One study found that a heifer’s risk of lameness was 3.6 times higher for cows housed on concrete slats compared to those on rubber slats. The risk of sole hemorrhage and sole ulcer was 2.2 and 2.8 times higher, respectively. PETA’s standards do not require a specific type of flooring but do require nonslip surfaces. NMPF’s Farmer’s Assuring Responsible Management guidelines for farmers state that “[r]oughened, nonabrasive flooring prevents animals from slipping, which can result in broken legs or crippling injuries” and recommends that farms install nonslip walkways or alleys.

Finally, many companies and producers have already banned the use of genetically engineered growth hormones, including Walmart, Starbucks, Kroger, Publix, Ben & Jerry’s, and California Dairies (which is responsible for 9 percent of milk production in the U.S.); rBST has also been banned in the European Union (EU), Canada, Japan, Australia, and New Zealand.

Producers That Allow Group Housing for Calves

Like all mammals, mother cows form strong maternal bonds with their calves, and on dairy farms and cattle ranches, cows can be heard frantically bellowing out for their calves for several days after they have been forcefully separated. What’s worse, the young calves are often tethered to hutches and denied all but visual contact with other members of their own species. AWI’s Animal Welfare Approved plan, in which dozens of dairies nationwide participate, prohibits raising calves in isolation and tethering individual calves.

Annual Audits Provide Needed Accountability

All reputable industry organizations require facility audits of their members to ensure compliance with animal welfare standards. To be a part of the CROPP Cooperative, farms must submit to audits, which may be unannounced. And National Dairy FARM Animal Care Program fees are used in part to pay for third-party verification. The National Dairy Animal Well Being Initiative states it best: “Assuring on-farm dairy animal well-being requires third party verification.”

PETA STANDARDS: SUPPORTING INFORMATION

Tail Docking of Dairy Cattle: A Veterinary Perspective

By Holly Cheever, D.V.M.

Excerpted from *Humane Society Veterinary Medical Association (emphasis added)*

March 10, 2010

At the time of my graduation from Cornell's College of Veterinary Medicine in 1980 and my entrance into dairy production medicine, I had heard dimly of tail docking in bovines as an unnecessary oddity practiced only in New Zealand. None of the farmers whose herds I cared for in Cortland County, New York, were aware of tail docking, so I never had any personal exposure to this practice.

In the 1980's and 1990's, however, it spread to the United States and Europe and now, **by one 2005-2006 report, it is done in 82.3% of American dairies** up from the USDA's 2001 report stating that docking was practiced at the rate of 50.5%.

Its original purported aim was to minimize the spread of leptospirosis to milking staff from an infected cow's soaking her tail's switch in her urine and spraying the workers when swatting flies. In addition, the removal of two-thirds of a cow's tail was claimed to promote greater udder cleanliness, therefore improving milk quality and hygiene, and at the same time providing increased comfort for the farm workers.

An Inhumane Procedure

Tail docking in the United States is typically done to heifers pre- or post-calving, though it can be done as early as day one in the newborn calf. The procedure can be done by the use of the elastrator band system (most common), the use of emasculators, or by surgical excision. Anesthesia and pain management are not employed. The heifers express distress and pain both during the procedure itself and for long periods post-operatively.



Heifers express distress and pain during the tail-docking procedure. ©istockphoto

During the healing period, they move what is left of their tails less and instead hold them pressed against their hindquarters; they may be more restless and exhibit more displacement behaviors than they did prior to their banding. Additionally, neuromas (tangled nests of axons growing from damaged nerves) at the amputation site are a known sequela to docking, but there are no studies detailing their rate of occurrence. Since neuromas are the cause of the phantom pain in humans with amputated limbs and beak pain in debeaked chickens, we can assume that such growths produce chronic pain in cattle as well, as evinced by the increased sensitivity to heat and cold in docked cows' stumps.

In addition to pain, **tail docking increases the heifers' risk of contracting gangrene, tetanus, and other pathogens in the stump's necrotic tissue,** especially with the elastrator band method. Their discomfort increases

dramatically with fly season, since they are no longer able to eliminate flies from their hindquarters. Flies can be so disruptive to cattle welfare that **cows without tails have been seen to exhibit lowered milk production, less weight gain, and disrupted grazing behavior due to their inability to rid themselves of their biting pests.** One final welfare concern is that cattle use their tails as behavioral and communication cues to their herd mates, and **removal of this appendage may impair their abilities to interact naturally and appropriately.**

Disproving the Claims



Studies show that the claims of increased udder cleanliness and milk hygiene and quality are unfounded. © istockphoto

Clearly, the pain associated with the procedure and the long-term distress and chronic pain make tail docking very controversial, even if its touted benefits are true—but are they?

Internationally, studies have determined conclusively that there is no basis for the claims for increased udder cleanliness, improved milk hygiene (including lowered

somatic cell counts), and greater milk quality. The evidence is, in fact, overwhelming that **the purported benefits of tail docking are completely unfounded, as seen in all studies examining these claims.** As for the concern that worker comfort is impaired by receiving a wet switch across the face, the tails' switches can be trimmed a couple of times a year (but not in fly season) and the environment may be kept cleaner to keep the switches cleaner.

Since the studies have disproved the claims and for legitimate welfare concerns, **tail docking is, at this time, banned in Denmark, Germany, The Netherlands, Norway, Scotland, Sweden, Switzerland, and the United Kingdom, as well as in some states in Australia.** The Canadian Veterinary Medical Association opposes the practice and stipulates that, if it must be done, it must be performed by properly trained personnel and must include pain management.

Industry and Veterinary Opposition

In the United States, the American Veterinary Medical Association also opposes this practice, and states that if “medically necessary,” it must be performed by a licensed veterinarian; the American Association of Bovine Practitioners acknowledges that it “is not aware of sufficient scientific evidence in the literature to support tail docking in cattle.” However, acceding to member pressure, rather than expressing opposition, it requests that they “counsel clients on proper procedures, benefits, and risks” and also recommends that it be done as young “as practical.” Industry groups have also weighed in against the practice. The

National Milk Producers Federation recommends against tail docking of dairy calves in its National Dairy Farm Program Animal Care Manual and instead recommends switch trimming.

Dehorning Cattle: Cruel and Unnecessary

Horns are special adaptations of the integument (skin). The corium (the area of cells located at the junction of the horn and skin) is the site of horn production. If the horn but not the corium is removed, horns will resume growing. Horns begin as buds within the skin of the poll. At approximately 2 months of age, the horn buds become attached to the periosteum of the frontal bone overlying the frontal sinus. ...

The cornual nerve, a branch of the Trigeminal nerve (cranial nerve V), provides sensation to the skin of the horn/horn bud region. Injection of a local anesthetic around the cornual nerve as it traverses the frontal crest desensitizes the area.

Disbudding involves destroying the horn-producing cells (corium) of the horn bud. Horn buds are removed without opening the frontal sinus. Chemical and hot-iron disbudding methods destroy the horn-producing cells, whereas physical methods of disbudding excise them.

...

Dehorning is removal of the horns after they have formed from the horn bud. Physical methods of dehorning (gouge dehorning) include the use of embryotomy wire, guillotine shears, or dehorning knives, saws, spoons, cups, or tubes. The Barnes-type scoop dehorner is commonly used for physical dehorning.

Animal welfare expert Temple Grandin calls dehorning “the single most painful thing we do” to cattle and adds, “It’s a lot of stress and we should be giving [cows] a lot of anesthetics.” And yet dehorning is widely practiced by the dairy industry and neither anesthetics nor pain relief are commonly provided.

The USDA reports that 94 percent of operations routinely dehorned heifer calves in 2006. Of those, a reported “two-thirds (69.1 percent) used a hot iron; 28.2 percent used a tube, spoon, or gouge; and 16.3 percent used saws, wire, or Barnes dehorner.” **Only 17.7 percent of operations reported using any form of pain relief during dehorning.** The AVMA calls disbudding with a hot iron “quite painful.” Worse, the most painful procedures are reserved for the oldest calves, for whom the event is even more traumatic. At approximately 2 months old, the horn begins to grow into the bone, resulting in much more painful and dangerous dehorning, often requiring the “scoop” method in which a sharp metal scoop-like device is pressed into the cow’s head to gouge out any horn and horn developing tissue. Older calves are also more

difficult to restrain and handle, and there is increased risk of trauma, blood loss, infection, and fly larvae infestation of the wounds.

d. For the 94.0 percent of operations that routinely dehorned heifer calves while on the operation during the previous 12 months, percentage of calves dehorned and average age at dehorning, by method used to dehorn calves:

Method	Percent Heifers*	Std. Error	Average Age (Weeks)	Std. Error
Hot iron	67.5	(3.1)	7.6	(0.4)
Caustic paste	12.2	(2.6)	2.7	(0.3)
Tube, spoon, or gouge	13.0	(1.7)	16.9	(1.2)
Saws, wire, or Barnes	7.1	(1.1)	23.5	(2.6)
Other	0.2	(0.1)	32.7	(6.9)
Total	100.0			

*Dairy heifer calves weaned during the previous 12 months.

The USDA also reports that of dairy operations that used a dehorning procedure that would cause bleeding, less than half (46.4 percent) disinfected the equipment for each calf, increasing the likelihood of disease transmission and infection. Common post-dehorning infections include tetanus, Bovine cutaneous papillomas, and an increased risk of transmission of the bovine leukosis virus (BLV).

According to the AVMA, it can take up to eight hours for a dehorned calf's plasma cortisol concentrations (an indication of stress) to return to baseline levels. Prior to dehorning, cows try with all their might to avoid it—they wag their tails (a stress response), thrash their heads, rear up, and can become so frantic that they trip over themselves. Afterward, they will rub their heads repeatedly, shake their heads, extend their necks, eat less, and flick their ears and tails more, all of which are signs of acute distress and pain in cattle.

Lawmakers and dairy producers in Europe already recognize the importance of using painkillers when dehorning cattle. In the EU, calves more than 14 days old *must* receive a local anesthetic during disbudding or dehorning, and in the U.K., it's illegal to disbud calves or dehorn *any* cattle without anesthetic unless chemical cauterization is used, and chemical cauterization can only be used in the first week of life.

Despite the overwhelming evidence that dehorning is painful, U.S. guidelines and standards are remarkably vague, leaving room for many farmers to forgo any painkillers and allowing calves to suffer as a result.

One alternative to dehorning and disbudding cattle is to breed for polled (hornless) breeds. While these breeds have traditionally been shunned because of production concerns, the USDA states,

“It now appears that the tremendous amount of genetic selection, primarily for milk production, that has occurred in horned dairy breeds has made them *appear* superior in terms of productivity” [*emphasis added*]. The AVMA states, “Polled beef bulls already demonstrate behavior, growth, carcass quality and reproductive performance equivalent to their horned counterparts.” With a breeding program and careful genetic selection, polled cows could produce equivalent amounts of milk to their horned counterparts.

NMPF’s Animal Care Manual cites several justifications for dehorning and disbudding, including “reduce[d]feeder space requirements” and others that can easily be met by adjusting handling and housing standards to fit the cow’s nature instead of mutilating the cow for convenience.

PETA’s standards require dairy farms and calf-raising operations to refrain from dehorning and disbudding.

Key Factors to Avoid Lameness

As noted above, 20 percent of on-farm cow deaths are caused by lameness or injury—the single largest cause, according to the USDA. A number of factors contribute to lameness in dairy-farmed cows, and a comprehensive approach and rapid response to this critical issue is critical to combating and controlling the epidemic. The initial signs of lameness must be treated promptly in order to prevent suffering and eventual death.

Lameness can be caused by musculoskeletal or metabolic factors or illness in the cow (often related to the farm environment). Proper nutrition and feeding management are important preventative factors but will not be discussed in detail here since providing cows with a well-balanced, healthy diet is one of the most basic requirements of any dairy.

PETA’s standards primarily address mechanical and environmental factors that lead to lameness. These factors are often easily controlled through adequate employee training and good husbandry practices. For instance, mechanical lameness can be caused by horn overgrowth, claw imbalance, or improper hoof angle, all of which can be prevented through proper foot care and nonslip flooring. Lameness from infectious disease is caused by bacteria in the soft tissue around the hoof and in between the claws and can leave cows in critical condition. Common infectious diseases include interdigital dermatitis (hoof rot), digital dermatitis (foot warts or hoof warts), and interdigital phlegmon or interdigital necrobacillosis (acute foot rot). All can be prevented with good cow and farm hygiene and regular footbathing. Simply put, cows’ feet must remain clean and dry in order to prevent moisture retention that breeds disease, infection, and injury.

In addition to the welfare benefits for cows, taking preventative measures to avoid lameness in cattle has a direct effect on farm finances. One study estimated that lameness costs an average of \$9,000 per 100 cows each year.

The adoption of PETA’s full set of standards requires farms to prohibit the use of rBGH; maintain sanitary facilities with clean, dry, deep bedding material; install nonslip flooring; and provide regular foot care, hoof trimming, and immediate treatment for lameness.

Prohibit the Use of rBGH/rBST

Many animal welfare–based and all organic dairy-farmed animal welfare programs prohibit the use of artificial growth hormones because of the negative effects on both cows and humans. Major corporations and dairy producers have already taken this step, including Walmart, Sam’s Club, Starbucks, Kroger, Publix, Ben & Jerry’s, and California Dairies (which is responsible for 9 percent of milk production in the U.S.).

Coinciding with the U.S. Food and Drug Administration (FDA)’s 1995 approval of recombinant bovine growth hormone (rBGH, also referred to as rBST) for use in the U.S., the EU commissioned a study to assess the effects and risks of using genetically engineered growth hormones on the welfare of cows used for dairy. The report concluded, among other findings, that,

An increased incidence of foot and leg disorders associated with the long term administration of [r]BST has been described by several authors. In the largest scale study, ... foot disorders ... increased by a factor of 2.2 and the number of days affected was increased by a factor of 2.1. As a consequence of the nature of the different foot and leg disorders there will be pain and other suffering in these animals. Hence welfare will be seriously and adversely affected as a consequence of the BST treatment.

A separate report by the EU outlining the risks to human health was published simultaneously. Shortly after publication of the reports, the EU’s 10-year moratorium on the sale of rBST was turned into a permanent ban. For reasons that reflect the EU’s rationale for the ban, organic dairy farms in the U.S. ban the use of rBST and many conventional producers and companies are following suit. The Organic & Non-GMO Report states that “[t]he number of dairies using the hormone is dropping dramatically.”

Despite this proclaimed trend, it’s difficult to pin down how many cows are injected with rBST on U.S. dairy farms since the substance is FDA-approved and farmers are not required to report its use. Estimates vary: One 2008 survey found that 71.7 percent of dairies used the hormone, while a 2006 USDA survey reported that figure at 15.2 percent.

Regardless of the actual number of dairies using rBST, the following serious animal welfare issues have been directly linked with its use:

- A meta-survey concluded that injecting cows with rBST increases their risk of mastitis by approximately 25 percent. Initial studies by Monsanto, the inventor of rBST, put this figure at a staggering 76 percent for cows who had one offspring and 50 percent for cows with multiple offspring.
- **Cows given rBST are 55 percent more likely to experience lameness**, most commonly manifesting as joint, leg, and hoof lesions and inter-digital swelling. In fact, when rBST was originally sold for commercial use in the U.S., it was required to include a package insert indentifying a number of adverse side effects, including foot and leg problems.

- Typically, rBST is given to cows during their lactation period. These cows tend to have a lower-than-normal body condition score at the end of the lactation period and going into the next lactation period.

The dramatic evidence of rBST's detrimental effect on cow health is the primary reason that a ban on the use of the product is recommended as part of PETA's standards for dairy farmed-animal welfare.

Maintaining Sanitary Facilities

Another critical aspect of reducing instances of lameness is the maintenance of safe, sanitary facilities for all cows on dairy farms. While the dairy industry has issued detailed guidelines for proper sanitation to protect animal health through programs such as the FARM Animal Care Manual, these standards are merely optional and undercover investigations by PETA and other animal welfare organizations have found that many farms fail to meet even the most basic standards of care. One typical example is a 2009 PETA undercover investigation of a Land O'Lakes supplier facility in Pennsylvania that revealed routine neglect and cruelty to cows.

Over the course of several months, **the investigation documented filthy conditions for cows on the farm, including pens that were filled with deep, pooled excrement**, and cows who suffered from ailments and conditions so severe that they collapsed and became "downers" but were not put out of their misery or provided with veterinary care in a timely manner, if at all.

PETA's investigator found that cows and calves were routinely kept in pens and barns whose floors were covered with inches of excrement, which caused foot and hoof problems and fostered the spread of disease. Calves were riddled with pneumonia, "manure scald," ringworm, pinkeye, and parasites. Some cows suffered respiratory distress and had pus-filled nasal discharge streaming down their faces. Abscesses were common on the farm—some abscesses burst and oozed pus, even as cows were being milked.

During the course of PETA's investigation, Land O'Lakes inspected the farm, noting that there were areas in need of cleaning (including the milking parlor walls) but approved the facility nonetheless.



Conditions like these were defended as “standard dairy practice” by operators at a Land O’Lakes supplier farm.

This is just one of many investigations that demonstrate the critical importance not only of appropriate cattle-waste management but also of proper facility auditing procedures, which will be discussed in detail later.

Waste removal and surface management have the most significant impact on preventing death or health problems such as infections, contagious diseases, slippage, bone breakage, and lameness. According to NMPF, “Proper sanitation and waste management keep animals dry, ... clean and free of manure and provide them with comfortable, healthful surroundings. In contrast, poor sanitation contributes to many animal health problems.” Foot warts, for example, thrive where excessive manure is present on hoofs and are among the most challenging foot ailments to control.

PETA’s minimum recommendations for maintaining sanitary facilities are as follows:

- Facilities must be free of standing water. All cows must have ample clean, dry space in which to stand and lie down inat all times. An automatic alley scraping system is less preferable, since it has a higher chance of accidentally catching a stray calf or down cow.
- Waste-removal implements must be cleaned daily.
- Manure must be removed from facilities (including freestalls, walkways, and other traffic areas) *at each milking*—at a minimum—to improve sanitation and traction.
- Individual pens and freestalls must be cleaned and groomed daily, at a minimum.
- Cows must be removed from an area prior to cleaning.

The Important Role of Nonslip Flooring

Flooring and other surfaces on which cattle stand have a direct impact on overall animal health. NMPF's FARM Animal Care Manual highlights the critical role of nonslip flooring:

“Roughened, nonabrasive flooring prevents animals from slipping, which can result in broken legs or crippling injuries.” The U.K.'s Department for Environment, Food, and Rural Affairs (DEFRA) Cattle Code also calls for a slope no more than 10 percent, as “steeper slopes can cause leg problems, slipping, and falling.” DEFRA also states that concrete surfaces “should not be too rough as this can graze or even cut the soles of the animals' feet.”

Slatted floors are not permitted under PETA's recommendations, unless the slat or wire is under a drinking area (and then it is considered drainage, not flooring).

A scientific meta-analysis of the impact of flooring on cow behavior conducted by Canada's National Farm Animal Welfare Council and published in March of 2009 reached the following three important conclusions:

1. The type and quality of flooring has a major impact on cow welfare.
2. Concrete flooring is too hard and provides insufficient traction, increasing the chance of slips and falls.
3. Concrete flooring, compared to natural straw or earth surfaces, increases the chance of lameness and hoof lesions.

While PETA's standards do not prohibit concrete floors, any concrete surfaces must be maintained in such a way that they are kept dry, grooved to prevent slips, not so rough as to damage cows' feet, and not worn smooth. No cow should be continuously confined to an area that has a concrete surface. Regular access to well-maintained pasture must be provided. In addition to providing an outlet for a cow's social needs, walking on well-maintained natural surfaces can help to combat the hoof-eroding effects of concrete. Current statistics indicate that for cows on U.S. dairy farms, such access to pasture is the exception, rather than the rule. The USDA's 2006 survey indicated the following troubling facts:

1. Year round, 60 percent of dairy operations deny lactating cows any outdoor access, or they are given access only to dry lots, barren areas that typically become rain- and manure-soaked during the wet season and that provide no shelter from biting cold during the winter.
2. More than 50 percent of dairy operations keep lactating cows on concrete floors. Only 10 percent of operations keep lactating cows primarily on pasture, and this represents only 5 percent of total cows.
3. While dirt is the predominate flooring on only 5.4 percent of operations, this figure represents 20 percent of cows, reflecting the use of dry lots on factory farm operations.

Providing Timely and Regular Foot Care and Immediate Treatment for Lameness

The fourth factor for prevention of lameness in cows used for dairy is the provision of timely and regular foot care in order to prevent painful diseases and conditions in cows that are common causes of lameness and to provide immediate treatment when lameness is present. The dairy industry itself has highlighted the severity of the lameness issue through the FARM program and

encourages the adoption of a thorough herd health plan, worker training and standard operating procedures, safe and sanitary environments, and attentive preventative care in order to avoid this problem, recommending (among other things), “Routine examination and trimming of hooves.” PETA specifically requires a *minimum* of twice-yearly hoof inspection and trimming carefully carried out or supervised by a qualified farrier.

All cattle in a herd should score 1 on the locomotion scorecard; cows with higher scores must be provided with immediate treatment by a veterinarian. Diagnosis of and corrective action for the underlying cause must also be carried out immediately.

Appropriate Bedding Standards

Finally, the provision of clean, comfortable bedding for cows is crucial to the prevention of lameness and the promotion and maintenance of a healthy herd. Field research conducted by Dr. Nigel Cook in 2001 shows that lameness rates dramatically improved when cows lie down 11 to 14 hours per day, which they are unable or unwilling to do when bedding is soiled, uncomfortable, or unavailable because of overstocking (a practice in which a farm provides a fraction of beds in comparison with the number of cows in the herd in order to save money and conserve space).

There are advocates throughout the dairy industry for various types of bedding, from water beds to sand to straw, and PETA takes no official position on specific bedding types, as different materials may be appropriate for different environments and herds. For the purposes of providing comfortable, clean environments and preventing lameness, all operations should implement the following measures:

1. Bedding must be kept clean and dry and be available to all animals at all times. According to the dairy industry’s FARM Animal Care Manual, “All animals should have the opportunity to lie down on dry areas.”
2. Waste must be removed from lying areas at least twice daily.
3. If rubber-filled mats are used, they must be cushioned with additional dry bedding material.
4. Bedding areas must be large enough for the herd’s largest cows to lie down, stand up, and lunge forward comfortably. During cold weather, bedding must be deep enough for cows and calves to burrow and keep warm.

In addition to increasing comfort and reducing lameness in cows, evaluating and changing bedding materials along with improving environmental management has been shown to increase milk production markedly, with associated costs regained in one to two years.

Benefits of Group Housing With Freedom From Tethering

Animal behaviorists have found that cows interact in socially complex ways and develop friendships over time. They mourn the deaths of and separation from those they love. The mother-calf bond is particularly strong. There are countless reports of cows who frantically call and search for calves who have been taken away, and some have even been known to travel for miles looking for their young. Blackie, a cow in England, made headlines years ago when she broke out of an enclosure and walked 7 miles—to a farm that she’d never been to before—to

reunite with her calf, who had been sold separately at auction earlier that day. Blackie was found the next morning suckling her baby, identified by the auction sticker still attached to her rump.

Despite the dairy industry's acknowledgment (as stated in the FARM Animal Care Manual) that “[c]ows are gregarious and usually do not like to be isolated,” it is common practice for calves on dairy farms to be taken from their mothers within hours of birth and raised in isolation, often tethered to small hutches and unable to contact or form bonds with another animal of their own species. **Nearly 87 percent of newborn calves are removed from their mothers before they are 12 hours old; only 2.6 percent of newborn calves are permitted to stay with their mothers more than 24 hours.** The USDA reports that nearly 70 percent of dairy operations confine unweaned heifers to an individual pen or hutch, and nearly 50 percent keep lactating cows in tie stalls or individual pens, a devastatingly unnatural life for such social beings.

The USDA cites concern with the spread of disease as justification for the solitary confinement of unweaned calves, with scours (diarrhea) and death from respiratory illness as the primary concerns. However, with proper management techniques and husbandry practices, the risk of respiratory disease can be largely mitigated.

Colostrum provides a calf with passive immunity critical to a healthy future in the same way that human colostrum provides immunities for newborn human infants. Durst and Nielsen (2008) state, “Consumption of an adequate amount of high-quality colostrum is the single most important management factor in ensuring health and survival of calves” It's common practice to feed waste milk from mastitic cows to unweaned heifers. This milk is nutritionally inconsistent and can contain pathogens and antibiotics that can harm calves. Instead, calves should receive whole milk from healthy cows or high-quality milk replacer. Removing cows who have tested positive for Johne's disease from the herd will also help reduce the risk of disease.

In addition to high-quality nutrition (and plenty of it—much more than the industry standard of 2 quarts per day), the risk of disease in young calves can be reduced by environmental controls. It's commonly understood that there is a direct correlation between air quality and respiratory illness. Better air mitigates the development and spread of disease. Maintaining sanitary facilities, including the prompt removal of urine and feces, will reduce the level of harmful gases (including ammonia) and bacteria in a calf's environment. Increasing the size of the calf's housing area, reducing the temperature of indoor environments, and ensuring adequate ventilation (while reducing drafts) will also improve air quality, thereby reducing the risk of contracting respiratory illnesses. Improving air quality will also help reduce scours, as will thoroughly cleansing the udders and teats of any cows with whom calves come into contact and ensuring that all calves have continuous access to clean, dry, deep bedding that is changed at least twice daily.

In addition to being preventable, the clinical signs of respiratory infection are easily identifiable. If dairy farms monitor animals thoroughly and frequently, infected animals can be quickly isolated for veterinary care.

Keeping calves in even-numbered, age-appropriate groups is good for their social and physical health, and any dairy farm with good calf-management practices can adopt this practice. “Group

rearing allows for early social interactions that have been shown to be important in the development of normal social responses later in life. Group housing provides improved access to space, allowing for more vigorous activity and play.” Raising calves in groups is also less labor intensive, costs less, and results in faster weight gain for calves. (Weary, 2004) In addition, weak calves are encouraged to eat more in group housing because calves eat more when they see others eating.

The Importance of Providing Immediate Euthanasia for Non-Ambulatory (Downed) Cows

If PETA’s standards are adopted in full, farmers should see a reduction in the number of non-ambulatory (downed) cows. If a downed cow is discovered, however, and medical treatment is unavailable or she has no hope of recovery, PETA’s standards for the care of farmed dairy cows require that trained farm staffers or licensed veterinarians immediately euthanize her. Some farms, including the Land O’Lakes supplier investigated by PETA in 2009, keep sick, injured, and suffering animals alive in order to profit from their sale for slaughter. To move downed cows, farm workers often wrap chains around one of the cow’s limbs and hoist or drag the cow, causing further injury and distress to already suffering animals.

All reputable animal welfare programs call for euthanasia measures for humane reasons. NMPF’s Herd Health Plan calls for specific protocols for the handling of non-ambulatory or “downer” cows, including humane techniques to move the animal without dragging as well as the delivery of prompt veterinary medical care. HFAC standards would prohibit the movement of non-ambulatory cows using forceful techniques such as hoisting the cow by a chain or dragging the cow, as these methods are painful, terrifying, and can cause physical injury. The Animal Welfare Approved program strictly prohibits withholding treatment “in order to preserve an animal’s eligibility for market.” NMPF states, “If the animal appears to be experiencing severe pain or distress, can’t be saved or moved properly, has been chronically ill, or was recently treated with antibiotics requiring an extended withholding period, [the animal] should be euthanized by a person appropriately trained in the procedure.” Also according to NMPF, “Euthanasia is appropriate when an animal’s quality of life is decreased or when pain and suffering cannot be alleviated.”

Euthanasia is also the most appropriate course of action to prevent further spread of disease and contamination of the herd or the food supply. In 2003, a USDA-funded study found that *E. coli* was 3.3 times more likely to be present in non-ambulatory cows than in walking culled cows, and in 2004, an FDA report stated that “nonambulatory disabled cattle ... are the population at greatest risk for harboring BSE [bovine spongiform encephalopathy].”

It is critical that producers use killing methods approved by the AVMA or Bovine Practitioners and follow the latter’s instructions on how to verify death prior to moving a cow or leaving animal to be picked up by a rendering service.

Unfortunately, while the industry’s own guidelines are clear, the day-to-day practices on many dairy farms, at auction houses, and at slaughterhouses result in downed cows suffering for hours or days without care.

This is one typical story of a “downed cow.”

The truck carrying this cow was unloaded at Walton Stockyards in Kentucky one September morning. After the other animals were removed from the truck, she was left behind, unable to move. The stockyard workers used the customary electric prods in her ear to try to get her out of the truck, then beat and kicked her in the face, ribs, and back, but still she didn't move. They tied a rope around her neck, tied the other end to a post in the ground, and drove the truck away. The cow was dragged along the floor of the truck and fell to the ground, landing with both hind legs and her pelvis broken. She remained like that until 7:30 that evening.

For the first three hours, she lay in the hot sun crying out. Periodically, when she urinated or defecated, she used her front legs to drag herself along the gravel roadway to a clean spot. She also tried to crawl to a shaded area but couldn't move far enough. Altogether, she managed to crawl a painful 13 to 14 yards. The stockyard employees wouldn't allow her any drinking water; the only water she received was given to her by Jessie Pierce, a local animal rights activist, who had been contacted by a woman who witnessed the incident. Jessie arrived at noon. After receiving no cooperation from stockyard workers, she called the Kenton County Police. A police officer arrived but was instructed by his superiors to do nothing; he left at 1 p.m. The stockyard operator informed Jessie that he had permission from the insurance company to kill the cow but wouldn't do it until Jessie left. Although doubtful that he would keep his word, Jessie left at 3 p.m. She returned at 4:30 p.m. and found the stockyard deserted. Three dogs were attacking the cow, who was still alive. She had suffered a number of bite wounds, and her drinking water had been removed. Jessie contacted the state police. Four officers arrived at 5:30 p.m. State Trooper Jan Wuchner wanted to shoot the cow but was told that a veterinarian should kill her. The two veterinarians at the facility would not euthanize her, claiming that in order to preserve the value of the meat, she could not be destroyed. The butcher eventually arrived at 7:30 p.m. and shot the cow. Her body was purchased for \$307.50.

When the stockyard operator was questioned by a reporter from *The Kentucky Post*, he stated, “We didn't do a damned thing to it,” and referred to the attention given the cow by humane workers and police as “bullcrap.” He laughed throughout the interview, saying that he found nothing wrong with the way the cow was treated.

This is not an isolated case; in fact, it's so common that animals in this condition are known in the meat industry as “downers,” and no effort is made by industry insiders or the USDA to see that they are treated more humanely. It is standard practice for stockyard workers to find “downed” animals, tie them to the back of a pickup truck, and drag them to an area where they are piled on top of each other to await the butcher. The handling of “downer” animals has proved that industry cannot monitor itself.

Successfully Implementing a Third-Party Auditing System

The USDA reports that during 2006, nearly half of dairy operations (47.3 percent) participated in some form of quality-assurance program designed to educate producers and ensure product quality, with the highest percentage of operations (42.2 percent) participating in a local milk cooperative/processor-sponsored assurance program. While participating in a quality-assurance program can help farmers improve animal welfare, the primary purpose of these programs is to ensure product safety and quality and not to directly address the critical animal welfare issues outlined in this report. By contrast, annual third-party audits are essential to ensure on-farm compliance with animal welfare standards.

Dr. Jim Reynolds, a veterinarian at the University of California–Davis and former chair of the American Association of Bovine Practitioners Animal Welfare Committee, states that third-party welfare assessments and audits are valuable “because they provide management structure to dairies in all of the areas that are important for husbandry and profitability.” NMPF encourages third-party auditing to “demonstrate the integrity of the program’s animal care standards module and provide evidence to our stakeholders documenting the dairy industry’s commitment to ethical care and well-being of dairy animals” and calls for third-party verification conducted through a statistical sampling in which participating farms are randomly selected. And farmers in the Animal Welfare Approved program must agree to “a minimum of one visit a year from Animal Welfare Approved staff or agents, with the possibility of additional visits if deemed necessary, to confirm compliance with the standards during various seasons and to allow observation of animals in different phases of life.”

Reynolds states that “[a]udits are objective, third-party, repeatable verifications that the husbandry of animals conforms to predetermined standards” and that audits “must be structured so they can be repeatable and defensible.” (Northeast Dairy Business, 2006) PETA’s standards require audits to be:

1. **Transparent:** All reports resulting from audits (with proprietary information removed) must be publicly available (i.e., posted on the company’s website or, for producers without a web presence, available for on-demand viewing on the premises) within 48 hours of receipt.
2. **Unanticipated:** Unannounced audits are preferred so that auditors are not shown a whitewashed version of farm operations.
3. **Verifiable:** Audits must be performed by reliable, well-trained personnel. The results should be verifiable by third parties.

Finally, while PETA does not require internal audits, they are strongly suggested for the purpose of maintaining the highest level of animal welfare throughout the year. Internal audits should be performed regularly and should include specific action steps and timelines to address any welfare shortfalls.

CONCLUSION

The guidelines suggested in this report are easy to implement and will prevent the most common reasons for and most extreme suffering of cows on dairy farms. The full slate of recommendations represent remedies to critical problems of animal welfare in the dairy industry, evidenced by disease outbreaks, consumer outrage, and damning undercover evidence of systematic neglect and cruelty. All are in practice to some extent at farms across the country and can be implemented by operators of all sizes.

REFERENCES

American Veterinary Medical Association. 2010 Jan 28. Backgrounder: welfare implications of dairy cow tail docking. Available at:

http://www.avma.org/reference/backgrounders/tail_docking_cattle_bgnd.asp.

American Veterinary Medical Association. 2010 Jan 28. Backgrounder: welfare implications of the dehorning and disbudding of cattle. Available at:

http://www.avma.org/reference/backgrounders/dehorning_cattle_bgnd.asp.

American Veterinary Medical Association. 2009 Apr. Policy: tail docking of cattle. Available at:

http://www.avma.org/issues/policy/animal_welfare/tail_docking_cattle.asp.

Animal Welfare Approved, "Bison and Calves Standards," Available at:

<http://www.animalwelfareapproved.org/standards/bison-2011/>.

Barnett JL, Coleman GJ, Hemsworth PH, Newman EA, Fewings-Hall S, Ziini C. 1999. Tail docking and beliefs about the practice in the Victorian dairy industry. *Australian Veterinary Journal* 77(11):742-7.

Bergsten C. 2010. Impact of flooring on claw health and lameness. *WCDS Advances in Dairy Technology* 22:241-51.

Blaney DP. 2002. The changing landscape of U.S. milk production. U.S. Department of Agriculture Statistical Bulletin Number 978.

Beward J, Gentle MJ. 1985. Neuroma formation and abnormal afferent nerve discharges after partial beak amputation (beak trimming) in poultry. *Experientia* 41(9):1132-4.

Byrne, CM, Erol I, Call JE, *et al.* 2003. Characterization of *Escherichia coli* O157:H7 from downer and healthy dairy cattle in the upper Midwest region of the United States. *Applied and Environment Microbiology* 69(8):4683-8.

California Dairies, Inc. 2011. About California Dairies, Inc. Available at:

<http://californiadairies.com/about>.

Campbell JB, Berry IL. 1989. Economic threshold for stable flies on confined livestock. *Miscellaneous Publications of the Entomological Society of America* 74:18-22.

Canadian Veterinary Medical Association. 2010. Tail docking of dairy cattle, position statement of the Canadian Veterinary Medical Association. Available at:
<http://canadianveterinarians.net/ShowText.aspx?ResourceID=25>.

Cheever H. 2010 March. Tail docking of dairy cattle: a veterinary perspective. Humane Society Veterinary Medical Association. Available at:
http://www.hsvma.org/advocacy/news/tail_docking_dairy_cattle_veterinary_perspective_031010.html.

Cook N. Freestall barn design and its influence on the daily time budgets of dairy cows. American Dairy Science Association. Available at:
<http://www.adsa.org/discover/8th%20DISCOVER/Int%20Summaries%20combined.htm#FreeStall>.

Cornell University Department of Animal Science PRO-DAIRY Program. 2006. What you need to know about animal welfare audits. *The Manager* 18:9.

CROPP Cooperative. 2011. Dairy Pool Standards. Available at:
<http://www.farmers.coop/resources/animal-care-program/dairy-pool-standards/>.

Dairy Code of Practice Scientists' Committee. 2009 March. Code of practice for the care and handling of dairy cattle: review of scientific research on priority issues. National Farm Animal Care Council (NFACC), 83.

[DEFRA] Department of Environment, Food, and Rural Affairs (UK). 2003 Mar. Code of recommendations for the welfare of livestock: cattle. Available at:
<http://www.defra.gov.uk/foodfarm/farmanimal/welfare/onfarm/documents/cattcode.pdf>.

DiNita LJ, American Veterinary Medical Association. 2001 Jan15. Natural Bovine Behavior Key to Evaluating Management Practices. Available at:
www.avma.org/onlnews/javma/jan01/s011501pp.asp.

Doohoo IR, DesCôteaux L, Leslie K, Fredeen A, Shewfelt W, Preston A, Dowling P. 2003 Oct. A meta-analysis review of the effects of recombinant bovine somatotropin: 2. Effects on animal health, reproductive performance, and culling. *Canadian Journal of Veterinary Research* 67(4):252-64. Available at
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC280709/?tool=pmcentrez>.

Durst P, Nielsen MW. 2008. Getting calves started well. *Michigan Dairy Review* 13(4):5-7.

Eicher, SD, Morrow-Tesch JL, Albright JL, *et al.* 2000. Tail-docking influences on behavioral, immunological, and endocrine responses in dairy heifers. *Journal of Dairy Science* 83:1456-62.

Eicher, SD, Cheng HW, Sorrells AD, *et al.* 2005. Short communications: behavioral and physiological indicators of sensitivity or chronic pain following tail-docking. *Journal of Dairy Science*. Manuscript on file.

European Commission Scientific Veterinary Committee (ECSVC). 1995. Report on the Welfare of cows. Available at: http://ec.europa.eu/food/fs/sc/oldcomm4/out35_en.pdf.

European Union Council Decision 1999/879/EC of 17 December 1999 concerning the placing on the market and administration of bovine somatotrophin (BST) and repealing Decision 90/218/EEC. Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31999D0879:EN:HTML>

Farmers Assuring Responsible Management. 2009. FARM animal care manual.

[FDA] Food and Drug Administration. 2004. Interim final rule—use of materials derived from cattle in human food and cosmetics. *Federal Register*, 69FR 42255. Available at: <http://www.fda.gov/Food/DietarySupplements/GuidanceComplianceRegulatoryInformation/ucm107860.htm>.

Fulwider WK, Grandin T, Rollins BE, Engle TE, Dalstead NL, Lamm WD. 2008. Survey of dairy management practices on one hundred thirteen north central and northeast United States dairies. *Journal of Dairy Science* 91(4):1686-92.

Hansen M, *et al.* 1997 Sept. Potential public health impacts of the use of recombinant bovine somatotropin in dairy production. *ConsumersUnion.org*. Available at: http://www.consumersunion.org/pub/core_food_safety/002272.html.

[HFAC] Humane Farm Animal Care. 2004 Mar. Animal care standards: dairy cows. *Certified Humane.org*. Available at: <http://www.certifiedhumane.org/uploads/pdf/Standards/English/Microsoft%20Word%20-%20Std04.Dairy.3A.pdf>.

Horovitz B. 2009 Mar 16. Companies cut synthetic hormone from dairy products. *USA Today*. Available at: http://www.usatoday.com/money/industries/food/2009-03-15-dairy-growth-hormone-ban_N.htm.

Ishler V, *et al.* 2011 Jan 28. Prevention and control of foot problems in dairy cows. *Extension.org*. Available at: http://www.extension.org/pages/Prevention_and_Control_of_Foot_Problems_in_Dairy_Cows.

Laskawy T. 2010 Oct 6. Court rules rBGH-free milk *is* better than the kind produced with artificial hormones. Now what? *Grist.org*. Available at: <http://www.grist.org/article/food-2010-10-06-court-rules-on-rbgh-free-milk>.

MacDonald JM, *et al.* 2007. Profits, costs, and the changing structure of dairy farming. *United States Department of Agriculture Economic Research Service, Washington, DC* 47, 41.

McNett C. 2006. Freestall design is key component of cow comfort, milk production. Agriview. Available at:

http://www.agriview.com/articles/2006/12/28/dairy_news/feature_stories/producer03.txt.

Mosheim R. 2009. Increasing size of dairy farms driven by declining production costs. United States Department of Agriculture, Amber Waves, 1 pp.

[NDAWI] National Dairy Animal Wellbeing Initiative. 2008. Principles & guidelines for dairy animal well being. Available at:

<http://www.dairywellbeing.org/pdfs/NDAWI%20Principles%20&%20Guidelines.pdf>.

Pace D. Feeding a bucket calf. Oklahoma Cooperative Extension Service, Oklahoma State University 135.

Schechter A, Sandholm D. 2010 Jan 28. Dehorning: 'standard practice' on dairy farms.

ABCNews.com. Available at: <http://abcnews.go.com/Blotter/dehorning-standard-practice-dairy-farms/story?id=9658414>.

Schreiner DA, Ruegg PL. 2002. Effects of tail docking on milk quality and cow cleanliness. Journal of Dairy Science 85:2503-11.

Schreiner DA, Ruegg PL. 2002. Responses to tail docking in calves and heifers. Journal of Dairy Science 85:3287-96

[SCAWAH] Scientific Committee on Animal Health and Animal Welfare. 1999. Report on animal welfare aspects of the use of bovine somatotrophin. Available at:

http://ec.europa.eu/food/fs/sc/scah/out21_en.pdf.

Simon S. 2004 Jan 4. Mad cow casts light on beef uses. Los Angeles Times.

Sorensen L. 2009. Hoof trimming at Dykstra Dairy. ProgressiveDairy.com. Available at:

http://www.progressivedairy.com/pd/features/2009/0509/0509_sorensen.html.

Stull CL, Payne MA, Berry SL, *et al.* 2002. Evaluation of the scientific justification for tail docking in dairy cattle. Journal of the American Veterinary Medical Association 220(9):1298-1302.

The Gale Group, Inc. Dairy farms. Highbeam Business. Available at:

<http://business.highbeam.com/industry-reports/agriculture/dairy-farms>.

The Organic & Non-GMO Report. 2007 Sept. rBGH-free trend sheds light on genetically engineered food. NonGMOSource.com. Available at:

<http://www.nongmosource.com/articles/sept07/rBGH-free.php>.

Tom EM, Duncan IJH, Widowski TM, Bateman KG, Leslie KE. 2002. Effects of tail docking using a rubber ring with or without anesthetic on behavior and production of lactating cows. *Journal of Dairy Science* 85:2257-65.

Tucker CB, Weary DM. Winter 2001-Spring 2002. Tail docking in dairy cattle, animal welfare information center bulletin 11:3-4.

United States Department of Agriculture. 2007. Dairy 2007, Part I: Reference of dairy cattle health and management practices in the United States, 2007. USDA-APHIS-VS, CEAH. Fort Collins, CO #N480.1007, 128 pp.

United States Department of Agriculture. 2008. Dairy 2007, Part II: Changes in the U.S. dairy cattle industry, 1991-2007 USDA-APHIS-VS, CEAH. Fort Collins, CO #N481.0308

United States Department of Agriculture. 2008. Dairy 2007, Part III: Reference of dairy cattle health and management practices in the United States, 2007: Highlights. USDA-APHIS-VS, CEAH. Fort Collins, CO #N482.0908.

United States Department of Agriculture. 2009. Dairy 2007, Part IV: Reference of dairy cattle health and management practices in the United States, 2007 USDA:APHIS:VS, CEAH. Fort Collins, CO #N494.0209

United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services. 2003. Part III: Reference of dairy cattle health and health management practices in the United States, 2002. National Animal Health Monitoring System, Fort Collins, CO #N400.1203.

United States Department of Agriculture, National Agriculture Statistics Service. 2009 Mar. Milk cows and production estimates 2003-2007.

Weary D. 2004. Group housing calves. FarmWest.com. Available at: <http://www.farmwest.com/index.cfm?method=pages.showPage&pageid=14>.