On the Use of Veal Crates:

- **Each stall is constructed so that the calves will have adequate room to stand, stretch, step forward, backward, and from side to side, lie in a natural position and groom themselves. (***Facts About the Care and Feeding of Veal Calves*, the American Veal Association)

    - In a 1991 study by Le Neindre et al. (1993), calves in small pens spent more time with four legs bent and less time lying with all four legs stretched than those in large pens. In de Wilt's 1985 study, calves in crates spent less time lying on their side or on their sternum with hind legs stretched than group-housed calves, and spent more time on the sternum with forelegs stretched (cited in Le Neindre, 1993). Stull and McDonough (1994) noted that calves in stalls while recumbent extended one or more legs only 2% of the time, compared to group penned calves who extended one or more legs 13% of the time. Webster et al. (1985a) found that above the age of about 10 weeks, crated calves were unable to adopt a comfortable sleeping posture.

- **Some European countries have bowed to animal rights pressure and forced their veal producers to switch to "group housing" by the year 2004. This is supposed to be a "humane" and "communal" alternative to individual pens; but wherever it's been tried, animals' health suffers, as they share diseases easily. If a single calf gets sick, the entire group must be medicated. Also, "bully" behavior (pun intended) frequently emerges among calves raised in group settings, creating a huge source of stress for the animals.** (from ActivistCash.com)

    - Group-housed calves show little competitive behavior which might be considered harmful. . . Calves which do not have contact with their mothers are especially dependent on social contact with other calves. Even when the mother is present, calves choose to associate with other calves from the age of 7 days onwards (Lidfors 1994). Calves housed individually make strenuous efforts to make visual and tactile contact with other calves. (Scientific

Veterinary Committee, Animal Welfare Section (SVC), 1995. *Report on the Welfare of Calves*. European Commission, Brussels).

- **[M]inimizing calf-to-calf contact is the best prevention against disease . . . Modern veal housing is designed to partition the animals only up to the shoulder level, ensuring calves visual and physical interactions with their neighbors** (VealFarm.com, published by the PA Beef Council, funded by America's Beef and Veal Producers)

    - Calves isolated in crates have more medical problems than calves housed in other systems. Warnick et al. (1977) found that isolated calves required three times as many medical treatments as individually-reared calves who could socialize with others. Thus, being isolated from others is a stressor that causes medical problems. (Scientific Veterinary Committee, Animal Welfare Section (SVC), 1995. *Report on the Welfare of Calves*. European Commission, Brussels).

- **The individual stall method is considered a humane practice that ensures the health of calves** (*Facts about the Care and Feeding of Veal Calves*, published by the American Veal Association).

    - The welfare of calves is very poor when they are kept in small individual pens with insufficient room for comfortable lying, no social contact and no bedding or other material to manipulate. (Scientific Veterinary Committee, Animal Welfare Section, 1995. *Report on the Welfare of Calves*. European Commission, Brussels).

On the Effects of (Lack of) Exercise:

- **Animal exercise -- whether minimal or excessive -- has zero effect on the tenderness of veal meat.** (ActivistCash.com)

    - The more collagen there is in a piece of meat, the tougher it is to cut and to chew . . . Weight-bearing muscles and muscles that are constantly used, contain higher amounts of collagen than muscles that aren't used for support or aren't used as frequently. http://www.exploratorium.edu/cooking/meat/INT-what-makes-juicy.html

On the Nutritional Content of Veal Formula:

- **Veal calves receive diets with sufficient iron to meet the animals' requirements for normal health and behavior. Farmers are careful to provide sufficient iron to their calves, recognizing that an early clinical**

symptom of anemia is poor appetite — a calf that does not eat will not grow (*Facts About the Care and Feeding of Veal Calves*, published by the American Veal Association).

- In Stull and McDonough's (1994) study of calves at commercial veal facilities in California, 25% of the animals were found to be marginally anemic, and another 10% were clinically anemic

- **When a calf is "special-fed" (also known as "milk-fed" or "formula-fed") it means it is receiving a top-notch diet to help it grow healthy and strong . . . . with a special-fed diet, the calves receive carefully controlled amounts of iron to meet their nutritional needs. Research studies have shown that such diets help maintain normal appetite, health and behavior. (***The Truth about Veal / The Veal Truth*, Joint Veal Committee/ the National Cattlemen's Beef Assoc):

    - Calves given an all-liquid, iron deficient diet "can have serious health problems, can show serious abnormalities of behaviour, and can have substantial abnormalities in gut development." (Scientific Veterinary Committee, Animal Welfare Section, 1995. *Report on the Welfare of Calves*. European Commission, Brussels).

- **While calves are not with the dairy cow following birth, they still receive her colostrum, or first milk, within 24 hours. Full of antibodies and essential nutrients, colostrum gives the calves' immune systems a healthy boost. Early separation also allows the dairy farmer to measure the amount of colostrum the calf receives, within the proper time frame. (***Frequently Asked Questions*, Vealfarm.org)

    - In studying 550 calves at 10 commercial veal facilities in California, Stull and McDonough (1994) found that 78% of the calves "had not ingested or failed to absorb sufficient quantities of immunoglobulins from colostrum and therefore may have been more susceptible to infectious pathogens." http://ars.sdstate.edu/animaliss/veal.html

On the Need for Fiber in the Diet:

- **With a milk-based diet, special-fed calves remain pre-ruminant; once a calf is fed grain, the meat develops the strong flavor commonly associated with beef thanks to the rumination process . . . The National Research Council of the National Academy of Sciences has confirmed that veal calves do not indeed need fiber in their diets. (***Vealfarm.com,* published by the PA Beef Council, funded by America's Beef and Veal Producers)

- Most calves raised for veal and denied access to any solid feed capable of fermentation in the rumen show a complete absence of normal ruminal papillary development. Hair balls accumulate in the rumen and may cause a mechanical obstruction to digestion. In a small percentage of veal calves milk replacer enters the rumen rather than the abomasums and predisposes to a severe hyperkeratosis. Such calves fail to thrive. (Scientific Veterinary Committee, Animal Welfare Section (SVC), 1995. *Report on the Welfare of Calves*. European Commission, Brussels).

- **Feeding fiber to a calf is like asking it to eat cardboard. Young calves simply do not have the enzymes -- nor the ability to ruminate -- needed to digest fiber.** (ActivistCash.com)

    - The feeding of solid feed to veal calves has been encouraged to meet their need to ruminate. Higher levels of stereotyped licking and oral manipulation are shown by calves which are not provided with roughage . . . The performance of stereotypies indicates poor welfare. . . . Another important reason for offering solid feed is to avoid problems with indigestion and enteric disease associated with the failure to ensure some degree of normal rumen development . . . The necessity to eat roughage and to ruminate is evident in calves (Scientific Veterinary Committee, Animal Welfare Section, 1995. *Report on the Welfare of Calves*. European Commission, Brussels).

- **Calves raised in the most "natural" setting, on the pasture with their mother cows, do not consume significant amounts of fiber (like grass) at all, nor do they begin to ruminate, until they are 4 to 6 months old.** (ActivistCash.com)

    - When solid feed is ingested, especially that including fibre, the structure of the rumen changes in that long papillae are formed. Either fibre itself, or food metabolites, or both of these, may be the causal agents here. ***This change would normally start to occur after two to three weeks at which age the young calf eats pasture plants or similar food material.*** (Scientific Veterinary Committee, Animal Welfare Section, 1995. *Report on the Welfare of Calves*. European Commission, Brussels).

On the Need for Iron:

- **The milk formulas fed to veal calves are indeed devoid of iron, but so is cow's milk! . . . Farmers would have nothing to gain by fostering anemia**. (ActivistCash.com)

    - *The Special Fed Veal Production Guide* advises producers to completely withhold all sources of dietary iron in order to bring the calves' hemoglobin levels to 7.5-8 g/ml before they are marketed – a level clearly

well below the amount needed to avoid anemia. In acknowledgement, the guide states, "With this approach, an occasional case of clinical anemia may develop."

- **Adding iron to young calves' feed only supports pathogens like E.coli and Salmonella that live in the animals' intestines. This has been shown to cause sickness, diarrhea, and early death.** (ActivistCash.com)

    - "Iron is required for normal hemoglobin formation and is a component of other body systems that use oxygen. The requirement for iron is relatively high in the calf because of the expansion of the total blood volume that occurs during growth."

- **A. Veal producers carefully watch each calf to be sure it is not suffering any clinical symptoms of anemia, such as weakness or loss of appetite. Calves must receive diets with iron to meet the animals' requirements for normal health and behavior** ***(****Vealfarm.com, published by the PA Beef Council, funded by America's Beef and Veal Producers)*

    - A calf is born with a hemoglobin level of about 12 g/ml. A mean normal value of hemoglobin for bovines is approximately the same at 11.5 -13 g/ml. But milk-fed veal calves typically sport hemoglobin levels of 7.5 to 8 g/ml.

    - In Stull and McDonough's (1994) study of veal calves at commercial veal facilities in California, 25% of the animals were found to be marginally anemic, and another 10% were found to be clinically anemic.

On the Disease Rates in Veal Calves:

- **In fact, studies show that calves raised in groups have from two to 14 times the disease rate of individually-penned calves. (***Facts About the Care and Feeding of Veal Calves*, American Veal Association)

    - Cozzi et al. (2002) found that calves fed only milk replacer required more medical treatments for respiratory and gastrointestinal disease than calves fed a liquid diet supplemented with either straw or beet pulp. In one study comparing veal calves with calves at pasture and early-weaned calves, the veal calves were the only animals requiring treatment for enteric disease after six weeks of age. In addition, the veal calves in this study exhibited a higher incidence of respiratory disease and received more antibiotic doses than the other animals (Webster et al., 1985b).

Another study of 460 calves at eight special-fed veal calf facilities located in California and Oregon found 23% were affected by diarrhea, with suspected enteric pathogens including coronavirus, rotavirus and E. coli, identified in 86% of the sick animals (McDonough et al., 1994). Of the calves stricken with diarrhea, 92% had complete or partial failure of transfer of passive immunity, attributed by the researchers to inadequate intake of colostrum (McDonough et al., 1994).

Warnick et al. (1977) found that isolated calves required three times as many medical treatments as individually-reared calves who could socialize with others.

- **The best evidence that veal calves are healthy is the excellent growth rate and very low mortality of special-fed veal calves. The typical veal calf gains an average of 2.5 pounds or more per day (***Facts About the Care and Feeding of Veal Calves*, American Veal Association).

    - Isolated calves had the slowest weight gain when compared to group or individually reared animals (group-housed animals had the fastest gains). In a study by Fisher et al. (1985), calves confined to 0.66 meter-wide pens with slatted floors had slower weight gains than those housed in 1.36 meter-wide pens with solid floors and straw.

On the Use of "Animal Health Care Products" (Drugs) in Veal Calves.

- **While some groups have expressed concern that use of AHCPs might lead to the development of antibacterial resistant pathogens in animals and the transfer of those pathogens to humans, study after study by reputable scientific bodies has failed to link the use of AHCPs to human health risks.** (American Veal Association)

    - "Revelations that up to 90% of U.S. veal calves are being fed synthetic testosterone illegally are sending a shock wave through the meat industry, causing a government crackdown and new worries about the impact of hormones on the food supply. In interviews with *USA TODAY*, veal industry officials said that calves have been fed growth hormones for decades. Officials with the Food and Drug Administration, however, say this has never been legal and the safety of this practice has not been tested" (*Growth hormones in veal spark debate FDA says they're illegal, but industry says they're not new*, USA TODAY, April 2, 2004)

- **[V]eal farmers may use antibiotics to prevent and treat disease and its spread among the livestock. They do not use these drugs arbitrarily, continuously, or typically in large doses.** (*Safety through Science*, The American Veal Industry)

    - Veal is among the most hazardous meats in terms of illegal drug residues. USDA National Residue Program records for 1998, 1999, and 2000 show that meat from "formula-fed" veal calves averaged a .9% violative rate. Over the same three-year period, meat from steers averaged a .06% violative rate and meat from heifers averaged a .1% violative rate.

On the Issue of Factory Farms:

- **The image of a food factory couldn't be further from the truth. Typical veal farms are family operations.** (*The Truth About Veal* / *The Veal Truth,* published by the Joint Veal committee and the National Cattlemen's Beef Association)

    - ***Most farms have about 500 calves*.** Should a farmer sell 100 of them, he or she would have about $50,000 to $55,000 in revenue before factoring in care costs (*Good Living for Hoosier Veal Farms*, 2/6/05, posted at **www.fortwayne.com**)

      A CAFO is defined in 40 CFR 122.23 appendix B as "an animal feeding operation where . . . more than 300 animal units are confined at the facility and either one of the following conditions are met: pollutants are discharged into navigable waters through a man-made ditch, flushing system or other similar man-made device; or pollutants are discharged directly into waters of the United States which originate outside of and pass over, across, or through the facility or otherwise come into direct contact with the animals confined in the operation." (from **http://extension.usu.edu/cooperative/waterquality/index.cfm/cid.813/tid.1728/#definitions**)

References:

Andrighetto I, Gottardo F, Andreoli D, Cozzi G. Effect of type of housing on veal calf growth performance, behaviour and meat quality. Livestock Prod Sci 1999;57(2):137-145.

Cozzi G, Gottardo F, Mattiello S, Canali E, Scanziani E, Verga M, Andrighetto I. The provision of solid feeds to veal calves: I. Growth performance, forestomach development, and carcass and meat quality. J Anim Sci 2002;80:357-366.

Fisher LJ, Peterson GB, Jones SE, et al. Two housing systems for calves. J Dairy Sci 1985;68:368-373.

Le Neindre P. Evaluating housing systems for veal calves. J Anim Sci 1993;71:1345-1354.

McDonough SP, Stull CL, Osburn BI. Enteric pathogens in intensively reared veal calves. Am J Vet Res 1994;55(11):1516-1520.

Stull CL, McDonough SP. Multidisciplinary approach to evaluating welfare of veal calves in commercial facilities. J Anim Sci 1994;72:2518-2524.

Warnick VD, Arave CW, Mickelsen CH. Effects of group, individual, and isolated rearing of calves on weight gain and behavior. J Dairy Sci 1977;60:947-953.

Webster AJF, Saville C, Church BM. The effect of different rearing systems on the development of calf behaviour. Br Vet J 1985(a);141:249-265.

Webster AJF, Saville C, Church BM, Gnanasakthy A, Moss R. Some effects of different rearing systems on health, cleanliness and injury in calves. Br Vet J 1985(b);141:472-483.