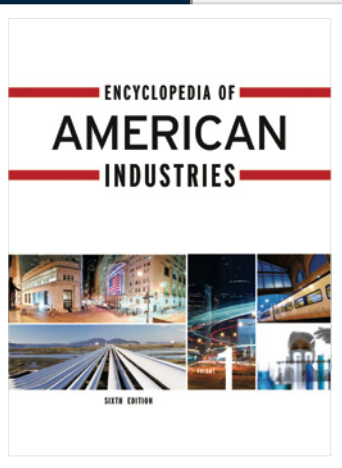


NEW EDITION



### Encyclopedia of American Industries

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# Encyclopedia of American Industries, 6th Ed.

An ever-evolving marketplace drives home the need for research on business and industry. Students and business professionals seek reliable information on the business direction of the country – which ultimately leads to sound decisions for strategy, planning and direction.

## MEET A GROWING NEED

Gale, a part of Cengage Learning, offers a new edition of a reference staple. The updated, 3-volume sixth edition of *Encyclopedia of American Industries* delivers more than 1,000 in-depth entries that provide comprehensive information on industries in every realm of American business.

Volume 1 covers more than 460 manufacturing industries. Volume 2 has approximately 320 essays on such industries as agriculture, mining, construction, wholesale and retail. Volume 3 delivers nearly 230 essays on topics of finance, insurance, real estate, service industries and public administration.

Ideal for college and postgraduate business students, business professionals and entrepreneurs, this updated source guides readers to the statistical and contextual data they can put to practical use immediately in papers, projects and presentations.

## SAMPLE PAGES

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### Cattle Numbers and Beef Production

Year	Total cattle (in 000s)	Cows (in 000s)	Beef production (in 000 lbs.)	Production per cow (in lbs.)	Retail value of beef produced (in \$)
1999	30,115	42,874	24,422	414	304.1
2000	30,189	42,739	26,777	425	316.5
2001	31,271	42,880	27,136	423	322.1
2002	31,764	42,728	27,515	422	327.2
2003	31,780	42,725	28,215	422	332.2
2004	31,246	42,551	28,647	422	337.2
2005	31,420	41,803	29,483	422	342.2
2006	31,121	41,511	29,152	422	347.2
2007	31,021	41,333	28,421	422	352.2
2008	30,823	41,082	28,224	422	357.2
2009	30,521	41,045	28,061	422	362.2

Source: USDA—Economic Marketing Information Center.

Nebraska, and Texas accounted for 52 percent of the United States commercial red meat production in the last 2000s.

### BACKGROUND AND DEVELOPMENT

The cultural fancies of New England, who were the first meat packers in the United States, used salt to preserve meat. As the nation expanded westward, slaughterhouses were built near production centers so meat could reach the table before it spoiled. The Inevack brand was driven westward or barged to these early packing plants. So many hogs were slaughtered in Cincinnati, Ohio, that the city was called "Porkopolis."

For sanitary reasons, meat packing operations could not be carried out only during the cold winter months, with ice used for refrigeration. The development of mechanical refrigeration and refrigerated railroad cars in the second half of the nineteenth century changed this. From late 1855 until the 1920s, Chicago, a hub city for the railroad, became renowned for its array of stockyards that collected and slaughtered livestock, often under hawking working conditions.

With the turn of the twentieth century came mechanized disassembly and conveyor procedures in the plants, and the 1950s saw major improvements in plant sanitation and packaging. By the 1980s, the meat packing industry had again dispersed. Slaughterhouses moved closer to the feedlots where the animals were raised. Not having to ship them long distances reduced the stress, weight loss, and injury to the animals that was the inevitable effect of long journeys in crowded cattle cars and trucks.

**Regulations.** Under the 1906 Meat Inspection Act, US, pre- and postmortem inspection of meat eating.

insurers and foreign commerce became mandatory. Meat to be used entirely within a single state may be inspected by that state's agriculture department. The federal program was conducted by the Food Safety and Inspection Service (FSIS) of the USDA. During the late 1980s and throughout the 1990s, unfavorable media criticism of the inspection system spurred an overhaul of FSIS procedures.

Outbreaks of *E. coli* bacteria and lyseria resulted in several deaths and millions of dollars in meat recalls during the 1990s. This led to increased scrutiny of the federal meat inspection program and forced the Pathogen Reduction and Hazard Analysis and Critical Control Points (PRHACCP) rule instituted in 1996. This required the industry to update its inspection methods, which had changed little in the previous 50 years. From 1996 to 1999, new inspection plans were initiated, with all raw meat and poultry products being inspected using methods capable of detecting invisible pathogens by January 2000. The meat industry also continued to promote safe meat handling practices in the home through consumer education programs, labeling, and advertising.

**Slaughter.** The desirability of stunning animals prior to slaughter was recognized in both Europe and the United States before the end of the nineteenth century. The practice became mandatory in the United States in 1960 with the passage of the Humane Slaughter Act. The act requires that before being slaughtered, animals must be rendered unconscious by mechanical, electrical, or chemical means in order to cause the animal a minimum of excitement or discomfort. Captive-bolt pistols or pneumatic guns may be used on cattle. Pincers, electric shock, or asphyxiation in a carbon dioxide chamber is allowed for sheep and pigs. Compressed-air stunners and gun chambers for smaller animals cause some use after

Food & Kindred Products

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World War II. Exceptions in federal requirements are made for ritual slaughter that satisfy the requirements of a particular faith. In kosher inspection, for example, a member of the Jewish faith can shear and bleed the animal without first stunning it and then examine it for abnormalities before approving it for food use.

After stunning, cattle are suspended by one or both hind legs, while the carotid arteries and jugular veins are cut. Hides are then removed by an automated process. A straight cut opens the center of the belly to remove the viscera. Next, the carcasses are split down the center of the backbone. Beef carcasses might then be skinned, a procedure in which the carcasses are cooked for 24 hours after being tightly wrapped in results that has been soaked in water. The carcass fat is smooth and sits when the animal is removed. Specialty meat items like the brains, kidneys, tail, tongue, and overboards do not accompany the carcass but are an important income source for packers. The procedure for veal carcasses are similar, except that the hides are left on during chilling. Veal carcasses have very little fat and would shrink during chilling if the hides were removed.

In hog slaughter, the animals are bled after stunning by severing a large vein. The carcasses are then submerged in hot water to loosen the hair. After the removal of the hair, the carcass is eviscerated, split, and chilled.

**Grading.** While meat inspection is mandatory, grading is a voluntary program. Funded by fees paid by the packers, the service is offered by the USDA's Agricultural and Marketing Service. Grading establishes uniform grading standards and helps to determine the value of various meat cuts. Meat carcasses are graded by both quality and yield.

The quality grades for beef are prime, choice, good, standard, commercial, utility, cutter, and canner. Cattle characteristics that determine the grade include marbling (the streaks of fat in the lean portions), the color and texture of the lean, and maturity. Consumers tend to interpret grading as an indication of taste and tenderness, although it was not designed for this purpose. Growing consumer perceptions that lean meat is healthier have increased the demand for lower-fat grades. The ratio of usable meat to bone and fat determines a carcass' yield grade. Combined with the quality grade, it is used to establish the monetary value of a carcass.

**Working Conditions.** The slaughterhouses of the United States in the early twentieth century were grim and dangerous places to work. Low wages coupled with unsafe conditions made the mechanics of Chicago and other cities hazardous work sites. But it was not until reports on conditions there grew widespread—thanks in part to Upton Sinclair's novel *The Jungle*, which depicted in

chilling detail the deplorable environment of the stockyards of Chicago—that the government turned its attention to the industry. Slaughterhouse conditions furthered the cause of fighting unions, which grew in strength over the ensuing years.

At the end of the twentieth century, automation had not replaced manual labor and the extensive use of sharp knives and other hand tools. Workers were still lifting and logging heavy carcasses, abattoir floors were slippery, and workers suffered from exposure due to the need for continuous refrigeration systems. Despite American Meat Institute (AMI) and Occupational Safety and Health Administration (OSHA) guidelines, 36 percent of meat packing employees are injured on the job each year. The meat packing industry still has the highest injury rate of any U.S. industry. As long as there is no economical and reliable cutting machinery that can accommodate the physical variety of animal carcasses, processing will continue to be a manual operation.

In the early 1990s, the industry's rate of cumulative trauma disorders (CTDs) was higher than all other manufacturing industries. The illness usually took the form of carpal tunnel syndrome, in which repeated, rapid, and forceful motions pinch and compress the nerve that runs through the wrist to the hand. Lower back and various tendon disorders also were reported. Under-reporting of injury and illness remains a chronic problem as the majority of the meat packing workforce is comprised of illegal aliens.

Two of the nation's largest meat packers, IBP Inc. and John Morrell, were cited in 1987 by OSHA for underreporting or failing to meet injury and illness. Both companies contested the OSHA fines, which were greatly reduced. More importantly, OSHA recognized that the industry's meat packing workers needed new solutions. In 1990, OSHA issued its fine ergonomic guidelines after consultation with the AMI and labor groups. The guidelines emphasized worker training in proper techniques, strengthened by refresher courses, and the importance of reporting CTD symptoms early to prevent permanent injury. Medical management by trained health care providers was another program component.

OSHA offered special incentives to meat packers who entered into voluntary agreements with the agency to lessen their ergonomic hazards. While they would still be subject to OSHA inspections, they would not be cited or penalized on ergonomic grounds. Critics on OSHA's voluntary guidelines were mixed, and industry critics did not always agree. Phillip L. Imeson, president of the United Food and Commercial Workers Union, testified at a hearing of the House Employment and Housing Subcommittee that OSHA was about to repeat earlier disastrous experiences with "a new program of cooperation

## FOOD &amp; KINDRED PRODUCTS

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## MEAT PACKING PLANTS

This industry includes establishments primarily engaged in the slaughtering (for their own account or on a contract basis for the trade) of cattle, hogs, sheep, lambs, and calves for meat to be sold or to be used on the same premises in canning, cooking, curing, freezing, and in making sausage, lard, and other products. The industry also includes establishments primarily engaged in slaughtering hoeses for human consumption. Businesses primarily engaged in slaughtering, dressing, and packing poultry, rabbits, and other small game are classified in SIC 2015: Poultry Slaughtering and Processing. Those primarily engaged in slaughtering and processing animals not for human consumption are classified in SIC 2048: Prepared Feeds and Feed Ingredients for Animals and Fowls, Except Dogs and Cats. Businesses primarily involved in manufacturing sausages and meat specialties from purchased meats are classified in SIC 2013: Sausages and Other Prepared Meat Products.

## NAICS CODE(S)

311611 Animal (Except Poultry) Slaughtering

## INDUSTRY SNAPSHOT

Meat packing is one of the largest agriculture-based industries in the United States. However, in recent years, changing consumer eating habits have impacted the beef and pork industries, which are by far the largest sectors in this industry category. Rapid and widespread consolidation within the industry has placed hog and beef meat packing under the control of just a handful of larger players. Operating on very

thin margins, processing plants are under constant pressure to keep costs low and volume high.

According to the *Annual Survey of Manufacturers*, the total value of production for all meat types was \$72.5 billion in 2008. Beef, not canned or made into sausage, was valued at \$41.5 billion. Meat processed from carcasses generated \$35.8 billion in 2008. Pork slaughtering was valued at \$18.3 billion in 2008. Shipments for veal, not canned or made into sausage, totaled \$359 million in 2008. Lamb and mutton, not canned or made into sausage, had a value of \$345 million.

In 2009, U.S. commercial slaughter fell to 33.3 million head, while total U.S. beef consumption fell to 26.9 billion pounds. The total value of beef production in 2007 was \$73 billion.

In addition, there were 944,200 commercial calf, 113.6 million hogs, 2.52 million sheep and lambs slaughtered in 2009. As of January 1, 2010 there were 934 federally inspected slaughter and processing plants, with the majority in Pennsylvania, Texas, and Montana.

## ORGANIZATION AND STRUCTURE

The American Meat Institute (AMI) represented about 1,000 companies that processed 70 percent of the nation's meat and poultry, as well as the suppliers for those companies. The meat packing plants that processed beef cattle, hogs, and sheep into food and nonfood products ranged in size from those handling small numbers of livestock to operations processing millions of animals a year. About 900 slaughter and processing plants were federally inspected in the late 2000s, and over 2,000 were instead subject to state inspection or custom-exempt.

According to the USDA, the U.S. meat and poultry industry is spread among all fifty states, Iowa, Kansas,

## CONTENT DETAILS:

Industry entries cover size and economic/social impact; organization and structure; history and development; major countries and companies, including rankings; size and nature of the work force; and a bibliography of further reading sources.

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