

# Best's Underwriting Guide

## MEAT PACKING PLANTS

Line	Best's Hazard Index	Underwriting Comments
Automobile Liability	7	Daily deliveries. Large fleet of vehicles. Higher based on radius of operations.
Automobile Physical Damage	7	Driver training and experience is essential.
General Liability	4	
Product Liability and Completed Operations	10	Food poisoning and contamination claims. Mad cow disease variant possible if insured uses livestock from foreign producers and suppliers.
Environmental Impairment Liability	3	
Workers' Compensation	10	Frequency of injuries is a problem. Possible injuries from carcass preparation procedures and meat preparation equipment.
Crime	6	
Fire and E.C.: Property	8	Heavy fire load, including meat.
Business Interruption	7	
Inland Marine	7	
Boiler and Machinery	10	Extensive refrigeration equipment.

Low 1-3, Medium 4-6, High 7-9, Very High 10

#### SIC Codes

2011	Meat Packing Plants
2013	Sausages and Other Prepared Meats
2077	Animal and Marine Fats and Oils
5147	Meat and Meat Products (boxed beef)
5149	Groceries and Related Products, NEC
5154	Livestock
5159	Farm-Product Raw Materials, NEC
5421	Meat and Fish (Seafood) Markets, Including Freezer Provisioners (Seafood)

#### NAICS Codes

3116	Animal Slaughtering and Processing
31161	Animal Slaughtering and Processing
311611	Animal (except Poultry) Processing
311612	Meat Processed from Carcasses
311613	Rendering and Meat Byproduct Processing
4224	Grocery and Related Product Wholesalers
42242	Packaged Frozen Food Wholesalers
42252	Livestock Wholesalers

### Related Classifications

Breeding — Small Animals  
 Canning — Fish and Seafood  
 Fish and Seafood Dealers — Wholesale and Retail  
 Fish and Seafood Freezing Operations  
 Food Distributors  
 Hog Confinement Facilities  
 Meat Products Processing  
 Pet Food Manufacturing  
 Poultry — Processing  
 Public Refrigerated Warehouses  
 Rendering  
 Supermarkets and Grocery Stores  
 Trucking — Long Haul  
 Warehousing

### Special Exposures

Cargo losses in transit  
 Materials-handling injuries  
 Cumulative trauma disorders  
 Knife-related injuries  
 Foot and mouth disease  
 Faulty or poorly maintained equipment  
 Excessive production speeds  
 24-hour operations  
 Foreign objects in meat products  
 Below-grade utility-storage areas  
 Smoking operations  
 Boiler or pressure vessel explosions  
 Slippery walking and working surfaces  
 Effluent discharge  
 Odor pollution

## RISK DESCRIPTION

Meat packing plants, also called "slaughterhouses," are establishments primarily engaged in the slaughtering of cattle, calves (for veal), hogs, sheep, lambs, and horses for meat for human consumption, either for their own account or on a contract basis for the trade. Also, they may be sold or used on the same premises for canning, cooking, curing, and freezing, and in making sausage, lard, and other products. The meat industry consists of red meat facilities, which produce beef or pork products, and poultry facilities, which produce chicken (except eggs) and turkey products.

It should be noted that there are two major types of meat establishments: the meat packing plants, which slaughter livestock and process meat, and the meat products processors, which do no slaughtering but buy wholesale meat for further processing or final sale to consumers. Meat packing plants may perform slaughtering operations, processing operations from carcasses slaughtered at other facilities, or both. Rendering operations may be performed either at standalone facilities, or in combination with slaughter and/or other further processing operations. Meat facilities that perform "upstream" or "downstream" operations that entail getting meat products from the farm to the consumer (e.g., livestock raising, wholesale distribution), that are not considered part of the meat products industry operations. This classification should be read in conjunction with the Meat Products Processing, Rendering, and Food Distributors classifications.

Meat packing plants purchase cows, calves, hogs, sheep, and lambs from farmers, slaughter them, and then sell the meat to meats products processors, retail operations, and institutional operations, such as restaurants, schools, and government entities. Slaughtering involves killing animals, inspecting the carcasses for abnormalities and disease, and cutting and trimming the carcasses into saleable meat products. Some meat packing plants will produce sides or quarters of beef or pork, and others will process the meat further into wholesale cuts. Sides and quarters of meat are typically sold to meat processors and wholesale and retail establishments. Wholesale cuts are sold to retail establishments (grocery stores and butcher shops), restaurants, schools, and government entities. In addition, some meat packing plants manufacture prepared feeds and feed ingredients for animals (except dogs and cats) and may also perform slaughtering operations to manufacture animal feed. Meat packing plants also produce meat by-products, such as leather and pigskin hides; blood, bones, and organs for meat products and pharmaceutical extracts; and fat and other inedible parts used for rendering.

Insureds may be privately owned or part of a large, publicly held meat products corporation. Many of the businesses may be family-owned, and some are 50 to 100 years old. There are 1,300 companies in the animal slaughtering industry, and these companies own and operate about 1,400 establishments.

Meat packing plants are typically located in rural areas near livestock farmers and major highways, which allow them to bring in their supplies and ship out their products quickly and easily. Smaller plants will handle only slaughtering of the animal sometimes specializing in one type of animal, and they will usually have one plant. Larger insureds with hundreds of employees, are typically part of a meat processing conglomerate with numerous facilities located nationwide. Depending on the type of operation and the variety of services offered, the layout could include the following: various holding pens, a stick pit, a slaughtering area, a meat cutting area with multiple production lines, a blast freezer area, a refrigerated tempering storage area (for storage of the finished product), a laboratory for quality control testing of meat products, a drivers' waiting area, and administrative offices. If the insured also has meat processing operations, the insured will then be housed in single story masonry or wood-frame buildings or in plants made of prefabricated, pre-engineered structures of aluminum panel construction. Depending on the type of operation, the layout will also include various chill and holding coolers; blast and storage freezers; a smokehouse; curing and aging rooms; areas for boning, cutting, processing, and wrapping; holding pens; a rendering room; a customer area; a boiler room; a machine shop; administrative offices; and a truck sterilizing compartment.

Workers in meat packing plants will often include: slaughterers and meat packers, meatcutters and trimmers, cutting and slicing machine operators, casing finishers and stuffers, cooking machine operators, cooling and freezing equipment operators, maintenance repairers, refrigeration technicians, graders and sorters, production inspectors, quality control technicians, hand packers, packagers, machine feeders and offbearers, truck drivers, drivers/sales workers, and more. A variety of managerial and professional workers that include top executives, industrial production managers, advertising, marketing, promotions, public relations, and sales managers are also employed within the industry.

Office hours will typically be from 8:30 a.m. to 5:30 p.m., Monday through Friday. Most employees will work in shifts (such as 8:00 a.m. to 5:00 p.m., 7:00 a.m. to 3:30 p.m., 11 a.m. to 7:30 p.m., etc.). Smaller insureds may maintain more limited hours of operation, depending on the demands of their schedule. Moreover, work hours at both large and small insureds may be extended to accommodate any additional services or unusual circumstances that particular customers, seasons, or holidays may require.

Meat packing plants sell their products in two different markets: interstate/foreign and intrastate. Plants that are geared towards interstate and foreign markets are regulated by the Food Safety Inspection Service (FSIS) division of the United States Department of Agriculture (USDA). A few meat packing plants may offer limited custom slaughtering of livestock to farmers for their personal consumption; custom-exempt slaughtering, as it has become known, is done on a contract basis and is exempt from federal and state regulations. Meat produced for intrastate commerce is governed by state regulations and inspection programs which are equivalent to federal regulations and run in cooperation with the FSIS.

The FSIS's authority to regulate the meat industry was established by the Federal Meat Inspection Act of 1906. In 1958, the Act was amended by the Humane Methods of Slaughter Act, which set standards for the humane slaughter of livestock. The Wholesome Meat Act of 1967 allowed state Department of Agriculture inspectors to perform USDA inspections and thereby reduce the workload of the USDA inspectors. In 1978, the Humane Methods of Slaughter Act was amended to require the humane handling as well as slaughter of livestock.

Under federal and state regulations, before a plant can begin operating, the FSIS must approve the operation's plans for facilities, equipment, and procedures to make sure it will be sanitary. To meet FSIS approval, the facilities and equipment must be easy to clean and to keep that way. Each plant's floor plan, water supply, waste disposal systems, and lighting must be approved. When plants want to make improvements or repairs, or update their operations, they must first have FSIS approval. Once a plant begins operating, inspectors continually monitor the facility and equipment for the proper sanitary conditions; the plant cannot operate without USDA or state inspectors being present. USDA veterinarians and inspectors or their state equivalents are present at the production facility

full time. Veterinarians and inspectors have been granted the discretionary authority to close down plants they consider unsanitary. If, at any time, equipment is not properly cleaned or an unsanitary condition is discovered, the operations are closed down until the problem is corrected.

Livestock is inspected by USDA inspectors before and after slaughter. Prior to slaughter, USDA veterinarians look for diseases and other abnormal conditions. Dead or dying animals cannot be taken into a slaughtering plant. Afterwards, USDA inspectors examine each carcass and its internal organs for disease or contamination that would make all or part of them unfit for human consumption. USDA grading of beef products is also done at this time.

Although most plants are small, the bulk of the livestock slaughtered in the United States (over 70 percent) is done by the 20 largest companies. The days of the small meat packing plants are fading. Federal regulation of meat products by the USDA, which has improved overall meat quality, has made it almost impossible for smaller operations to compete with USDA-inspected plants because they do not have the capital to invest in the automated equipment that improves quality and productivity. As a result, the meat industry is becoming more competitive, and only businesses that can produce large quantities of high quality meat are expected to survive. In addition, many meat products manufacturers are consolidating their meat packing and processing operations to cut down on transportation and energy costs.

The biggest trend in the industry is that some new labels that are put on meat, poultry, dairy, and egg products read, "Certified Humane Raised & Handled", to indicate proof of certification that milk and beef from livestock have been raised under humane conditions. Under the Humane Farm Treatment Certification standards, pregnant pigs cannot be kept in metal "gestation crates," egg-laying hens cannot be kept in cages, and dairy cows cannot be tied in stalls. Also, using growth hormones and turning animals that are too sick to walk into food have both been banned. The label certifies that producers and processors have met certain standards for animal treatment. This is due to the growing business and public support in the United States and abroad for better treatment of farm animals. Corporations such as Kentucky Fried Chicken (KFC) currently support the movement, and has set new standards for the humane treatment of any chicken they use. McDonald's has been a major influence in this process since 1998 when it instituted a company-wide policy to routinely conduct inspections of every plant that it buys beef from; its auditors monitor every stage of the meat preparation process and keep track of every minor problem to make sure that any beef that it uses has been processed from cattle that is treated humanely. These major concerns have influenced the meat industry. The Meat Institute now routinely has annual "humane-handling" seminars, and has developed guidelines for the industry on how to properly treat cows and pigs, such as "Good Management Practices for Animal Handling and Stunning," and "Recommended Animal Handling Guidelines for Meat Packers" among many others.

According to the American Meat Institute, approximately 6,000 meat and poultry plants are USDA-inspected; another 3,000 plants have chosen to be inspected by one of the 25 state inspection programs. While insureds can choose federal or state inspection, if they are under federal inspection, plants must comply with the Federal Meat Inspection Act of 1906 or the Poultry Products Inspection Act of 1958. A key component of these laws is a strong inspector presence and the power to shut a plant down any time a threat to the public health or inhumane treatment of animals is noted. State-inspected plants comply with state requirements that are deemed to be the same as or equal to federal laws, but these plants may not export internationally or ship products across state lines.

The abovementioned humane guidelines were developed because workers in some meat packing plants have stated that animals were not being slaughtered in a humane method. It was discovered that procedures at certain meat packing plants entailed cutting cattle into pieces of meat while the animals, were still alive. In order to meet production line speeds of more than 300 cattle per hour, in some specific cases, workers have opened the legs, stomach, the neck, cut off the feet, while the animal is still alive and making noise. In these cases, stunning that should have killed the animals before the slaughtering process began was not properly utilized due to the speed in the production runs, and left them alive. (Workers are concerned for themselves as well. If the animals are not completely dead when they are cut open, they will struggle and thrash about wildly, resulting in injuries that range from broken arms, permanent disfigurement, and death in the most severe cases). A major case in point was the IBP Inc. plant in Pasco, Washington State, where workers confirmed that on a daily basis, there were several animal cruelty violations that included chopping the hooves off live cattle.

Speeding up the production line results in animal cruelty and also results in meat contamination. The increased speed does not give workers enough time to adequately sanitize the meat before it gets to the insured's customers. In the most extreme cases, fecal matter clings to the meat, resulting either in sickness or death in those customers who ate the insured's meat. After various E. Coli and other meat contamination outbreaks, the Clinton administration developed an inspection program under the Hazard Analysis Critical Control Points (HACCP). What HACCP does is transfer many federal inspection duties that used to be conducted by USDA inspectors to the insured's corporate quality control personnel. Due to the fact that this procedure has given insureds more control over their inspection procedures, the inspectors' ability to ensure compliance with meat safety and humane slaughter regulations has been impeded, according to experts. USDA inspectors cannot impose civil fines or recall meat even when they see problems that would result in outbreaks. The result has been deadly food contamination outbreaks and severe worker injuries.

The most pressing problem in the meat industry today is the return of Mad Cow Disease or Bovine Spongiform Encephalopathy (BSE), a brain-wasting disease that causes paralysis in human beings and eventually leads to death. According to the *ABC World News Tonight with Peter Jennings*, 70% of U.S. imported beef comes from Canada. After the disease occurred recently in a cow in Canada. All beef imports in to the United States from Canada have been permanently banned by the United States Department of Agriculture. Due to the crisis, shares in fast food restaurants, restaurants (that serve beef dishes), meat producers and processors, and cattle prices have fallen. For instance, stocks fell in Wendy's, McDonald's, and Outback Steakhouse (*USA Today*, May 20, 2003, *CNNMoney*, May 20, 2003).

The principal organizations for this industry are the American Meat Institute (AMI, which can be contacted at [www.meatami.com](http://www.meatami.com)); and the American Association of Meat Processors (AAMP, which can be contacted at [www.aamp.com](http://www.aamp.com)). Other related organizations include the National Pork Producers Council (NPPC, which can be contacted at [www.nppc.org](http://www.nppc.org)), the National Meat Canners Association (NMCA, which can be contacted at [www.meatamicom](http://www.meatamicom)), the National Food Processors Association (NFPA, which can be contacted at [www.nfpa-food.org](http://www.nfpa-food.org)), and the National Cattlemen's Beef Association (NCBA, which can be contacted at [www.beef.org](http://www.beef.org)).

### MATERIALS AND EQUIPMENT

Pneumatic or hydraulic dropper/spreaders, platforms (hydraulic, portable), hand trucks, overhead, rail-type conveyors; power and hand saws, hide pullers and strippers, dehiders, dehairing equipment, hand tools (knives, scissors, razors, scrapers, meat chippers, cleavers, sharpening rods, hooks); high-pressure water and steam hoses, water heaters; hoists, elevators, pulleys, monorail, overhead rail trolleys; cleaning and sanitizing chemicals; packaging and sealant machines; shackling equipment; refrigeration equipment; meat trees, drums, metal tables, viscera trucks (for small plants, can easily be sterilized between usage), and other trucks. Holding pens, stunning pens, stunning devices (electro-lethalers, knocking hammer, captive bolt gun).

### PROCESS OR SERVICE

The slaughtering process involves disassembling animals in an assembly-line type operation in which the animals move from stunning to refrigeration in a matter of minutes. The process is essentially the same for all types of slaughtering. For the purposes of this write-up, the process for slaughtering hogs will be discussed.

The animals are delivered to the meat packing plant by the farmers. The animals are separated in holding pens according to supplier; they will be given water and may or may not be fed, depending on how long they will remain in the pens until they are slaughtered. A USDA veterinarian will be present to examine the animals and look for abnormal or diseased animals; these animals will be separated and sent back to the supplier or taken to a rendering plant.

Before slaughtering, the animals are moved through a system of chutes to the stick pit, from which workers coax them into another chute that leads to a conveyor system. The animals are then conveyed automatically to the stunning machines where an electro-lethalers or a captive bolt gun is used to immobilize the animal by driving a metal bolt into its head without killing it. The law requires that all animals must be made insensible to pain before slaughtering.

Immediately after being stunned, an animal is dropped down onto another conveyor and taken to the slaughtering area. There, a worker with a knife cuts the jugular vein of the animal, and then soon after, an employee will stamp the animal with a letter to designate the day of the week and a lot number to designate the supplier. After that, another worker chains the animal, by one leg, to an overhead rail-type conveyor, and the blood is allowed to drain for a specified period of time. The blood itself is collected and conveyed to a storage tank or rendering facility.

Once the blood has drained, the carcasses are conveyed to the scald tanks. Still connected to the rail-type conveyor, the carcasses are dipped into the scald tank for a specified period of time to loosen up the animal's hair. The water in the scald tanks is typically around 140 degrees Fahrenheit.

After scalding, the carcasses are conveyed to the dehairer machines. In the dehairer machines, the animals are spun against rubber panels. As they spin, friction from rubbing against the rubber panels removes most of the hair from the carcasses.

Workers then chain the carcasses to another rail-type conveyor. In hog plants, a worker cuts a slit into each of the hind legs of the carcass, and a second worker attaches the carcass by the hind legs to a rail-type conveyor using a T-shaped hooking device called a gambrel so that the carcass is suspended in the air. Next, the carcasses are conveyed to a series of polishers and singers, which fluff up the remaining hair on the carcass and then singe it off. Workers, using shavers, will remove any remaining hair.

After the hair has been removed, the carcasses are skinned. In hog slaughter, removing the skin is optional. Skinning may be done automatically by hide pullers and strippers, and de-hiders, or manually by workers using knives. The hides will be sold to leather and pigskin processors.

Before being conveyed to the slaughtering area, each skinned carcass is inspected by a USDA inspector. If the skin is not removed, the head and viscera are inspected at a later point in the slaughtering process. The inspectors look for skin irritations, discoloration and other abnormalities; other USDA inspectors examine the glands of the animal for evidence of disease. Abnormal carcasses are tagged and retained; later, they will be examined further, the infected parts removed, and the rest conveyed to the slaughtering area.

Upon passing inspection, the carcasses are moved into the slaughtering area. There, the heads are cut off using automatic cutting devices that leave the heads hanging by flaps of skin. A worker removes the heads of the carcasses and places them on a separate conveyor that will accompany the carcasses through the slaughtering process. In some plants, the heads are left hanging on the carcass.

Using counter-balanced circular saws, workers then split the stomach of each animal open. Immediately afterwards, other workers remove the viscera of each animal and place it on a third conveyor, which moves through the process in line with the heads and carcasses. Finally, a worker using another counter-balanced circular saw splits open the back of each carcass.

The carcasses are inspected for damage and weighed. Samples of tissue will be taken and then tested in an on-premises laboratory; tissue samples may also be sent to an independent laboratory to be tested for animal growth hormones and diseases. In some plants, after sample testing, workers use a fatometer to measure the leanness of the meat. Prior to being weighed, the carcasses are again inspected by USDA inspectors. If the carcasses pass inspection, they are stamped "USDA Inspected and Passed." If they fail, they will be stamped "USDA Inspected and Condemned" and sent to a rendering plant.

After the carcasses have been inspected and weighed, they are conveyed into blast freezers where they will be frozen to seal in moisture and to ensure freshness. There are many cooling processes used. In one process, hog carcasses are sent through three blast tunnels. Blast freezing for hogs usually takes about three hours; beef carcasses take slightly longer because of their larger size. After being blast frozen, the carcasses are conveyed to a tempering cooler and stored overnight.

While the carcasses are being chilled, the head and viscera undergo further processing by workers and inspection by USDA inspectors on separate lines. Processing heads may be done automatically by head splitters, or manually by workers with saws and knives. Workers will cut off all the meat from the head using saws and knives; this meat will be sold to meat processors for use in luncheon meats, sausages and hot dogs. Next, the eyes will be removed and preserved; typically, the eyes are donated to eye banks. Finally, the head will be split open, and the brain will be inspected for any abnormalities.

Processing of the viscera is typically done manually. First, USDA inspectors will examine the viscera for signs of disease and other abnormalities. Each organ will be inspected by the inspectors and random samples of organs may be tested on site and/or sent out to an independent laboratory. Next, workers will clean and sort the usable organs by hand. Hearts, livers, and stomachs may be

sold to pet food processors for pet food, or they may be sold to meat processors to make sausage or scrapple; intestines will be sold to meat processors for use as sausage casings.

The next day, the frozen carcasses are removed from the cooler and conveyed to the cut floor, where they will be cut up into sides or quarters, depending on the plant's practice. The carcasses are dropped onto a conveyor. Workers will manually line the carcasses up on the conveyor with the cutters, and then, the legs of the carcasses are cut off.

Cows are first cut into sides or quarters and then into five wholesale cuts: round, loin, rib, chuck and thin. Hogs may be cut into five separate wholesale cuts: ham, loin, side, shoulder and picnic. Each cut will be processed further (e.g., trimmed, cut and packaged) on separate production lines. Workers oversee the cutting process, inspecting the meat as it is conveyed along the line and guiding it to the cutters. Sides or quarters of meat will be placed in cardboard boxes; wholesale cuts will be shrink-wrapped and then boxed. Workers will load boxes onto pallets by hand, and then move the pallets to the cold storage warehouse for shipping the next day.

While small plants will typically kill less than 100 head of cattle or less than 200 head of hogs or sheep per 8-hour shift, many of them slaughter less than 25 cattle or 100 hogs or sheep per 8 day. In comparison, large plants may process up to 350 head of cattle per 8-hour day; however, they can increase their capacity to 700 head of cattle per day by adding a second shift. Some extra-large modern plants have a slaughter capacity of 2,500 of cattle per day or 5,000 head of cattle per day in two 8-hour shifts.

If the meat packing plant produces whole carcasses of beef or pork, workers called meat luggers will manually load carcasses onto trucks directly from the tempering coolers.

### Automobile Liability

The Automobile Liability for meat packing plants will be substantial. Hazards faced by drivers will include traffic congestion, poor road conditions, and inclement weather. Most travel will heavily depend on the size and radius of the insured's operations. A number of insureds will have their own fleet of refrigerated tractor-trailers, trucks and vans, and will typically make daily deliveries of meat products, although some will lease tractor-trailers, trucks, vans, and other vehicles. Some will travel to pick up animals for slaughtering operations, or deliver meat products to customers in various locations. Certain insureds will ship meat by rail, or they may use common carriers to make deliveries to customers; if the hauling is subcontracted to another party, the Automobile Liability exposure will be greatly reduced. This exposure will also be reduced if the insured's customers come to pick up the meat products from the insured's premises. It should be noted that large insureds tend to carry out long haul trucking, whereas small insureds usually deliver in a local area only. Although some clarification has been made as to coverage for damages resulting from loading and unloading, it is recommended that both the Automobile Liability and General Liability policies be written in the same company for the same limits.

What are the number, age, type, and condition of the insured's vehicles? The number of vehicles that the insured owns will depend on the size of its operations. Meat packing plants will typically own a fleet of from 2 to around 50 or more refrigerated or freezer tractor-trailers, and trucks along with a few refrigerated and freezer box trucks, vans, cars, and semitrailers. Other smaller refrigerated vehicles will be used to deliver the meat and carcasses to such customers as meat processors, supermarkets, restaurants, hotels, hospitals, schools, and food distributors. The insured may also operate several semitrailers for picking up other supplies, such as packaging materials and equipment. In comparison, smaller insureds may own a few refrigerated or freezer box trucks and vans, and perhaps, one or two refrigerated or freezer tractor-trailers. Since they ship carcasses and meat, insureds typically require refrigerated trucks/tractor-trailers to avoid the spoilage of meat. Are refrigerated trucks/tractor-trailers used? Some insureds will lease tractor-trailers, trucks, vans, and other vehicles. Sales personnel travel daily to sales accounts, some insureds may issue company cars to sales personnel and executives. However, other company business may be handled by employees who are driving their own vehicles. If employees use personally owned vehicles for work-related travel, a nonowned vehicle exposure will exist. The underwriter should confirm the existence of underlying personal insurance at acceptable limits and conduct an MVR review.

Does the insured transport products and/or livestock over state lines? If so, Department of Transportation (DOT) and Interstate

Commerce Commission (ICC) regulations governing interstate transportation will apply. Intrastate transportation will be regulated by state public utility commissions (PUCs), but DOT regulations may govern intrastate commerce as well, depending upon the regulations enacted by the respective state. In what states does the insured operate?

What are the frequency of travel and the radius of operations? Meat packing plants typically have a radius of operations of up to 400 miles. Depending on the insured's radius of operations, a long-haul exposure may exist. The largest meat packers operate nationwide through a network of processing plants; most insureds operate in one or two states or in a regional area. Insureds that handle their own pickups and/or deliveries will experience an increased exposure due to more frequent travel. The insured's drivers will usually follow scheduled routes. Has the insured developed route maps to customer locations, and are drivers required to follow them? Route maps will reduce driver confusion due to unfamiliar roads and areas. Does the insured discourage drivers from taking short cuts? Shipments may be made several times a day with delivery vehicles to several different locations, possibly over long distances. The same may be true for pickups of stock and other supplies. Most drivers will follow the same routes each week. Refer to the Automobile Liability section of the Trucking — Long Haul classification for more information.

The insured's delivery schedule will depend on what type of products it distributes. Large insureds may be under pressure to make more deliveries per day as quickly as possible as the meat and meat products are perishable and have limited shelf lives; small insureds dealing in similar items may have fewer daily deliveries. In their efforts to meet tight delivery deadlines, drivers may sometimes engage in reckless driving practices. Does the insured insist on a strict adherence to delivery schedules? Drivers should be encouraged to obey speed limits and local traffic laws. The insured should have a formalized plan for the dismissal of drivers for driving violations, such as accidents and speeding tickets. Determine how many violations drivers are allowed before they are dismissed. In addition, the number of daily and weekly deliveries will depend on the number of customers the insured has. How many clients does the insured have? Determine the average and maximum numbers of deliveries the insured makes daily and weekly. What are the average weekly and monthly mileages for each vehicle?

Does the insured pick up live animals or have them delivered? Typically, farmers will be responsible for delivering the live animals to the insured's premises. In rare instances, the insured may pick up livestock. How does the insured obtain other supplies?

If the insured engages in its own delivery of finished products to customers, pallets of meat and other meat products will be placed directly onto delivery trucks. Fully loaded, the weight of their cargo may cause these trucks to respond more sluggishly; also, the cargo

itself may shift during transportation. All cargo should be stacked and safely secured in delivery trucks. How does the insured secure cargo to prevent it from shifting?

What are the hazards of typical routes? Drivers will face such common driving hazards as traffic congestion, road construction, and poor road conditions. Highway/environmental factors include sharp curves and limited visibility caused by inclement weather (e.g., ice, rain, snow, or fog) and obstructions on hills. Does the insured require drivers to turn on vehicle's headlights before dusk and in the rain, fog, and snow? Insureds generally begin their pick-up and delivery operations in the early morning hours, and drivers may have to travel in the dark. Aside from having to contend with reduced visibility, drivers may be fatigued at such times, which could increase the risk of accidents. The Department of Transportation (DOT) has set standards for the number of hours drivers are allowed to work per day and per week. Drivers are allowed to work 10 hours per day and 60 hours per week. Drivers must not be allowed to exceed these limits. States have the power to modify these standards for intrastate trucking, and some may have relaxed these limits. The underwriter should investigate the regulations that apply in the insured's operating states. DOT regulations have set drug testing requirements for drivers, as well as minimum training and licensing requirements. Determine if the insured has a safe driver incentive program in place. What is the insured's practice?

What is the insured's policy regarding the use of cell phones while driving? In a growing number of municipalities, it is now illegal to use a cell phone or other handheld communications device while operating a motor vehicle. Are drivers encouraged to pull off to the side of the road while talking on their cell phones? This may be an issue of particular concern for salespeople who will spend more of their time on the road than other employees. The use of "hands-free" technologies, such as headsets or voice-activated dialing, should be strongly encouraged. Does the insured provide appropriate hands-free cell phone devices for its drivers?

What are the ages, training, and experience of the insured's drivers? A commercial driver's license (CDL) will be required for all truck drivers issued by the state in which they reside. Obtain evidence of insurance and MVRs on all drivers. Since the Fair Credit Reporting Act requires written permission from the driver to obtain MVRs, the insured should make obtaining this permission part of the hiring process. In addition, drivers that will drive vehicles with chemicals (such as refrigerated trucks) will need a hazardous material endorsement and/or permit. What is the insured's practice?

Does the insured have a routine maintenance program in place for all company-owned vehicles? All vehicles should be kept in good condition, repaired promptly as needed, and inspected regularly. It is a positive underwriting sign if the insured contracts out all automotive maintenance and repairs. Are any of the insured's mechanics automotive service excellence (ASE)-certified? Employees should not be allowed to repair or assist in the repair of the insured's vehicles.

#### **Automobile Physical Damage**

The Automobile Physical Damage exposure for meat packing plants will be substantial because of the heavy reliance on tractor-trailers, delivery trucks, and fleets of vans and cars. Refrigerated semitrailers and trucks that are used to deliver the finished product are expensive to repair or replace and are highly susceptible to damage. Vehicles will be subject to physical damage, theft, and vandalism from malcontents. Other hazards will include poor road conditions, heavy truckloads, and shifting cargo. This exposure will be higher for insureds that have their vehicles make long haul trips. If the insured contracts out pick-up and delivery services, this exposure will be reduced.

What are the number, age, type, and condition of the insureds' specialized vehicles? Insureds may operate a fleet of vehicles consisting of delivery trucks, tractor-trailers, vans, and refrigerated trucks. Are the insured's vehicles owned or leased? Most insureds will own

vehicles that are used for deliveries. Some companies may lease additional vehicles for periods of exceptional order demands, since at such times, the delivery schedule will increase.

Drivers may be required to haul loads over great distances. What are the hazards involved with the insured's specialized vehicles? What is the insured's radius of operations? Shifting of improperly loaded or poorly balanced cargo may cause a vehicle to go off balance, possibly overturning or veering into other lanes or off the road. Improperly secured loads can cause cargo to break away and fall off the trailer or to shift on turns, steep grades, or rough road surfaces, leading to the possibility that the driver will lose control of the vehicle. What is the insured's practice for loading and securing cargo onto trucks? Cargo should be properly secured before transport, and drivers should make periodic inspections of their load throughout their route, especially if traveling over long distances or rural back roads. Are drivers and cargo loaders instructed on proper packing and securing procedures? Meat may be packed on pallets and wrapped with cellophane before being loaded into delivery trucks. Large and extra-large pieces of meat and carcasses should be transported on hooks; typically, the meat is hung from hooks that are attached to the vehicle (that is specially developed for that purpose).

Accidents involving the vehicle may be due to both direct causes, such as equipment failure (e.g., failure of brakes, tires, or lights), and indirect causes (e.g., vehicle rollover, shifting or falling loads). Highway/environmental factors include sharp curves and limited visibility caused by inclement weather (e.g., ice, rain, snow, or fog) and obstructions on hills. Does the insured require drivers to turn on their vehicle's headlights before dusk and in the rain, fog, and snow? Drivers should also maintain sufficient stopping distance from vehicles ahead of them. Does the insured educate drivers on this safety practice?

In their efforts to meet tight delivery deadlines, drivers may sometimes engage in reckless driving practices. Does the insured insist on a strict adherence to delivery schedules? Drivers should not exceed posted speed limits. Speed limits vary from state to state; some states have special speed requirements for trucks (e.g., in Texas, the speed limit during the day for trucks is 60 miles per hour; however, at night, the speed limit is reduced to 55 miles per hour). Are the insured's drivers aware of speed limits in the states in which they travel?

What are the ages, training, and experience levels of the insured's drivers? A commercial driver's license (CDL) will be required for all truck drivers issued by the state in which they reside. Obtain evidence of insurance and MVRs on all drivers. Since the Fair Credit Reporting Act requires written permission from the driver to obtain MVRs, the insured should make obtaining this permission part of the hiring process. In addition, drivers who operate vehicles with chemicals (such as refrigerated trucks) will need a hazardous materials endorsement and/or permit. Does the insured employ any drivers under the age of 25? If so, a youthful operator exposure will exist. It is a positive underwriting sign if there is a driver safety training program in place. Does the insured enforce current state and federal motor carrier safety regulations (FMCSRs)?

How are drivers' whereabouts and driving patterns monitored? For many insureds, drivers on the road and dispatchers in the home office are able to maintain constant contact via a dash-mounted or built-in global positioning system (GPS), which uses satellite technology to track the vehicle's whereabouts. A GPS can let dispatchers know how far drivers have traveled, their various rates of speed, and their current location. Close monitoring of drivers can help determine who is driving safely by sticking to their assigned routes and adhering to state-mandated speed limits. Dispatchers will generally rely on either cellular telephones or dash-mounted, two-way radios to communicate with drivers while they are on the road.

What types of warning devices and gauges are installed on the insured's trucks? Trucks should be equipped with a signal that provides a warning to the driver when a failure occurs in the vehicle's service brake system. Are the insured's truck tires in good condition?

According to FMCSRs, a motor vehicle should not be operated on a tire that has body ply (i.e., one or two layers of heat- and impact-resistant, rubber-coated nylon or polyester cords that form the body of the tire) or belt material exposed through the tread or sidewall, has any tread or sidewall separation, is flat or has an audible leak, or has a cut to the extent that the ply or belt material is exposed. Do drivers inspect truck tires before and after each trip? Do the insured's employees perform an overall check of the vehicle at the start of their shift?

Are vehicles regularly inspected and serviced by qualified mechanics? The insured should contract out all vehicle maintenance services. Unless they are licensed mechanics, employees should not be allowed to do repair work on any vehicles. However, some large companies may hire their own mechanics to conduct vehicle servicing and repairs. Does the insured contract out mechanical services? Determine the experience and qualifications of the insured's auto repair and maintenance contractors. Are the insured's mechanics Automotive Service Excellence (ASE)-certified?

Where are the insured's vehicles stored when not in use? Specialized vehicles may be subject to vandalism from malcontents due to the fact that their sheer size causes them to attract more attention than do regular automobiles. Tractor-trailers and delivery trucks should be stored in a locked garage or fenced-in parking lot when not in use, and these areas should be well lit. Some insureds have their premises patrolled by a security service during off hours. If so, this is a positive underwriting sign. Are vehicles kept locked when left unattended, and are they equipped with anti-theft alarms? What type of alarm system has the insured installed? Any alarm system should be connected to a central-station alarm monitoring system. Because of the concentration of values, it is preferable that vehicles be garaged or protected by a fenced-in lot. Are lots well lit and "No Trespassing" signs clearly posted? It is a positive underwriting sign if the insured has hired a night/weekend security service to patrol its parking areas during off hours.

It should be noted that the loss of the fleet (e.g., in a garage fire) could cause a substantial loss and a lengthy business interruption. Refer to the Business Interruption section of this classification for more detailed information. Does the insured store vehicles in a garage or a fenced, well-lit parking lot?

### General Liability

Due to a small number of daily visitors to the premises, meat packing plants will experience a minor General Liability exposure. Those who are likely to visit the insured's site will include delivery personnel; messengers; federal and state inspectors such as United States Department of Agriculture (USDA) inspectors, OSHA inspectors, Environmental Protection Agency (EPA) inspectors, Food and Drug Administration (FDA) representatives, health inspectors, and Sanitation Department inspectors; customers, such as sales representatives from meat product vendors, meat product processing companies, food distributors; suppliers, district managers, tour groups, and friends and family members of employees. Claims are likely to be more frequent than severe as a large percentage of all bodily injury claims will result from slips, trips, and falls, although those attending factory tours for educational reasons will be exposed to the same hazards as the workers in the factory area. Visitors may slip on spilled meat, bloody animal entrails, and liquids from meat products, or they may trip over meat, carcasses or corrugated cartons. If insureds offer a combination of both meat slaughtering and meat products processing operations, it is highly recommended that this section be read in conjunction with the General Liability section of the Meat Products Processing classification for related exposures.

What is the layout of the insured's premises? The layout of a meat packing plant will vary greatly, depending on the size and scope of the operation and on what types of meats and meat product it distributes. Most meat packing plants are housed in one-story, freestanding build-

ings. Some insureds may be located in multiple-occupancy structures. There will often be various holding pens, a stick pit, a slaughtering area, a meat cutting area with multiple production lines; (where the carcasses are cut into sides, quarters and wholesale cuts), a blast freezer area, a refrigerated tempering storage area, for storage of the finished product, a laboratory for quality control testing of meat products, a drivers' waiting area, and administrative offices. It should be noted that where the insureds have meat processing operations, the insured's layout will often also include administrative offices; various chill and holding coolers; blast and storage freezers; a smokehouse; curing and aging rooms; space for boning, cutting, processing and wrapping; holding pens; a rendering room; a customer area; a boiler room; a machine shop; an office; and a truck sterilizing compartment.

What are the insured's hours of operation? Generally, meat packing plants are open seven days a week. Hours are set up according to the responsibilities of the workers in the company. General office hours are from 8:30 a.m. to 5:30 p.m., Monday through Friday. Most production employees will work in shifts (such as 8:00 a.m. to 5:00 p.m., 7:00 a.m. to 3:30 p.m., 11 a.m. to 7:30 p.m., etc.). Smaller insureds may maintain more limited hours of operation, depending on the demands of their meat packing and processing schedule. Moreover, work hours at both large and small insureds may be extended to accommodate any additional services or unusual circumstances that particular customers or seasons may require.

What are the average and maximum number of visitors to the premises daily? Meat packing plants may not have many visitors, but they will include government inspectors from various regulatory agencies such as USDA inspectors, OSHA inspectors, FDA inspectors, and sanitation department personnel, who will often perform unannounced spot checks; delivery personnel from various meat processing plants and meat suppliers will stop by the premises once to several times per week, depending on the insured's volume of business and its customers' subsequent need for replenishment, and truck drivers who are picking up or delivering customers' goods. Some customers, such as meat products processors and food distributors may come daily to pick up meat from insureds. Sales representatives or drivers from meat equipment manufacturing companies will often come into the insured's premises to promote their various types of equipment, and assorted meat-related companies will also come in to promote their services. Other visitors will include sales representatives and vendors (from suppliers, food manufacturers, grocery wholesalers, restaurants, etc.), maintenance people (such as repair personnel who may service refrigeration equipment), and the employees' friends and/or family members. Visits, even those for picking up or delivering meat, are normally scheduled in advance; however, government inspectors will often perform spot checks unannounced. Are signs posted indicating which areas are off-limits to nonemployees? "Authorized Personnel Only" or "Employees Only" signs should be posted in areas, such as walk-in refrigerated areas, storage areas, production areas, and meat laboratory testing rooms, where the general public would not normally be allowed entrance. If they are permitted to enter these areas, visitors should be escorted by experienced employees and supervised carefully. If it is necessary for nonemployees to enter the meat slaughtering area and the production facility, and, of course, be escorted by an employee, they should be required to wear hard hats, safety glasses, and nonslip footwear.

Because of stringent sanitation requirements and safety concerns, most meat packing plants will not offer tours of the slaughtering area and production facility, but may give frequent restricted tours. Visitors may be taken into the cutting area, but most will be restricted to offices and observation areas, where visitors can view the operation without being exposed to hazardous conditions. It is a positive underwriting sign if tours are conducted from behind Plexiglas partitions or from elevated catwalks, as this will reduce tour attendees' exposure to production floor hazards. Do elevated catwalks have nonslip treads and guard rails installed for fall protection? Does the insured give

tours to customers or school children? If the insured offers tours of the facility, they must be properly organized, well supervised, and restricted to observation areas. Are all factory tours scheduled in advance? How frequently does the insured give tours? What is the ratio of tour guides to visitors? Determine the condition and level of housekeeping of the observation areas. To ward off unnecessary injuries, all tours should be limited in size to provide for proper supervision. Groups of children should be closely supervised. All visitors should wear closed-toe shoes in order to prevent serious injuries.

All production areas must have a means of egress. Are all exits from the premises clearly marked and unobstructed? Are tour guides and production personnel thoroughly trained in emergency evacuation procedures? Are tour groups instructed in evacuation procedures prior to each tour? Determine if all tour groups are conducted by an experienced employee who is familiar with the plant and all its possible hazards.

While on the premises, visitors who are typically allowed entrance to production areas, such as USDA inspectors, OSHA inspectors, and EPA inspectors and service and repair contractors, will be exposed to a variety of hazards. Burns may occur as a result of contact with furnaces and various other meat packing and meat preparation equipment. Warnings should be clearly posted around all potentially hot surfaces and production equipment and areas. Is access to the insured's manufacturing equipment sufficiently insulated to prevent burns upon accidental contact?

It should be recognized that USDA and state inspectors will be on the insured's premises full time and will be exposed to some of the same hazards as workers. They work in refrigerated areas and are thus exposed to cold temperatures. They will examine the carcasses as they are brought into the slaughtering area. They could be struck by moving carcasses or by neighboring workers. They also could be cut by workers using saws and knives. However, injuries to inspectors are generally not as severe as those to workers; refer to the Workers' Compensation section of this classification for a full discussion of worker-related hazards. Typically, occupational injuries to USDA inspectors are covered under the USDA's Workers' Compensation policy. If inspectors are injured as a result of the insured's negligence, however, they do have the right to sue and collect under the insured's General Liability policy, but such claims are rare.

Slips, trips, and falls in the production areas and offices will be the main exposure for the majority of visitors to the insured's premises. In general, meat packing plants tend to be crowded with machinery. Scraps of meat on the working floor may cause slipping and tripping. Good housekeeping practices are the main loss control measure for these hazards. What is the level of housekeeping on the insured's premises? Office and reception areas, walkways and aisles should be well maintained and kept free of debris and clutter. Electrical and telephone cords within the building should be routed away from heavily trafficked areas and covered with rubber or metal slippguards. Trash should be removed from the premises on a daily basis. What is the condition of the insured's floors and floor coverings? Floors should be swept, mopped, and/or vacuumed daily. If the insured has tile or concrete flooring, are rubber-backed floor mats placed inside all entrances so visitors can wipe their feet as they enter the main structure? This can help reduce the possibility of people slipping on rainy or snowy days when individuals with wet shoes will be entering the building. Worn, torn, or loose floor coverings should be repaired or replaced immediately. A rug mat or runner should also be kept in areas where wet spills may be common, and should be checked frequently for upturned edges and changed as needed.

Meat packing plants use a great deal of water in the meat preparation process; as a result, production floors in most areas may be wet. The production areas should have warning signs posted, such as "Caution — Wet Floor." Drains should be installed in any areas where spills are common. Rubber mats with nonslip treads should be used in these areas as well. Are all spills mopped up promptly?

If there are steps into the premises or within the facility, they should be kept in good repair. Do the steps have handrails and nonslip treads? Are they well lit? If the insured has an elevator, determine who is responsible for inspecting and maintaining it, and assess that individual's level of experience. Some insureds may contract out these services while others will rely on their own maintenance crew to perform them. What is the insured's practice?

What is the condition of the insured's furnishings in reception areas? Some furniture may have sharp or pointed edges that could injure visitors. All furniture should be in good condition with rounded edges and smooth surfaces. Furniture should be regularly inspected by an employee and repaired or replaced as necessary.

Cuts, lacerations, dismemberment, and/or electrical shocks may result from accidental contact with sharp or moving parts on automated machinery. Arms or hands could be seriously injured when visitors place their hand near the meat preparation machine's operating gears. For instance, individuals could be seriously injured if their arm entered the "nip point" or juncture of two counter-rotating rollers on the machine. What is the level of experience of the insured's equipment service and repair contractors? Anyone who is engaged in attending to the insured's equipment should be thoroughly familiar with its workings. Lockout/tagout procedures should be practiced to prevent the accidental operation of any equipment while it is being serviced or repaired. Automated machinery should have machine guards in place over sharp or moving parts.

Electrical shocks could result from contact with wiring that is worn, damaged, or exposed. Appliances and electrical machinery should be properly grounded, NRTL-listed, and equipped with circuit breakers. All wiring should be double insulated, and loose or exposed wiring should be disconnected from its power source, especially in areas where floors may be wet. A licensed electrician should inspect all wiring and power cords on electrical equipment. What are the qualifications and experience level of the electrician who services the insured's equipment?

Visitors, such as government regulators and computer repair technicians may sustain electrical shocks from improperly grounded or maintained electrical equipment, computers, lighting fixtures, or other electrical appliances. Wires may fray or crack and cause machinery to malfunction. Is all electrical equipment properly grounded and NRTL-listed? How often is it inspected and serviced? All such maintenance work should be conducted by a licensed professional.

Maintaining constant vigilance with regard to proper sanitation is an essential loss control measure for meat packing plants. Some meats will be prepackaged and wrapped tightly in cellophane before transportation to customers, so spills will be rare. Nevertheless, accidents do happen. In loading docks and storage areas, for example, tears in bags of meat could create spills. Also, leakage from ruptured boxes of meat as well as smashed or damaged meat, could lead to wet and sticky spots on warehouse or loading dock floors. Are spills mopped up immediately and "Caution — Wet Floors" signs placed over affected areas? Meat packing plants that fail sanitation inspections are often closed down until the insured's plant(s) meet the government's standards. Federal and state regulations require equipment and facilities used for processing live animals for human consumption to be completely cleaned every eight hours of operation to maintain sanitary conditions. The daily schedule for insureds may consist of one or two eight-hour production shifts, followed by a six- to eight-hour cleaning period. Walls and floor surfaces are initially rinsed with water to remove loose solids, and the surfaces are then scrubbed with detergents and sanitizers, and rinsed in a typical cleanup procedure. Thus, it is a positive underwriting sign if the insured employs a full-time supervisor whose job it is to oversee proper sanitation practices for the entire facility. What are the qualifications and experience of the insured's sanitation supervisor? Has at least one full-time sanitation worker been designated for each of the insured's facilities? Does the insured maintain strict compliance with OSHA standard 1910.141, Sanitation?

Frostbite could occur if inspectors or visitors are not suitably attired for the colder temperatures they will be exposed to in refrigerated storage areas. If visitors are allowed to enter climate controlled storage areas, management should ensure that they are appropriately dressed to withstand the temperature of the room they are entering. Does the insured have an adequate supply of protective clothing (e.g., face masks, gloves, quilted coveralls, etc.) on hand, or are inspectors expected to provide their own? For more information on related exposures, refer to the General Liability section of the Public Refrigerated Warehouses classification.

Although most insureds will have their own HVAC repair and maintenance personnel, in some cases, larger repairs may require the assistance of a manufacturer's repair person. Electrical shock will be a serious concern for these individuals, as will working in confined spaces. What is the level of experience and expertise of any outside HVAC specialists who come on site to assist with repairing the insured's refrigeration equipment? It is a positive underwriting sign if these individuals are sent directly from or referred specifically by the equipment's manufacturer since they are much more likely to be familiar with the workings of the insured's refrigeration equipment. Lockout/tagout procedures must be followed, and the insured should be in compliance with OSHA standards 1910.146, Permit-Required Confined Spaces as well as 1910.147, The Control of Hazardous Energy (Lockout/Tagout).

Meat packing plants will have large loading docks on site for receiving and shipping out meat products. What are the layout and condition of the shipping and receiving areas? The insured will have daily traffic in the shipping/receiving area. Livestock will be brought into the premises, and finished meat will be shipped out daily. Truck drivers for common carriers could be injured during loading and unloading operations. Does the insured prohibit public carrier drivers from assisting in loading and unloading? Are all of the insured's forklifts equipped with backup alarms? What are the training and experience of the insured's forklift operators? OSHA requires all forklift operators to be certified and trained on specific hazards found at the insured's facility. Thorough training in the safe operation of forklifts is essential to help minimize the risk of injury. Convex mirrors should be in place at any blind corners and at the beginnings and ends of aisles so operators can see pedestrians in time to stop. Are trucks chocked during loading and unloading procedures to prevent them from rolling? Traffic patterns should be clearly established for loading docks, and truck drivers should be cautioned to avoid walking down aisles between storage racks. Are speed limit and warning signs (e.g., "Proceed with Caution" or "Keep Clear of Aisles") posted where necessary?

Furthermore, does the insured have a waiting area for drivers? Driver waiting areas should be in good condition, free from tripping and falling hazards and well lit. All furniture in the waiting area should be sturdy and in good condition to prevent drivers from being injured.

If visitors are allowed access to the insured's meat storage facilities, they may be exposed to injuries resulting from collisions with forklifts or toppling inventory. Forklifts will be used by the insured to transport pallets of raw meat, other meat materials, and finished meat to and from storage and production areas as well as loading docks. Meat packing plant employees are at the greatest risk of being struck by toppling inventory because they are often directly involved with the loading and unloading of stock. Forklift traffic patterns and maximum speeds should be established and clearly posted around all areas in which they are used. Convex mirrors should be placed at the ends of aisles and at corners where collisions between forklifts and visitors are more likely to occur. Are loaded pallets stacked upon one another in storage areas? Has the insured established a maximum height that loaded pallets are allowed to be stacked?

What is the condition of sidewalks and parking lots on the insured's premises? Are they kept in good repair? They should be free of cracks, potholes, debris, and clutter that could cause visitors to slip, trip, or fall. Maintenance of all exterior areas is particularly important

during bad weather and the winter season. Freezing rain, sleet, ice, blizzards, and other severe winter conditions will increase the potential for visitors to slip and fall. Have arrangements been made for the prompt removal of ice or snow? Water should be kept off walkways, and puddles should not be allowed to accumulate. Are parking spaces clearly marked? Exits and entrances should also be clearly marked to permit smooth traffic flow.

Since slaughtering is a major aspect of the operation, livestock may be kept in outdoor holding pens. What level of premises safety and security has the insured taken? As unauthorized people could enter the insured's premises and be injured, it is important to ensure that the stockyards are not accessible to members of the general public. Plant grounds and the whole premises should be fenced. Security guards and patrol services should be used at night. Also, sound security measures in these areas should include sufficient lighting to illuminate all livestock areas at night and closed circuit television cameras (CCTVs). Exterior lights should always be turned on at dusk. What procedures does the insured have in place? For more information on premises security, refer to the Crime section of this classification.

### Product Liability and Completed Operations

Livestock is typically slaughtered at meat packing plants and then the meat is provided by the insured to its various customers, who then further process into various finished meat products. As a result, the insured will bear the brunt of this liability and will usually be named in lawsuits alone or along with its customers, most notably fast food restaurants, restaurants, institutions (such as schools, universities, the military, etc.), meat products processors, and other establishments. Contamination of meat products can be caused by the failure to detect diseases or abnormalities, spoilage from improper refrigeration (e.g., botulism, salmonella, staphylococcus, and listeriosis), chemical contamination, and insect or rodent infestation. Overall, the Product Liability exposure for meat packing plants will be severe.

Claims will result from consumers who become ill after eating meat products which are spoiled, contaminated, or diseased; are improperly cooked or canned; contain harmful or improperly mixed ingredients; contain foreign substances; or have been cured with an improperly mixed solution of chemicals. Foreign objects in processed meat products also can cause broken teeth or cuts. Also, the insured could face claims as a result of poor storage and/or delivery that results in food spoilage and contamination that can cause serious illness and possibly death. Due to the possibility of outbreaks of such foodborne illnesses as *Escherichia coli* (*E. coli*), salmonella, listeria, and the fatal Mad Cow Disease or Bovine Spongiform Encephalopathy (BSE), insureds that slaughter and prepare meat must take specific precautions when handling meat. Product Recall Expense Coverage may be necessary. This section should be read in conjunction with the Product Liability and Completed Operations section found in the Meat Products Processing and Rendering sections, as well as in other food-related classifications, such as Fish and Seafood Dealers — Wholesale and Retail, Canning — Fish and Seafood, Poultry — Processing, and Food Distributors.

The insured's exposure will depend on the extent of automation in the processing plant, because automation allows production uniformity and can help prevent contamination by human hands. Other factors to consider when underwriting this line are the type of meat packing plant (e.g., beef, hog, calf or sheep and lamb), the amounts of meat slaughtered daily and weekly, worker training and experience, the insured's length of time in business, and loss history. How much meat does the insured process daily and weekly?

What are the types and amounts of meat processed by the insured? Insureds in this industry slaughter and process various meats that come under the category of red meats, such as beef, goat, and lamb. Insureds in this industry include large commercial butchering companies that supply freezer-ready meats, as well as companies that pro-

duce packaged portion cuts of fresh or aged meat for large commercial and institutional accounts. Does the insured sell any other items besides meat? Some larger insureds may process and sell other items, such as poultry, pork, sheep, calf, fish and seafood. What is the insured's practice?

Does the insured comply with all regulations and standards set by the United States Department of Agriculture (USDA) and other pertinent regulatory agencies? Meat packing plants are regulated by the Food Safety and Inspection Service (FSIS), a division of the USDA. An important criteria for preventing claims is compliance with USDA regulations concerning meat packing plants. Because of the potential for meat product contamination, the meat industry is one of the most highly regulated in the United States. The FSIS's authority to regulate the meat industry was established by the Federal Meat Inspection Act of 1906, which governs all meat produced for interstate or foreign commerce. Meat produced for intrastate commerce is governed by state regulations and inspection programs. In 1958, the Federal Meat Inspection Act was amended by the Humane Methods of Slaughter Act, which set standards for the humane disposition of livestock. The Wholesome Meat Act of 1967 enabled state inspectors to take over some of the plant inspection responsibilities of the USDA. Then in 1978, the Humane Methods of Slaughter Act was amended to require the humane handling of livestock. Today, the Federal Meat Inspection Act requires all operators of meat packing and processing plants to submit plans for facilities and equipment to the FSIS for advance approval; advance FSIS approval must also be sought for repairs, improvements, and modernizations.

In addition, the Federal Meat Inspection Act requires that all livestock be inspected both before and after slaughter. Before slaughter, USDA veterinarians look for diseases and other abnormal conditions. Dead or dying livestock cannot be taken into a meat packing plant. After slaughter, inspectors examine each carcass and the internal organs for disease or contamination that would make all or part of them unfit for human consumption. USDA veterinarians supervise the work of all inspectors to assure uniformity in the inspection process and to provide expertise in detecting diseases.

Incidents of product contamination and claims of food poisoning, although once rare, have been on the rise, and claims can be quite severe. In 1993, an incident involving tainted meat sold at a fast food restaurant caused numerous illnesses and deaths. The USDA traced the tainted meat to several meat packing plants, all of which met USDA inspection requirements; the responsible plant itself, however, could not be pinpointed. The USDA reported that the incident was caused in part by improper or incomplete cooking. (Thorough cooking will kill most of the harmful bacteria found in raw meat products).

As of this writing, concerns about meat-borne pathogens have been complicated by the fact that while the USDA has more tools and tougher standards for inspecting insureds who violate safety rules, they do not have the authority to enforce such regulations. For instance, the USDA cannot impose any civil fines or recall meat when there are problems that could result in outbreaks. A joint *Washington Post* and *Dateline NBC* investigation discovered that several systemic and industry failures in the federal inspection system created an environment where customers are continually exposed to E.coli-contaminated meat by various insureds who do not meet safety standards. The case of Excel is representative of the consequences that can occur when meat-borne pathogens are not controlled. A young child died, and more than 500 got sick as a result of the inspection lapse. The meat was discovered to have been contaminated with animal feces, according to various documents. Located in Fort Morgan, Colorado, Excel Corporation was cited 26 times in a 10-month period for shipping out meat that was tainted with E.coli bacteria at least four times. The contamination was so bad that a district supervisor "withheld inspection" from the plant and had it shut down for five days. Excel promised to change its carcass-dressing system.

Due to similar cases, the number of recalls of contaminated meat has increased because some members of Congress and various consumer groups have called for tougher federal oversight of meat packing plants.

Who supplies the insured with livestock? What are the reputation and loss history of all of the livestock suppliers with whom the insured does business? Livestock suppliers may occasionally sacrifice livestock quality for profit. However, using diseased cows would result in contaminated meat, and after further processing, contaminated meat products. Insureds will face considerable exposure through their contracts with livestock suppliers, meat processors, and food distributors, and other types of customers if they deliberately ignore meat safety regulations; such fraudulent activities have resulted in injuries and death to customers nationwide.

Does the insured impose strict quality standards on all livestock and component suppliers? It is critical that the insured establish explicit ingredient specifications with livestock suppliers and ensure that all cattle meet those standards. A sample of incoming cattle shipments and the feed that they eat should be inspected thoroughly by the insured before they are accepted. Any shipments of livestock that do not meet contract specifications should be refused. If the sample fails to meet the insured's quality standards, does the insured refuse to accept the shipment?

Have any of the insured's suppliers ever been cited by the USDA for noncompliance with regulations? It is highly recommended that the insured make sure that its livestock suppliers are maintaining standards. The insured should conduct annual audits of all its livestock suppliers. Insureds should request open invitations in order to have their quality assurance staff and plant managers specifically conduct independent humane slaughter audits of the livestock suppliers to review all animal handling practices. If the insured's livestock suppliers allow such visits, is the insured openly welcomed by its livestock suppliers, and does the insured openly welcome its customers to visit its own premises for the same purpose? Determine the quality control measures used by the insured's suppliers. Do the suppliers offer any quality guarantees on their products? Determine how long the insured has had dealings with its suppliers.

Determine if all incoming livestock are stringently inspected. The insured must have a policy of inspecting every animal before accepting it. Shipping and receiving records should be maintained so that diseased cattle/animal materials can be tracked back to their original suppliers. As the insured may incur sizeable defense fees in defending a product liability lawsuit, good recordkeeping may help mitigate these costs by subrogating them to the original livestock supplier.

Does the insured use any livestock from foreign livestock suppliers? Determine if the insured engages in such a practice. If so, who are the insured's suppliers? What steps are taken to ensure that foreign livestock meets U.S. standards? Some insureds will import their livestock directly from foreign countries. This increases the exposure because lawsuits against foreign livestock suppliers may be difficult to pursue, and, as a result, customers may bring claims against the insured as the livestock supplier's agent.

Using livestock from any foreign country will further increase this exposure. At the time of this writing, there has been a recent occurrence of Mad Cow Disease (known as Bovine Spongiform Encephalopathy or BSE) in Canada. As a result, the USDA banned all imports of cattle, beef, and beef products from Canada as of May 20, 2003. In 1985, it was meat from Britain that carried strains of the Mad Cow Disease. 129 people from Britain, 6 from France, and 1 each from Italy, Ireland, Canada, and the United States died from eating the British contaminated meat. People get infected with the Mad Cow Disease or a variant of it called Creutzfeldt-Jakob disease (vCJD), both of which result in fatal brain diseases or brain-wasting; these have long incubation periods that can last for several years, and can eventually result in paralysis and death. Cattle get infected upon eating feed made with protein and bone meal from diseased rendered cattle or sheep. Some insureds may raise their own livestock. Does the insured or its

livestock suppliers feed their cattle with rendered beef or sheep meat parts? It is highly recommended that all insureds that use meat from foreign livestock suppliers audit their suppliers to determine what procedures are used for feeding the livestock. If the insured uses livestock from countries from which beef imports have been banned, has the insured recalled the meat and destroyed any remaining batches from the foreign suppliers? The underwriter should check the reputation, experience, and loss history of all parties involved with the foreign livestock. Does the insured keep careful records of livestock received and processes used? What is the insured's practice?

What kind of testing program does the insured have in place? Throughout the meat packing process, most meat packers sample meat at various stages in the manufacturing process, all meat batches from slaughtered livestock are examined for impurities, contaminants, chemical irregularities, adulteration, or any other defects that could affect the quality or efficacy of the final meat product. All batches should be bar coded and serial numbered. Before any slaughtered meat is turned into finished products, unprocessed meat should be screened for discoloration, odd sizes, and odd smells. Discoloration, bad odor, and mold are all signs that the meat is unfit for human consumption. To avoid cross-contamination, some insureds may separate process machines by distance or by physical barriers. The reliability of these tests is then further periodically checked by the USDA and state inspectors. How often does the insured conduct in-process quality testing?

Moreover, meat packers should conduct testing after production as well. Such samples of the packaged product are also typically taken and analyzed in the on-premises testing laboratory. How frequently are samples taken? Are all results documented? What do test results reveal? Determine the training and experience of the insured's quality control staff. It is imperative that insureds maintain accurate records of all quality control testing to use as a defense in the event of a claim. Does the insured maintain records of all batches and any contaminants they contained? Meat packers are required to maintain accurate and complete records of all tests conducted for at least three years. Most insureds choose to maintain test records indefinitely. Also, according to the USDA regulations, to be sold in commerce, all meat must be stamped "USDA Inspected and Passed." Has the insured ever been cited for inspection infractions?

Additionally, to monitor purity, the insured should also test batches periodically during all processing. If a batch is found to be contaminated, the process machinery should be sanitized and the batch destroyed. Batch records and numbers should be kept; contaminated meat that is shipped into supermarkets and grocery stores, hotels, restaurants, fast food restaurants, convenience stores or other establishments may then be traced back to the meat packing plant from which it came. Has the insured ever been held liable for shipping contaminated meat? Even if the insured is not held liable, the insured could still incur sizable defense costs. Is the insured's quality control testing performed in house, or is it contracted out to a reputable testing laboratory? Many insureds have the capital resources and staff expertise to implement a sophisticated quality control program, it is essential to examine the loss history, sanitation program, and process controls carefully in such a risk.

What is the condition of the insured's meat processing equipment, storage areas, and process machinery? The processing system and all equipment must be designed and set up with no hidden or difficult to reach areas to allow easy sanitation. Special care must be taken to ensure that all equipment is fully sanitized. Is the system thoroughly flushed after sanitation to ensure that no chemicals are left behind that could contaminate the meat? All meat packing equipment should be thoroughly sanitized and inspected for damage prior to use. Storage and warehouse areas should be emptied, inspected, and carefully cleaned out frequently as well.

Before a meat packing plant can begin operating or resume operations after a shutdown, FSIS must approve its plans for facilities, equipment, and procedures to make sure the operation will be sanitary

and can produce wholesome meat products. To meet FSIS approval, the facilities and equipment must be easy to clean and keep clean. Each plant's floor plan, water supply, waste disposal systems, and lighting must be approved. Once a plant begins operating, inspectors continually monitor the facilities and equipment for sanitation. If, at any time, equipment is not clean or an unsanitary condition is discovered, the operations will be closed down until the problem is corrected.

Is the insured's plant designed with ease of sanitation in mind to reduce bacteria growth? Walls and floors must be constructed of a smooth and impermeable material, such as dairy bricks and dairy tiles. All production floors should be designed to curve into each other to reduce the amount of nooks and crannies where bacteria can grow. After each production run, all walls and floors should be hosed down and scrubbed with sanitizing chemicals, such as sodium hydroxide. These chemicals help to make the environment bacteria resistant, as most bacteria cannot survive in a high Ph environment. What sanitizing chemicals does the insured use?

Foreign objects (e.g., glass bits, dirt, insects and insect parts, animal feces, hair, metal and other debris) could be introduced into the meat as it goes through the meat production process. Claims may be filed by consumers that could be injured if such products are ingested. Even if the insured is not held liable for the Product Liability claim, the insured could still incur sizable defense costs. What measures does the insured take to remove metal and other debris from meat and meat products? To prevent broken glass from falling into the meat and meat products, light bulbs shatterproof and protected by a metal shield. Cutting blades, grinders, and the like should be examined regularly for nicks or worn spots that could cause pieces of metal to fall into the product. Magnets should be used and are typically installed throughout the insured's conveyance systems to remove or pull any metal and undesirable metallic objects or other large contaminants from the meat mixtures; screens are also used to remove rocks and other nonferrous debris.

Housekeeping is important in preventing the insured's meat and finished meat products from becoming contaminated with foreign objects, such as dirt. Does the insured have a comprehensive sanitation program in place to monitor the cleanliness of its meat processing, packaging, and storage areas? Unsanitary conditions in storage and processing areas, especially in or near various meat processing machineries and work areas, could easily contaminate a meat or meat product batch. All product batches should be stored under conditions that protect their integrity from contamination or deterioration, and all laboratory equipment should be cleaned and sterilized.

What is the level of hygiene of the insured's workers? Strict hygiene (e.g., handwashing) should be enforced, especially before shifts and after any breaks. In addition, workers with long hair should be required to tie it back or wear a hairnet or cap. Are the premises kept clean, and is all trash placed in appropriate containers and removed on a daily basis? Who is responsible for the training and supervision of workers? Plant managers should require production workers to inspect and clean their work areas daily.

The insured should implement a cleaning schedule for the entire facility including a weekly inspection of equipment and production areas by qualified personnel. Also, production equipment should be cleaned and inspected before the start of every product batch. Production equipment should be checked specifically for accumulations of contaminants that could taint product batches (e.g., soil or grease build-up, or stagnant water inside pipes where harmful bacteria could grow).

The insured may hire a sanitation consultant to inspect the premises regularly and to point out existing sanitation problems and methods to rectify them. Records should be kept of all such inspections. What is the training of all sanitation consultants that inspect the premises?

Despite stringent quality control measures, the possibility of distributing contaminated meat and meat products will exist. An effective product recall program will help minimize losses that may result from these types of claims. Does the insured have such a program?

The program should outline a system for identifying the location of the affected products and for halting their continued sale, distribution, and consumption. Has the insured ever had to perform a product recall or market withdrawal in the past? If so, what were the reasons for the recall(s)? Due to pressure from the government, insureds may ask customers (such as retailers) and consumers to return a product after federal inspectors find evidence that a batch of meat can harm the general public. Also, a failure of the insured to meet its own set standards could result in the insured calling a recall.

Detailed records of customer orders and shipments should be kept to trace contaminated shipments and to assist with recalls from a livestock supplier supplying stock to the insured. Does the insured have a policy of not distributing products which show obvious signs of contamination? If the insured receives boxes of meat from a livestock supplier, are the boxes inspected upon arrival for obvious signs of spoilage or contamination? Such boxes must immediately be rejected and sent back to the suppliers. Does the insured maintain accurate distribution records? This will be effective in the event that any recall is necessary; the insured will be able to locate the tainted product quickly and inform the customer to pull it from the shelf. This quick response will be effective in minimizing liability in this line. What is the insured's practice?

What methods does the insured have in place for informing its food distributors, retail stores, and consumers of recalled items? Most insureds should have an easily accessible, interactive website and/or telephone customer service staff to respond to questions or problems with products, as well as to provide general company information. In the event of a recall, are insureds informed about such meat products before they can be distributed to customers by mistake, or so no one else will have access to these products?

Both the FDA, and the FSIS have published guidelines for proper procedures on meat and meat products recalls under their jurisdiction. Sources for further related information can be found on the Internet at the following websites: the Center for Food Safety and Applied Nutrition (CFSAN) of the U.S. Food and Drug Administration at [www.fda.gov/opacom/7/alerts.htm](http://www.fda.gov/opacom/7/alerts.htm); Hazardous Analysis Critical Control Points Database (<http://vm.cfsan.fda.gov/~7Elrd/haccp.html>); and the U.S. Department of Health and Human Services (<http://www.hhs.gov/drugs/index.shtml>). Does the insured have a recall or market withdrawal plan in place? Is the plan in compliance with FDA and USDA guidelines? Most product recalls arise out of noncompliance with federal regulations. Nonetheless, an effective recall program is important in recovering products that could become the basis for a Product Liability claim.

Product Recall Expense Coverage will be desired by insureds since they will be liable for meat and meat products that are spoiled due to their negligence, such as not maintaining the appropriate temperature for refrigerated products. Also covered under the product recall coverage will be expenses to advertise recalls, to remove the product from the market, and to dispose of it. Meat could be contaminated by outside substances, such as refrigerants, machine fluids, or leaks from other stock. Grain and rice can attract vermin or rodents. Consequently, the insured could be held liable if it did not notice contamination before the customers were shipped their products. Although, meat spoilage or tampering on the meat packing end would be the meat packing plant's responsibility; the insured may nevertheless incur defense costs.

Proper storage methods will help alleviate claims for contaminated meat. The insured will store pallets of meat on metal storage racks in the warehouse or in walk-in refrigerators and/or freezers. The insured will not take individual meat out of their cases; it will transport the received product, in their original cases, on loaded pallets to the proper storage areas (if they are packaged), unpackaged, or hanging from hooks in refrigerated vehicles. All meat should always be stored by keeping them off the floor and away from dirt, dust, and potential water damage.

In order to prevent possible spoilage due to storage at improper temperatures, the insured must keep its refrigeration equipment in peak working order. What are the age and condition of the insured's freezers and/or refrigerators used to store products until they are shipped to clients? A malfunctioning refrigerator or freezer could cause food to spoil. Assess the condition of the insured's refrigeration equipment, and determine how often it is inspected. Is it on a routine maintenance schedule? What are the training and experience levels of the insured's refrigerator maintenance and repair crew? Key personnel should be on call around the clock in the event of an emergency.

How does the insured monitor its refrigeration system to ensure that temperatures do not drop below the acceptable levels? The insured should have thermometers that monitor the temperature in the blast freezers, slaughtering room, and warehouse. How often are these temperatures checked? The refrigeration system must be designed to reduce the impact of a temporary loss of refrigeration capacity. In case of a power failure, most refrigerated spaces will maintain their low temperatures for several days, provided that the space is well insulated. What precautions has the insured taken to ensure the uninterrupted functioning of the refrigeration system? Refrigeration systems typically run on electricity. The insured should have a backup power source in case of a general power failure. Please refer to the Boiler and Machinery section of this classification for more information.

Determine whether temperatures in the different storage areas are controlled and monitored either by computer or manually. How much training has been provided for workers who monitor and operate the insured's temperature controls? If computerized systems are used, have operators received any training directly from the system's manufacturer or the software company? Even if the facility is not open to receive shipments around the clock, a worker who has been trained in the operation of the insured's temperature control system should be stationed on the premises at all times to monitor the temperatures in each of the separate storage areas.

Moreover, warehouse managers must be aware of the storage temperature for all meat and make certain that any stored meat and meat product is assigned to an area of the facility that is maintained at the manufacturer's recommended temperature range for proper short- or long-term storage. How is such information tracked? Is bar coding used for assigning meat and products batches to a particular storage location? Bar codes will lessen this exposure because they provide product data that is available at all points in the supply chain of any meat or meat product that has been distributed. It consistently tracks all meat and meat products and movements at all times. What is the insured's practice? For related exposures on meat and other meat-related products, refer to the Product Liability and Completed Operations sections of the Meat Products Processing and Fish and Seafood Dealers — Wholesale and Retail classifications.

Refrigeration systems, if not properly maintained, may contaminate the finished product if leaking refrigerants drop onto meat products. Such an occurrence is unlikely, however, if the insured monitors the refrigeration system, including compressors, lines, coils and valves. Ammonia and freon are the most widely used refrigerants; both are extremely toxic and could cause serious illnesses if ingested. What type of refrigeration system does the insured have, and what refrigerants does the insured use?

Since insureds have refrigerated warehouses and storage areas, the insured may also wish to add an endorsement that would cover possible losses resulting from refrigerant leaks in areas of the facility where customers' goods are stored. Warehouses may be operated using ammonia-based refrigerants or a newer, more "environmentally friendly" version of Freon. (Production of the older type of Freon has been banned in the United States after it was discovered that it was having harmful effects on the ozone layer.) If the insured stores ammonia on the premises, does it comply with OSHA standard 1910.111, Storage and Handling of Anhydrous Ammonia? For more

information, refer to the Warehouse Operators' Legal Liability section of Public Refrigerated Warehouses.

Refrigeration during transportation is a major concern. Although there is no federal law requiring truck drivers to use refrigeration, the USDA and various state laws require meat packers to keep meat refrigerated during transportation. What method does the insured use to make sure that meat is kept cool during transportation? The failure of the refrigeration systems of semitrailers and trucks could result in the spoilage of an entire shipment. Some insureds may make the necessary arrangements to use common carriers for transportation of meat from their plants and warehouses to other locations, at the customer's request. What is the reputation and loss history of the trucking companies that the insured deals with most often? In the event that a loss occurred due to an error or negligence on the part of the shipping company with whom such arrangements were made, the insured could be named as a co-defendant in any ensuing claims. The underwriter needs to consider whether or not such losses will be covered or excluded under this policy; a special endorsement to protect the insured against this exposure may be required. How often does the insured make arrangements for the transportation of customer-owned meat that has been stored or cross docked on its premises? Some insureds, have their own fleet of vehicles that they use to deliver customers' stored meat and meat products. Where this is the case, Motor Truck Cargo Coverage will be necessary. Refer to the Inland Marine section of this classification for additional information on this type of policy and what it entails.

Also, the contamination of raw meat and meat materials is possible during transport by common carriers if delivery vehicles or containers are not adequately clean. The insured should have some means of assurance from contract carriers that delivery vehicles (e.g., tractor-trailers, trucks, vans, etc.) are adequately clean. The insured should inform the carrier about what levels of cleanliness are expected, as well. Most courts will recognize that it is the reasonable and logical responsibility of the contract carrier to provide clean and refrigerated vehicles/containers for the transportation of the meat commodity in question, since it is the rail carrier or trucking firm that will be in the position to know and monitor the prior use of a truck or railcar. However, in the event of a serious claim, the insured could still be held liable. It is essential, therefore, that insureds communicate their needs to common carriers. The underwriter should note that it is illegal to carry meat and any food ingredients in rail cars or trucks that have been used to transport toxic substances. The insured should obtain a certified, written guarantee from the carrier stating that the containers were not previously used for carrying chemicals.

The delivery of the finished meat products must be coordinated with customers and tailored to their business hours and schedule to ensure that the product can be refrigerated immediately. Meat delivered to a customer when they are not prepared to receive them may spoil if they must be held for any length of time. Meat products should never be left unrefrigerated. Does the insured ever make deliveries at night or during nonbusiness hours? What provisions are made for weekends and holidays? For more information, refer to the Automobile Liability section of this classification.

To lessen the Product Liability exposure, it is highly recommended that insureds implement a Hazard Analysis and Critical Control Points (HACCP) program as recommended for meat by the American Meat Institute. The brochure and several food safety tips and information are also listed on its website at [www.ifdaonline.com](http://www.ifdaonline.com). An insured using a "HACCP plan" will be able to analyze its processes in order to determine where any problems will occur in its procedures, and be able to then apply all its monitoring and prevention resources to the most serious problems. If the insured's company is federally inspected, then having a HACCP plan is mandatory. Determine if the insured's facility is inspected according to HACCP procedures. Who inspects the insured's facility? What are their qualifications and experience?

Although often excluded from coverage, spoilage may also result from pest infestation. Maintaining constant vigilance with regard to

proper sanitation is an essential loss control measure. USDA inspectors can immediately shut down any meat packing plants company for any sanitation violation. It is a positive underwriting sign if the insured employs a full-time sanitation supervisor whose job is to oversee proper sanitation practices for the entire facility. What are the qualifications and experience of the insured's sanitation supervisor? Does the insured employ at least one full-time sanitation worker for each of its warehouses? Pest control services should be contracted out to a reliable and reputable firm. Duplicates of all contracts and records of application dates should be kept off site for an indefinite period. Should a claim arise, such documents could prove invaluable in demonstrating that the insured was not negligent in its efforts to control pest infestation. Strict compliance with OSHA standard 1910.141, Sanitation must be maintained.

The USDA regulates the chemicals that meat packers may use to control pests and to disinfect and sanitize their facilities, and has a list of approved chemicals used for such purposes. The insured must submit information on the chemicals used in its operations to the USDA. Are all of the chemicals the insured uses USDA approved? How frequently does the insured exterminate pests? Does the insured handle pest extermination itself or contract it out? If extermination is contracted out, determine the experience, reputation, and loss history of the insured's extermination contractor.

Adulteration or contamination of finished products could occur from employee or customer tampering. For instance, an employee can intentionally contaminate a meat supply by poisoning several pounds of ground beef or any other meat product. Meat and meat products that are sold in vacuum-packed packages or cans present very little opportunity for tampering; products sold in plastic bags, cardboard boxes, glass jars, or bottles present a more serious exposure. What steps does the insured take to prevent tampering? Containers prone to tampering should include a label warning consumers not to use the product if the seal has been punctured or removed.

In response to the growing number of people made ill by foodborne pathogens found in improperly cooked meat, the FSIS has amended the federal meat and poultry products inspection regulations (9 CFR Parts 317 and 381) to make it mandatory that all labeling on raw meat products contain safe handling instructions. This applies to all meat and meat products intended for both consumer and institutional use. Exempt from this rule are meat or meat products that will undergo further processing at another federal or state inspected plant.

Regulated by the Labeling and Consumer Protection Staff (LCPS) of the USDA, which develops policies and inspection methods and administers programs to protect from misbranding, the insured's labeling is also a consideration. As a result, all labeling must be approved by the USDA, and is subject to the federal Fair Packaging and Labeling Act. The labels for products for consumer use must contain the following information: (1) "Keep refrigerated or frozen; thaw in refrigerator or microwave," (2) "Keep raw meats separate from other foods; wash working surfaces, utensils and hands after touching raw meat," (3) "Cook thoroughly," and, (4) "Refrigerate leftovers within two hours." The labels for products intended for institutional use must contain the same information as the first three directions above; the fourth item should read: "Keep foods hot at 140 degrees Fahrenheit or higher; immediately after service, refrigerate leftovers." How does the insured comply with this regulation?

Furthermore, the labeling should also include all forms of product identification and nutrition; claims; a net quantity statement (e.g., weight, volume, or count); species identification and nutrition; a product freshness date; the numbers of fat, carbohydrate, and protein grams; the number of calories generated from fats; and the name and location of the manufacturer, packer, or distributor. Also, all pre-packaged meat products must carry ingredient statements that are regulated by law. Incorrect labeling or misbranding occurs occasionally, either by fraud or by accident. All labels must be truthful and not false misleading in any manner. All labels must identify what the meat grade is,

and what the meat product is. With regard to value-added meat and meat products that may be a blend of ingredients, the label should indicate each component, particularly if the blend includes salt, fats, or carbohydrates. With such meat foods, a statement of "guaranteed analysis" that indicates the percentage of fat, fiber, moisture, and protein, and all ingredients (in descending order of importance) should be listed. Nutrition information of the meat should be provided at all retail stores that carry the meat. The word, "fresh" may not be used to designate a product that contains sodium/potassium nitrate/nitrite or has a brine concentration of 10% or more, and the words, "farm" or "country" should not be used on labels if the products are not prepared in the farm or country. For bulk shipments, the contract will contain the information that would normally be on a label. Is the insured in compliance with all federal labeling requirements? All the labeling information on the meats must be in compliance with the labeling requirements of the Food Safety and Inspection Service of the USDA. What information is contained on the insured's labels?

It should be noted that a failure to stamp the correct dates could lead to claims for food poisoning from the consumption of spoiled products. A history of selling spoiled products is a poor underwriting sign. The underwriter should investigate the insured's record with the USDA. To ensure the fitness for sale of meat products, the USDA conducts random residue testing (sampling) of meat products, checking for drug and chemical residues in animal tissue. Such residues can result from improper use of pesticides, herbicides, animal growth hormones, and medicines and medicated feeds, as well as industrial accidents that contaminate animal feeds, the environment where animals live, or the slaughtering plant itself (e.g., ammonia leaks and spills). FSIS inspectors use in-plant tests to check animal tissue and also send samples to FSIS laboratories.

A moral hazard may exist. Consider the possibility of product contamination from a small fire, one that does not put the operation out of business. Because the loss of the entire stock from smoke or soot contamination could prove ruinous to insureds, some owners might attempt to circumvent health department efforts by salvaging and selling adulterated, contaminated or diseased meat. What is its loss history? Do they have records of inspection by the state health inspectors in their state of operation? How long has the insured been in business?

#### Environmental Impairment Liability

The Environmental Impairment Liability exposure for meat packing plants will be slight. Insureds frequently generate huge amounts of wastewater containing grease and animal fat residues in the course of animal slaughtering operations. The wastewater used for hygiene and quality control purposes is generally 80 to 95 % of the total freshwater consumption. Principal operations and processes in meat packing plants where wastewater originates are animal holding pens, slaughtering, cutting, meat processing, secondary manufacturing (by-product operations), and cleanup operations. Claims will stem primarily from the improper use, storage, and disposal of solvents, wastes (that often contains blood, bits of flesh, fat, manure, dirt, and viscera), and chemicals (such as chlorides, phosphorous, and nitrogen products). Blood recovery, grease recovery, separate paunch manure handling, and efficient rendering operations can reduce waste loads substantially, and may even result in the development of salable by-products. Any policy should include coverage for sensory pollution (from noise or odors) as well.

Large volumes of wastewater and of biodegradable, nonhazardous solid waste are generated by meat packing plants. An estimation range of 1,100 to 4,000 gallons of water per live weight ton of slaughtered animal is used in the United States according to The United Nations Environmental Program, *Cleaner Production Assessment in Meat Processing* (2000). Not only that, more than 50 % of that water is used in the slaughter, evisceration, and boning areas. What are the average and maximum daily amounts of wastewater produced by the insured?

Most insureds dispose of screened wastewater by agreement with the local sewerage authorities; some municipalities will require grease traps. For oily substances, further processing is required by the federal Environmental Protection Agency (EPA).

Large insureds may dispose of their wastewater directly into public waterways; such insureds will have the greatest need for coverage for gradual pollution. EPA regulations have become increasingly strict regarding wastewater disposal. Insureds often must apply primary and secondary treatment, roughly equivalent to what public systems do. If insureds discharge into public waterways, they must obtain a permit. Has the firm been cited for pollution violations? What level of wastewater treatment does the insured carry out? Some insureds may house a small, on-site wastewater treatment facility; refer to the Environmental Impairment Liability section of the Wastewater Treatment Facilities (Nonhazardous) for further information. How does the insured dispose of wastewater that is produced by its process operations? Do the insured's disposal procedures comply with all local, state, and federal water pollution regulations?

Raw waste loads may vary from day to day and from season to season, so the system used should be flexible. It is a positive underwriting sign if the insured recycles some or all of its wastewater. In addition, solid waste can be screened out and converted into animal feed or fertilizer.

Accidental or excessive discharge of chemicals and animal waste can lead to runoff and/or leaching, causing contamination of such off-target sites as groundwater, streams, brooks, ponds, rivers, local waterways, and nearby drinking water supplies (e.g., reservoirs, wells, etc.). Also, it can deplete dissolved oxygen in ponds and streams, killing fish and other aquatic life. EPA guidelines recommend either aerated stabilization basins or ponds and activated sludge treatment systems as the most cost-effective means of meeting effluent standards. The underwriter should thoroughly familiarize him or herself with the federal effluent limitation standards for the meat industry.

Hydrogen sulfide that is generated from the processing of waste from meat packing plants may increase this exposure. Hydrogen sulfide is responsible for the rotten egg smell that is characteristic of meat packing plants. It is a gaseous by-product of the wastewater process that occurs during meat processing. Hydrogen sulfide becomes toxic and dangerous because it paralyzes the sense of smell. Even exposure to it at the lowest levels of concentration may result in such short-term symptoms as eye irritation, cough, fluid in the lungs, sore throat and shortness of breath. Long-term exposure may result in fatigue, appetite loss, irritability, headaches, poor memory, dizziness, headaches, nausea, and in the most extreme cases, unconsciousness and even death. To reduce such exposures, insureds are supposed to monitor the hydrogen sulfide emissions from the industrial waste system, caused by the chemical processes that occur while processing the waste from their operations. The EPA requires that all insureds should measure and report all hydrogen sulfide quantities emitted from their operations to either local or state authorities in the meat packing plants respective locations. A daily release of 100 pounds each of hydrogen sulfide and ammonia as has been set by federal law as a Reportable Quantity threshold with the classification of "extremely hazardous substance." Failure to do so will result in citations from the EPA in the form of an administrative order to comply. For instance, IBF, in Holcomb, Kansas was charged by the EPA for not reporting the release of excessive amounts of more than 100 pounds of hydrogen sulfide over significant periods of time. What procedures does the insured have in place for monitoring hydrogen sulfide levels that are generated from wastewater system? Determine if the insured has ever been cited for not measuring and reporting hydrogen sulfide levels to either local or state authorities in its respective location. What is the insured's practice?

It is highly recommended that the underwriter obtain a list of chemicals used by the insured (in order to check their toxicity levels) and investigate the insured's methods of chemical usage. Are all of the chemicals used by the insured approved by the EPA? Are any of

the chemicals used by the insured on the EPA's "restricted use" or "community right-to-know" lists? If so, these chemicals require special handling and care. The insured should follow all manufacturer's label instructions and precautions, as well as any federal, state, and local regulations when mixing, applying, storing, and disposing of chemicals. It is highly recommended that insureds pay attention to the EPA Industry Sector section on the meat industry, particularly on the part that deals specifically with pollution regulation information.

What are the storage methods for any chemicals that are used in meat production? Such substances should be kept in tightly sealed, EPA-approved containers and labeled according to their contents. They should be stored away from other materials and equipment in a cool, dry, well-ventilated, fireproof, low-traffic area that is accessible only to authorized personnel. A properly installed ventilation system should have a switch outside, so that the fan can be turned on before anyone enters the facility. Weatherproof warning signs with messages such as "DANGER! Chemicals — Keep Out!" should be posted outside the facility on every door and window. Does the insured keep its storage areas locked, and are the windows sealed tightly, barred, or boarded over? It is highly recommended that the insured have a special storage area in the form of a separate building that has been designated exclusively for storing chemicals and chemical equipment. If a separate building is not available, then a wing, corner, or separate room on the first floor of a building should be used. How often do inspections of storage containers take place, and who performs them?

If fuel or pest control chemicals are stored in large quantities on the premises, additional exposures may be created. (These sudden and accidental pollution exposures are covered under the standard Comprehensive General Liability policy.) Where does the insured store its pest control substances? Determine if the insured contracts out pest control work, as this will reduce this exposure. Does the insured have underground or above-ground fuel storage tanks for use by its delivery fleet? Aboveground tanks are preferred. In what amounts are fuels stored on the premises? For more information on hazards and loss control measures associated with fuel storage and underground storage tanks, refer to the Environmental Impairment Liability section of the Petroleum Marketers — Wholesale and the Underground Storage Tank Remediation Contractors classifications.

Poorly trained or careless workers could mix chemicals improperly and increase the hazards of contact and the risk of damage or injury. Most states have stringent certification requirements that workers must meet to be qualified to use various chemicals. Are the insured's employees properly certified to apply such substances? What worker training does the insured have in place for the proper handling and use of any chemicals? The underwriter should examine the certification, training, and experience of the insured's employees, particularly those who work in production areas, research and development, and quality testing laboratories.

Water tables may be close to the surface at or near an insured's facility. Direct spills of hazardous chemicals could possibly contaminate a water supply (e.g., a reservoir) and have a widespread impact. What safety precautions does the insured take when performing this type of work? A topographical survey will indicate any areas susceptible to groundwater contamination, and hazardous substances should be restricted from use in or around these areas.

In addition, the insured will also need to dispose of grease, oils, and cleaning solvents that are potentially toxic. To reduce this exposure, some insureds may choose to use haulers. How does the insured store these wastes while awaiting pick-up by haulers who will take them to a hazardous waste disposal facility they use. Determine who hauls the insured's hazardous wastes and what disposal facility they use. Both the hauler and the disposal facility should be properly licensed and have identification numbers from the EPA. How often does the waste hauler visit the insured's premises? What are the average and maximum sizes of waste loads hauled? The insured must maintain chain-of-custody documents indefinitely. These should include all hazardous

waste manifests signed by the insured, the hauler, and the disposal facility. Such records are invaluable in defending a suit.

Because of the hazardous waste exposure presented by most cleaning solvents, some insureds may use a cleaning tank that is periodically drained and refilled by an outside contractor who takes responsibility for the final disposal of the hazardous liquid. Although this transfer of responsibility should be clearly stated in the contract with the disposal firm, the courts may not relieve the insured of all liability. What criteria did the insured use in selecting the disposal firm? Are chain-of-custody documents maintained here as well? The contractor should give the insured copies of all waste manifests and receipts from approved disposal facilities. What type of cleaning process and solvent does the insured use? If the insured uses a cleaning tank, how frequently is the tank refilled?

Are wastewater pollutants in the forms of solid wastes and liquid concentrates ever deposited at landfills? If so, has the landfill site been chosen carefully? Landfills should be on level ground to prevent horizontal or vertical migration of wastes to ground or surface waters. Does the insured have a recycling agreement with any of its chemical suppliers? Recyclable containers are recommended because they can be returned to the original manufacturer or dealer. What is the insured's practice? It is worth noting that, due to the possible pollution of underground water systems and sources, subsurface waters, and groundwater, the burial of any chemicals is the least preferred waste disposal option.

Accurate logs and records of all waste disposals should be kept in order to establish proof of proper handling and disposal methods and could help to avert or settle environmental impairment claims. What are the insured's recordkeeping practices with regard to waste disposal methods? How long are logs and records maintained? Are duplicates of all essential records stored in a secure, off-site location?

Animal wastes may emit very unpleasant fumes that can spread to surrounding communities. According to the EPA, wastes pose environmental hazards of bioaccumulatability and toxicity. Have any complaints ever been filed by occupants of adjacent properties regarding the emission of noxious fumes or gases? Modern electrostatic precipitators should be able to remove 99% of industry air pollutants. Energy conservation and periodic boiler upgrading also may help to reduce fumes.

Is pollution control equipment inspected regularly for signs of malfunctioning? Improper operation can allow materials to be accidentally discharged rather than settling to be removed later. Solids should always be removed from the final effluent through the clarifier. Who is responsible for operating this equipment, and what is that person's level of experience? The underwriter should obtain copies of the insured's previous EPA inspection reports.

An ammonia leak from refrigeration systems is another possible hazard. Determine the size and scope of the insured's refrigeration and freezer systems. Are such systems inspected and maintained on a regular basis? What are the qualifications and training of refrigeration and freezer inspection and repair personnel? Has the insured ever had an ammonia leak?

EPA guidelines should be posted throughout production facilities, and preventative measures should be strictly enforced. Are workers educated on the proper clean-up and disposal of hazardous materials? All spills and leaks should be reported to the supervising foreman, superintendent, and/or project manager. Absorbent clay, hydrated lime, and sodium hypochlorite should be kept on hand for emergency detoxification of spills or leaks. What is the insured's practice?

### **Workers' Compensation**

The Workers' Compensation exposure will be severe because work in meat packing plants is an extremely labor-intensive, highly hazardous process. Claims under this line of coverage may arise from injuries caused by slips, trips, or falls, frostbite, hypothermia, burns,

electrical shocks, cuts or lacerations, back strains and injuries, and eye injuries from falling objects or dust could result. Severe or fatal injuries may occur in some instances from the improper use of materials, equipment, and tools and may range from minor cuts to crushed or amputated limbs to death. Respiratory problems are possible from exposure to chemicals and solvents that are used in the processing of the meat. Long-term exposure to excessive noise levels above 85 decibels can lead to hearing loss. Also, there is a possibility of electrocution, during the servicing and repair or use of meat packing plants equipment. Repetitive slicing and lifting often leads to cumulative injuries that leads to carpal tunnel syndrome. Employees in office areas will face standard office environment exposures, such as slips, trips, and falls, electrical shocks, and repetitive motion injuries (RMIs). In rare instances, workers may contract such infectious diseases such as brucellosis.

The meat and meat products industry is one of several fields with the highest rates of job-related injuries and illnesses. Although working in meat packing plants has become safer over the years, it still remains one of the most hazardous industries in the country. Both meat packers and meat products processors have a high frequency rate and a severity rate of injury; however, compared to injuries in the rest of the meat industry, meat packing operations have one of the highest worker injuries and illnesses.

What is the layout of the insured's premises? Insureds are often housed in single story masonry or wood-frame buildings located in both rural and urban areas; plants made of prefabricated, pre-engineered structures of aluminum panel construction. The layout could include the following: various holding pens, a stick pit, a slaughtering area, a meat cutting area with multiple production lines, a blast freezer area, a refrigerated tempering storage area (for storage of the finished product), a laboratory for quality control testing of meat products, a drivers' waiting area, and administrative offices. If meat processing operations are conducted on site, the insured's layout will also include: various chill and holding coolers; blast and storage freezers; a smokehouse; curing and aging rooms; space for boning, cutting, processing and wrapping; holding pens; a rendering room; a customer area; a boiler room; a machine shop; administrative offices; and a truck sterilizing compartment.

Office hours will typically be from 8:30 a.m. to 5:30 p.m., Monday through Friday. Meat packing plant workers generally work in one of three eight-hour shifts, two shifts for production, and one shift for cleanup. Shifts may be 8:00 a.m. to 5:00 p.m., 7:00 a.m. to 3:30 p.m., 11 a.m. to 7:30 p.m., etc.). Smaller insureds may maintain more limited hours of operation, depending on the demands of their meat processing schedule. Moreover, work hours at both large and small insureds may be extended to accommodate any additional services or unusual circumstances that particular customers or seasons may require.

What are the number, age, duties, and training of the insured's workers? Depending on the type of operation and the variety of services offered, the size of a meat packing plants company may range from small one- or two-person operations to large businesses with hundreds of employees. According to the Occupational Outlook Handbook, red meat production is the most labor-intensive food processing operation, and 30% of all food processing workers are employed in the plants that involve such meat products. Workers general duties include: livestock handling, severing the jugular vein of the stunned animal, attaching the carcass to rail-type conveyors, shaving the carcasses, monitoring equipment and machinery, splitting the carcasses, removing the viscera, inspecting the carcasses, performing tests on carcasses, cutting/trimming/boning meat using knives and saws, packaging cuts of meat, packing cases and pallets of meat, and loading and unloading shipments. Workers may also pick up and deliver shipments of supplies and finished products and perform various office duties.

Since animals are not uniform in size, slaughterers and meat packers skin, eviscerate, and cut each of the carcasses into large wholesale

cuts (e.g., rounds, loins, ribs, and chucks) to make the handling, distribution, and marketing of meat more convenient. Then, they further process these primary parts into cuts that are ready for retail use, and produce hamburger meat and meat trimmings, which are used to prepare sausages, luncheon meats, and other products. Also, they clean and salt hides.

Meat cutters and trimmers use hand tools to break down the large primary cuts into small retail cuts or individual size servings; they will often cut meat into steaks and chops, shape and tie roasts, and grind beef for sale as chopped meat. Also, meatcutters may weigh, wrap, and arrange the cuts of meat in refrigerated cases for transportation to customers. Graders and sorters, production inspectors, and quality control technicians evaluate meat before, during, or after processing. Other workers who work with specific body parts of the cow as it goes down the production line include: the knocker, who is at the front of the line and uses a pistol-like device to drive a metal bolt into the steer's head; the second legger, whose job entails cutting hocks off carcasses as they go down the production line; the tail cutter; belly ripper; and hide puller.

Employees who make sure that all meat production equipment are working adequately include both maintenance repairers who perform routine machinery servicing, like changing and lubricating parts, and specialized mechanics.

To prevent meat spoilage, food has to be packaged and promptly delivered by freight, stock, and material movers; machine feeders and offbearers, who feed meat materials into the machines and remove goods at the end of the production line; industrial and tractor operators, who drive gasoline or electric-powered vehicles equipped with forklifts, elevated platforms, or trailer hitches to move meat goods around a storage facility; truckdrivers, who transport and deliver livestock and materials, and may load and unload trucks; and driver/sales workers, who drive company vehicles over established routes to deliver and sell meat goods.

Management and professional positions will include top executives who make policy decisions, warehouse managers, transportation managers, and industrial production managers (who organize, direct, and control the operation of the meat packing plant). Insureds with test laboratories also employ as chemists and food scientists. Also, there would be other technical service experts, who, as parts of teams, perform quality assurance tests and have the authority to approve or disapprove any supplier who fails to meet the insured's quality standards.

It is a positive underwriting sign if the insured has safety seminars and warnings, around the premises that address whether standards are being met and guidelines are being followed. The insured is required to post OSHA Form 300. This form is a list of all work-related accidents that have occurred within the past year. Is there a safety officer that oversees the work and safety practices of all workers and provides safety education classes on the job? It should be noted that larger insureds with many employees may need to appoint more than one person in this capacity. The safety officer should be someone with good field experience who can understand and identify potential safety problems and be able to recommend and implement procedural or equipment changes that will improve employee safety. Safety officer(s) and safety teams should conduct both weekly and monthly safety meetings to promote an exchange of ideas between management and employees. During such meetings, the safety officer should facilitate important demonstrations by the employees on specific safety topics.

Does the insured have a designated team of employees who continually monitor the premises — particularly all production areas — for safety? Insureds should keep records of any violations of safety rules, reports of company safety meetings, medical injury reports, defective equipment reports, vehicle safety checklists and inspections, and accident investigators' checklists. Are reports of all accidents and injuries kept on file? If so, for how long? These records can often play a vital role while performing loss control surveys of the facility. Is the

insured in compliance with OSHA standard 1904.2, Log and Summary of Occupational Injuries and Illnesses?

How much experience do the insured's workers have? Training will vary depending on the position held and the type of operation the insured runs. Most workers require little or no training because they acquire their skill on the job through formal and informal training programs under the supervision of more experienced workers. Training lengths will vary depending on the task; simple cutting operations will require a few days to learn, while complex tasks like eviscerations will require a month to learn. Guided by experienced workers, the trainees will learn the proper use of tools and equipment and how to prepare various cuts of meat. The objective of most meat packing plants is to start new employees on the least dangerous job, such as simple cuts or removing bones until they acquire the skill and the discipline to handle the more dangerous tasks. When they have demonstrated that they have learned various skills involving various meatcutting tools, they are taught to divide carcasses into wholesale cuts into retail and individual portions. New employees, according to the Bureau of Labor Statistics, suffer a significant portion of all occupational injuries. For instance, new workers will often handle the livestock; they unload the livestock from the trucks, lead them to the holding pens, calm the animals down, give them water, and also lead them to the stick pit and slaughterhouse. In the course of carrying out such duties, these workers could be kicked, trampled, or gored by the animals.

Furthermore, workers could be severely injured during the stunning process. Animals may become agitated as they approach the stunning machines. Workers who attempt to steady or calm the animals could inadvertently be struck by the animal or by the stun gun/electro-lethal, and severe shocks, concussions, and puncture wounds could result. What training do workers receive in handling livestock?

Some jobs, such as inspectors and quality control workers, may need specialized training and education. Such workers are often trained in meat safety and will require a certificate to be employed in such positions in a meat packing plant. Formal educational requirements for managers will range from two-year degrees to master's degrees. Employees with research positions, such as scientists, may need a master's or doctoral degree. If the insured has delivery truck drivers, they will require a commercial driver's license (CDL) issued by the state in which they reside.

Does the insured supplement its in-house training program by sending workers to educational seminars and conferences that focus on various aspects of the industry, such as food handling and storage or refrigeration methods? Determine who is responsible for overseeing worker training. Are less experienced workers paired with more seasoned employees until they have demonstrated an acceptable level of competence at their assigned tasks?

Workers involved in cutting/trimming/boning operations will use a variety of knives and saws (circular and band) to cut the carcass at various stages in the process. As a result, workers will be exposed to injuries arising from the improper use of knives, cleavers, and power tools. Slaughterers, meatcutters, and butchers may sustain cuts from knives that slip during boning; most cuts are on the hand or arm, but very serious injuries may occur if the knife stabs the upper thigh. Are knife blades sharpened regularly? Slaughterers, meatcutters, and butchers are more apt to apply more pressure on a dull knife, which could lead to a more serious injury as a result of slippage. Knives should be kept sharp and have guards to prevent workers' hands from slipping onto the blade. Sharpening steels should be equipped with a protective disk at the hilt. When not in use, knives should be kept in a scabbard or pouch preferably on the worker's belt. Work stations can be located to minimize the chance of one worker cutting another. If not needed, points should be removed from knives to prevent stab wounds. Workers must be instructed in the proper use of knives and warned not to use them improperly, such as using a knife to pick up a cut of meat. All saws should be properly equipped with safety guards. Are power saws frequently inspected and serviced? Suitable protec-

tive clothing — such as an apron of thick leather, wire mesh, or plastic material — to cover the femoral area should be provided in addition to wire mesh gloves and arm protection. Cuts, lacerations, and dismemberment injuries are also possible for employees who work with meat slicers in preparing various other processed meat products. Guillotine-type cutters that are used to cut the meat into several different shapes, pieces, sizes, and portions should be designed to prevent the "repeat" action of the cutting blade and to require two-handed operation. Tools of this nature should be equipped with all the necessary guards. How much training do the employees receive before being allowed to operate the meat slicers unsupervised? Inexperienced workers in meat preparation should be paired with a more experienced employee until they become familiar with insured's equipment and machinery. What are the age, type, and condition of the insured's meat cutting machinery? Are workers instructed in the proper use of such machinery? In addition, employees may suffer cuts and lacerations from opening boxes or bags of meat with a box cutter, knife, or razor blade. Cuts can result in longer-than-usual lost work time because employees cannot return to work if there is any danger that the wound would contaminate the meat.

To what extent are cutting operations automated, if at all? Fingers and hands may be cut, punctured, or crushed by various cutting or grinding equipment. Are workers required to wear hand protection when working closely with cutting machines? Standard impact-resistant safety glasses should also be provided for employees. What is the insured's practice?

The use of power saws, slicers, grinders, and other power equipment may cause very serious injuries. Hands or limbs could be pulled into the grinding mechanism; efficient machinery guarding to prevent contact of hands with the dangerous parts of machinery must be maintained at all times. Are all of the insured's machines properly guarded? An interlocking system should be installed on all machines to prevent their operation if guards are removed. It is a positive underwriting sign if all automated machinery is fully enclosed and guarded. Does the insured comply with OSHA standard 1910.212, General Requirements for All Machines? Employees should be furnished with heavy-duty rubber or leather work gloves to prevent hand injuries when working with machinery that may have sharp parts.

Some employees may remove guards or continue to operate a faulty machine by shorting out the switch, often with disastrous results. A formal safety program should stress the importance and necessity of proper machine guarding. Are operators instructed never to clean machines while they are in motion? Distractions have contributed to many injuries; socializing, therefore, should be kept to a minimum where employees use hazardous equipment.

Pinched or even amputated arms, hands, or fingers may occur when machines that are used by operators for meat slicing are being adjusted. Serious or fatal injuries may occur if any of the machine parts are cracked, or if employees' extremities come into contact with moving parts. In the meat packing industry, a common cause of machine-associated accidents is the failure of workers to follow lock-out procedures when making the frequent adjustments, cleaning, or other actions outside of mechanical maintenance work that are required when working with meat processing and packaging machines. For instance, in Montgomery, Alabama, workers for S&C, a meat processor, dismantled a meat grinder, and turned it over to BMS (a contractor) for cleaning. There was a shift change, and an S&C worker started the grinder without knowing that the BMS employee was inside the meat grinder cleaning it, resulting in the employee's legs getting caught in the machine and being amputated. As a result, the Occupational Safety and Health Administration (OSHA) fined S&C (the beef processor insured) for \$22,500 for willful safety violation and BMS (the contractor) was fined \$77,000 for one serious and two repeat violations. According to OSHA, the amputation would have been prevented if any of the companies had used its own lockout program and properly transferred control of the equip-

ment. Is all equipment inspected regularly and maintained carefully? Do the insured's employees perform any maintenance work on the process machines, or is such work contracted out? What are the training and experience of the individuals who maintain the insured's machinery? Power should be shut down and machines should be locked and tagged out before any inspection, maintenance, or repair work commences. Is the insured in compliance with OSHA standard 1910.147, The Control of Hazardous Energy (Lockout/Tagout)?

In addition to the obvious physical hazards of butchering operations, workers are also susceptible to a number of diseases that are transmitted from animals to humans, such as brucellosis, leptospirosis, erysipeloid, ringworm, and warts, through bacteria-ridden meat. These diseases are rarely fatal but can be quite debilitating. Also, primary dermatitis and other skin irritations are often caused by abrasions of the skin by fat-soiled clothing or contact with brine solutions. Skin diseases are also caused by bacteria and fungi. Erysipeloid is a type of dermatitis caused by a bacteria transmitted by infection of skin puncture wounds and scratches. Dermatophytoses refers to a class of skin fungi that are transmitted by contact with the hair or skin of infected animals. Tania or ringworm, is the most common example. Dermatophytoses are easily diagnosed and treated. Warts are also quite common among meat packers. Workers can contract warts by touching contaminated towels, meat, knives, and work tables and stations.

Moreover, wounds, particularly those caused by bone pricks, can quite easily become infected. Workers may be susceptible to tularemia, a flulike illness caused by bacteria from infected animals entering small cuts and scratches on the hands. Prompt and proper attention to puncture wounds and cuts is essential to prevent infection. Full first aid facilities must be available in the meat-cutting area.

Brucellosis is the most commonly transmitted disease and is caused by a bacterium transmitted by handling cattle or swine. Rarely fatal, brucellosis is, however, a serious disease that can last for months if untreated. The symptoms of brucellosis include constant or recurring fever, headaches, weakness, joint pain, night sweats, and loss of appetite. Leptospirosis is another bacterial infection transmitted through direct contact with infected animals or through contact with water, moist soil, or vegetation contaminated by the urine of infected animals. It is also rarely fatal but can be debilitating if left untreated. Are workers required to wash their hands before and after each work period and in between breaks? Is the insured in compliance with OSHA standard 1910.138, Hand Protection?

Wrapping/packaging workers, can be burned by sealant machines that are used to wrap the meat in plastic film. In addition, meat wrappers may be exposed to polyvinyl chloride vapors, which are created when meat wrapping film is cut with a wire that is too hot. Prolonged exposure to PVC fumes has been found to cause an asthma-like respiratory condition in meat wrappers. Also, the fumes are considered to be skin and eye irritants. Adequate temperature control on these machines to prevent the cutting wire from becoming hot enough to vaporize the wrapping film will reduce the potential for respiratory problems.

The cleaning, repair, maintenance, and inspection of meat packing plants machines, refrigeration equipment, and production machinery and/or boilers may require some employees to enter confined spaces. Working in confined spaces can be extremely hazardous. Does the insured inform workers of the hazards associated with working in confined spaces and provide adequate training in safety procedures? All OSHA standards must be followed for work in confined spaces, especially concerning the use of proper respiratory equipment, confined space attendants, communication equipment, and rescue personnel. Does the insured comply with OSHA standard 1910.146, Permit-Required Confined Spaces?

Workers may be injured during the maintenance and cleaning of automated production machinery, such as packaging and filling systems. Although air blowers clean most machines, some machines must be disassembled for more thorough cleaning. Does all equipment

have stationary lubrication fittings so employees do not have to reach inside a machine to lubricate it?

What types of cleaners are used on the insured's premises? How, where, and in what amounts are such materials stored? Do the insured's employees perform cleaning operations, or is this work contracted out? Insureds use strong chemical cleaners that can be very toxic or corrosive, as well as ammonia, which is used as a refrigerant in the processing and storing of beef and pork. Exposure to ammonia and chemical cleaners may be acute (i.e., a single incident that causes a rapid onset of symptoms) or chronic (i.e., repeated low-level exposure over a prolonged period of time — weeks or months). Prolonged exposure to ammonia levels can cause permanent lung and eye problems, while frequent exposure to small amounts can lead to bronchitis, persistent cough and excess mucus production. With recurring use, the presence of some chemicals can often build up in the body until they reach levels that can cause both reversible illnesses (such as skin rash, nausea, eye irritation, fatigue, soreness in joints, blurred vision, injury to the liver, etc.), and irreversible illnesses (including birth defects, severe injury to the nervous system, and certain types of cancer). Problems are most frequently encountered if these chemicals are inhaled, ingested, or absorbed through the skin. Some chemicals are especially dangerous when they are quickly absorbed through certain parts of the body, such as the eyes, ear drums, scalp, or groin area. The splashing of chemicals into an employee's eyes and face is a possibility, and may cause serious injury or blindness. The use of safety glasses, goggles, and face masks will help prevent splattered or splashed chemicals from reaching a worker's eyes. Is the insured in compliance with OSHA standard 1910.133, Eye and Face Protection? Workers who handle hazardous chemicals should be discouraged from wearing contact lenses, as chemicals can become trapped between the lens and the eye. Are emergency eyewash stations and showers available in areas where potentially irritating chemicals are used?

Workers' lungs can become irritated if chemical fumes are inhaled. Over time, the inhalation of chemicals and toxic gases, such as chlorine and ammonia, may cause inflammation of mucous membranes and respiratory ailments could result. Workers may also be exposed to ammonia gas leakage.

Depending on the kinds of hazardous chemicals that are stored and/or handled on the premises, various types of personal protective equipment will be required. Since many chemical hazards are respiratory in nature, two of the most common forms of chemical protection equipment are: personal protective equipment (which consists of chemical-resistant, waterproof hats and washable hard hats with no absorbing liner); and chemical-resistant breath masks and self-contained breathing apparatus (SCBA, such as respirators, air-purifying respirators, dust/mist-filtering respirators, and air-supplying respirators), along with an adequate ventilation system. Determine the age, type, and condition of the insured's respiratory and ventilation equipment. Is the insured in compliance with OSHA regulations 1910.134, Respiratory Protection, and 1910.94, Ventilation? Have all employees who are engaged in such work been trained in the proper use of respiratory equipment? Are employees who work in close proximity to these processes provided with air filter respirators, face masks, and safety goggles?

Workers could inadvertently poison themselves if they inadvertently ingest food or beverages, or even smoke cigarettes, that have become contaminated with hazardous substances through contact with their own chemical-soiled hands. As a precaution, chemicals should never be stored near food or other items intended for human consumption, and vice versa. A good supply of detergent or soap, hand cleanser, and water must be provided for employees who work with chemicals and solvents, or in chemical storage areas. Is frequent hand washing strongly encouraged, particularly for workers who handle chemicals?

Systemic poisoning may occur through skin absorption. Work clothes could become contaminated. Workers typically handle cleaning compounds or solvents, which may result in dermatitis.

Is the insured in compliance with OSHA standard 1910.132, Personal Protective Equipment? Such equipment may vary from task to task, and must be supplied to workers when appropriate. Does the insured issue and require employees to use the appropriate personal protective equipment, such as chemical-resistant, long rubber gloves or chemical-resistant gloves with gauntlets during cleaning operations?

What are the age, type, and condition of personal protective equipment issued to the insured's employees? All personal protective equipment should be NIOSH-approved. What measures has the insured taken to enforce the use of personal protective equipment? The insured should be in compliance with OSHA standards, 1910.135, Occupational Head Protection and 1910.138, Hand Protection. To prevent serious foot injuries, workers should be issued unlined, thick-soled, chemical-resistant, steel-toed work boots that cover the ankles. Leather boots should not be worn. In warmer climates where chemical-resistant boots are too hot to wear, chemical-resistant overboots with washable shoes (such as sneakers or layered socks) should be issued. The insured should be in compliance with OSHA standard 1910.136, Foot Protection. What is the insured's practice?

Are workers made aware of hazardous substances that they are working with? Material safety data sheets (MSDSs) must be available for workers to read. It is highly recommended that all employees who work for the insured have a thorough knowledge of the chemicals they use or are exposed to on the job sites at their main facility. Workers have the "right to know" and insureds must provide all relevant information to their employees. Determine if the insured is in compliance with OSHA standard 1910.1200, Hazard Communication.

It is important that insureds comply with all federal, state, and local laws and regulations regarding chemical usage. Does the insured follow all relevant Environmental Protection Agency (EPA) guidelines? The EPA mandates that certain procedures must be followed when using various chemicals and solvents. In addition, as employees who work with chemicals and solvents are consistently exposed to these chemicals (as described above), a medical surveillance program should be set up to monitor employees' blood levels frequently and consistently so that they may be treated accordingly, in compliance with OSHA standard 1910.1020, Access to Employee Exposure and Medical Records. The program should entail giving workers blood tests in order to detect any indications of poisoning in their blood and determine their levels of exposure. All new employees should participate in a pre-employment medical examination. Also, determine if the insured performs any pre-employment drug testing of its employees. What is the insured's practice?

Workers who attach a chain/dolly assembly or gambrel to the hind quarters of a stunned animal could be injured in falls or be crushed underneath a falling carcass. Since cows typically weigh up to 2,000 pounds and hogs up to 270 pounds, such injuries could be quite severe. What are the age and condition of the insured's hoisting equipment and chain/dolly assemblies?

Meat packing plants often use augers, screw augers, rail-type conveyors, screw conveyors, and/or conveyor belts to move carcasses and cuts of meat from operation to operation. They are also used to move the raw materials and finished products from the production, loading, and shipping areas to refrigerated storage areas. These conveyors pose hazards to workers because they are automated. Workers have been caught in moving machinery and crushed, have had limbs fractured or amputated, and have been severely cut. Are conveyors equipped with guards to prevent contact with the nip points of the belts, rollers, and trains? Is the conveyor belt height designed to minimize the necessity of stressful movements? Emergency shutdown switches should be placed at conspicuously marked, strategic locations along the length of the conveyor and must be easily accessible to all production employees. Are conveyors regularly inspected and serviced?

Workers could also be struck and seriously injured by moving carcasses. While small plants will typically kill less than 100 head of cattle or less than 200 head of hogs or sheep per 8-hour shift, many of

them slaughter less than 25 cattle or 100 hogs or sheep per day. In comparison, large plants may process up to 350 head of cattle per 8-hour day; however, they can increase their capacity to 700 head of cattle per day by adding a second shift. Some extra-large modern plants have a slaughter capacity of 2,500 of cattle per day or 5,000 head of cattle per day in two 8-hour shifts. Faster production line speeds at meat packing plants have made worker injuries quite severe. It is a negative underwriting sign to process beef carcasses at a rate of more than 5,000 cattle a day. In some of the newer meat packing plants, they are processed at a rate of 309 to 400 cattle per hour. Due to increased production line speeds, animals may not be stunned properly. Federal law states that animals must first be "stunned" (i.e., rendered insensible to pain with a blow to the head or an electric shock). Where there is no compliance with this law, the high-speed processing does not give the workers enough time to ensure that every single animal is dead. Consequently, the animals may still be alive as its throat and various parts of its body are being cut. For instance, an insured in Texas was cited for chopping hooves off live cattle. Improperly stunned animals have been the cause of the highest rate of employee injuries in the meat packing industry, such as broken limbs and teeth, workers' arms being kicked and shattered by a dying cow, broken hands, fractures, and in extreme cases, death, particularly in high speed plants. Do workers who handle carcasses early in the production line wear chest pads and hockey masks? How fast are carcasses moved along the rail-type conveyors?

What is the insured's policy regarding auger and conveyor use? Employees must neither ride on nor climb over or under a moving conveyor belt.

Slips, trips, and falls are common exposures in production areas. Good housekeeping practices are the main loss control measure for these hazards. What is the level of housekeeping on the insured's premises? In meat production areas, floors are often wet. During production, water, blood, and grease may be spilled on the floor. Also, water may drip onto the floor from some of the equipment that is used for meat production operations, increasing the potential for slips, trips, and falls. Are all spills cleaned up immediately? "Caution — Wet Floor" signs should be displayed over affected areas. Are periods set aside during the production shift for general housekeeping? Are employees instructed to be on the watch for slippery areas? Areas which routinely allow water or other wastes to collect and pose a hazard should be marked with warning signs. Are such signs posted? Have drains been installed in any areas where spills are common? Rubber mats with nonslip treads should be used in these areas as well. Spills should be mopped up promptly.

Are open surface dip tanks, used for sterilizing shackling equipment (e.g., used to shackle the carcass to the rail-type conveyor), and elevated work platforms equipped with sturdy guardrails? Workers may slip and fall while conducting sterilization procedures on equipment; guardrails can protect workers from such accidental falls. What loss control measures does the insured use to protect workers from such falls?

Employees will also be exposed to slips, trips, and falls in the offices and employee break rooms. The office and reception areas should be kept free of debris and clutter. Trash should be removed from the premises on a daily basis. What is the condition of the insured's floors and floor coverings? Floors should be swept, mopped, or vacuumed daily. Worn, torn, or loose floor coverings should be repaired or replaced immediately. Telephone and electrical cords should be routed away from aisles, hallways, and doorways; cords that must cross doorways should be covered to keep people from tripping over them.

Electrical shocks could result from wiring that is worn, damaged, or exposed. All wiring should be double insulated, and loose or exposed wiring should be disconnected from its power source, especially in areas where floors may be wet. A licensed electrician should periodically inspect all wiring and power cords on electrical equipment. What is the experience level of the electrician who services the insured's equipment?

Workers in meat production areas may also receive electrical shocks from ungrounded or malfunctioning electrical machinery. This is particularly important in wet areas, common in most meat packing plants due to the vast amounts of water used in this process, and the vast amount of wastewater created as a result of the meat production operations. In meat packing plants, an independent, green color-coded equipment ground wire is preferable to other types of conductors, such as metal conduit or bonding to water pipes. In wet locations, weather-tight covers should be used on wall-mounted outlets. Plugs and cords for machinery that is frequently moved for cleaning should be inspected regularly. Is all electrical equipment properly grounded, NRTL-listed, and connected to ground fault circuit interrupters (GFCI)? Is the insured in compliance with NFPA 70, National Electrical Code? All electrical tools should be wired for use in wet areas and be in compliance with NFPA 303, Fire Protection Standard for Marinas and Boatyards. What is the insured's practice?

Some insureds will have meat products processing operations, and those workers who prepare value-added meat meals could be burned by coming into contact with hot cooking surfaces or vat contents. What measures are taken to prevent workers from accidentally touching hot machinery? In more automated operations, this exposure will be relatively slight. Heat-resistant personal protective equipment should be provided to employees working around hot surfaces. Steam burns are another source of injury because of the volume of steam cleaning that is done and the use of steam jackets on cookers. Steam-cleaning hoses and steam-water mixing valves require frequent inspection to ensure that they are in good working order. Employees working with steam should wear insulated, heat-resistant gloves. Are all steam pipes insulated?

The insured may conduct welding, brazing, or cutting operations on its processing equipment. Does the insured ever contract out such work? If not, the plant's workers may be exposed to burn injuries while using welding production equipment. The correct personal protective equipment must be provided by the insured for all workers to protect them from burns and stray sparks. The skin can be severely burned by exposure to ultraviolet radiation from the electric arc; this is also cancer causing. "Welder's flash" or "arc eye," an irritation characterized by a sensation of sand in the eyes, is caused by exposure to ultraviolet radiation from the electric arc. Gas-shielded arc welding produces particularly high concentrations of ultraviolet radiation. It may also burn the skin as in a sunburn. Any exposure without eye protection can result in permanent eye injury. All personal protective equipment and clothing must comply with NIOSH standards, be approved by a nationally recognized testing laboratory (NRTL) and be fire and/or heat resistant. Protective gloves, preferably the gauntlet type, must be worn regardless of the type of welding being done. Determine if the insured has a formal fire protection program. What protective equipment does the insured provide its workers with? Does the insured have a fire protection program? It should be noted that insureds with no formal fire protection program may face fines and claims. For more detailed information on welding exposures, refer to the Welding, Brazing and Cutting classification.

Workers will be exposed to excessive noise levels for prolonged periods of time. Workers exposed to a time-weighted average (TWA) of 85 dB of noise must be provided with NIOSH-approved hearing protection devices if they request them. OSHA mandates that insureds must provide and require employees to wear hearing protection (e.g., NIOSH-approved earplugs or earmuffs) when noise levels reach or exceed a TWA of 90 dB. Are employees provided with NIOSH-approved hearing protection? Are employees given pre-employment and annual audiometric tests as a baseline against which future tests can be compared? Annual audiometric exams must be conducted on all employees who are exposed to a TWA of 85dB. Is the insured in compliance with OSHA standard 1910.25, Occupational Noise Exposure?

Does the insured require employees to participate in a pre-employment medical examination? It is a positive underwriting sign if

employees are examined by a medical practitioner prior to assuming their work duties to assess whether they are physically capable of fulfilling their responsibilities. Slaughterers, meatcutters, butchers, materials equipment handlers, cleaning personnel, and other meat packing workers all engage in work requiring extreme physical exertion. These workers are expected to handle large cases of meat and meat products. Meat luggers will routinely load 300-pound carcasses onto trucks. These workers are susceptible to severe back, neck, and shoulder injuries, as well as falls. Aggressive job rotation of meat luggers and frequent breaks will also reduce the number of injuries. Does the insured rotate duties of meat luggers and give them frequent breaks? Any employees who are required to lift heavy loads should be provided with back support belts and harnesses. Determine if workers are instructed on the proper lifting methods help to prevent back injuries. Proper materials-handling devices (e.g., hand trucks, dollies, hoists, wheelbarrows with dual wheels, lifting straps, hydraulic lifting aids, etc.) should also be issued to workers when necessary. Employees should be instructed to ask for assistance when an item is too heavy or awkward to lift alone. Is the insured in compliance with OSHA standard 1910.176, Handling Materials — General? Dropping or lifting objects while moving them can cause serious foot injuries. Workers exposed to this hazard should be issued steel-toed work boots. A corporate-sponsored exercise program for employees, emphasizing stretching and strengthening exercises for the back and legs, is a positive underwriting sign.

Although most stored goods will be tightly wrapped with cellowrap to avoid the possibility of boxes of meat toppling onto persons who are operating forklifts or walking through the aisles below them, occasional accidents have been known to happen. As a precaution, hard hats and steel-toed boots should be worn by employees who work on loading docks or in storage areas where shelves are elevated to heights of six feet or more. What is the insured's practice? Are all goods checked that they are securely wrapped before they are moved to their designated storage location in the warehouse? Does the insured assume responsibility for wrapping the finished meat upon arrival at the facility, or are customers expected to handle their own bundling of meat? If the former scenario exists, assess the experience level of the person who oversees the insured's wrapping operations. If the latter scenario exists, does an employee doublecheck all incoming meat to ensure that the cellowrap is tight and there are no loose boxes or crates?

Most work in meat packing plants will often use forklifts and hydraulic lifts to move and palletized finished products or raw meat materials from the production facility to the warehouse and waiting trucks. What types of forklifts does the insured use? If gasoline or propane forklifts are used, proper ventilation during refueling is required; ideally, it should be done outdoors. Because explosive gases may escape from a forklift battery during recharging, this procedure should take place outdoors and away from ignition sources. When forklifts are unattended, control levers should be placed in neutral, emergency brakes set, forks lowered, and power cut. If the lift is parked on an incline, chocks must be placed in front of or behind wheels to prevent rolling. Are forklifts equipped with backup alarms? Is the insured in compliance with OSHA standard 1910.178, Powered Industrial Trucks?

What are the training and experience of the insured's forklift operators? Thorough training in the safe operation of forklifts is essential. Prior to their operation, do the insured's forklift operators use a written checklist to assess the condition of their vehicles?

Improper operation of forklifts could result in the operator or other workers being injured by toppling loads or the vehicle overturning. Is the rated load capacity clearly marked on all forklifts, and have employees been instructed not to exceed it under any circumstances? All forklifts should be equipped with overhead protection, such as a roll cage. Are the insured's forklifts equipped with backup alarms? Convex mirrors should be placed at the ends of aisles and at all blind corners. Have traffic patterns been established and clearly marked in

all loading docks and storage areas? Aisles in between storage shelves should be of sufficient width to accommodate the maneuverings of the type of forklift used in that particular storage area. Forklift operators should be particularly alert to the presence of pedestrians when maneuvering palletized goods onto and off of racks that are stacked "double deep" since removing or placing a pallet to the rear of the shelf requires first removing and lowering to the ground level any pallet that may be situated in front of it. How much training do the insured's forklift operators have in working on double deep storage configurations?

Most meat packing plants company facilities will include loading docks, each of which may have as few as 5 or as many as 20 or more docking bays where delivery trucks can back up and have their goods unloaded from the cargo bay. Forklifts will actually be driven onto the truck beds to remove pallets and cartons of goods, transferring them onto the loading dock. Employees could be hit by moving forklifts in the course of these procedures, possibly resulting in serious injuries. A safe, well-organized dock will effectively help reduce this exposure. Employees who work on loading docks should be required to wear OSHA-approved reflective, orange vests to increase their visibility to delivery truck drivers and forklift operators. Trucks should be chocked during loading and unloading to prevent them from rolling. The dock's traffic flow, including the arrival and departure of trucks, forklift operations, manual materials-handling equipment, and pedestrian traffic, should be closely regulated. Are all pickups and deliveries of goods scheduled in advance to allow for a smooth, well organized flow of traffic? If so, this is a positive underwriting sign. Traffic lanes for both pedestrians and vehicles should be clearly marked on loading docks. Good communication, both verbal and with signage, is essential for a safe loading dock. Are speed limit and warning signs (e.g., "Sound Horn" and "Proceed with Caution") posted throughout the area?

Although some insureds may contract with a meat distributor to pick up finished products, other businesses may perform delivery operations themselves. Truck drivers will face the possibility of being injured in motor vehicle accidents. How strongly does the insured encourage its drivers to meet their delivery deadlines? Strict adherence to delivery deadlines may encourage reckless driving practices. Refer to the Automobile Liability section of this article for more information on loss control measures for vehicular accidents.

Cumulative trauma disorders (CTDs) are prevalent in most of the tasks performed by workers in meat packing plants (e.g., from severing the jugular vein to packing the meat). Pincher devices are used to skin and remove the front legs of the animals; counter-balanced splitter saws are used to split the stomach and back of the carcasses; head splitters are used to remove the brain of the animal and jawbone/snout pullers to remove the jawbone/snout. Because of the repetitive motion involved in using these types of equipment, carpal tunnel syndrome is a leading injury. Workers may also sustain repetitive motion injuries (RMIs) such as thoracic outlet syndrome, which affects the neck and shoulders, and rotator cuff injuries of the shoulders. Are workers educated about the early signs and symptoms of these types of injuries? Another source of claims is "neighbor cuts" (i.e., when a worker cuts another worker in close proximity), usually caused by overcrowding and poor ergonomics. Frequent rest breaks are recommended. Is there adequate space to move around the production areas? Determine if all work stations have been designed to provide adequate space for workers to perform their duties safely. Crowded workstations will increase the Workers' Compensation exposure. What is the quality of lighting in the facility? Poor lighting can also contribute to accidents. Moreover, workers bending over machines or using chairs with inadequate support for long hours will be subject to back problems. In response to government scrutiny over cumulative trauma disorders, the red meat industry has become a leader in ergonomically designed work stations. What measures does the insured take to prevent or lessen the severity of cumulative trauma disorders, such as carpal tunnel syndrome? An employee rotation program can help protect workers from repetitive motion injuries. Does the insured have an

employee rotation program? It is highly recommended that the insured use the U.S. Department of Labor brochure, "Ergonomics Program Management Guidelines for Meatpacking Plants" to aid it in reducing these exposures.

Office employees are subject to CTDs, such as carpal tunnel syndrome, resulting from working with calculators, computers, and word processors as well. Employees working with computer monitors may also experience eye fatigue. It is recommended that they look away from the screen frequently to focus on distant objects and take a 15-minute break every 3 hours. Employers should follow ANSI standard ANSI/HFS 100-1988, which provides ergonomic design guidelines for visual displays, keyboards, and workstations.

Maintaining constant vigilance with regard to proper sanitation measures is vital because it helps prevent contamination of the meat which, in turn, reduces the workers' exposure to infectious diseases. Each day, one shift will be devoted entirely to cleaning and sanitizing the premises. It is a positive underwriting sign if the insured employs a sanitation supervisor whose job it is to oversee proper sanitation practices for the entire facility, as well as full time workers for each individual warehouse. What are the qualifications and experience of the insured's sanitation workers? Is the insured in strict compliance with OSHA standard 1910.141, Sanitation?

Since insureds have large refrigerated warehouses and storage areas, the risk of frostbite and hypothermia will be a serious concern for employees who spend extended periods of time in the insured's refrigerated storage rooms, such as those performing inventory. Employees exposed to such wet areas and refrigerated areas over long periods can develop arthritic conditions. Protective clothing that has been designed specifically for those who work in colder environments is available. Are workers issued such clothing in the proper sizes to ensure a comfortable fit? Depending on the temperatures to which they are exposed, such clothing may include: gloves; hats, earmuffs, and/or face masks; thick socks; work boots; long underwear (preferably thermal); quilted coveralls; and hooded jackets or ¾-length parkas. Does the insured use forklifts that have heated cabs? The amount of time workers spend in extremely cold storage areas (e.g., -20°F or colder) should be strictly limited to no more than 2 hours without a break to warm themselves up. What is the insured's practice? Are hot beverages in insulated thermoses provided for workers, or are they expected to bring their own? In addition, any doors leading into walk-in refrigerators/freezers should be equipped with safety latches so workers cannot accidentally lock themselves inside.

Workers could be injured while engaged in routine equipment maintenance or while performing repairs on the insured's refrigeration equipment. They will be exposed to high voltage, and may have to enter confined spaces as well in order to service the equipment. Does the insured comply with OSHA standards 1910.146, Permit-Required Confined Spaces whenever refrigeration equipment is being cleaned, serviced, or repaired? How much experience do the insured's service technicians have in dealing with industrial refrigeration equipment? Are they certified in HVAC repair from a reputable institution? In addition, workers may receive electrical shocks from malfunctioning refrigeration equipment. Is all equipment properly grounded, NRTL-listed, and connected to ground fault circuit interrupters (GFCIs)? Most refrigeration equipment is likely to be hardwired to the main electrical service wiring, and it will not need to be plugged into an outlet with an electrical cord.

What type of refrigerant does the insured use in its facility? Many insureds with refrigerated warehouses will utilize ammonia-based refrigerants. If not properly maintained, ammonia presents both explosion and respiratory hazards. An adequate equipment maintenance program and an extensive respiratory protection program are the best loss control measures for reducing these exposures. Workers who service refrigeration equipment or assist in cleaning up leaks will be exposed to ammonia leaks. Ammonia gas has been known to cause lung damage and, in high concentrations, can even lead to death.

When cleaning up leaks, workers should be required to wear self-contained breathing apparatus (SCBA) equipment to protect their lungs from exposure to the gas. Emergency respiration equipment should be stored in at least two separate on-site locations that are easily accessible to all workers. Also, it is essential that at least one of these designated storage sites be situated in an area of the insured's facility that would remain unaffected in the event of an ammonia leak. Does the insured have an ammonia leak detection system installed in all refrigerated areas that have interior exposed pipes? In addition to respiratory distress, exposure to high concentrations of ammonia vapors could result in skin burns. The insured should have the proper protective clothing on hand to issue to workers if necessary.

Under normal conditions, ammonia is a very stable compound, and modern technology has greatly increased the safety of its use as a refrigerant. The refrigeration system is typically a closed system, so there is no single spot where ammonia is fed into or siphoned out of the system. Therefore, any leaks would be the result of an accidental rupture or crack in pipes or fittings that are part of this closed system. Because ammonia has a strong, unpleasant odor, it is detectable to the human nose even in concentrations as small as approximately 5 — 50 parts per million, thus allowing plenty of time for workers to vacate any affected areas before the concentration would reach levels that may be cause for serious concern. In order for an explosion to occur, ammonia must reach an air concentration level of 16 — 28% (i.e., 160,000 — 280,000 parts per million), and there must also be an ignition source of at least 1204°F. If insureds have refrigerated warehouses and storage areas, it simply will not provide the type of environment in which critical temperature and concentration thresholds are likely to be reached. Even with these required parameters, it is extremely difficult to create the exact conditions necessary for ammonia to ignite. Is the insured in compliance with OSHA standard 1910.111, Storage and Handling of Anhydrous Ammonia?

What procedures does the insured have in place with regard to packaging? Meat products are extremely perishable and must be packaged as soon as possible after processing. How soon after slaughter are the insured's carcasses processed and shipped out? Typically, livestock is first slaughtered and blast frozen, held over night, and then processed and shipped out the next day. Sanitary corrugated cardboard containers are produced for the insured by manufacturers and must comply with USDA food product laws governing sanitation requirements. Are the insured's packaging materials sanitary? USDA-inspected plants must obtain written sanitation guarantees from suppliers for all packaging materials that come in contact with raw or processed meat. Suppliers must guarantee that their packaging materials comply with the federal Food, Drug and Cosmetic Act. Does the insured make these written guarantees available to USDA inspectors? For more detailed information with regard to packaging considerations, refer to the Product and Liability section of the Box Manufacturing — Corrugated classification.

Most insureds have testing laboratories for conducting quality assurance tests on the meat in order to make sure that it meets both state and federal standards. Carcasses and viscera have to be inspected to determine if they are suitable for human consumption. Each carcass and its components are identified and kept together wherever it is possible until the inspection is complete. Workers in the insured's testing laboratory may be exposed to hazardous chemicals, chipped or broken glassware, ungrounded electrical equipment, and hot equipment, such as bunsen burners. What chemicals are used in the laboratory, and in what quantities are they stored? Are laboratory workers provided with personal protective equipment, such as protective eyewear, gloves, and aprons? The facility should be equipped with an emergency eyewash station. Is all electrical equipment, such as ovens and sterilizers, in good condition, grounded, and NRTL-approved? Is all glassware in good condition and free from chips and sharp edges? What is the level of housekeeping in the laboratory? For more detailed information with regard to laboratory

exposures, refer to the Workers' Compensation section of the Laboratories — Commercial Testing classification.

What is the availability of emergency health care and first aid? The insured should be in compliance with OSHA standard 1910.151, Medical Services and First Aid. Are first aid kits located throughout the premises and on all of the insured's vehicles? The telephone numbers for local emergency medical teams should be posted prominently throughout the premises. Determine if any employees have been trained in cardio-pulmonary resuscitation (CPR) or first aid. It is a positive underwriting sign if all employees are required to undergo first aid training. Have any employees received training in emergency first aid, particularly in how to treat symptoms of hypothermia or frostbite?

It is highly recommended that in order to reduce the number of work-related injuries, insureds should refer to the U.S. Department of Labor's "Safety and Health Guide for the Meat Packing Industry." What is the insured's practice?

### Crime

There will be little cash kept on hand at meat packing plants; most customers will be billed by invoices and will send their payment in the form of a check. However, the cost of meat makes it highly susceptible to both inside and outside theft. (Third party theft will be covered under the Fire and E.C.: Property section). Employee dishonesty is a major concern. Overall, the Crime exposure will be significant.

What forms of payment does the insured accept? Most meat packing plants will bill customers or handle payments via purchase orders, which will enable most of the insured's customers to pay by check after invoices have been presented for payment. Are all checks stamped "For Deposit Only" immediately upon receipt? How often are bank deposits made? If possible, the insured should make deposits at varied times using different routes to avoid suggesting a routine. Are all cash, checks, and credit card receipts stored in a tool-, torch-, and explosive-resistant, NRTL-listed, time-delay safe until they are deposited?

Do the insured's drivers accept payment for deliveries? Drivers could be injured during robbery attempts. Also, they could embezzle the cash themselves. Are "Drivers Carry No Cash" signs posted on all trucks? Are drivers told to cooperate with robbers and their demands and not to offer any resistance? Are trucks equipped with NRTL-listed, fire-resistant drop safes? When returned to the insured, the safe should be opened only by a supervisor. Does the insured have a secured collection room? Determine if the room is equipped with a panic button wired to a central-station alarm monitoring center. What is the insured's practice?

Employees could pilfer stock or supplies, or assist others in stealing from the insured. How are the insured's workers screened before employment? Are all references checked and previous employment verified? Employee collusion may exist as employees may tamper with shipments for personal profit. Determine the insured's shipment practices. Does the insured perform periodic, unannounced financial audits? Ideally, accounting functions should be performed by more than one employee.

Furthermore, large losses stemming from collusion between employees and the insured's customers during deliveries may be reduced through proper managerial supervision and closed-circuit television cameras. It is not unusual for shipments of such high-value items as meat to be only partially complete. Are all invoices and receiving records kept in the office safe? Theft can be detected with careful attention to customer invoices and a specific policy for checking meat shipments the moment it either leaves the plant for delivery to customers, or it is picked from the plant by customers. Determine who is responsible for keeping inventory records. More than one employee should be responsible for inventory control. What is the insured's practice?

Loading docks and platforms should be monitored at all times to prevent employee theft or collusion with outsiders. It may be possible for a dishonest employee to hide meat shipments in a discreet location

and retrieve it later on at the end of his or her work shift. What is the level of supervision on the insured's loading dock? If loading docks and storage areas are equipped with closed circuit surveillance cameras, this is a positive underwriting sign. The employee parking lot should not be near the loading and unloading area. Loading and unloading areas should be physically separated from each other. Is any storage done on docks or outside the building? Moreover, incoming and outgoing meat shipments should be monitored carefully by management. Information about incoming and outgoing shipments should not be made general knowledge; prior knowledge by certain employees or persons may make those shipments easy targets for loss. Long-term relations with clients and/or a guard service can increase the possibility of insider-outsider collusion. It is highly recommended that a full-time worker be hired to oversee security for the entire facility. Some insureds may have their premises surrounded with perimeter fencing, possibly with a manned booth to monitor all incoming and outgoing vehicle traffic. Where this is the case, do booth workers stop all outgoing employee and passenger vehicles and visually inspect their trunks and/or backseats for stolen goods?

Tight inventory control practices, such as frequent scheduled and unscheduled audits of the meat, will help the insured keep track of inventory levels. How frequently are such audits performed? The insured may also wish to protect against unexplained losses or shortages that become evident at the time when a scheduled or unscheduled inventory is taken or when meat goods are removed from storage for the customer. Such losses could result from inadequate training and inventory tracking methods, from the unintentional discharge of stored meat goods to an unauthorized party, or even from more nefarious causes, such as employee dishonesty or collusion. What methods does the insured employ to keep track of the goods that are stored in its warehouses? If bar coding and computerized tracking methods are used, this is a positive underwriting sign. How much training have workers received in verifying bills of lading on incoming goods? Are warehouse receipts issued when goods are received for storage?

What is the level of security on the premises? All exit doors should be equipped with double-cylinder, deadbolt locks, and windows should have tamperproof locks. Most insureds will have an employee whose job is to oversee premises security. Does the insured have such a person on staff? If the facility is not open 24 hours a day, 7 days a week then it is a positive underwriting sign if security guards are hired to patrol the facility during off hours. Have any arrangements been made with local police for routine patrols of the facility? It may be advisable to have closed circuit cameras strategically placed at all entrances to help monitor who is entering the premises. If the property has perimeter fencing, it should be in good repair. Are all outdoor areas well lit at night?

Determine the location of the nearest police station. What is its response time?

#### **Fire and E.C.: Property**

There will be a serious Fire and E.C.: Property exposure for meat packing plants. The fire load will consist largely of stored meat, meat by-products, and fat; packing and storage materials (e.g., cardboard boxes, and various paper supplies), paper, polyvinyl chloride (PVC) film, pallets, and trash. Ignition sources will include inadequate or faulty wiring systems, malfunctioning electrical or overheated refrigeration equipment, ammonia leaks, and smoking. Beyond the ignition sources and fuel loads, the primary concern is the susceptibility of meat and meat products. In almost any fire, the United States Department of Agriculture (USDA), and the Food and Drug Administration (FDA) will declare all meat stock a total loss, either due to fire or smoke. If the insured keeps most of its information on computer disks and/or conducts business via e-mail, the paper fire load will decrease, and this exposure will be somewhat further reduced if documents are stored off-site. Theft by third parties may

also be an exposure. Insureds face exposure from malcontents and activists who could damage meat production facilities and release animals (that are waiting to be slaughtered) from their holding pens.

What are the age, type, and condition of the insured's building? Meat packing plants are typically housed in a large manufacturing space; some may be converted for the insured's use. They are typically of masonry construction with separate fire divisions for the different operations. Larger and middle-sized insureds may have more than one office or storage structure in various locations. The facility may be freestanding or connected to other structures. Insureds may be housed at a single location, or if they are chain operations, they may have various locations regionally, nationally, and internationally. Is the office located in a renovated structure? In renovated buildings, concealed spaces may be left between walls or above suspended ceilings where fire may spread rapidly and undetected. If there are adjacent facilities, what hazards do they pose? Have firewalls been erected in multi-occupancy buildings to help prevent the spread of fire? Adjacent facilities should be separated by a firewall that extends to the ceiling. Are the premises owned or leased?

It should be noted that the Federal Meat Inspection Act has established construction requirements for slaughtering plants concerning sanitation and ease of cleaning and drainage. These requirements, which help to reduce the number of hard to reach or concealed spaces where contamination can multiply, also make fire detection and suppression easier, and improve the premises' resistance to fire. Determine if the insured is familiar with these requirements. What procedures does the insured have in place to indicate that it followed these requirements?

What is the layout of the insured's premises? The layout could include the following: various holding pens; a stick pit; a slaughtering area; a meat cutting area with multiple production lines; a blast freezer area; refrigerated warehouse; a refrigerated tempering storage area for storage of the finished product; a laboratory for quality control testing of meat products; a drivers' waiting area; and administrative offices. If they have meat processing operations, the layout will include production works (stunning area, tempering area), test laboratory; various chill and holding coolers; a smokehouse; curing and aging rooms; space for boning, cutting, processing and wrapping; a rendering room; a customer area; a boiler room; a machine shop; administrative offices, and a truck sterilizing compartment.

Faulty or inadequate wiring systems, malfunctioning electrical or overheated refrigeration equipment, and ammonia leaks are key ignition sources. Most insureds have extensive electrical requirements stemming from their refrigeration systems and production equipment. Is the electrical supply adequate for the insured's needs? If the insured's electrical requirements exceed the capacity of the power supply, the system could become overloaded and start a fire. What are the age, type, and condition of the insured's wiring? Wiring should be in compliance with NFPA 70, National Electrical Code. If the insured operates out of a converted or renovated structure, check if any rewiring has been done. Is the insured's wiring system sufficient to meet its electrical needs? It is recommended that a planned program of scheduled inspection and preventive maintenance for all wiring be implemented.

Larger meat packing plants may be more automated than smaller plants. What is the extent of automation in the insured's plant? Computer-automated systems may run parts of the production and processing plant or the entire operation, and sensitive electronic equipment (i.e., computer-automated equipment) is susceptible to damage and fires caused by humidity or excessive heat from inductive power sources. To prevent overheating, such equipment must be isolated from the production plant and equipment and machinery and from the inductive power source. What is the insured's practice?

What are the number, type, age, and condition of all electrical equipment used by the insured? Office areas may contain such standard electrical office equipment as computers, copiers, printers, and fax machines. In addition, the insureds' production equipment and

machinery includes refrigeration equipment, stunning machines, saws, conveyors, dehairers, polishers, pinchers, snout pullers, head splitters, and sealing/packaging machines, all of which have the potential to malfunction or overheat. How often is production equipment inspected and repaired? All electrical equipment should be bonded and grounded to prevent static electricity buildup and discharge. Conveyors are a source of static electricity; the insured should equip the conveyor system with static electricity collectors or conductive belts. Are cords and wires on all electrical equipment periodically inspected for fraying and cracking? Worn or frayed cords and wires could spark, and should be repaired or replaced promptly. Refrigeration equipment is thermostatically controlled, but a malfunction could cause it to overheat. Is all electrically powered equipment properly grounded, NRTL-listed, and in good repair? Does the insured have a routine maintenance and inspection plan in place for its electrical equipment? Determine the experience and qualifications of the person who maintains this equipment. Is all refrigeration equipment carefully monitored?

Ammonia, commonly used as a refrigerant in the meat packing industry, is combustible in high concentrations, which can reach within inches or feet of a broken pipe or leaking valve. In addition, ammonia systems contain a substantial quantity of flammable vaporized oil from the compressors. If the insured uses ammonia-based refrigerants, what type of ammonia detection system does it have in place? Generally, there are two types of ammonia detection systems that may be used, both of which involve a central control panel with sensors placed in strategic locations where leaks may be expected. A fixed system that is always on and constantly monitors the air in the facility should be connected in such a way as to trigger emergency ventilation and shut down electrical equipment when it detects a leak. Portable units, on the other hand, can be used to monitor the air quality during the course of responding to a leak so it can be determined when the situation is once again safe for normal operations.

As for curtailing ammonia leaks, it is essential that certain measures be in place to properly respond to them. Key personnel must be fully trained in how to respond to such situations, and have the right equipment on hand and ready for immediate use. According to a report from FM Global, the "first line of defense" for refrigerated warehouses is to ensure that any areas where ammonia leaks could occur are equipped with an appropriately designed ventilation system; that is, one that uses negative air pressure by having fans exhaust air from one end of the area while drawing fresh air through an inlet at the opposite end. Have workers been trained in the proper procedures for venting any areas in which an ammonia leak has occurred so that the concentration levels in the air can be quickly reduced? Secondly, if possible, the insured should apply a mixture of carbon dioxide (CO<sub>2</sub>) and water (in the form of a light spray or fog) to the affected area. With the presence of water vapor, ammonia reacts with the CO<sub>2</sub> to form a harmless white powder known as ammonium carbonate. Thirdly, emergency shut-off valves must be in place, and all workers should know where they are located and how to operate them since a large amount of ammonia could be released in a matter of minutes, possibly with devastating results. Are all ammonia pipes and control valves clearly labeled? It is highly recommended that the insured post schematics in prominent locations showing exactly where the ammonia shut-off valves are located throughout the facility. Are these valves easily accessible to all workers? The insured should be in compliance with NFPA 30, Flammable and Combustible Liquids Code. Has the local fire department been informed of the location and amounts of ammonia that are kept on the premises at any given time?

Despite the fact that it is being used to curb ammonia leaks, workers could also be injured by inhalation of CO<sub>2</sub> (from dry ice stored in vats used to freeze cuts of meat). Carbon dioxide is a colorless and odorless gas that can fill up a room and cause headaches, dizziness, drowsiness, nausea, and vomiting. Considered a toxic substance, in sufficient quantities, inhalation of CO<sub>2</sub> can be fatal. Are the insured's dry ice vats properly ventilated?

Proper training for forklift drivers is also essential since ammonia leaks commonly occur when drivers attempt to maneuver the vehicle after having neglected to lower their fork, resulting in the fork impacting with an overhead pipe, rupturing it, and causing an ammonia leak. How experienced are the insured's forklift operators? It is a positive underwriting sign if the insured conducts random drug and alcohol testing on its forklift operators. Having impact barriers in place around the ammonia piping can help to minimize this risk. Has the insured's piping system been designed to ensure enough clearance with raised forklifts?

Does the insured permit smoking on the premises? According to most local fire codes, smoking is strictly prohibited in meat production, storage, and warehouse areas. Does the insured have a strict no smoking policy? Are "No Smoking" signs posted throughout the insured's facility, especially in areas where meat products are produced and/or stored? If the insured has a designated smoking area, are self-closing, fire-resistant receptacles provided? Are they emptied regularly?

Some insureds may have a small kitchen or cafeteria on site, and food preparation equipment may present an additional ignition source. Is the kitchen area fully equipped or not? Determine the age, type, and condition of all kitchen equipment on the premises. Are all employees who are involved in food preparation properly trained in the use of any stoves, ovens, or grills? The use of electric appliances is preferred to gas appliances since they do not have open flames. If the insured does not have a fully equipped kitchen area, are microwaves, coffee makers, or other such devices present in the area? Who inspects and maintains the insured's kitchen area equipment? Is the insured in compliance with NFPA 70B, Recommended Practice for Electrical Equipment Maintenance? Refer to the Fire and E.C. section of the Restaurants classification for more information on kitchen exposures and loss control measures.

Insureds will have on-site laboratories to test meat in order to make sure that they meet both federal and state standards. These laboratories hold a wide variety of heating equipment, such as autoclaves and ovens. Some forms of laboratory equipment, particularly bunsen burners, produce an open flame. All of these devices are ignition sources that must be used with caution. It is not uncommon for laboratories to use these devices to start a small, controlled fire for an experiment. Has the insured implemented appropriate safeguards and supervision to keep such experimental fires from growing out of control? Are open flames monitored at all times? More commonly, laboratory heating instruments cause fires by accidentally coming into contact with a flammable or combustible material or by malfunctioning. Due to the potentially serious exposures posed by testing laboratories, strict fire safety regulations must be established and followed. For more information on exposures concerning testing laboratories, refer to the Fire and E.C. sections of the Laboratories — Commercial Testing and Laboratories — Research and Development classifications.

Welding, brazing, or cutting operations may be performed on the insured's production equipment. What measures has the insured taken to prevent flammable or combustible materials from coming into contact with running heating devices? Are the insured's heating devices and machinery routinely inspected and serviced? What are the training and experience of the insured's service personnel? With regard to training of personnel and welding or cutting operations, it is highly recommended that the insured establish specific work rules concerning fire protection. It is a negative underwriting sign to give employees only generalized instructions to work safety because it will not be adequate enough to stave off claims and noncompliance with both federal and government standard. For instance, after an employee died in a fire that occurred in its plant, an insured, the Packerland Packing Co of Texas, Inc. was cited for a failure to establish a fire protection program geared towards welding or cutting operations (OSHRD Docket No. 13315, Occupational Safety and Health Review Commission, November 17, 1997). Please refer to the Fire and E.C. section of the Welding, Brazing and Cutting classification for more information on related exposures.

What is the insured's fire load? Wooden or plastic pallets and other packaging materials (e.g., insulated padding, styrofoam, cardboard boxes, plastic, and others), trash, documents, office furniture, plastic and/or wooden pallets, cardboard cartons, wooden crates and barrels, bubble wrap, plastic pellets, straw, excelsior paper, tissue paper, string, rope, freezer pads, and quilted padding and more; cleaning chemicals, and oil and grease in the insured's vehicle maintenance area will all contribute to the fire load as will the meat itself, particularly dry meat goods. For insureds that store most of their documents and files off-site, this exposure will be reduced. The extent of the fire load will vary greatly depending on the size and scope of the insured's operation.

Good housekeeping can be an effective loss control measure for this hazard. Office areas should be kept clean and free of debris and clutter. Are all floors and floor coverings swept or vacuumed daily? All work surfaces should be kept neat and well organized in order to eliminate clutter. Boxes of trash and debris should not be temporarily stored near exit doors. Trash should be removed and disposed of daily. All electrical wiring should be properly insulated and run inside the walls. There should also be adequate aisle space between all storage units.

A fire is more likely to spread in other directions where merchandise is stacked closely together on racks/shelving units. In all storage and office areas, paper goods, and storage items should be well organized and stacked neatly on shelves that do not block any entrances, exits, hallways, or aisles. Are the insured's shelves constructed of wood or metal? Metal shelves are preferable since they will not burn as readily as wooden ones. It is a positive underwriting sign if shelves do not touch the ceiling or obstruct any fire detection or suppression devices. Are packaging materials neatly stored and at a safe distance from potential ignition sources?

Some of the meat products the insured stores on site are packaged in plastic. Other materials include polystyrene foam "peanuts," foamed-in-place plastic, or shrink wrap. Products encased completely in plastic packaging have been found to burn as if the product itself was plastic. Plastic materials and components will be flammable and can produce dense, toxic fumes when burned. This smoke could impede fire fighting efforts. In addition, plastic wrappings prevent prewetting of the product, and thus diminish fire control.

The insured may store small quantities of flammable chemicals in the testing laboratory. All flammable chemicals must be kept in fire-resistant metal canisters and stored in a fire-resistant storage area.

The production facility must be scrubbed down and sanitized each day after production runs. The insured will use sodium hydroxide to clean and sanitize equipment machinery. In an undiluted state, this and other chemicals will increase the Fire and E.C.: Property exposure, whereas, in a diluted state, they are not considered a fire hazard. What chemicals are used to clean and sanitize the equipment, and what are their flammability ratings?

What are the average and maximum values exposed to loss? Valuable items exposed to loss will include meat and finished meat products, various office equipment and furniture, computers, and valuable documents, such as contracts with livestock suppliers. Computers and valuable papers and records will both be covered under an Inland Marine policy. Materials-handling equipment, such as forklifts, will also be subject to loss, but would be covered by an Inland Marine policy as well.

The underwriter should note that, in the event of a fire, the insured's entire inventory will be condemned by the United States Department of Agriculture and the Food and Drug Administration (FDA). The value of the insured's inventory may be difficult to determine because it fluctuates from day to day, and the type of meat distributed by insureds will vary. What type of meat and meat products does the insured prepare?

What are the age, type, and condition of the insured's fire detection and suppression equipment? Smoke detectors should be located throughout the premises. Both the fire detection and suppression systems should be tested periodically, especially in areas where contracts

and documents are stored. Automatic sprinkler systems are recommended. Early Suppression Fast Response (ESFR) sprinklers are a viable loss control measure for any occupancy. What type of sprinkler system does the insured have? Annually tagged, Class ABC fire extinguishers should be located throughout the premises, and all employees should be properly trained in their use. Are smoke and heat sensors installed in the appropriate locations? Do sensor systems shut off air circulation blowers under smoke and fire conditions? Determine if the facility is connected to a central station alarm monitoring system.

Pre-fire planning is a critical loss control measure for this industry. Does the insured have a fire emergency plan in place? How often is this plan practiced and updated? How often are emergency drills conducted? Employees should be aware of all emergency procedures in the event of a fire. There should be regular evacuation drills, and since workers may not be in the same place each time a drill takes place, they should be trained to exit the facility through the closest doorway. How often is the insured's evacuation plan practiced and/or updated? Pre-assigned employees and/or emergency response teams should be equipped with radios or bullhorns for more effective communication. Is the warehouse equipped with a public address system so emergency instructions can be heard by everyone? Are emergency contact numbers displayed throughout the premises? If the local fire department participates in such drills, this is a positive underwriting sign.

Determine the location and response time of the local fire department.

It is also possible that a moral hazard may exist. Determine how long the insured has been in business. What is the level of competition in the area? The underwriter should examine the insured's financial situation for the last three to five years to determine any possible problems.

It should be realized that due to the nature of this business, damage resulting from vandalism is a possibility, and may be problematic for some insureds. Production facilities can be damaged by vandals; activists could release animals from their holding pens. What security measures has the insured taken? Does the insured have a perimeter fence?

### **Business Interruption**

Insureds will face difficulty in finding an alternate location and obtaining specialized equipment and machinery. Total losses are unlikely, but because of the United States Department of Agriculture's (USDA) construction and sanitation requirements, recovery after a total loss could take a year or longer. Even after a partial loss, the insured would have to close the plant so that the system could be repaired, sanitized, and inspected. Both a meat packing plant's location and reputation will be vital to its continued business. Basic processing machinery, materials, supplies, and equipment should be easy to locate. However, damage to the refrigeration equipment of the building structure could cause extensive downtime. Overall, the Business Interruption exposure for meat packing plants will be substantial.

Does the insured own or lease the premises? Although reputation is important, the majority of insureds will own their plants. Meat packing plants are centrally located to serve customers in a particular geographic location. Since location is essential, the warehouses will be strategically situated so they are close by or adjacent to various transportation terminals (e.g., railroads, piers, etc.). In the event of a loss, is the insured more likely to repair, rebuild, or relocate? The space requirements of such a facility would make rebuilding the best option for most insureds.

Determine how long it would take the insured to rebuild or repair the premises in the event of a loss. Rebuilding could take several months since large, industrial-type refrigeration equipment, conveyors, and processing equipment, as well as generators would have to be brought in and set up, and storage shelves may need to be rebuilt as well. A long-term shutdown could result in the loss of repeat clientele. If the insured is unable to meet its obligations to customers, they could

turn to other meat packing plants and customers might be difficult to win back later; the insured may want to consider Extended Period of Indemnity coverage.

What is the availability of replacement equipment and supplies? Materials-handling equipment, (e.g., forklifts), could be easily rented or purchased from local dealers. However, customized or specialized meat processing equipment and refrigeration equipment may take some time to replace since it may need to be custom-built to suit the insured's needs.

Could any part of the facility continue to operate, even on a limited basis, while one or more warehouses and storage areas are undergoing repairs? Some insureds may operate more than one meat packing plant, either on the premises or in a different part of the state or geographical region. Does the insured own a meat packing plant facility at another location? This could prove highly beneficial in the event of a loss since additional storage space may be readily available should the need arise.

If the insured accidentally introduced drug-tainted (e.g., antibiotic or growth hormones) livestock into its slaughtering plant, an interruption would be necessary. Currently, many customers are demanding that any meat they buy should have no additives because of the alleged adverse effects it may have on anyone who will finally eat it. If drug-tainted additives were found, the entire operation would have to be shut down, so that the equipment and machinery could be inspected and sanitized. The insured's ability to recover from such a shutdown would depend on the availability of other livestock. What is the availability of livestock in the insured's area?

How quickly could the insured replace stock? When writing coverage for Contingent Business Interruption, determine whether the insured has access to alternate sources of supply. Meat packing plants typically work with several livestock suppliers, so that a loss suffered by one supplier is unlikely to affect the insured's ability to continue operations. With how many suppliers does the insured do business with? Could the insured find an alternate supply of livestock? In addition, most meat packing plants sell their products to a number of customers and will not be dependent on a single large customer. However, where this is not the case, and the insured is dependent on a single account, such as a meat processor, then there may be an exposure related to a contingent business interruption at a recipient location. As a result, a contingency plan should be in place. Determine how many customers the insured has. For insureds with a few large accounts, losing one account could be financially devastating and could put the insured out of business; Contingent Business Interruption coverage may be warranted for the loss of a large client.

Meat packing plants typically have contracts with livestock farmers for livestock. The underwriter should determine the insured's obligations under the contract. The insured may be obligated to purchase livestock from the farmer on a regular basis; if so, the insured may want to consider defining the cost of this livestock as a continuing expense.

Could the insured increase production at a second site to process and package his product or use a competitor's facilities? Most meat packing plants operate at a capacity based on current demand. Reciprocal agreements are a growing trend in the industry, as meat packers seek to reduce their time element exposures. Have any arrangements been made with a competing facility to temporarily sublet additional refrigerated storage space in the event that one of the insured's warehouses must undergo lengthy repairs?

The failure of the insured's refrigeration system could lead to a lengthy business interruption, because the USDA would close down the facility until the refrigeration system could be repaired and the facility reinspected. In addition, failure of the system could also cause the USDA to condemn all of the meat in the facility. Therefore, it is desirable for the insured to have an alternate emergency power source to run the production and refrigeration equipment in the event that a loss causes a power failure. Power outages could lead to a short-term business interruption, but the resulting losses could be severe. Does

the insured have a backup power supply (e.g., on-site generators or arrangements with an alternate power company) that it can rely on in the event of a power outage? Determine who is responsible for testing, servicing, and maintaining these backup generators. What is that person's level of training and experience? How familiar is he or she with the insured's power-generating equipment? Refer to the Boiler and Machinery section of this classification for more information.

How reliant is the insured on its refrigerated and/or freezer trucks? The insured will have a significant exposure related to its fleet of refrigerated trucks. If the insured has its own delivery trucks and tractor-trailers, it will likely be more reliant on them because it will distribute meat products to customers. How quickly could the insured replace such trucks? The insured would likely be able to rent or lease a refrigerated truck the same day and be able to continue deliveries. As the insured is highly dependent on its fleet of vehicles to make deliveries, it may wish to consider a Loss of Use Endorsement. Where are vehicles stored when not in use? A garage fire could destroy the entire fleet and cause a serious Business Interruption loss. Refer to the Automobile Liability and Automobile Physical Damage sections for more information on the loss of use of the insured's vehicles.

The insured will have an exposure related to loss or damage to automated production machinery, such as rail-type conveyors, stunning machines, dehairers, polishers, cutters, and packaging equipment. Does the insured have more than one production line? Typically, the insured will have only a single production line, and consequently, if such machinery broke down, bottlenecks could develop. Does the insured maintain spare parts or spare equipment for emergencies? A Loss of Use Endorsement to the Boiler and Machinery policy may be advisable.

Moreover, it should be noted that the extent of the equipment and machinery exposure will depend on the level of automation and the type and the cost of the equipment the insured owns. Computer automation ranges from control of a single machine to the entire production system. To what extent is the insured's system automated? Computer automated systems should be designed so that they can be taken off line and run manually; such a system design will reduce the impact of system failures that could otherwise halt the insured's production. Can the insured's system be run manually?

The equipment used by a meat packing plant is typically expensive, but should not be difficult to obtain. How long would it take to obtain replacement equipment? Does the insured have any custom-made equipment? If so, it may be beneficial to maintain a stock of spare parts to facilitate repairing rather than rebuilding such equipment. Does the insured maintain an adequate supply of spare parts?

Does the insured experience a peak season? Determine whether sales of particular meat products are greater at holiday periods. A serious interruption in production prior to a holiday could cause a proportionally greater loss in earnings than an interruption at some other time.

### **Inland Marine**

Meat packing plants will have a substantial Inland Marine exposure. This is specific to transit coverage, due to the attractive nature of meat goods to thieves. Also, in any accident, some product may be deemed spoiled. Both of these are major concerns. Computer hardware and software applications will be part of every insured's operations, and so, an Electronic Data Processing (EDP) policy is highly recommended. Valuable Papers and Records will be necessary to protect such important documents as testing records, customer and inventory files, invoices, and contracts with meat products processing companies, livestock suppliers, and distributors. Insureds that own forklifts will need a Mobile Equipment floater. An Outdoor Sign Floater may also be necessary.

If the insured offers delivery services to customers, or if the insured must have meat transported from its meat packing plant to a customer, a Goods in Transit coverage is recommended. What are the average and maximum values of shipments? Values depend on what is being

shipped. In this case, meat product cargos are both valuable and perishable, and must be refrigerated at all times during transit. Failure of refrigeration systems in semitrailers and trucks could result in spoilage of the entire shipment. The underwriter should note that in the event of an accident or such spoilage, the shipment may be destroyed or condemned by the USDA and the FDA. What is the insured's loss history? Meat packing plants that process less than 10,000 live animals daily will have a much lower exposure than the insureds that process more than 10,000 live animals daily, because they will have less finished meat products to transport. How many live animals does the insured process daily? How are loads secured in transit? Most insureds seal the truck with a band that has a serial number stamped on it. Only the recipient of the goods may unseal or break the seal. The unbroken seal protects the inventory and keeps it intact until it is opened. Determine the frequency of the insured's shipments. Depending on their operations, most insureds will make daily deliveries. How are such items secured on vehicles to prevent possible damage during transport? Most of the meat is transported in refrigerated trucks, or packaged in ice or vacuum-sealed boxes or plastic bags. Larger and extra-large pieces of meat are transported with hooks; the meat is hung from hooks that are attached to the vehicle (that is specially developed for that purpose). Vehicles should never be left unlocked or unattended when carrying meat since it can be attractive to thieves. Are vehicles equipped with alarms? Due to the value of meat shipments, hijacking may also be an exposure. Damage from collision or overturn must also be considered. Examine all sales contracts to determine when ownership and exposure to loss shifts from seller to buyer. Does the insured use common or contract carriers or owned vehicles for transporting items? Refer to the Automobile Liability section of the Trucking — Long Haul classification for more information.

Meat packing plants use computers for tracking inventory, as well as for taking customer orders. Management uses office computers to create employee schedules and tend to accounting chores. Not only that, but computers can monitor and control the temperature of refrigerated areas where the meat is stored. Since computers and computerized equipment are essential to this business, an EDP policy is strongly recommended. What are the number, age, type, and condition of the insured's computers and software? It is a positive underwriting sign if the insured has identification numbers etched on all of its computers. Are backup copies of all vital software stored off premises in an NRTL-listed, fire-resistant safe?

The insured may also wish to consider Valuable Papers and Records coverage for important documents, such as testing records, customer and supplier agreements/contracts, inventory records, and employee records. Protecting testing records is very important in reducing this exposure; United States Department of Agriculture (USDA) and Food and Drug Administration (FDA) regulations stipulate that meat packing plants should maintain accurate records on all production runs including supplier information, dates, and any tests performed. All important documentation should be kept in a fire-resistant, NRTL-listed safe. Copies of these documents should be kept in a similar type of safe off premises. What is the insured's practice?

A Mobile Equipment Floater will be needed to protect the insured's forklifts and other materials-handling equipment, such as pallet inverters. Forklifts will be used to move pallets of meat products from the production room to the cold storage warehouse, and also from the cold storage warehouse to the trucks. What are the age, type, and condition of such equipment? Have all forklifts and other materials-handling equipment been permanently etched with identification numbers? What security measures does the insured employ to protect its mobile equipment? Determine where the insured's mobile equipment is stored when not in use. Is it kept in a fenced-in lot, a gated section of the facility, or a locked garage with access restricted to designated employees?

An Outdoor Sign Floater will most likely be necessary since nearly all meat packing plants will have several outdoor signs. Such signs

will be subject to damage from weather or vandalism. What are the number, type, and condition of the insured's sign(s)? Outdoor signs should be securely fastened, and rooftop signs should be anchored firmly. Outdoor signs less than 12 feet above the sidewalk are ordinarily not acceptable.

### **Boiler and Machinery**

Meat packing plants will have a severe Boiler and Machinery exposure because of extensive refrigeration systems and steam pressure vessels used for scalding the animals. Since insureds deal primarily with storing and handling meat products, they are subject to strict regulation by the United States Department of Agriculture (USDA) and the federal Food and Drug Administration (FDA). They must submit at any time to both periodic announced and unannounced inspections from these agencies, as well as inspections on the part of OSHA and Environmental Protection Agency (EPA) officials. Insureds are also subject to inspection by, and must adhere to the guidelines established by, any state agencies that oversee the handling, storage, and transportation of meat products within their state(s) of operation. Maintenance services must be performed and the necessary repairs made to refrigeration equipment as stipulated in each inspection report.

Meat packing plants will have extensive refrigeration systems to keep the production area cold, to blast freeze the slaughtered carcasses, and to refrigerate the finished product in the warehouse. What are the condition and extent of the insured's refrigeration system?

Who is responsible for inspecting and maintaining the insured's refrigeration and blast freezing equipment? Regular inspection and maintenance of all refrigerants and freezing systems, including those used in cold storage rooms and nonprocess-related areas, are essential to control this exposure. The underwriter should determine the frequency with which the insured inspects its refrigeration systems, including condensers, compressors, evaporators, valves, and connectors. Although many insureds will have their own system repair, maintenance, and inspection team on staff, others will contract out these services. What are the qualifications, experience, and loss history of the insured's refrigeration and inspection service team?

A properly licensed engineer must be present to monitor the ammonia system at all times. Pipes in ammonia refrigeration systems need to be flushed periodically to prevent buildup of calcium chloride and other scale. Frequent inspections and nondestructive testing (manual, x-ray, and ultrasonic) and proper preventive maintenance of such systems are necessary. What is the insured's maintenance schedule?

Does the insured have its own backup generators on the premises to provide a continuous power source for refrigeration and freezing equipment in the event of a power failure? If so, it is essential that they be run and tested on a scheduled basis in order to ensure that they are functioning properly should they be needed. How frequently are the backup generators tested? It is a positive underwriting sign if the insured contracts out all maintenance and repair services for such equipment. What are the reputation and qualifications of the person(s) who are responsible for inspecting and servicing the insured's backup generators?

Pressure vessels constitute the second part of the Boiler and Machinery exposure. Freshly slaughtered steer and hog carcasses will be immersed in steam-jacketed scald tanks. Does the insured use fired or unfired pressure vessels? Unfired pressure vessels are generally cleaner to operate, but fire vessels are still commonly used. Oil or gas is typically used to fire the boilers. What fuel is used to fire the insured's boilers? Determine the age, type, number, and condition of the insured's boilers and steam-jacketed vats. Are the steam jackets air tight? Cracks or openings in those vessels can introduce impurities into the steam that can be recondensed and sent back through the system.

What are the age, number, and condition of the insured's boilers? Most insureds will have one or more indirect-fired boilers that are fueled by oil or gas. The boilers will typically be in constant operation

as they will also be used to heat the premises in the winter as well as for production. Determine the frequency with which boilers are inspected. Regular inspection and maintenance of the equipment, including parts and internal ("steam side") surfaces, along with proper training of the operators are essential loss control measures. How frequently is the steam system, including all interior boiler surfaces, steam jackets and shafts, condensate return units, valves and connections, inspected? How does the insured monitor equipment for leaks, steam pressure, and temperature?

Does the steam system work continually? If so, federal laws require that the insured make provisions for monitoring the system during weekends and holidays. Most plants shut down the system at night for cleaning during the night shift. What safety procedures do boiler operators follow when firing up the boilers each morning?

Are boiler operators properly licensed? Assess the training and experience of the boiler operators. Are they in compliance with federal and state training and certification requirements for plant operators and high-pressure boiler operators? In most states, high-pressure boiler operators must pass examinations and be licensed by the state. Many manufacturers offer operator training programs and manuals with specific recommendations and safety procedures. Does the insured take advantage of this type of information?

Are operators thoroughly familiar with the steps involved in an emergency shutdown? A full set of these instructions should be posted by each boiler, but operators should be able to react automatically to implement the procedure. Are shutdown procedures designed to prevent the system from crashing? Do operators work in pairs so that the boiler controls, including water level monitors, are never left unattended? Visual checks of all controls should be made hourly.

What are the training, qualifications, and experience of the insured's boiler inspectors? How does the insured monitor its equipment for leaks, steam pressure, and temperature? Ascertain how often the insured has interior surfaces cleaned to prevent the buildup of scale that can lead to cracking, rupturing, or other breakdowns. Water quality will determine the frequency of such a cleaning. How often does the insured test the water quality? Determine if the insured's boiler operators meet state licensing requirements.

What safety devices does the insured have in place for its boilers and machinery? Safety valves and pressure relief devices must be in place and operational. All boilers should be equipped with safety devices and features that will allow operators to shut down the system before it reaches a critical stage. The use of safety valves and pressure relief valves is required by law in most states. Does the insured's boiler use an automatic water feeder? Many boilers use automatic water feeders. However, the use of automatic water feeders, which maintain proper water levels, is not recommended, as it may inhibit detection of other problems of which the excessive use of makeup water is a symptom of a leak or a rupture. Low-water fuel cutoff valves are required on all automatically fired boilers, and low water alarms are required for all manually fired boilers. These features should be drain-tested daily and blown down frequently to remove scale. How often are they inspected? Does the insured use an alarm system to indicate when water levels are low? What safety features does the insured have in place? How carefully, and by whom, is their operating condition monitored?

Since boilers are an important part of the meat production process, Business Interruption and Expediting Expense coverages, and a Loss of Use Endorsement may be necessary. Refer to the Business Interruption section of this classification for more information.

## Underwriter's Checklist

What animals does the insured slaughter — cattle, hogs, calves, goats, or sheep and lambs? What is the insured's annual production capacity?

Is the insured privately owned or part of a meat processing conglomerate?

Does the insured sell quarters or sides of meat, or does the insured break carcasses down into wholesale cuts?

Does the plant conduct any meat processing on the premises?

Is livestock picked up, or is it delivered by suppliers? Does the insured ship out finished products in owned vehicles or by public carriers?

Is the insured's plant inspected under federal or state regulations?

Does the insured employ a sanitary supervisor whose job it is to oversee proper sanitation practices for the entire facility?

Is the production facility scrubbed down and sanitized after each production run? What chemical sanitizers are used by the insured?

What quality control specifications exist for each product?

Are records that can trace all ingredients from receiving to shipping kept by the insured?

Does the plant have a quality control program, including laboratory testing and sanitation? Are products tested daily?

What preparation and sanitation procedures are followed by the insured to prevent food-borne illnesses?

How are personal hygiene requirements enforced?

Does the insured comply with all aspects of the federal Meat Inspection Act? Has the insured ever been shut down by the Food Safety Inspection Service (FSIS)?

How does the insured train its workers in proper cattle stunning procedures? Does it use procedures outlined in the American Meat Institute's "Recommended Animal Handling Guidelines for Meat Packers"? Are cattle treated in a humane manner according to the American Meat Institute's "Good Management Practices for Animal Handling and Stunning?"

How many carcasses does the insured process on its production line? How fast do the carcasses travel down the line?

Are all of the insured's animals inspected by United States Department of Agriculture (USDA) veterinarians before slaughter? Are all carcasses, including heads and viscera, inspected by USDA inspectors during and after slaughter?

To what extent is the slaughtering process automated?

What is the means by which the insured tracks which meat products have been recalled or identified as hazardous by the USDA? How often does the insured check the USDA website for list updates?

When goods are being picked up from the plant, what methods are used by workers to verify that the party who is making the pickup is authorized to do so?

What methods does the insured employ to inventory and track the goods that are stored in its warehouse?

Does the insured have an aggressive employee duty rotation program?

Is the insured in compliance with all local, state, and federal regulations regarding the quality standards of effluent? Has the insured ever been cited by the Environmental Protection Agency (EPA) for violation of effluent standards?

Does the insured have a comprehensive fire prevention program that includes weekly inspections of fire detection and suppression systems as well as of meat production equipment?

What refrigerants does the insured use in its refrigeration system? What precautions has the insured taken to ensure the proper functioning of the refrigeration system? Does the insured have any backup generators to provide a continuous power source for refrigeration and freezing equipment in the event of a power failure? If so, how often are they tested for proper functioning?

What are the qualifications of the individuals who service, repair, and inspect the insured's refrigeration and blast freezing equipment?

Are workers in refrigerated warehouses and storage areas issued protective clothing?