Better Safe, Than Sorry

Assuring the consumer of a safe beef product will be the toughest challenge of the '90s.

by Lisa Hawkins

Remember the '50s? Poodle skirts, bobby socks, saddle shoes and duck tails were the latest fads. And the beef industry was trying to reduce the size of the meat cuts, while maximizing marbling.

Who could forget the '60s? Society was faced with miniskirts, hippies and anti-war protests. And the beef industry adopted the carcass yield grades as well as boxed beef.

How about the '70s? It was the era of bell bottoms and disco dancing. And the beef industry was rapidly increasing frame size and product leanness.

Then came the '80s. The decade from which the preppies and yuppies emerged. And the beef industry shifted from a pro ducer-driven to a consumer-driven industry. Beef's negative publicity in the early 1980s brought about the $1 beef checkoff program.

What's ahead in the '90s? Perhaps, someday, we will look back on this decade and think of the environmental movement. However, a major issue concerning the beef industry is food safety. The beef industry will have to produce cattle which meet the consumer's demands.

Consumers are asking for a high-quality, low-calorie beef product that is free from residues. In order to assure the consumers that the industry is meeting these demands, the National Cattlemen's Association (NCA) began the Beef Safety Assurance Program.

This voluntary program recommends guidelines for cattle handling, drug use, feed purchasing and other management procedures. By following these guidelines, participating cattlemen are assured that their beef is safe and without harmful drug and pesticide residues.

"The program puts into writing what the feedyards are doing already," says Burt Rutherford, communications director, Texas Cattle Feeders Association.

In 1986 the Texas Cattle Feeders' Association started a state beef safety assurance program, from which the NCA drafted their program.

The Texas program is aimed primarily at feedyards. Approximately 106 feedyards are enrolled in the program, which is about 75 percent of the fed cattle in the membership area.

Correct implanting is important to prevent residues in beef carcasses.

Rutherford says that although Nebraska and Colorado have implemented similar programs, many states are waiting for NCA's lead.

"The role of NCA is to provide assistance for states developing programs and to maintain continuity within the programs," says Gary Cowman, NCA's associate director of science and technology.

Cowman says there are currently six to seven states developing quality assurance programs. The program stemmed from industry concern over beef's perceived safety in the consumer's eye.

Within the first few days, Colorado had 80 of their 295 feedlots enrolled in the program. The Colorado program is based on the Texas and Nebraska formats.

"We have a compliance evaluation checklist which we require for a safe beef product," says Dean Settje, director of animal health for the Colorado Cattle Feeder's Association. The process includes visiting the feedyards on an individual basis.

The program also involves comprehensive inspection and evaluation of the feedyard, Settje says. The producer receives a written and oral report after each visit.

University faculty are involved with the training of the personnel conducting on-site inspections.

"The program is a cooperative effort among the state cattlemen's associations, Extension services, veterinarians and the feed industry," says Cowman.

Settje says producers sign up for the inspections because they want one-to-one feedback on their operation.

Another incentive of the program is packer involvement.

"The cattle feeders involved want to make it worthwhile for the packers," says Settje. "Packers may not pay a premium for safety assured beef, but producers won't be discounted either."

Cowman agrees and takes the theory one step further. He believes the time may come when packers will only buy cattle from safety assurance programs.

"When cattle nmnbers get back in line, packers will be more apt to bid on cattle in the safety assurance program," says Harlan Ritchie, Michigan State University animal scientist.

Ritchie says there has been an in-

crease in the number of packers and retailers finding carcasses and cuts of meat with scar tissue from improper injections.

"Those areas have to be trimmed, resulting in economic loss for the packing and retailing industries," says Ritchie.

Addressing this issue is the Beef Safety Assurance Program's technician training program. The training program is still in development. However, once implemented, it will consist of three to four days of training focused on animal health and feed production. The technicians will be trained primarily by Extension personnel, veterinarians and meat scientists.

The trained technicians will show their co-workers and staff the proper methods of injections in order to avoid carcass bruises and lesions. They also will educate people on ways to avoid drug residues and feed contaminates.

"Feed contaminates are the greatest concern," says Wes Bonner, veterinarian and general manager of Veribest Cattle Feeders. He says chemical residues concentrate in animal byproducts such as fats and oils.

In respect to drug residues, Ritchie says, the purebred industry is at the highest risk by sending cull cows to market that haven't gone through the proper withdrawal period. Ritchie emphasizes the importance of accurate recordkeeping.

Safety assurance programs will educate producers on storage, use and how to read labels of animal drug products.

"As we shorten the time cattle are in feedlots, then the drugs used at the cow-calf level become more important," he says. "If used improperly, the drugs could carry over the feeding period."

Ritchie uses the example of calves that are in the feedlot 150 days. He says with calves in the feedlot for that short of a period, it's possible that violative levels of drug residues could appear.

While the primary focus of the NCA Safety Assurance Program is at the feedlot level, the program is part of the industry network.

"Every level of production will be responsible for animal product use," says Cowman.

Quality assurance is part of a chain which begins with the cow-calf producer and extends all the way to the consumer. If any segment of the chain is supplied with an inferior product, it reflects back on the previous link.

"The Safety Assurance Program provides a system of checks and balances within the cattle industry," says Rutherford.

Who knows what the '90s will bring? With the Beef Safety Assurance Program, perhaps consumers will look back and say that was when the beef industry assured us of a safe, high-quality product that we can enjoy.

Food Cost-Safety Balance

As inspection procedures grow more precise, the 'acceptable' risk begins to be an economic issue.

Consumers must be willing to accept minute risks in order to obtain an abundant supply of desired foods at affordable prices, says economist Tanya Roberts of USDA's Economic Research Service (ERS).

"A totally risk-free food supply is technically infeasible and economically undesirable," she says.

Even so, the growing scientific sophistication in detecting hazardous chemicals or microorganisms in food is creating new procedures for controlling these risks.

In fact, new tests reveal that microorganisms are a more common cause of foodborne disease than most Americans suspect.

"Rapid tests for bacteria may improve monitoring of the critical control points in food production and distribution," says Roberts, "and improve the safety of the food supply." New detection procedures for chemicals show levels of residues that were formerly undetectable, sometimes triggering legal action.

Many food safety policies were adopted before these testing improvements and the challenge now is to incorporate this new knowledge into workable food safety policies that take into account the economic costs and benefits of such regulation.

"Acquiring and understanding food safety information is difficult work for a highly trained professional, let alone an individual consumer," says Roberts. "Microorganisms are invisible to the naked eye, rapid tests may not be available, and most microorganisms found in food are not pathogenic (capable of causing disease). Even where tests are available, tests may not be able to differentiate pathogenic strains from harmless strains of the same microorganism."

In spite of these problems, health professionals, the food industry and the public are pressing for more to be done about a problem that can be measured in both human and economic terms.

Researchers estimate that from 6.5 million to 33 million Americans (three to 14 percent of the population) become ill each year from microorganisms in their food. An estimated 9,000 of these illnesses result in death — or four out of 100,000 people.

In contrast, the Environmental Protection Agency's worst-case estimate is that pesticides in food potentially cause about 6,000 cases of cancer each year, or about two in every 100,000 people.

Most toxicologists and food scientists believe that microbial pathogens are a more serious hazard than chemical residues in the food supply.

"The conventional wisdom used to be that foodborne disease caused by microorganisms would only cause mild, brief illness, primarily diarrhea and vomiting for one or two days," says Roberts. "But the severity with which people may be stricken can vary enormously."

How hard an individual may be hit depends on a wide range of things: the virulence of the organism, the number of organisms eaten, composition of the foods involved and the "susceptibility" of the individual — which varies with age, the presence of other diseases, pregnancy, medications, nutrition and immune system status.

Chronic diseases such as central nervous system disorders, heart complications, blood poisoning or kidney disease can occasionally result from common bacterial and parasitic diseases. An estimated two to three percent of foodborne diseases have some kind of short-term or

long-term recurring aftereffects. While these are low-probability events, the lifelong implications are serious.

The economic costs of foodborne diseases are in the billions of dollars. In fact, for just two diseases — salmonellosis and campylobacteriosis — the medical costs and time lost from work total about $2 billion a year for Americans. Both these ailments are common intestinal diseases with flu-like symptoms.

A third disease, congenital toxoplasmosis, causes mental retardation in fetuses and is estimated to have costs exceeding $215 to $323 million annually,

"These partial estimates omit many microbial foodborne diseases," says Roberts. "Overall, medical costs and productivity losses are several billion dollars a year."

Other Hazards

Pesticide residues and animal drug residues are two other potential hazards in food, both of which have gained greater visibility in recent years, and months.

Although pesticides are required to pass approval by the federal Environmental Protection Agency (EPA) before entering the market, approval was granted in the past to many widely used pesticides when less sophisticated tests meant less was known about their chronic toxicity— like their potential to cause cancer.

"Beginning in 1978, new regulations required more complete information on the chronic toxicity of pesticides prior to approval for use in agriculture," says Professor Eileen Van Ravenswaay of Michigan State University, who worked with ERS economist Roberts in researching food safety costs. "Consequently, pesticides introduced in the last decade have faced tougher scrutiny"

Tougher scrutiny has not always resulted in a safer food supply, according to a report issued in 1987 by a National Academy of Sciences (NAS) committee on which Van Ravenswaay served.

"This paradox arises because although some new pesticides are significantly less carcinogenic and pose substantially fewer health risks than some pesticides already on the market," she says. "EPA has not always been able to register them under current law. Thus, older, riskier pesticides continue to be used in some cases even though better ones could be available."

EPA is required to re-register old pesticides as new data becomes available about their health effects. At the time of the NAS report, EPA had data for 74 of the 289 pesticides currently registered.

Of the 74, EPA has classified 53 as oncogenic (capable of causing tumors). These 53 compounds account for 90 percent of all fungicide use, 38 percent of all herbicide use, and 40 percent of all insecticide use. The situation is particularly serious for fungicides because few good substitutes are likely to be developed, according to NAS.

The so-called Delaney Clause in federal regulation restricts the use of chemicals found to be cancer causing and may therefore most affect fruits and vegetables because fungicides are widely used on these crops.

"Like pesticides, many approved animal drugs were registered for use on the basis of safety evaluations that are now considered obsolete," says Van Ravenswaay. "For example, the safety of sulfa drugs — which are widely used in swine and veal production — is being questioned. Even though sulfa drugs have long been recognized as causing allergic reactions in some sensitive individuals, recent studies by the Food and Drug Administration's National Center for Toxicological Research indicates that sulfamethazine may be a potential carcinogen. Based on preliminary risk assessments, FDA has warned that it may lower the tolerance of sulfamethazine in swine or ban its use."

Adequate detection methods do not exist for approximately 70 percent of the animal drug residues in meat, milk and eggs that USDA is responsible for monitoring, according to a congressional report. Currently, tests are being developed by both public and private researchers to detect the presence of animal drugs in food.

And USDA's Food Safety and Inspection Service (FSIS) has made considerable progress in developing tests for detecting antibiotic and sulfa drug residues.

But detection is only a first step in managing food hazards. Regulation and enforcement must also be considered.

On the enforcement side, FSIS cannot simply fine violators. The agency can condemn and seize carcasses, however. FSIS can also initiate criminal procedures, but these actions based on detecting residues may be hampered by the complexity and slowness of tests requiring tissue samples. By the time an impermissible level of drug residue is found, the carcass may have already been consumed.

"New scientific developments are profoundly altering knowledge about risks in the food supply and revolutionizing procedures for controlling those risks," say Roberts and Van Ravenswaay.

In some cases, these new technologies

are beginning to be used by industry and federal regulators both here and abroad.

The Economic Factors

The extent to which they become common practice, however, may rest on economic grounds.

That is because the use of some substances — and the effort to eliminate others — is usually influenced by costs and benefits.

"Pesticides and animal drug residues may enter the food chain because they lower the costs of producing food," says Van Ravenswaay. "Other potentially hazardous substances, such as pathogenic microorganisms and environmental contaminants, enter the food chain because avoiding their presence in food increases the costs of producing that food. Still others impart desirable qualities to food, such as food additives that enhance taste, texture, visual appeal and shelflife."

As a result, sellers have little incentive to provide information to buyers on the potential adverse effects of substances in their products.

"Sellers do not want to alert consumers to risks because sales are likely to fall, and consumers may be reluctant to pay a higher price for 'safer' food if they cannot easily verify safety claims," says Van Ravenswaay. "If sellers cannot recoup the extra costs of developing and producing a safer product, they will not develop the product."

More government regulation and broader inspection programs would cost more money at a time when budget pressures are prompting federal efforts to cut costs.

The possibility of more extensive regulation — and stricter standards for "tolerances" of permissible amounts of suspect substances — thus presents an economic dilemma.

"Economic theory tells us that too much regulation, or the wrong sort of regulation, can be as costly to society as too little regulation," says Roberts. "For food safety, the key to optimal regulation is balancing human health benefits with costs of regulation."

Editor's Note: This article is based primarily on information provided by economist Tanya Roberts of the Commodity Economics Division, Economic Research Service, and Professor Eileen Van Ravenswaay of the Department of Agricultural Economics, Michigan State University for *Farmline* magazine.