

DEALING WITH FOOD SAFETY ISSUES

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INTRODUCTION

In recent years, food safety issues have received increased attention from consumers, industry groups and governmental agencies in the U.S. and throughout the world. Consumer assurance of the safety of pork is vital to ensure continued demand in pork producing countries. Countries that export pork must satisfactorily meet the expectations of the importing country's regulatory agency as well as their consumers.

INCREASED INTEREST IN FOOD SAFETY

There has been increased interest in food safety by the public globally for several reasons. Several prominent food safety situations throughout the world have led to this increased interest. They include:

- Bovine Spongiform Encephalopathy (BSE or Mad Cow Disease)
- *E. coli* O157:H7
- Dioxin contamination of animal feeds
- *Listeria* in ready to eat foods
- *Salmonella* in eggs
- *Salmonella* DT104

In addition, issues such as biotechnology, antimicrobial resistance, and irradiation have received heightened attention by the media worldwide.

FACTORS AFFECTING FOOD SAFETY

There are many factors that affect food safety and countries' responses. They include:

- Increased international movement of food products
- Cultural differences with regard to sanitation and food preparation
- Increased numbers of susceptible people to foodborne illness (young, aged, immune suppressed)
- Changes in lifestyle (food on the run)
- Lack of basic food preparation skills
- Emerging pathogens
- Consolidation of the food industry
- Increased number and visibility of consumer organizations
- Enhanced media coverage

These factors must be addressed as countries develop food safety regulations, industry programs, and consumer education.

NATIONAL PORK PRODUCERS COUNCIL'S (NPPC) FOOD SAFETY CHAIN APPROACH

While NPPC is a producer organization, we recognize that food safety is a continuum. Therefore, effectively addressing food safety requires a partnership among all of the participants in the food chain. To develop this partnership, NPPC established a Pork Safety Committee in 1994. All segments of the chain are represented on this Committee. The Committee's mission is to assure the safety of U.S. pork through coordinated science-based efforts throughout the pork chain. Its efforts are directed to decreasing the potential for foodborne illness associated with pork products and to improving product image with regard to safety among consumers worldwide.

NPPC has allocated significant resources to each segment of the chain in the areas of research, technology transfer, education, and policy development to develop a Pork Industry Food Safety System. The target audiences for program activities are producers, packers/processors, retail/foodservice and consumers.

HAZARD ANALYSIS AND CRITICAL CONTROL POINT (HACCP) AND PERFORMANCE STANDARDS

The U.S. Department of Agriculture's Food Safety and Inspection Service (FSIS) has established requirements for all meat and poultry plants to reduce the risk of foodborne illness associated with the consumption of meat and poultry products and to modernize the meat and poultry inspection system. Plants are required to develop HACCP plans. HACCP is part of a food safety management system where plants evaluate each step in their process to look for areas where potential food safety problems or hazards could exist. Based on these identified hazards and their potential to be controlled, plants identify Critical Control Points in the process.

HACCP implementation is based on seven principles. They are:

1. Conduct a hazard analysis.
2. Identify the Critical Control Points (CCPs) in the process.
3. Establish critical limits for preventive measures associated with each identified CCP.
4. Establish CCP monitoring requirements. Establish procedures for using the results of monitoring to adjust the process and maintain control.
5. Establish corrective actions to be taken when monitoring indicates that there is a deviation from an established critical limit.
6. Establish effective record-keeping procedures that document the HACCP system.
7. Establish procedures for verification that the HACCP system is working correctly.

Under HACCP, packers focus on three specific types of hazards: physical such as broken needles, chemical (antimicrobial and pesticides), and microbial. One of the areas for control that packer HACCP plans address is incoming animals. This has increased packer interest in on-farm production practices.

With regard to microbial hazards, packers are required to meet performance standards for generic *E. coli* and *Salmonella*. Packers are first taking steps within their plants to meet the microbial standards but there is increased interest in what can be done at the farm to reduce levels of potentially harmful bacteria.

PRODUCERS - PORK QUALITY ASSURANCE™ (PQA) PROGRAM

The most significant way that U.S. pork producers address their food safety responsibilities at the present time is through the PQA Program. Pork producers developed and implemented this voluntary education program beginning in 1989 to prevent antimicrobial residues and enhance herd health practices. Drug residue prevention is clearly a producer responsibility.

There are three levels to the program. PQA Level III™ is the highest level of the PQA program. The producer can only complete it after discussions with a third party verifier. Approved verifiers are veterinarians, agricultural education instructors, and U.S. Department of Agriculture (USDA) Extension personnel. The 1997 release of the program was designed to more clearly emphasise producers' responsibilities with regard to antimicrobial residue avoidance and to blend with packer Hazard Analysis and Critical Control Point (HACCP) plans. Considerable discussion took place with the Food Safety and Inspection Service (FSIS), Food and Drug Administration (FDA), and packers to ensure this revision meets packer and government expectations of producer responsibilities. Briefly, it consists of Ten Good Production Practices (GPPs) with the first six related to antimicrobial residue avoidance (food safety) and the last four addressing management to help minimise the use of animal health products (efficient, quality production).

Many packers are now requiring all of the producers that supply their plant to have completed the PQA Program. A new version of the PQA Program will be released in the summer of 2001. Some of the topics to be addressed with this revision are antimicrobial resistance, foreign animal disease avoidance, cleaning and disinfection, rodent control, avoidance of broken needles, *Trichinae* certification, *Toxoplasma* control, and pork quality. In addition, NPPC is focusing on enhancing the delivery of the education in a more uniform manner. Web-based applications are also being explored.

PRODUCERS - PHYSICAL HAZARD AVOIDANCE

NPPC has been conducting research to evaluate the breaking strength of injection needles and the detectability of currently available needles and prototype needles under development. NPPC organized a workshop in March 2000 with representation by producers, packers, needle manufacturers, and manufacturers of needle detection equipment. Each group is evaluating

ways to enhance their efforts to reduce the potential for this type of physical hazard in pork. This year NPPC implemented a new awareness campaign to reduce the possibility of physical hazards in pork products. Developed with the thought that no consumer should find a broken needle in his pork dinner, the “One Is Too Many”sm campaign provides information to producers, veterinarians and packers on how they can work together to eliminate this situation.

PRODUCERS - ANTIMICROBIAL USAGE

Recently, there has been heightened interest by the public health community, media, consumers, and industry in the potential for antimicrobial usage in animals to result in the transfer of resistant bacteria to humans. NPPC is committed to assessing the science of this issue. In 1997, in cooperation with the American Association of Swine Practitioners, a Pharmaceutical Issues Task Force was formed. This Task Force is reviewing the current science with regard to antimicrobial usage in animal agriculture and will be recommending a sustainable position for the pork industry. Research projects and educational programs for producers and veterinarians are currently underway.

In addition another advisory group is being formed to look at non-antimicrobial production enhancers. This group will look at the science and performance of products such as probiotics, competitive exclusion agents, enzymes, etc. A Manure Safety Working Group is helping the industry better understand what happens to bacteria and other agents after they are applied to the land from manure.

PRODUCERS – ON-FARM FOOD SAFETY CERTIFICATION PROGRAMS

In addition to the PQA Program, NPPC with the Agricultural Research Service, the Animal and Plant Health Inspection Service, and FSIS has been developing the framework for additional on-farm food safety certification programs. The first one to be implemented will be certification for the absence of the risk factors for trichinae infection. Though the prevalence of trichinae in U.S. swine is extremely low (0.013% on the 1995 USDA National Animal Health Monitoring System National Swine Survey) and the number of human cases due to the consumption of pork is small, it continues to be a perception concern for U.S. pork. The certification will be based on an on-farm audit conducted by specially trained veterinarians with USDA program oversight.

The proposed certification process includes the following elements:

1. Veterinarians trained in good production practices relative to trichinae work with their producers to ensure that trichinae risk factors are minimized on their farms.
2. The on-farm audit will serve as a method to document the absence of trichinae infection risks. The audit will evaluate feed integrity, source and storage; building construction and condition as it pertains to biosecurity; the integrity of rodent control programs; and general management and hygiene concerns as they pertain to rodent control, vermin attraction, and other issues.

3. On a regular basis, a statistical sample of the national trichinae certified herd will be tested at slaughter using diaphragm digestion or ELISA.
4. USDA veterinarians will conduct random “spot audits” of certifications.

Large-scale pilots with producers and packers began in 2000 with completion in early 2002.

PRODUCERS - PATHOGENS

With performance standards in place for processing plants, there is more interest in what can be done at the farm to reduce levels of potentially harmful bacteria. NPPC since 1994 has had a very aggressive on-farm food safety research program focused on the feasibility of Good Production Practices (GPPs) at the farm level for control of potential human pathogens. NPPC with its *Salmonella* Working Group is exploring development of GPPs to begin to address this potential pathogen. In addition, to ensure coordination of U.S. and international efforts, NPPC has been involved in the three international symposiums held on *Salmonella* in pork production.

PACKERS/PROCESSORS

In 1996, NPPC added a food microbiologist, to develop food safety programs from the plant to the consumer. Significant research programs have been funded to assist plants as they implement HACCP systems and meet performance standards. Two Pork Quality and Safety Summits have been held to provide timely research results to the packing industry. A Post-harvest Food Safety Technical Advisory Group composed of plant food safety personnel, academia, and researchers provides direction on research, education, and policy to the NPPC Pork Safety Committee.

Last March, NPPC developed the *Salmonella* Intervention Assistance Program (SIAP). This program provides help to small slaughter plants facing unique challenges meeting FSIS *Salmonella* Performance Standards. The program arranges for teams of professional meat scientists and microbiologists to evaluate these plants, suggest areas where improvements can be made, and provide the plants with information on how to control and prevent *Salmonella*. The SIAP is provided to the plants at no cost and results remain strictly confidential.

In conjunction with the American Meat Science Association, many fact sheets on food safety issues such as irradiation, HACCP implementation, and meat inspection have been developed. NPPC provides a monthly publication, *Pork Plant Communicator*, that includes the latest research results to over 250 key plant, government and industry personnel. In addition, research reports from producer funded research are posted on the NPPC web site (<http://www.nppc.org/>) as they are received.

RETAIL/FOODSERVICE

At the retail level, research has been funded to survey temperatures in meat cases to better inform the retail sector about the importance of temperature control for shelf life and food safety. NPPC also provides food safety information to retailers as requested and is currently working on a comprehensive literature review on enhanced and case ready pork products. For foodservice, ServSafe educational courses are sponsored along with the development of educational materials.

CONSUMERS

A food safety kit with a variety of educational messages including pork specific information has been developed. Thousands of these kits have been distributed. Website materials are also available. Food safety information is included with requests for pork recipes. For three years, we have directly reached consumers through a Food Safety Booth at the World Pork Expo. Consumers have the opportunity to take a food safety quiz, pick up food safety educational materials, and participate in a handwashing demonstration. NPPC also is a member of the Partnership for Food Safety Education "Fight Bac" campaign.

FUTURE FOOD SAFETY AREAS

Food safety assurances are and will increasingly be key components of food production chains. To reduce the potential for food safety problems, there will be more interest in qualified suppliers and traceability. Such systems are currently being developed. Each segment of the chain must understand what their contribution and responsibility is in addressing food safety. Consumers will continue to have an increased interest in how their food is produced.

Improved product quality including food safety is increasingly viewed as a cost of remaining competitive in the food production business rather than as a means to directly enhance profits for the producer or the rest of the chain. The integration of key features such as market responsiveness, strong process control and production audits into a credible food safety system will be key to an industry's competitiveness.

CONCLUSION

Effectively addressing food safety issues requires coordination of efforts throughout the food chain. Comprehensive food safety education and research "from the farm to the table" is needed. In addition, it is critical that pork producers throughout the world are aware of the evolving food safety issues and are preparing themselves to address their role and responsibilities in providing safe pork to consumers. There will be increasing expectations by global consumers for accountability and certification in food safety systems.