

Food Safety and Muscle Foods Inspection

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It is a pleasure to be here today to share with you some major improvements we have made in food safety and inspection.

The U.S. Department of Agriculture's (USDA) Food Safety Inspection Service (FSIS) is actively implementing a comprehensive program to improve the safety of meat and poultry products. We have developed a strategic plan as a blueprint to change our current inspection from one that relies heavily on organoleptic examination at slaughter plants to one that encompasses the entire farm-to-table food safety chain.

The strategic plan's main feature is its pathogen reduction program which includes improvements in education, regulations, enforcement, microbiological data, research and technology transfer to the industry.

In fiscal year 1994, Congress approved an additional eight million dollars for the Food Safety Inspection Service (FSIS) for pathogen reduction activities. In fiscal year 1995, as part of the President's Investment Initiatives for USDA, the Administration is requesting additional monies for pathogen reduction activities.

A Pathogen Reduction Task Force, headed by Patricia Jensen, Acting Assistant Secretary for Marketing and Inspection Services, is coordinating all pathogen reduction activities within USDA. The task force is responsible for oversight of the more than 70 pathogen reduction activities that have been identified in the farm-to-table continuum.

On-The-Farm Activities

To improve food safety on the farm, USDA is proposing a trace-back system for determining the source of microbiological contamination on farms when an outbreak occurs. This will aid in defining risk factors that may have contributed to the presence of pathogens and also help identify management practices that might prevent the contamination from occurring. In FSIS, we are writing new record-keeping rules that require meat and poultry plants to maintain records to help identify problems and track them to the sources of contaminated meat or poultry.

The Animal Plant Health Inspection Service (APHIS) is working with Public Health Service agencies and universities

to find ways to minimize the presence of pathogens on poultry and livestock — before they leave the farm, feedlot or grow-out house. Efforts are also underway to develop educational programs for the producers and handlers of live food animals to encourage adoption of production practices that limit contamination by pathogens and other hazards.

Microbiological Improvements

As part of our post-harvest efforts, FSIS has been conducting numerous microbiological studies to determine the types and levels of pathogens on meat and poultry. We will use the data as a gauge to measure where we are today and whether future interventions have had the effect of reducing the prevalence of pathogens in meat and poultry production.

We have completed our microbiological baseline survey of steers and heifers and the final report is available. Similar surveys are underway for bulls and cows and broiler chickens. A pork study is planned for the fall. We are also conducting microbiological surveys of USDA-inspected ground beef and that produced at retail establishments. A study of disabled cows is examining the potential for increased shedding of pathogens in stressed animals. We are also starting to investigate the use of microbiological testing in three areas of inspection—pre-operational sanitation, slaughter production and processed products production. In pre-op sanitation, we are pilot-testing the use of equipment swabs for aerobic plate counts to supplement the daily visual inspection of a plant's sanitation program. In the slaughter process, we have conducted a critical control point study in five beef slaughter plants where we sample carcasses at several points in the process from skinning and evisceration to the final wash before they enter the cooler. This may aid in any process control system to minimize bacterial contamination. We are also extending our microbiological testing program for processed ready-to-eat products to include other types of products. Since the 1980s, we have had a *Salmonella/Listeria* program in Ready-to-Eat (RTE) products.

Microbiological sampling for uncooked cured meat products was conducted in October 1993 and for cooked patties in December 1993. Sampling is expected to begin in May 1994 for dried, cured or fermented products.

We are continuing development and evaluation of rapid microbiological tests for use in the laboratory and in-plant for Hazard Analysis and Critical Control Points (HACCP) verification and cooked meat programs. We have published 10 requests for research proposals for the development of methods to detect and enumerate microorganisms or microbial toxins of high priority.

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Enhanced Enforcement

We have taken several significant steps to improve our inspection program and ensure the safety of meat and poultry. While inspectors cannot see microorganisms on meat and poultry, they can spot production and other problems in plants that could lead to product contamination and adulteration. For example, we are emphasizing stricter enforcement of proper sanitation and other food safety requirements in meat and poultry plants. In addition, tough corrective action is being taken in problem plants.

FSIS has conducted unannounced reviews in meat and poultry plants around the country. In March 1993, we conducted reviews in 90 beef plants to observe the implementation of our "zero" tolerance policy for fecal, mild and ingesta on carcasses. We took immediate action when we found one-third of the plants had serious problems in complying with the policy. We have revisited several of these plants and have found considerable improvement. We have also been providing additional training to our inspectors in 900 beef plants nationwide to ensure uniform application of the zero tolerance policy. An enhancement program for poultry is being developed to ensure the absence of fecal contaminants.

We have established a Review and Assessment office to conduct unannounced reviews in meat and poultry plants throughout the United States. The staff has started a 1,000-plant review targeting plants suspected of having compliance problems. Over 300 plants have already been reviewed. A planned acceleration of pace began this spring.

As a result of our strict enforcement efforts, we now have 275 Federal plants operating under Progressive Enforcement Action (PEA), an intensified inspection program that can lead to withdrawal of inspection if problems are not corrected. This represents a three-fold increase in progressive enforcement action. In January 1993, only 90 plants were under the PEA program.

To enhance our enforcement efforts, we hired 200 new inspectors in fiscal years 1993 and 1994 and plan to hire an additional 200 inspectors in fiscal year 1995. Effective inspection staffing continues to be a critical priority.

Public Health Focus

We are planning a more aggressive role in public health protection. We have placed an FSIS liaison at the Centers for Disease Control and prevention (CDC) in Atlanta to investigate foodborne outbreaks.

USDA has created a Public Health Division within FSIS and is actively recruiting for a medical professional to head the division. That division will be responsible for coordinating public health policies and maintaining liaison with federal, state and local government officials involved in the detection of foodborne disease through the FSIS CDC position. It will coordinate the FSIS response to emergencies involving meat and poultry, including voluntary recalls of contaminated products, as well as operating a foodborne hazard control center.

FSIS is encouraging states to mandate the reporting of Hemolytic Uremic Syndrome and *E. coli* O157:H7 infections. The agency is also working with the medical community to ensure that physicians and other health professionals are

better informed about the disease. By the end of 1993, about 18 states were reporting outbreaks of illnesses to CDC. Eight more states planned to start reporting this year.

Hazard Analysis Critical Control Points (HACCP)

As I mentioned earlier, prevention is a key element in the pathogen reduction strategy. We are working to mandate Hazard Analysis and Critical Control Point systems in all of the nation's meat and poultry plants. HACCP is an internationally-recognized process control system designed to prevent biologic, physical or chemical hazards from occurring during production.

We have been impressed with the participation in the development of the HACCP proposal. More than 100 observers and 33 participants were involved in our March HACCP roundtable discussion. We have put the development of the proposal on a fast track. Once the proposal is published in the Federal Register, we will again evaluate public and industry input before developing a final rule.

Consumer Education

Consumer education is another critical part of the Pathogen Reduction Program. We have intensified our food safety education efforts to provide consumers with key information to protect themselves and their families from foodborne illness.

For example, we are mandating safe handling instructions on meat and poultry labels. Our final rule requiring raw and partially-cooked ground meat and poultry products to carry safety handling instructions became effective on May 27, 1994. The instructions will appear on other raw meat and poultry products effective July 6, 1994.

We have launched an on-going campaign to teach consumers the importance of following the safe handling instructions. Recently, we worked with school nurses nationwide to distribute two million cards emphasizing the importance of cooking hamburger all the way through.

Our campaigns also are targeted to local health communities and food preparers who serve the public, particularly those individuals who prepare foods for the population most at risk for foodborne disease — the elderly and the very young.

Cooperative efforts among the Food and Drug Administration (FDA), FSIS, USDA's Extension Service and others also have resulted in a more consistent educational message reaching food preparers and the general public.

Finally, USDA's Meat and Poultry Hotline continues to be a service for consumers who have questions about the safety of meat and poultry. The Hotline receives more than 130,000 calls each year.

Closing

Our goal is a more focused inspection system with emphasis on:

- Public Health
- Tougher Enforcement
- Improved Consumer Education.

Discussion

J. Regenstein: Half the program, as I understand it, is primarily at the FSIS level. The question I have is: First, on the issue of traceability — will that help or not? And secondly, given our knowledge of animals on the farm, how do you envision preventing contaminated meat from coming into the plant other than by implementing heavy testing?

R. Carnevale: I think that at this point, the idea of trace-back having a big impact on pathogens entering the plant is probably minimal, simply because although we might trace it back to a farm, we don't know what action to take, other than to close that farm and not allow them to ship animals. However, targeting pathogen reduction and not pathogen elimination, and the idea of implementing HACCP on the farm, is just that. The goal is to try to identify practices that decrease the probability that a specific pathogen is going to make it into the slaughterhouse and contaminate product at that point.

Regenstein: Can you give some suggestions as to what you expect might help farmers do this?

Carnevale: Right now our experience is fairly limited, but I know that if you take a look at some of the experiences, such as in California, there is some fairly good information in terms of *Salmonella*. You can look at "host-adapted" ones, (the types that are adapted to a particular host, which generally are not food safety issues) and those that are "non-host adapted." John Gay at Washington State has defined some of these *Salmonella* species as "production-system" adapted. This means they tend to persist in those production systems mainly because of what people are doing, not because the pathogen inherently wants to remain in the system. This addresses such questions as: "How do you handle your manure, and where is the contact with the young stock relative to the manure?" and "Can you identify some of the animals that might be persistent carriers and eliminate those out of the herd?" If you can identify and break those cycles, you can then do something on some of those farms with production-adapted *Salmonella*, and eliminate those on the farm. You can thus decrease the pathogens that are getting into the system.

Unidentified: Dr. Carnevale, you mentioned food irradiation, briefly. I know it has been tried on strawberries and there is talk of using it on meat. As you are aware, it is very controversial and I would like to get your thoughts on this.

Carnevale: Irradiation has been approved by the Food and Drug Administration and USDA for use in pork for *trichina* and in poultry for bacterial contamination. So both segments of the government consider it a safe and effective process. It is still very controversial and the industry has yet to embrace it. Currently, the industry is working on a petition for its use on beef and I understand data have been collected to support the submissions. If it is proven safe and effective for beef, then we will permit it for use. Whether the industry embraces it or not remains to be seen.

As I have said at other meetings, my feeling is that if society requires a pathogen-free product, then something like irradiation is going to have to be the standard treatment for raw meat coming out of a plant. There really is no other way to insure it. While irradiation probably is not 100% effective either, it does a pretty good job. Of course, it does not help with

post-contamination. After a product has been irradiated, it can always be contaminated again by "the dog" or by "other people," but irradiation remains a very effective means to support saying, "The meat that leaves my plant is pathogen-free."

I think it's also economics. It is going to be very expensive to irradiate a large portion of the meat supply. There will probably be problems in constructing facilities with all the environmental concerns that people will raise within a community. So while it is a good technology, I think it remains to be seen whether industry is going to be able to afford it, and whether the public is going to accept it.

J. Romans: I wonder if you would comment on the method of cooling poultry that is currently accepted by FSIS, and the uptake of water and "soup"?

Carnevale: Poultry, of course, is allowed to be chilled in water baths. There is a lot of criticism about that. In most of those poultry chilling tanks, chlorine is added to try to reduce the pathogen contamination. The meat industry has been looking for some possibly comparable way of washing carcasses. Currently, the Meat Board is doing a study on "wash-trim" (which probably will be discussed at this conference) to try to compare washing carcasses vs. trimming carcasses in eliminating pathogens. We do not have any intention of eliminating the poultry chillers from use. There have been suggestions that air-chilling may be a better alternative to water-chilling because it causes less bacteria to grow on poultry carcasses. But there have never been any real data to support an improvement against pathogens. Does that answer your question?

Romans: I would like you to clarify what you said: There is no difference between air-chilling and water-chilling, and there is no difference in the transfer of pathogens between animals?

Carnevale: What I said is that I have not seen any data that showed an improvement in air-chilling over water-chilling. But I would agree that a contaminated bird going into a chill tank probably transfers *Salmonella* or *Campylobacter* to other birds in that tank. What we have found is that in the frequency of occurrence, there are more birds coming out with *Salmonella* than birds that went in with *Salmonella*. However, the number of *Salmonella* cells or *Campylobacter* cells on each of these carcasses is very low. So essentially, the chill tank may have increased the number of birds that are positive, but it reduced the overall level so it had a dilution effect on the numbers of each carcass.

Romans: You have no intention of changing the cooling regulations for poultry? This doesn't seem logical to me.

Carnevale: There is a poultry enhancement program being developed. I am not intimately involved with this, but to my knowledge, it does not restrict the use of poultry chilling tanks.

A. Kotula: Just to clarify, unless the law has changed, I question that FSIS has the authority to go into farms and prevent the shipment of infected cattle. Has that changed? I know you can't do this with *trichina*-infected hogs and I don't see how you can do it with cattle that have been identified with *E.coli*.

Carnevale: I don't think FSIS ever had that kind of author-

ity. Whether APHIS would get that authority in the future is the question.

Kotula: No, they don't. Even if you identify production units with *E.coli*, could you go into the farm? I don't believe you can with the present legislation.

S. Kneibel: The Center for Disease Control has reported many times that probably 99% of all food-borne disease outbreaks are due to mishandling of food during food-service or home preparation. Yet we may mandate HACCP only in the food processing segment of the industry. Is there any movement to make HACCP mandatory? Mr. Harrington, maybe you can respond to that. Does FDA have the ability to do that?

R. Harrington: FDA does not have the ability to do that because they have delegated regulatory authority to the states. There is no movement toward mandating HACCP in food-service. Two states have tried it — Maryland and New York. New York had their program undercut by budget slashing.

Maryland's program has been in place only 18 months. It remains to be seen how it is going to work. There is a broad movement to apply the principles of HACCP in food-service. Virtually every state is running ongoing training programs initially for their regulatory inspection personnel, in cooperation with our own educational foundation, for food-service personnel. Mandatory HACCP in a food-service operation is extremely difficult and probably cannot work the same way that it would work in a slaughter or canning plant. You do not have the linear arrangement of production throughout the facility. A simple example of why it can't work the same way as it does in a manufacturing plant is, "What do you do with the daily blue plate special?" It was chicken today and beef tomorrow, and it will be pork the next day. Each one of these has different control points. So in terms of mandatory HACCP in food-service, it is not coming down the line soon. In terms of widespread support for applying it, — yes, it is everywhere.