Salmonella Risk Assessment on the Farm and in the Processing Plant. R. H. Bailey1, R. W. Wills1, M. L. Rybolt1, V. V. Volkova2, J. A. Byrd3, K. Dazo-Galarneau1, A. K. Daniel1, K. L. Hataway1, T. P. Doler1, S. A. Hubbard1, and D. L. Magee1, 1Mississippi State University, Mississippi State, 2Perdue Farms, Salisbury, MD, 3Cornell University, Ithaca, NY, 4Southern Plains Area Research Center, College Station, TX.

A series of studies was conducted to assist the poultry industry in understanding the risk factors involved in meeting FSIS Salmonella performance standards in broilers. Initially, a comparison was conducted of the isolation ability of Salmonella-specific protocols: tetraphionate (TT) broth, Rappaport-Vassiladis R10 (RV) broth, and a secondary enrichment (TR) procedure. All methods were compared in litter and drag swab samples that were collected in broiler grow out houses. Although the number of samples identified as positive by TT and RV were not different, further analysis revealed that TT and RV were generally not in agreement. The TR protocol was shown to be the most sensitive isolation protocol and was subsequently used in a longitudinal field study. The relationships among Salmonella occurrence in various samples from broilers and their grow-out environment were investigated in 64 flocks in the southern United States. The increased likelihood of Salmonella contaminated carcasses entering the immersion chill tank was associated with higher contamination of the exteriors and crops of birds at plant arrival as well as house environmental samples at the time of harvest and before placement. The best predictors of post-chill broiler carcass Salmonella status were the frequencies of Salmonella in the litter on the day of harvest and before placement. Immersion chilling appeared to disrupt some of the relationships between Salmonella status in processing plant and preharvest samples. Therefore, a study was done to further investigate the prevalence of Salmonella at different points along the processing continuum and determine the relationship between the presence of Salmonella and Campylobacter on the same carcasses at the different points of processing. Carcasses were collected at 3 different points during processing: 1) at the re-hang station following de-feathering and removal of the feet, 2) following the final bird rinse cabinet, and 3) at the immersion chiller exit. The results of this work indicated that the prevalence of both pathogens decreased during processing and there was poor to slight agreement between Salmonella and Campylobacter status on carcasses.

Key Words: Salmonella, prevalence

139 Campylobacter risk assessment on the farm and in the processing plant. J. A. Byrd*, R. H. Bailey, R. W. Wills, M. L. Rybolt, V. V. Volkova, K. L. Hataway, T. P. Doler, S. A. Hubbard, and D. L. Magee, 1USDA-ARS-Food and Feed Safety Research Unit, College Station, TX, 2Mississippi State University, Mississippi State, 3Perdue Farms, Salisbury, MD, 4Cornell University, Ithaca, NY.

Poultry companies continue to produce safe and wholesome products, while facing increased regulatory pressure to control certain organisms indigenous to the production system. Although many risk factors that contribute to Campylobacter levels have been identified, precise identification of the most effective sites for intervention have not been established. A series of studies were conducted to assist the poultry industry in understanding the risk factors involved in meeting FSIS Salmonella performance standards in broilers. It has been established that contamination of the broiler carcass, when present, irreversibly begins on farms, with potential cross-contamination of non-contaminated carcasses during processing. Increased carcass contamination has been observed during the transport and holding of live poultry before entering the processing plant, and may continue during processing. Although carcasses exiting the scald tank typically have reduced numbers of Campylobacter, contamination of broiler carcasses has been shown to increase during feather and viscera (including crop) removal. Identification of critical control points allows the selection of appropriate and effective intervention strategies to help reduce the number of pathogen contaminated carcasses. Present data strongly suggest that effective programs must incorporate an integrated farm-to-table strategy that begins before the animals are placed on the farm (breeders and hatcheries) and must continue through handling and preparation by the consumer.

Key Words: Campylobacter, prevalence


FSIS will present an overview of the public health objectives associated with implementing performance standards to reduce the presence of pathogens of public health concern in raw poultry carcasses. A summary of the results of a nationwide baseline study will be presented, identifying the presence and counts of Salmonella and Campylobacter, as well other microbial indicators of process control on carcasses both before and after evisceration. Results of an FSIS risk assessment and cost-benefit analysis will be used to convey the expected public health benefits and costs associated with reducing exposure of the public to these pathogens of public health concern. Federal goals for reducing illnesses will be identified, and progress associated with the contribution of poultry to the public health burden will be described.

141 Campylobacter numbers from the processing lines. J. A. Marcy*, University of Arkansas, Fayetteville, AR.

This presentation will include industry data provided to the presenter without plant location or identifiers for both broiler and turkey processors. Some data includes enumeration of Campylobacter and other information is only in terms of percent positive.

Key Words: Campylobacter, broiler, turkey, processing

142 New and traditional Salmonella and Campylobacter detection technology and surveillance techniques or, how do we protect the public health and make money for the poultry industry? N. Stern*, American Academy of Microbiologists, Athens, GA.

Salmonella and Campylobacter are pathogens causing numerous human cases/outbreaks repeatedly associated with poultry products. To enhance poultry microbiological safety, it is incumbent upon the poultry industry to produce commercial products with reduced levels of pathogens or, to eliminate these from poultry products. It is expected that the presently responsible regulatory agency (Food Safety Inspection Service; FSIS) will appropriately monitor and protect the public’s safety associated with these products. Adequate methods for enumerating these pathogens (old-fashioned quantitative bacterial methods)
exist for limited numbers of samples and, DNA or immunoassay based technologies will continue to evolve to assess larger numbers of samples. The current approach prescribed by FSIS to monitor adequacy of processing plants for adherence to safety standards call for a single processed carcass among perhaps 100,000 to 1,000,000 carcasses per day to evaluate that plant for compliance. This qualitative standard is held despite large variations in *Campylobacter* numbers seen between individual processed carcasses. An alternative science-based quantitative pathogen assessment of entire process lots will be discussed and should be considered by FSIS and the industry. Currently, many US consumers and both Western Europe and Japan have proscriptions against the use of hyper-chlorination and other harsh chemical processes costing US poultry sales. To enhance market share, the US industry must institute effective on-farm interventions to reduce the need to apply controversial chemical disinfection of carcasses while protecting the public health.