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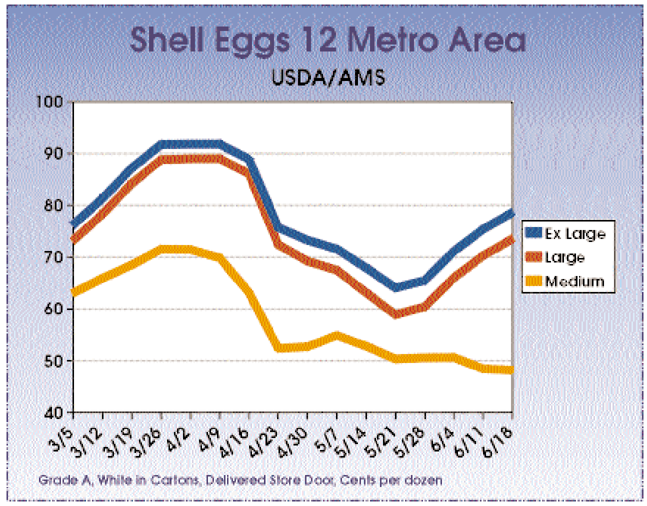
USDA and Egg Safety Strategy

In June the US Department of Agriculture published a report designed to help food safety experts determine the most effective ways to reduce the risk of food-borne illness from eggs. Under the leadership of Dr. Roberta Morales, the Salmonella Enteritidis Risk Assessment was conducted by a multi-disciplinary team from ARS, APHIS, ERS, AMS and Office of Risk Assessment and Cost-Benefit Analysis.

"The *Salmonella* Enteritidis risk assessment report is major development in the Administration's multi-faceted farm to table strategy necessary to address today's complex food safety problems," stated Catherine Woteki, USDA Under Secretary for Food Safety. "We now have a farm to table computer model program with which we can identify the interventions that provide the best return in terms of public health protection.

"We have learned from this exercise that a broadly based policy is more likely to be effective than a policy directed solely at one area of the egg production to consumption chain."



The Food Safety and Inspection Service (FSIS) began in December 1996 to assess the risk of food borne illness associated with shell egg consumption. The objectives of the risk assessment were to establish the unmitigated risk of food borne illness from SE; identify and evaluate potential risk reduction strategies; identify data needs; and prioritize future data collection efforts. A five-module risk assessment program was developed. The first module was the Egg Production Module which estimates the number of eggs produced that are infected with SE. The Shell Egg Module, Egg Producers Module and Preparation and Consumption Module estimate

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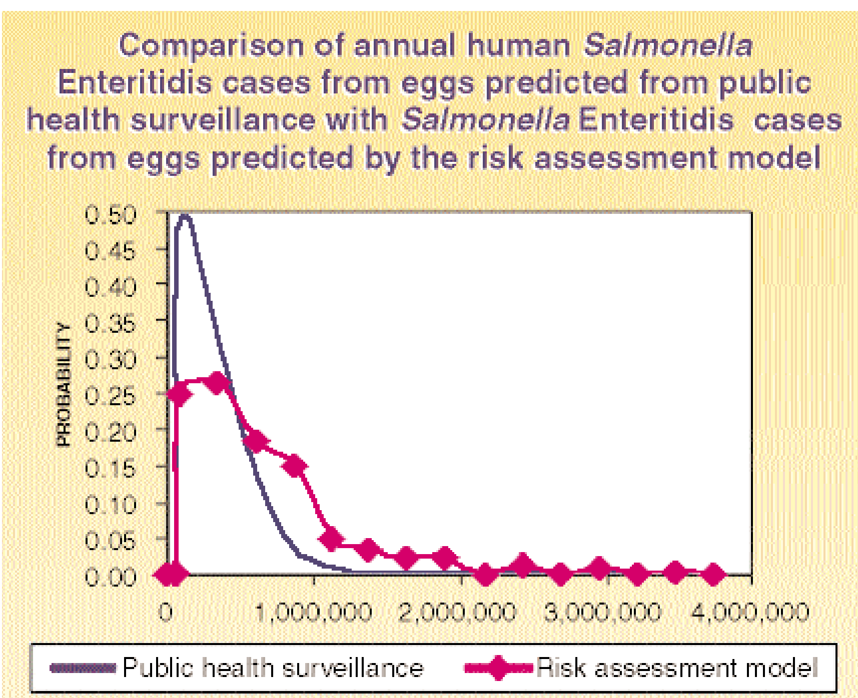

US Poultry Looks to Future Exhibitions

US Poultry & Egg Association has signed contracts with the Georgia World Congress Center through 2002 for the International Poultry Exposition and has begun negotiations to finalize dates and locations for each of the next 10 years.

"We examine all aspects of the show on an annual basis to ensure that we are continuing to meet the needs of the poultry and egg industry," said Don Dalton, USPoultry President. "Not only do we survey exhibitors and attendees, we also solicit feedback through an advisory committee, which is comprised of a cross section of IPE exhibitors. After carefully evaluating this input, our board of directors voted unanimously on June 12 to set dates for the annual event through 2009."

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Future Exhibitions

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"For more than 50 years, the IPE has played an important role for the poultry industry," said Delvin R. Barrett, USPoultry Chairman, Feather Crest Companies. "Thanks to industry support, what started as a small networking event has evolved into the world's largest display of technology, equipment, supplies, and services used in the production and processing of poultry and eggs."

Unlike some privately owned industrial expositions, the association funnels proceeds from all of its programs, including the IPE, back into the industry in the form of research grants, subsidies for educational programs, and sponsorships for such programs as the National Chicken Cooking Contest, egg promotion, and turkey recipe development.

USPOULTRY also demonstrates its commitment to the industry by sponsoring the College Student Career Program, held annually in conjunction with the IPE. More than 450 students from 27 colleges and universities participated in the 1998 program.

Tradeshow Week magazine ranked the exposition 56th in its "top 200 largest trade shows of 1997." Since the list is based on occupied square footage, this year's show is expected to climb even higher on the list. In 1998, a record 1,132 exhibitors displayed their products and services on approximately 16 acres inside the Georgia World Congress Center. Three hundred and forty of those exhibitors have participated in the show for more than 10 years. ❑

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the increase or decrease in SE organisms in eggs and/or egg products as they pass through storage, transportation, processing and preparation. The Public Health Module calculates the incidences of illnesses and four clinical outcomes (recovery without treatment, recovery after treatment by a physician, hospitalization and mortality) associated with SE contaminated egg consumption.

The baseline model for shell eggs presented in the report simulates an average production of 46.8 billion eggs per year in the US, of which 2.3 million contain SE. The consumption of these eggs represents a mean of 661,633 human illnesses per year ranging from 126,374 to 1.7 million cases per year. It is estimated that 94 percent of the cases recover without medical care, 5 percent visit a physician with an additional 0.5 percent being hospitalized and 0.05 percent resulting in death.

Twenty percent of the population is considered to be at a higher risk from salmonellosis. This group includes infants, elderly, transplant patients, pregnant women and individuals with certain diseases.

Figure 1 on page 1 shows the comparison of total number of illnesses due to SE positive eggs simulated with the model with a distribution of illnesses from SE positive eggs predicted from national health surveillance. There is considerable overlap between the two independently derived distributions. The surveillance data has been used to estimate SE-related human illness with an average of 637,000 cases per year in a range of 254,000 to 1,176,000. The median number of cases were 504,084 and 636,000 for the simulation and surveillance data, respectively.

The baseline egg products module predicts the probability is low for cases of SE from the consumption of pasteurized egg products. However, current FSIS time and temperature regulations do not provide sufficient guidance for the large range of products that industry produces.

Mitigation elasticity is an indication of how changes in module variables affect the output of the model. For example, a 25 percent reduction in a few input variables were simulated as examples of how this elasticity can be used. No single input variable in the model as a potential mitigation achieved an equivalent reduction in total human illness. However, certain combinations may be potentially effective in reducing illness incidences. One such combination of mitigations in the Production Module and the Preparation & Consumption module estimated an equivalent reduction in human illness. The significance of this is that when addressing policies designed for reduction of SE, it is important to make it multi-faceted rather than isolate one area of the production to table chain.

Total human illness reduction was calculated for two scenarios with the Shell Egg Processing and Distribution module. In the first scenario, USDA found a 12 percent reduction in incidence when eggs are immediately cooled after lay to an internal temperature of 45 F and then maintained at the temperature throughout shell egg processing and distribution as opposed to the current diversity of temperature experienced throughout this stage of production.

In the second scenario, an eight percent reduction was noted when eggs are maintained at an ambient temperature of 45 F throughout shell egg processing and distribution compared to current practices.

Mitigation elasticity provides measures of the effects of specific interventions. For example, diverting eggs from SE positive flocks from shell egg markets into egg products markets for pasteurization could show significant reductions in the number of illnesses.

USDA points out that the model can be continually refined and updated. It also points out that risk assessment results provide only part of the information needed by policy makers. Cost-benefit analysis goes hand in hand with risk assessment and policy determination. ❑