United States Department of Agriculture
Food Safety and Inspection Service

Measurement of Inherent Risk in Processed Meat and Poultry Products

Matthew Michael, Director
Program Evaluation and Improvement Staff
Office of Program Evaluation, Enforcement and Review
Food Safety and Inspection Service
U.S. Department of Agriculture

Risk-Based Inspection (RBI)

FSIS is developing a new system of inspection which will better allocate Agency resources to control the risks posed to the public health by meat and poultry products.

RBI and Measures of Risk

Allocation of Agency resources under RBI at each inspected processing establishment will rely upon two measures of risk:

- **Inherent Risk Measure: a measure of the inherent risk posed to the public health by each type of processed meat and poultry product, assuming typical process control by the producing establishment, and;**

- **Risk Control Measure: a measure of the amount of actual risk control achieved by each establishment.**

Measure of Inherent Risk

- **Provides a relative value for the risk posed to the public health by each category of processed meat and poultry product produced in an official establishment.**

- **Takes into account the species of animal processed and the type of processing (hazard component); and the production volume (exposure component) for that product at each establishment.**

Inherent Risk Formula

Hazard Component *x* Exposure Component= Risk Measure

Species/Process Value *x* Volume = Inherent Risk

Species/Process Values

- **FSIS has determined the initial values for 24 species/process categories through expert elicitation.**

- **Expert elicitation is commonly used to supplement, integrate and interpret existing qualitative and quantitative data into a framework for making decisions.**

The Experts

- **FSIS asked 23 experts from academia, the Federal government and industry to score the species/process categories to reflect the relative risk of illness per serving that each poses to consumers.**

- **A list of those experts can be found on the FSIS Webpage at:**

http://www.fsis.usda.gov/PDF/Elicitation_Memo_092205.pdf

The Expert Elicitation

- **Experts were asked to provide both a relative ranking of inherent risks and scores that reflect proportional risk, e.g. a species/product combination with a score of “10” poses 10 times more risk than a species/product combinations with a score of “1.”**

- **Experts were given a specific set of assumptions, provided to ensure that they would each calculate their scores in the same context and the scores would thus be comparable.**

Median Species/Process Values

Finished Product Type	MedianScore
Raw ground, comminuted, or otherwise nonintact beef	10.0
Raw ground, comminuted, or otherwise nonintact chicken	10.0
Raw ground, comminuted, or otherwise nonintact turkey	10.0
Raw ground, comminuted, or otherwise nonintact poultry—other than chicken or turkey	10.0
Raw ground, comminuted, or otherwise nonintact meat—other than beef or pork	9.7
Raw intact turkey	9.0
Raw intact chicken	8.0
Raw intact poultry—other than chicken or turkey	8.0
Raw ground, comminuted, or otherwise nonintact pork	8.0
Raw otherwise processed meat	7.0
Raw otherwise processed poultry	7.0
Raw intact beef	5.0
Raw intact meat—other than beef or pork	5.0
Raw intact pork	4.0
RTE fully-cooked meat	3.0
RTE fully-cooked poultry	3.0
RTE acidified/fermented meat- without cooking	2.0
RTE acidified/fermented poultry-without cooking	2.0
RTE dried meat	2.0
RTE dried poultry	2.0
RTE salt-cured meat	2.0
RTE salt-cured poultry	2.0
RTE meat fully cooked without subsequent exposure to the environment	1.0
RTE poultry fully cooked without subsequent exposure to the environment	1.0

Volume

FSIS will use production volume data for each type of product, collected in each establishment from FSIS inspection program personnel, to develop the exposure component for each establishment.

Question 1

We have tentatively decided to use the median of the expert scores in the Inherent Risk algorithm. Is there an alternative we should consider?

Question 2

Thermally-processed, commercially sterile products (e.g. canned products) were not included in the elicitation for scoring by the experts. How exactly should they be fit into the range of Species/Process values now?

Question 3

To better ensure comparable expert data, experts were asked not to account for any processing after product leaves the establishment of origin, e.g. no cooking at a second establishment or preparation at retail.

- **If a processed product is to receive further processing at another establishment, how should we account for its inherent risk?**

- **If a processed product is to be further processed at retail, how should we account for its inherent risk?**

Question 4

How do we translate volume data collected for each type of processed product produced at each establishment into an exposure variable for that establishment?

Question 5

Given that most establishments produce more than one type of product, how should inherent risk data for each establishment be presented?

Question 6

To better ensure comparable expert data, we did not ask experts to consider severity of illness that can result from the consumption of contaminated meat and poultry.

- **How should we account for severity of possible illness when calculating the risk inherent to each type of meat or poultry product?**