USDA

United States Department of Agriculture

One Team, One Purpose

Food Safety and Inspection Service

Protecting Public Health and Preventing Foodborne Illness

Risk Management from a US Perspective

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Food Safety and Inspection Service:
Who We Are; Responsibility

The Food Safety and Inspection Service (FSIS) is the public health agency in the U.S. Department of Agriculture responsible for ensuring that the nation's commercial supply of meat, poultry, and egg products is safe, wholesome, and correctly labeled and packaged.

Food Safety and Inspection Service:
Public Health Regulatory Context

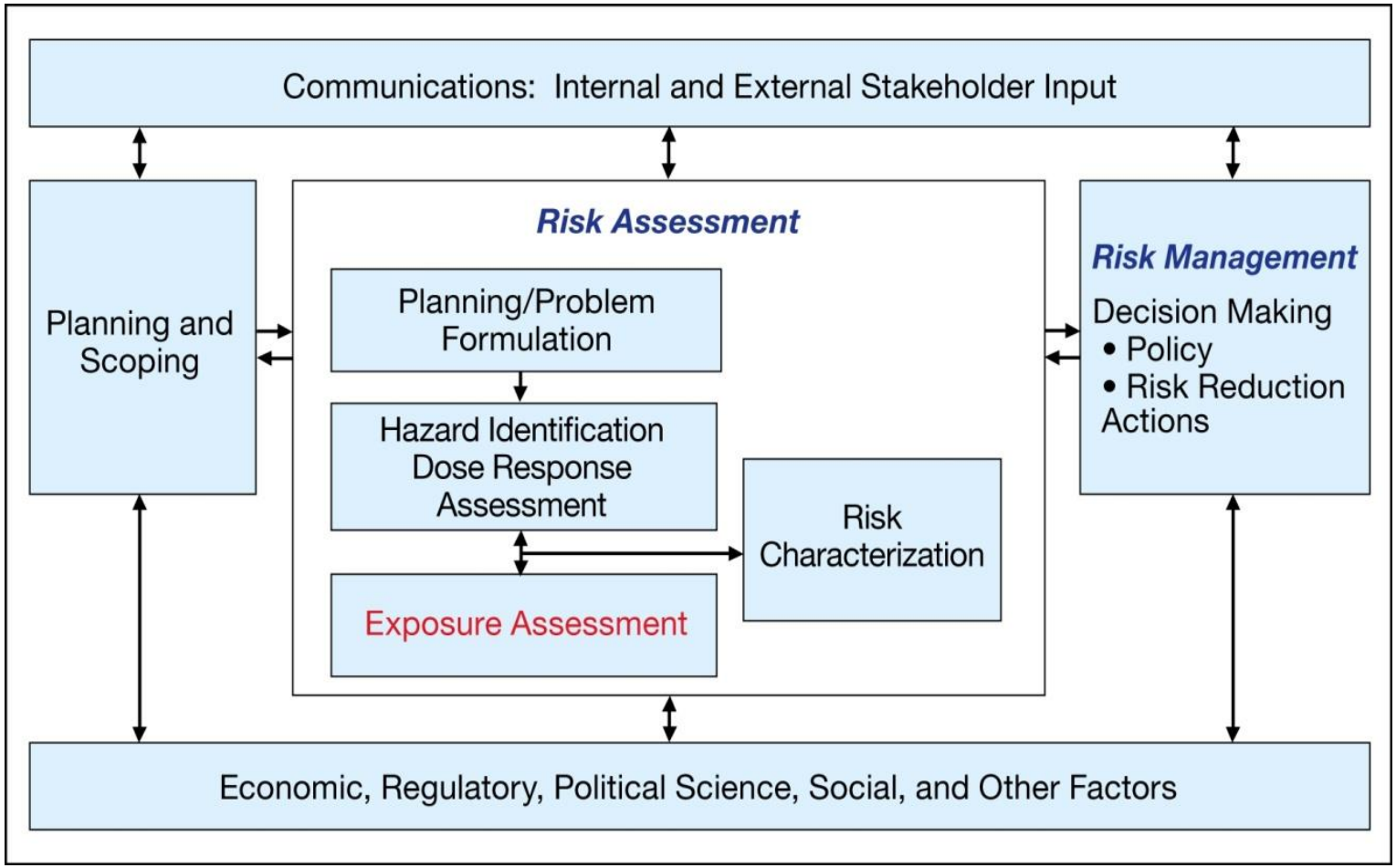
- Food safety statutory requirements
  - Federal Meat Inspection Act (FMIA)
  - Poultry Products Inspection Act (PPIA)
  - Egg Products Inspection Act (EPIA)

Food Safety and Inspection Service:
Science from SPS Agreement

- The SPS Agreement provides that measures for standards, guidelines and recommendations for food safety should be science-based and are focused on protecting human life or health:

  - Article 2, point 2: Members shall ensure that any sanitary or phytosanitary measure is applied only to the extent necessary to protect human, animal or plant life or health, is based on scientific principles and is not maintained without sufficient scientific evidence,…

Food Safety and Inspection Service:
Risk Analysis



Adapted from NRC, 2009

Food Safety and Inspection Service:
Risk Assessment

- Scientific process for estimating the probability of exposure to a hazard and the resulting public health impact (risk)
- Predicts public health benefits of changes in policies, practices, and operations.
- Used to facilitate the application of science to policy (the “bridge between data and decisions”)

Food Safety and Inspection Service:
Assessments of Risk Vary Based on Risk Management Information Needs

Qualitative

Implicit
Subjective
Less Data
Fewer Resources
Narrow Scope

Screening
Risk profile
Categorical Scoring

Systems models
Stochastic models
Uncertainty Analysis

Rapid Risk Evaluations
Safety Assessments

Quantitative

Explicit
Objective
More Data
More Resources
Broad Scope

High/Medium/Low

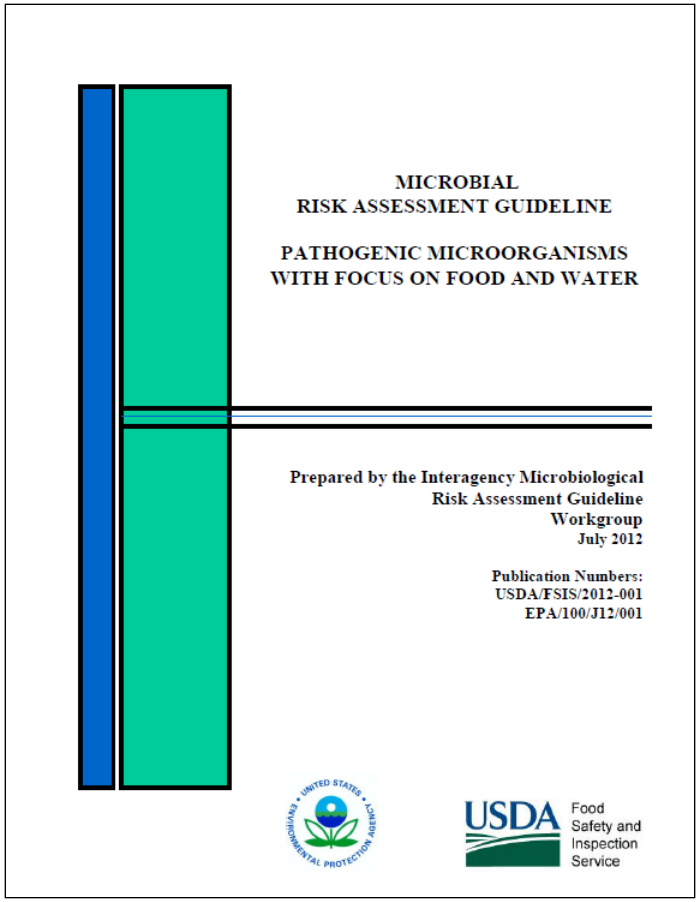
$$p(H \mid D, I) = p(H \mid I)\frac{p(D \mid H, I)}{p(D \mid I)}$$

The "best" risk assessment is the one that "is fit for purpose" and most directly informs the risk management issue.

Dearfield, Hoelzer and Kause, Journal of Food Protection 77: 1428–1440, 2014

Food Safety and Inspection Service:
Microbial Risk Assessment Guideline

www.fsis.usda.gov/Science/Microbial_Risk_Assessment_Guideline/index.asp


MICROBIAL
RISK ASSESSMENT GUIDELINE

PATHOGENIC MICROORGANISMS
WITH FOCUS ON FOOD AND WATER

Prepared by the Interagency Microbiological
Risk Assessment Guideline
Workgroup
July 2012

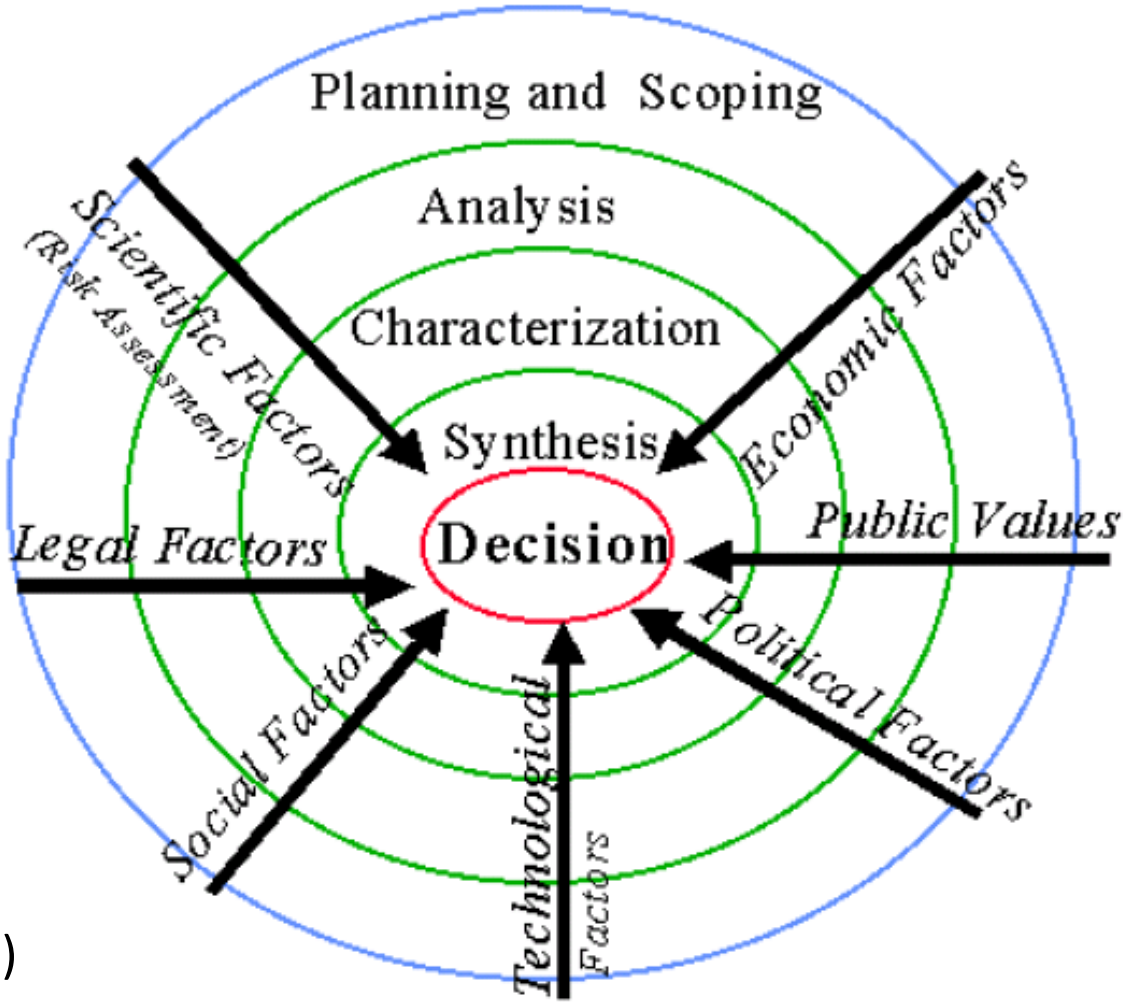
Publication Numbers:
USDA/FSIS/2012-001
EPA/100/J12/001

USDA Food Safety and Inspection Service

MICROBIAL RISK ASSESSMENT GUIDELINE PATHOGENIC MICROORGANISMS WITH FOCUS ON FOOD AND WATER

U.S. Department of Agriculture/Food Safety and Inspection Service (USDA/FSIS) and U.S. Environmental Protection Agency (EPA) (2012). Microbial Risk Assessment Guideline: Pathogenic Organisms with Focus on Food and Water. FSIS Publication No. USDA/FSIS/2012-001; EPA Publication No. EPA/100/J12/001.

Food Safety and Inspection Service:
Decision-Making Framework



From:
EPA Risk Characterization Handbook (2000)

Food Safety and Inspection Service:
Risk Management Considerations

- Have well defined risk management questions/policy options (practical application of risk assessment)
- Realize risk assessments are not a “one size fits all”
- Complexity of the risk assessment depends on the purpose for developing the risk assessment
- Risk assessors and risk managers are independent, but interdependent
- Iterative interaction between risk assessors and risk managers is needed to develop RAs useful to inform policies

Food Safety and Inspection Service:
Risk Management Options

- Establish regulatory requirements, such as regulatory levels based on the ML or MRL
- Utilize international guidelines/codes of practice to establish national guidances
- Provide dietary advice/labeling
- Institute mitigation strategies
- Institute recalls/public health alerts
- Provide education and training opportunities
- Establish research needs and pursue data gaps

Food Safety and Inspection Service:
Chemical: Setting Pesticide Tolerances

- Before allowing the use of a pesticide on food crops, USEPA sets a tolerance, or maximum residue limit, which is the amount of pesticide residue allowed to remain in or on each treated food commodity.
- A wide variety of scientific studies are reviewed before USEPA will set a tolerance (i.e., conducts a risk assessment). The data are designed to identify possible harmful effects the chemical could have on humans (its toxicity), the amount of the chemical (or breakdown products) likely to remain in or on food, and other possible sources of exposures to the pesticide.

Food Safety and Inspection Service:
Microbial: Salmonella and Campylobacter risk in poultry

FSIS Microbiological Data

Data from FSIS Inspection Activities

Step 1
Estimate the Relationship between establishment variations in FSIS-Inspection Activities and frequency of *Salmonella* and *Campylobacter* positives on Poultry carcasses

Previous Estimates
Relationship between *Salmonella* and *Campylobacter* Contamination on poultry and human illness.

- Uses CDC data and FSIS analyses

Step 2
Predict the Effect of Increasing Specific Inspection Activities Using the Relationship Estimated in Step 1

- Predictions are made for scenarios ("what ifs") with a range for the number of the four different inspection procedures

OUTPUT
Estimated Annual Number of Illnesses from *Salmonella* and *Campylobacter* under different inspection scenarios
(for example, increased off-line inspection tasks)

Thank you very much
Any questions?

FSIS Risk Assessment Website:
http://www.fsis.usda.gov/wps/portal/fsis/topics/science/risk-assessments