

Food Safety Communication: Navigating the Divide Between Perceptions and Scientific Consensus

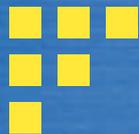
Carl K. Winter, Ph.D.
Extension Food Toxicologist
Department of Food Science and Technology
UC Davis

ckwinter@ucdavis.edu

A NEWSWEEK GUIDE

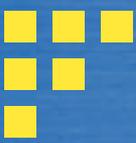
How Safe Is Your Food?





Simon

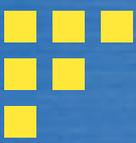




Food Safety in Perspective

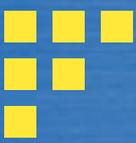
Food safety priorities of FDA and WHO

1. Microbiological contamination
2. Nutritional imbalance
3. Environmental contaminants
4. Naturally-occurring toxins
5. Pesticide residues
6. Food additives



FOODBORNE ILLNESS RATES – U.S. ESTIMATES (CDC)

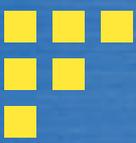
- 48 million cases annually
- 128,000 hospitalizations
- 3,000 deaths



FOODBORNE ILLNESS RATES – U.S. ESTIMATES (CDC)

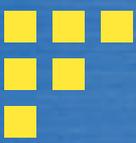
- 48 million cases annually
- 128,000 hospitalizations
- 3,000 deaths

- 130,000 cases per day!



PESTICIDE RESIDUES

- Only a handful of cases of food poisoning from pesticide residues worldwide over the past few decades
- Typical exposures of US consumers to pesticide residues often more than one million times lower than levels causing no effects in long-term animal toxicity studies
- Evidence of violations, particularly with imported foods, but not of health significance

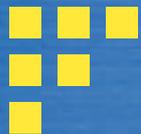


CONSUMER CONCERNS

What type of hazard is posed by pesticide residues in foods?

- 79% Serious health hazard
- 17% Something of a hazard
- 2% Not a hazard at all
- 2% Unsure

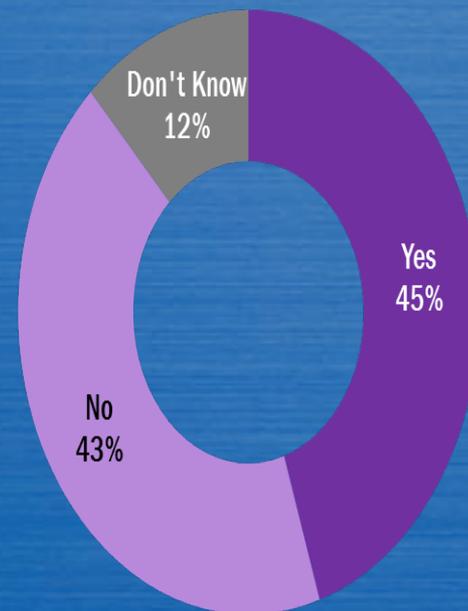
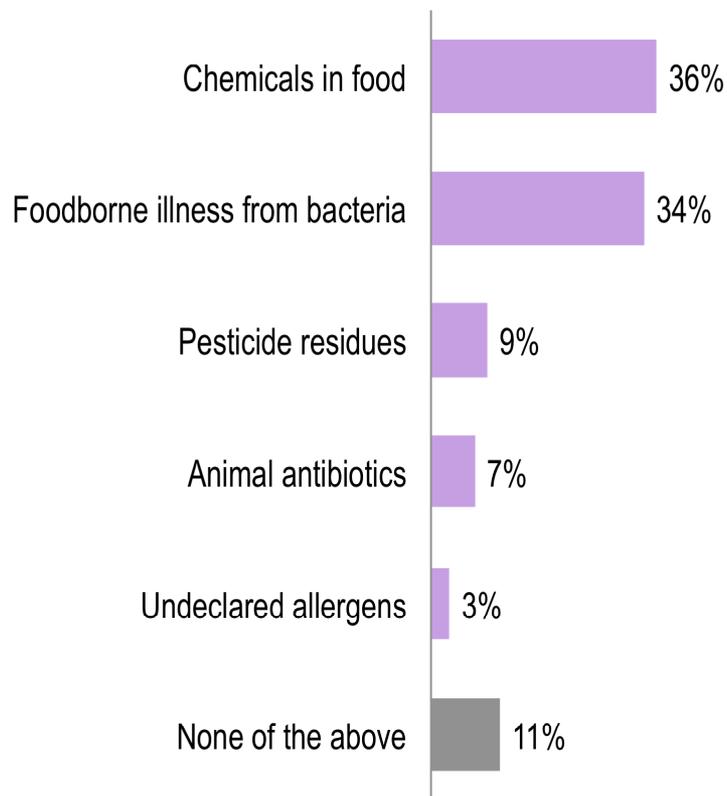
■ Source: Food Marketing Institute



International Food Information Council Foundation Food and Health Survey, 2015

In your opinion, what is the most important food safety issue for you and your family today? *(Select one.)*

Have you made changes to your food purchases because of recent information about chemicals in food/pesticide residues/animal antibiotics?

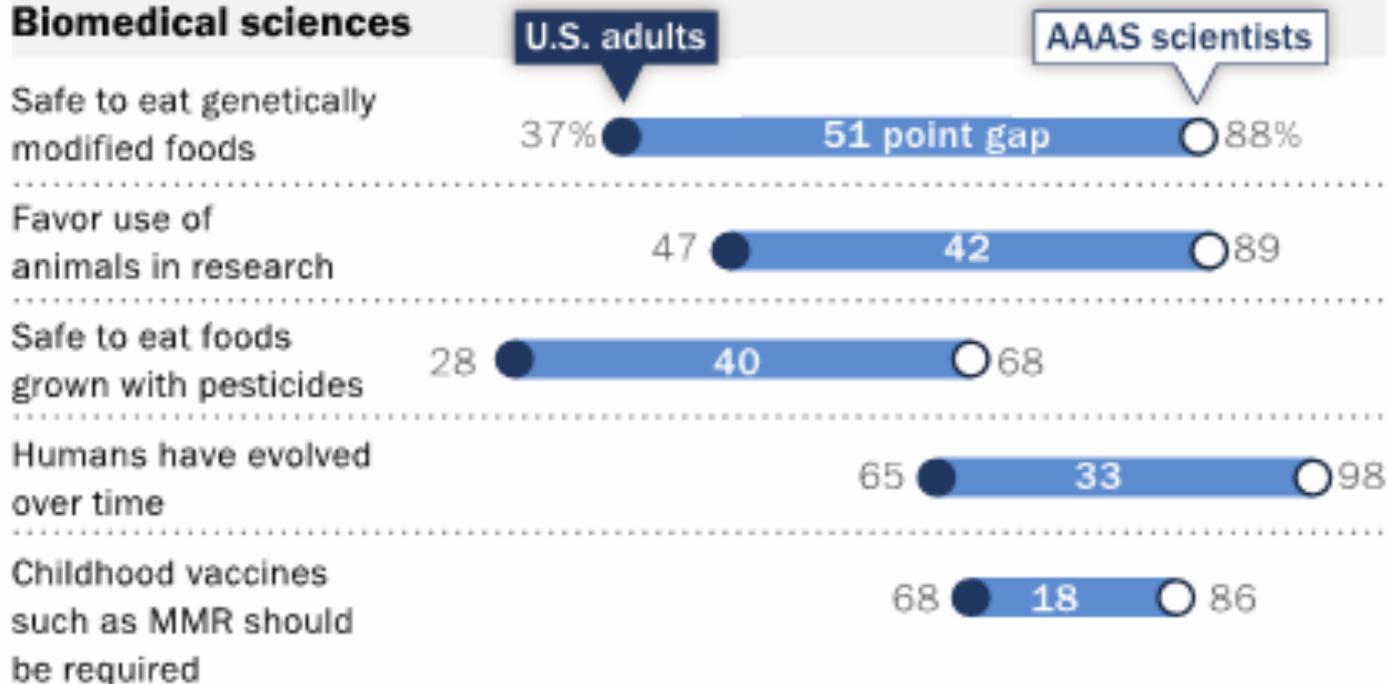


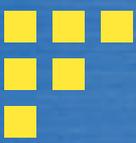
Pew Research Center, 2015

Opinion Differences Between Public and Scientists

% of U.S. adults and AAAS scientists saying each of the following

Biomedical sciences





EFFECTIVE RISK COMMUNICATION

- Draw attention to major risks that might benefit from greater oversight and public education
- Draw attention away from much lower risks that generate disproportionate attention

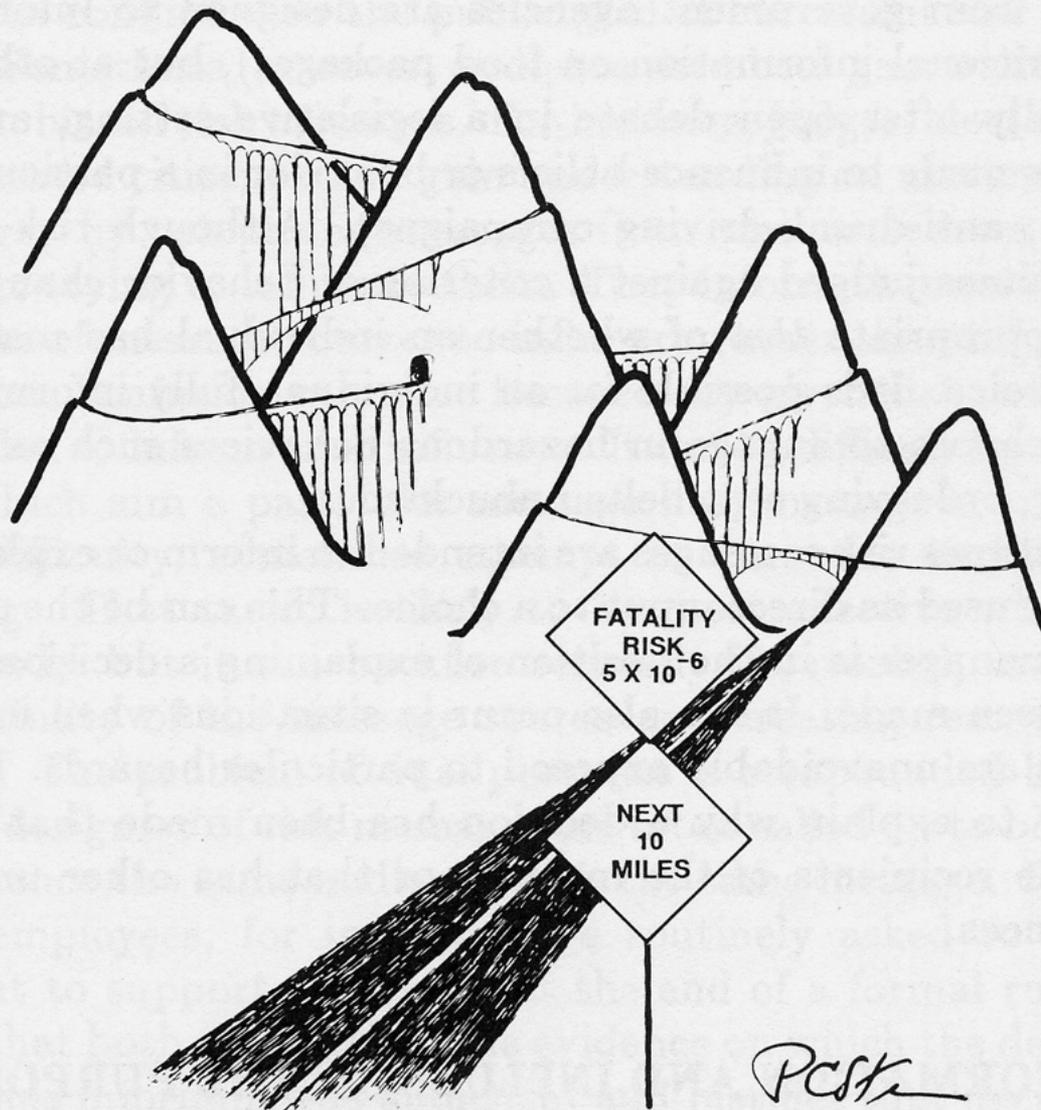
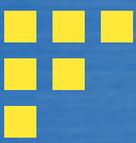
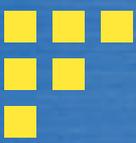


FIGURE 4.1 For personal action to reduce risks, a simple warning sign (e.g., “Hills and Curves Next 10 Miles”) may be sufficient; a report of a formal risk analysis could be counterproductive. SOURCE: Courtesy of Paul Stern.



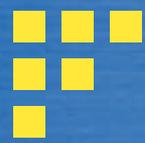
Different Risks are Perceived Differently

- The type of risk is important
- The population facing the risk is important
- The calculated probability of risk is often of much less concern



Example – driving ability



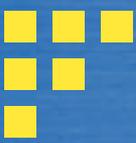


Consumer Acceptance and Perception

SANDMAN equation

$$\text{RISK} = \text{HAZARD} + \text{OUTRAGE}$$

- Scientists pay little or no attention to outrage factors
- The public has difficulty understanding the concept of **hazard** and places more value on non-scientific factors

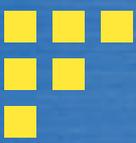


Qualitative Factors Affecting Risk Perception and Evaluation (Outrage Factors)

Factor	Conditions Associated with Increased Public Concern	Conditions Associated with Decreased Public Concern
Voluntariness of exposure	Involuntary	Voluntary
Fairness	Inequitable distribution of risks and benefits	Equitable distribution of risks and benefits
Origin	Caused by human actions or failures	Caused by acts of nature
Memorability	Memorable	Not memorable
Effects manifestation	Delayed effects	Immediate effects
Familiarity	Unfamiliar	Familiar
Trust in institutions	Lack of trust in responsible institutions	Trust in responsible institutions

Primary Smoking





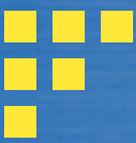
Example: Primary Smoking Hazard? Outrage?

$$\text{RISK} = \text{HAZARD} + \text{OUTRAGE}$$

Factor	Conditions Associated with Increased Public Concern	Conditions Associated with Decreased Public Concern
Voluntariness of exposure	Involuntary	Voluntary
Fairness	Inequitable distribution of risks and benefits	Equitable distribution of risks and benefits
Origin	Caused by human actions or failures	Caused by acts of nature
Memorability	Memorable	Not memorable
Effects manifestation	Delayed effects	Immediate effects
Familiarity	Unfamiliar	Familiar
Trust in institutions	Lack of trust in responsible institutions	Trust in responsible institutions

Secondary Smoking





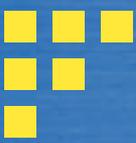
Example: Secondary Smoking Hazard? Outrage?

$$\text{RISK} = \text{HAZARD} + \text{OUTRAGE}$$

Factor	Conditions Associated with Increased Public Concern	Conditions Associated with Decreased Public Concern
Voluntariness of exposure	Involuntary	Voluntary
Fairness	Inequitable distribution of risks and benefits	Equitable distribution of risks and benefits
Origin	Caused by human actions or failures	Caused by acts of nature
Memorability	Memorable	Not memorable
Effects manifestation	Delayed effects	Immediate effects
Familiarity	Unfamiliar	Familiar
Trust in institutions	Lack of trust in responsible institutions	Trust in responsible institutions

Microbial Foodborne Illness

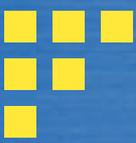




Example: Microbial Foodborne Illness Hazard? Outrage?

$$\text{RISK} = \text{HAZARD} + \text{OUTRAGE}$$

Factor	Conditions Associated with Increased Public Concern	Conditions Associated with Decreased Public Concern
Voluntariness of exposure	Involuntary	Voluntary
Fairness	Inequitable distribution of risks and benefits	Equitable distribution of risks and benefits
Origin	Caused by human actions or failures	Caused by acts of nature
Memorability	Memorable	Not memorable
Effects manifestation	Delayed effects	Immediate effects
Familiarity	Unfamiliar	Familiar
Trust in institutions	Lack of trust in responsible institutions	Trust in responsible institutions



Memorability - Chipotle Timeline

- July 2015: Seattle - E. coli O157:H7, **five** sick
- August 2015: Simi Valley, CA – Norovirus, **234** sick, source was sick employee
- Aug/Sep 2015: Minnesota – Salmonella newport, **64** sick
- Oct 2015-Feb 2016: 9 States – E. coli O26, **55** sick
- Dec 2015: Boston – Norovirus, **151** sick

Economic Impact – foodborne illness

Chipotle Mexican Grill Inc (NYSE:CMG)

Add to Watch List

Set Alert

470.97

Delayed Data
As of 4:00pm ET

↑ **+4.82 / +1.03%**

Today's Change

399 14

52-Week Range

758 61

-1.85%

Year to Date

Quote

Profile

News

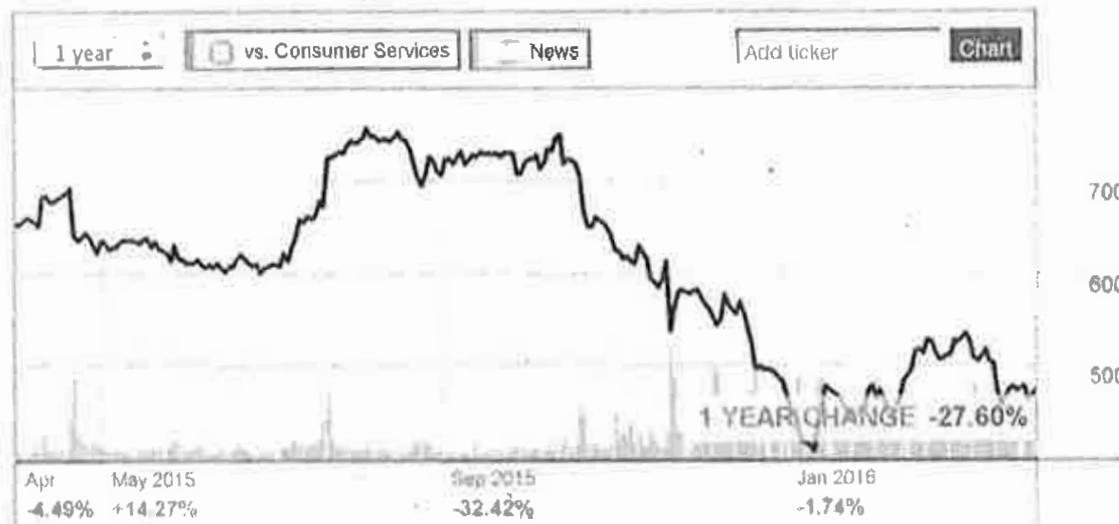
Charts

Forecasts

Financials

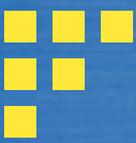
Shareholders

Competitors



Pesticides in food



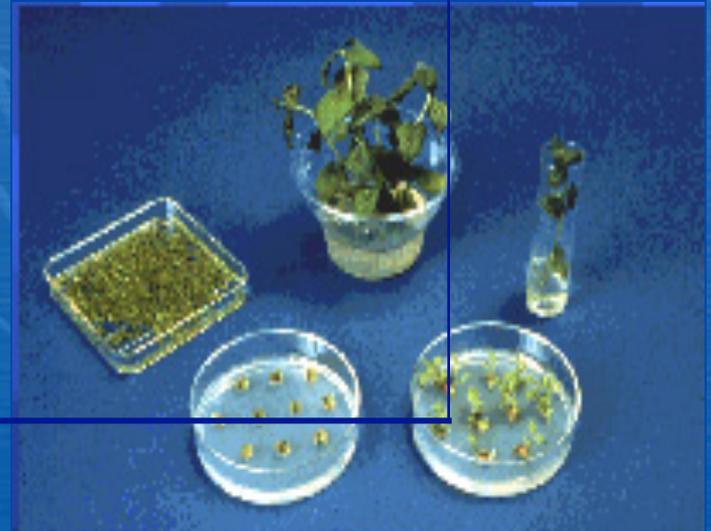


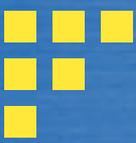
Example: Pesticides in food Hazard? Outrage?

$$\text{RISK} = \text{HAZARD} + \text{OUTRAGE}$$

Factor	Conditions Associated with Increased Public Concern	Conditions Associated with Decreased Public Concern
Voluntariness of exposure	Involuntary	Voluntary
Fairness	Inequitable distribution of risks and benefits	Equitable distribution of risks and benefits
Origin	Caused by human actions or failures	Caused by acts of nature
Memorability	Memorable	Not memorable
Effects manifestation	Delayed effects	Immediate effects
Familiarity	Unfamiliar	Familiar
Trust in institutions	Lack of trust in responsible institutions	Trust in responsible institutions

GMOs in food





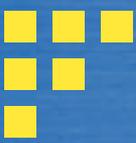
Example: GMOs in food Hazard? Outrage?

RISK = HAZARD + OUTRAGE

Factor	Conditions Associated with Increased Public Concern	Conditions Associated with Decreased Public Concern
Voluntariness of exposure	Involuntary	Voluntary
Fairness	Inequitable distribution of risks and benefits	Equitable distribution of risks and benefits
Origin	Caused by human actions or failures	Caused by acts of nature
Memorability	Memorable	Not memorable
Effects manifestation	Delayed effects	Immediate effects
Familiarity	Unfamiliar	Familiar
Trust in institutions	Lack of trust in responsible institutions	Trust in responsible institutions

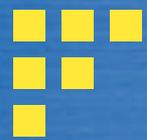
And now, some good news....





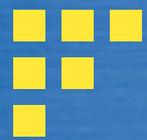
Improving Risk Communication Effectiveness: Increasing Familiarity and Trust

Factor	Conditions Associated with Increased Public Concern	Conditions Associated with Decreased Public Concern
Voluntariness of exposure	Involuntary	Voluntary
Fairness	Inequitable distribution of risks and benefits	Equitable distribution of risks and benefits
Origin	Caused by human actions or failures	Caused by acts of nature
Memorability	Memorable	Not memorable
Effects manifestation	Delayed effects	Immediate effects
Familiarity	Unfamiliar	Familiar
Trust in institutions	Lack of trust in responsible institutions	Trust in responsible institutions



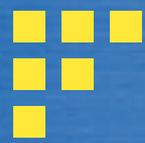
Concluding Thoughts

- Consumers make their decisions based upon scientific and non-scientific factors



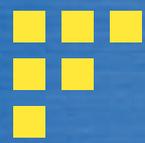
Concluding Thoughts

- Consumers make their decisions based upon scientific and non-scientific factors
- Scientists need to understand this and to humanize/ personalize messages



Concluding Thoughts

- Consumers make their decisions based upon scientific and non-scientific factors
- Scientists need to understand this and to humanize/ personalize messages
- Increasing trust in institutions (through action) and increasing consumer familiarity with specific food safety issues may minimize concerns



Concluding Thoughts

- Consumers make their decisions based upon scientific and non-scientific factors
- Scientists need to understand this and to humanize/ personalize messages
- Increasing trust in institutions (through action) and increasing consumer familiarity with specific food safety issues may minimize concerns
- We must have realistic expectations about what constitutes success

23 SEPTEMBER 1983 • VOL. 221 / NO. 4517

SCIENCE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

