Use of Microbiological Criteria in International Food Hygiene Standards

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Codex Alimentarius Commission

"To Protect the health of consumers and ensure fair practices in food trade."

- Early emphasis on development of general food hygiene standards, especially for commodities.
- Use of Codex standards by governments is discretionary.

Codex: Basic Principles of Food Safety

- Industry: Responsible for producing, manufacturing, and selling safe food products.
- Consumers: Assurance that food is safe when prepared and eaten according to its intended use.

General Principles of Food Hygiene, Codex Alimentarius Commission, 1997.

World Trade Organization

- WTO operating principles acknowledge the importance of science-based standards in removing artificial, unjustified, or discriminatory barriers to food trade.
- Codex standards were identified as key reference points in the WTO "Agreement on the Application of Sanitary and Phytosanitary Standards."

Government Role in Food Safety

- Ensure that food is safe and suitable for consumers -- ensure industry is doing its job.
- Maintain confidence in internationally traded foods.

Government Use of Microbiological Criteria

- Microbiological criteria measure the acceptability or unacceptability of foods, food handling, and food processing.
  - Widely used in safety assurance for imported foods.
  - Equivalence and transparency are now emphasized.

The role of microbiological testing has changed, but it is still an important tool.

When, Was, or Is, Development of a Microbial Criterion Called For?

Codex established pre-conditions to be met:

1. What is the need for, or purpose of, criterion?
2. Where shall criterion be applied?
3. What should happen if criterion is not met?

These conditions established the cognitive framework for change.

Criteria on the Vector of Change

- Early on, Codex emphasized vertical standards and vertical committees.
- In the 1980s, practical limitations of commodity committees emerged.
  - Global markets began to expand.
  - Testing regimes of 1980s (inspection, compliance, end-product testing) were strained.

As a result, Codex's pre-conditions for standard development proved difficult to meet, requiring a new approach.

HACCP: The Next Evolutionary Step

Hazard Analysis and Critical Control Points (HACCP)

- Incorporates risk-based analysis of food safety systems.
- Enables risk-based management of food safety hazards.
- Is the best-yet means of organizing information, including information derived from microbial testing.

Microbial risk assessment developed parallel to HACCP:

- Estimate risk associated with hazards in a system.
- Enables "testing" of systems and interventions.
- Unequalled as information-management tool.

Current Food Safety System Concepts

- Prioritization of risks
- "Outcome directed" risk management
- Food Safety Objectives (FSO)

Food Safety Objective

FSO: Defines the level of a hazardous component in a product at the point of consumption that is associated with an acceptable risk.

FSO represents a risk-based goal that is achievable by a food safety management system.

- Implies that safety is function of entire chain.
- GHP and HACCP testing regimes (with associated micro criteria) may be components.

FSO is another way of expressing the end product of a risk analysis.

FSO and Risk Analysis

- FSO shares scientific characteristics with risk assessment.
- FSO shares policy analysis characteristics with risk management (i.e., decision regarding risk that society can accept).
- As in Codex, when (or if) countries begin to establish FSOs, all stakeholders should be involved.

Micro Criteria ...Their Changing Uses

Yesterday… micro criteria were the **END.**

(i.e., end-product testing against established levels).

Today… micro criteria are the **MEANS** to an end.

- Determine whether control measure will control hazard.
- May apply at various points along the production chain.
- May occur as performance criteria, processing-step criteria, or product criteria.

Future Food Safety System Trends

Overall trends:

- Better targeted.
- More effective.
- More efficient.

Food safety systems that work smarter, not harder.

Future Codex Standards Development Trends

- Move increasingly towards process-based and outcome-directed standards.
- Increasingly obvious what is missing.
  - Consumer data (exposure).
  - Host-susceptibility data (dose-response).
  - Information on hazards (food-specific, country-specific, and strain-specific).
  - Clear definition of the desired level of public-health protection (informed by risk assessment and expressed in FSO).

Food Safety: The Next Frontier

- Public policy debate on ‘acceptable’ or de minimis risk:
  - In developed countries.
  - In Codex.
- Integration of microbial risk assessment into the broader, more highly developed world of chemical risk assessment.

Thank You