Impact of Food Regulations on Innovation

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October 16, 2008
Discussion Topics

- Industry and Government Roles & Responsibilities
- Regulatory Framework and Innovation Case Studies
- Recent Trends and Innovations – The Impact of Regulations
- Emerging Technological & Scientific Developments – The Impact on Regulations
- Future Business Challenges
Roles and Responsibilities
Roles & Responsibilities

Government Agencies
- Roles To Assuring Food Safety
- Regulatory Systems Premised Upon Attention Selectively Applied

Food Industry
- Protection of Public Health through Diligent Control of the Food Supply is of Paramount Importance and Ultimate Responsibility of Food Industry
  - Responsibility to Consumers that the Food Supply is Safe, Wholesome, and of High Quality
  - Responsibility to Governments to Perform in Accordance with Applicable Laws and Regulations
Regulatory Framework and Innovation
Case Studies
Innovation Trends Appear in All Aspects of Food Technology
Establishing A Regulatory Framework

- Advances in Scientific Knowledge
- Developments in Technology
- Changes in Public Perception

New Pressures on Regulatory Safety Evaluation
Case Study: Irradiation

- Food Preservation Processes
  - Different preservation techniques used with different types and forms of food

- Irradiation Used to Destroy Bacteria that Causes Food Decomposition and Food Poisoning
  - Lengthen shelf life
  - Mitigate food poisoning

- All Food Preservative Methods Change the Composition of Food in Some Way

Has Variations in Labeling Requirements Affected Consumer Acceptance?
Case Study: Gene Technology

- Traditional Cross Breeding Used to Select Plants with Most Desirable Characteristics

- Techniques of Genetic Modification Provide New Ways of Transferring Characteristics Between Living Organisms
  - Insect resistance
  - Utilize less water to grow

- Safety Assessments Based on Comparison with Conventional Food Counterpart
  - Molecular, Toxicological, Nutritional, Compositional Comparisons

Has Variations Regulatory Requirements Affected Consumer Acceptance?
Recent Trends and Innovations

Impact of Regulations
Trends: Impact of Regulations

- Affordable Nutrition
  - Selection: Gene Technology is a viable approach to address affordable nutrition, climate change concerns
  - Regulatory labeling requirements and inconsistent approaches to safety evaluation hinder the utilization of gene technology

- Food Safety
  - Preservation: Irradiation is a viable approach to assure food safety while maintaining nutritional integrity
  - Regulatory labeling requirements and inconsistent approvals hinder the utilization of irradiation for preservation

Real or Perceived Risk = Business Risk
Fast, Forkless, Healthful

- Fortified
- “Clean label” concept
- Natural
- Hand-held convenience

Scientific Requirements for Claims

- Approved Additives
- Regulatory Definitions
- Approved Packaging
No Substitution for Taste

- Health Benefits + Flavor = Success

JECFA Approach to Safety Evaluation of Flavouring Ingredients Facilitates the Global Usage of Flavours
Emerging Technological & Scientific Developments

Impact on Regulations
Emerging Technological & Scientific Developments: Impact on Regulations

- Nanoscience
  - Opportunities in food technology
    - Improved flavor, texture, bioavailability of supplements
  - Opportunities in food safety
    - Detection of microbial and chemical contaminants
  - Opportunities in environmental sustainability
    - Controlled release of fertilizers

Learn from Case Studies and Approach Using Sound Scientific Principles
Emerging Technological & Scientific Developments (cont.)

- Botanicals
  - Opportunity to delivering a natural food with health benefits
  - Established JECFA approach
  - EFSA risk assessor’s toolkit

Presumption of Safety

Utilize Structure Activity Relationships
Emerging Technological & Scientific Developments (cont.)

- Environmental Sustainability
  - Recycle and reuse

Utilize Modeling Tools

- Quality Supply Chain
  - Ensure the safety and security of food and consumer products throughout the global supply chain

3rd Party Food Safety Audit Criteria
Future Business Challenges
International Standards

Innovation in a Global, Competitive Market Dictates Acceptance of Science-Based Approach
Risk Assessment

- Practice of Risk Assessment Has Undergone Significant Changes Through the Years
  - Conceptually, judgment has moved away from a comfortable assurance of safety to an uncomfortable level of risk
- Inherent Uncertainty in Safety has Always been Present
  - Safety requires proof of a reasonable certainty of no harm – not proof beyond any possible doubt

Reasonable Certainty of Safety Determined in this Manner will Permit Sound Progress in Food Technology
Setting Regulation
- Utilize risk assessment to determine need to set standards

Management based on Legislative Intent
- Security
  - Traceability Requirements
- Safety
  - Quality Standards
  - Safety Standards
  - Approved Additives
- Consumer
  - Labeling
  - Food Standards

Point of Regulatory Action on Food Production & Processing Systems Affect Food Safety
Setting Standards

- Plant Varieties
- Pesticides
- Labeling Control
- Hygiene
- Materials in Contact
- Biotechnology Contaminants
- Additives
- Solvent Flavors
- Foods for Specific Nutritional Use
- Irradiation
- Deep Freezing
- Vehicle Emissions
- Fertilizers
- Dangerous Substances
- Feedingstuff Zoonoses
- Veterinary Pharmaceuticals
- Food Packaging, Processing, and Distribution

Managing Inputs

HUNDREDS OF PROCESSED INGREDIENTS

THOUSANDS OF FINISHED PRODUCTS THAT REACH THE CONSUMER

Relative Resources Needed for Control (Monitoring, Testing, etc.)

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If public safety is the goal, this is too far down in the food chain for real control.
Risk Communication

- Balance Hazard vs. Risk Communication

- Balance Communication with Risk
  - Labeling
    - e.g. Allergens
  - Warning Statements
    - e.g. PKU
  - Specifications
    - e.g. Food Chemicals Codex, JECFA
  - Information
    - e.g. Nutrition Facts
Food Regulations and Innovation

Consumer Criteria
- Safe
- Affordable
- Available
- Nutritious
- Wholesome
- Flavorful
- Minimal Environmental Impact

Regulatory Criteria
- Employ International Standards
- Build on the Past
- Use Sound Science for Risk Assessment
- Manage Risk at Appropriate Point
- Balance Risk Communication
Thank You