

# SAFETY & QUALITY ASSURANCE

## Timeline of Events <sup>1</sup>

### 1960s

- In 1967 an updated meat inspection act required all states to be in conformity with the federal standards by adopting federal standards or accepting federal administration of the meat inspection service.
- Beginning of HACCP: concepts developed for use in the space program as a management system based on inspecting the steps of food processing instead of inspecting the end product.
- Egg Products Inspection Act passed in response to *salmonella* spp. in egg products
- Public education program to cook all pork thoroughly to avoid trichina, put the responsibility on the consumer
- Surgeon General's pronouncement that foods treated with irradiation were safe and wholesome. NASA began using irradiation for the astronaut's food. FDA approved irradiation to inhibit potato sprouting and insect infestation of stored grains.
- Concerns about pesticides, their residues and their safety for people and the environment begin to surface with the book "Silent Spring", by Rachel Carson.

### 1970s

- *Cryptosporidium* emerges<sup>2</sup>
- *Campylobacter jejuni* emerges <sup>2</sup>
- *Yersinia enterocolitica* emerges
- Pillsbury first big user of HACCP principles
- 1973 eggs removed from potentially hazardous foods list

### 1980s

- First recognized E. Coli O157:H7 outbreak occurred in US.
- *Salmonella Enteritidis* emerges
- *Listeria monocytogenes* emerges <sup>3</sup>
- Irradiation approved for use on raw pork to destroy trichinae and for use on fruit to delay maturation and destroy insects.
- Pesticides in milk become a concern (heptachlor).
- National Academy of Sciences study of meat inspection process recommends use of HACCP for meat inspection.
- Faulty pasteurization of milk leads to largest outbreak of *salmonella* (1985).
- Discovery that intact shell eggs could be contaminated by salmonella enteritidis.

### 1990s

- Microbiological safety of food of more concern to consumers than hormone, antibiotic, and pesticide residues, or additives.
- Largest ever outbreak of *salmonella* enteritidis occurs

- Largest ever outbreak of *E. coli* 0157:H7 occurs, lead to more focus research into the epidemiology of a foodborne pathogen on the farm
- President's Food Safety Initiative - goal is to improve the nation's food safety through expansion of an early warning system, enhance seafood safety inspections, expand food safety research, expand risk assessment, expand training and education, and explore private-public partnerships.<sup>4</sup>
- HACCP system implementation for meat inspection is mandated in order to improve quality assurance and food safety.
- Chronic health effects of foodborne illness receive more attention (rheumatoid disease, Guillain-Barre syndrome, etc.)<sup>2</sup>
- *Salmonella* Typhimurium DT104 emerges
- *Yersinia enterocolitica* reemerged<sup>10,11</sup>
- VS trichinae program improves knowledge of its epidemiology
- Concern about Johnnes Disease as a human health issue emerges
- Irradiation approved for use on red meat

## Trends

- Public concern about food safety will remain high<sup>12,3,4,5</sup>. Food safety issues include: additives, colors, and flavors; antibiotics and other feed additives; fertilizers and other growing aids; irradiation; microbiological contamination; naturally occurring food toxicants; nutrition; pesticides; pollutants; processing; packaging; and labeling and tampering<sup>1</sup>. In a nationwide household survey conducted in 1995, 39% of respondents reported that fats and cholesterol in foods was their top concern, followed by food poisoning (30.4%), pesticide residues (13.6%), preservatives/additives (5.8%), hormones/antibiotics (3.7%), and high sugar content (3.4%)<sup>13</sup>. (see graph 4.9)
- There will be new, emerging and reemerging foodborne pathogens.
- New kind of foodborne outbreaks, which are more diffuse and widespread, have appeared due to changes in the way food is produced and distributed. Traditional outbreaks tended to be acute and highly local, with a high inoculum dose, high attack rate and follow a social event. The new kind of outbreaks are the result of low-level contamination of a widely distributed commercial food product<sup>2</sup>.
- New foodborne disease surveillance activities are being implemented by the Center for Disease Control and Prevention and their collaborators, to improve detection of outbreaks, including active surveillance in sentinel populations (FoodNet), national strain sub-typing databases, and routine monitoring of antimicrobial resistance<sup>2</sup>.
- Hazard Analysis and Critical Control Points (HACCP) programs replace the strategy of final product inspection<sup>2</sup>.
- Increase in quality certification by 3rd parties like ISO9000, quality control more important throughout food chain.<sup>6,8,9</sup>

## Uncertainties For The Future

- Consumer and industry acceptance of irradiation. How much impact will use of irradiation have on incidence of microbiological foodborne illness?<sup>12</sup>
- How will food safety influence international trade policy?<sup>3</sup>
- Antibiotic resistance and the role of animal agriculture. Development of animal production and treatment mechanisms that minimize the ability of microbes to adapt to antibiotics and changing environments. <sup>(2)</sup> Will antibiotics as promoters of animal growth be phased out (gradually or rapidly?), and can similar production benefits be realized by improvements in other aspects of animal care, such as hygiene<sup>14</sup>?
- Veterinarian role in food animal practice becoming advocate of food safety. <sup>(7)</sup>
- Increased regulation of foods with regard to transportation in interstate commerce.
- Development of animal production methods to reduce or eliminate contaminants from animals before slaughter. <sup>6</sup>
- Role of new animal identification systems.

## References

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