



Lesson 14

Food Science and technologies



C. Packaging Hurdles

© Clean Room Environment

© Modified Atmosphere Packaging

© Barrier Packaging Materials

© Packaging Systems

© Intelligent



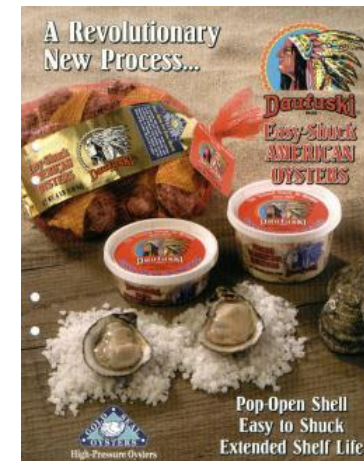
D. Processing Hurdles

⦿ Thermal Processing

- Hot Fill, Quick Chill (Cook>Package)
- Post Pasteurization (Package>Cook to surface or internal temp), including sous vide
- Retort sterilization

⦿ Non-Thermal Processing

- Irradiation
- Pulsed Light and Pulsed Electric Fields
- Ultra High Pressure



E. Distribution/Merchandising Controls

- ◎ Immediately following packaging
- ◎ Manufacturing plant holding coolers
- ◎ Loading Docks, Trucks, Loading Docks
- ◎ Distribution centers/depots coolers
- ◎ Loading Docks, Trucks, Loading Docks
- ◎ Retail/Foodservice holding coolers
- ◎ Store Merchandisers/display cases
 - Affected by display case design, sunlight, defrost, air circulation, product location...
- ◎ Between store and home
- ◎ Home refrigeration and preparation



E. Distribution/Merchandising Controls

Superchilling

- Storage temperature just above the freezing point of the product or raw material...for value-added produce and meat/poultry/pasta products, this would equate to a holding temperature in the range of 32-35° F.
- *Shelf life shown to be 1.5 to 4 times greater* for products consistently stored at these temperatures versus those stored at conventional refrigeration temperatures of 40-45° F.



Organizational Needs

- ◎ Consumer Understanding - Qualitative and Quantitative Consumer Research
- ◎ Product Design and Development: A Disciplined Process from Concept to Commercialization
- ◎ Culinary, Nutritional, *and* Food Technology Expertise
- ◎ Packaging Design and Development
- ◎ Cost and Quality Optimization
- ◎ Food Processing Expertise and Short Shelf Life Manufacturing
- ◎ Distribution and Logistics
- ◎ Microbiology, Food Safety and Food Security Expertise
- ◎ Shelf Life and Preservation Systems
- ◎ Specification and Controls Development, including GAP's, GMP's, SOP's, and HACCP

Critical to develop a flexible, nimble, cross-functional, empowered, and passionate team!

Strategic Alliance Development

Partnering for Success

- ◎ Manufacturer and retailer alliances
- ◎ Manufacturer and Manufacturer Joint Ventures to
 - Better understand international trends
 - Expand distribution into new geographic markets and/or
 - Enable complementary products, resulting in more complete range of products available to the customer
- ◎ Manufacturer and Supplier/University/Service Provider Joint Ventures

Alliances provide access to customers, and enable a more compelling value-added solution to customers and create synergy and efficiency in marketing and development efforts

