Food Packaging Options & Guidelines
1. To research and explain food package guidelines.
2. To describe properties of containers used in commercial food packaging.
3. To indentify factors and use of controlled atmosphere packaging.
4. To describe information required on a food label.
Defining Food Packaging & Guidelines
Is the science and technology of enclosing products for distribution, storage, sale and use.

- Protects food from microbial and other environmental contaminants.
- Can also protect food from damage during distribution.

**Microbial**: a microorganism, especially a bacterium, which causes disease.
Food Packaging

- Also offers:
  - consumer nutrition
  - ingredient information
  - cooking instructions
  - product
  - weight
  - brand identification
  - pricing
Functions of Food Packaging

- Main role is preservation
- Can be used to unitize or group products together
- Is also used to communicate and educate the customer

**Unitize:** the act of separating or packaging into single units
Is any substance which comes in direct contact with the food product

Includes:
- manufacturing
- packing
- packaging
- transporting
- holding food
Requirements of Food Packaging

- Protect against contamination of microorganisms
- Act as a barrier from moisture and oxygen
- Filter out harmful light
- Provide support from physical damage
- Protect against odors and environmental toxins
- Meet size, shape and weight requirements
• Ensures the safety of all food, bottled water and associated packaging materials sold in the United States except meat, seafood, poultry and some egg products
• Also regulates all food substances and safety of packaging material for food and beverages
• Replaced the Pure Food and Drugs Act of 1906
• Passed Federal Food, Drug, and Cosmetic Act of 1938
• Is a United States federal government policy that regulates farming, agriculture, and food.
• Was formed in 1862 under President Lincoln.
• Passed many critical acts such as:
  - banned diseased animals from being used as food
  - provided quarantine of imported animals
  - regulate consistency between state regulations of food
Food Safety & Inspection Service (FSIS)

• Is a public health agency in the U.S. Department of Agriculture
• Inspects and regulates products produced in federally inspected plants
• Ensures that these products are safe, wholesome and accurately labeled
• Includes:
  ➢ meat
  ➢ poultry
  ➢ processed egg products
The Pure Food & Drugs Act

- Was passed June 30, 1906
- Is a United States federal law providing meat inspection
- Forbid sales of adulterated foods and poisonous medication
- First insured products were acutely labeled
The Federal Food, Drug & Cosmetic Act

- Was passed by congress in 1938
- Gave the FDA authority to oversee the safety of food, drugs and cosmetics
- Replaced the earlier Pure Food and Drug Act of 1906
- Has been amended many times since its creation
Food Industry Certifications

• Available for commercial production and food service workers
• Educate individuals involved in food handling on the importance of cleanliness, sanitation, safety practices, temperature and quality control
- Include:
  - HACCP
  - ServeSafe through the National Restaurant Association
  - ISO 22000- a standard developed by the International Organization for Standardization relating to food safety management
- Can be obtained individually or as a facility
Properties of Food Containers
Retail Containers

- Protect and advertise the food for sale and storage
- Some examples include:
  - metal cans
  - glass
  - plastic bottles
  - jars
Primary Container

• Is the main package which holds the food being processed
• Comes in direct contact with the food
• Examples include:
  - jar(pickles)
  - can(soup)
  - bag(chips and cereal)
• Is the outer case, box or wrapper which holds retail units together
• Does not come in contact with the food directly
• Can also be referred to as a master container
• Function to protect the primary container from damage during shipment and storage
• Most commonly are made of corrugated fiberboard (cardboard)
Tertiary Container

- Groups all of the secondary containers together into pallets for shipping
- Objective is to aid in the handling of larger amounts of products
- Can be moved or transported using a forklift or pallet jack
• Cans are usually made of either steel or aluminum.

• Cans are important in the canning of fruits and vegetables since it must retort.

**Fun Fact:** Retort is used in the beverage industry, because the internal pressure from the carbon dioxide adds the necessary strength to the drink container.
Glass

- Is a chemical, inert and absolute barrier to oxygen and water
- Is formed from oxides of metals, most common being silicon dioxide (sand)
- Containers are being phased out of use to plastics
- Limitations of glass include:
  - breakage
  - shipping weight & costs
  - amounts of energy required in forming containers
• Are thin, flexible and used for bags or wrap
• Can be thicker and used to construct cartons
• Are treated, coated or laminated when used as primary containers to improve protection
• Can include additives:
  - to increase flexibility
  - for tear resistance
  - to add wet strength
• Eggs are most commonly packaged in paper or cardboard containers
  ➢ have a long shelf life of up to five weeks if properly stored
  ➢ must be stored in a refrigerator below 40°F
    ◦ should not be stored in refrigerator doors to prevent temperature fluctuations
  ➢ can be frozen if removed from the shell
- Are available in increments of six (half a dozen, dozen, dozen and a half)
- When packaged in large flats, also commonly wrapped in plastic and boxed
• Commonly comes in two types: Thermoplastics and Thermosetting polymers
  ➢ Thermoplastics will soften and melt when heat is applied
  ➢ Thermosetting polymers can melt and take shape; after they have solidified, they remain solid
• Can be cast, pressed or molded into a wide variety of shapes
• Examples include:
  ➢ plates
  ➢ tubes
  ➢ bottles
  ➢ boxes
  ➢ Styrofoam
Factors of Controlled Atmosphere Packaging
• Is also known as CAP
• Is an injection or introduction of elements to achieve desired atmosphere and slow natural respiration
• Objective is to extend product shelf life in warehouse or storage area
• Can contain gas that may be evacuated or introduced to achieve the desired atmosphere
• Is usually used for fruit and vegetables, but not meat
Features of (CAP)

- Is not to improve or enhance quality
- Slows the natural respiration rate of the product, not stop it altogether
- Is largely responsible for the year round availability of fresh fruits and vegetables
• Include the following:
  ➢ vacuum packaging
  ➢ shrink wrapping
  ➢ wax or other coatings
• Uses a special blend of
  ➢ oxygen
  ➢ nitrogen
  ➢ carbon dioxide
  ➢ water vapor
• Is an injection of special blends of components to extend product shelf life
• Is modified by direct injection of gases into a package
• Can also include evacuating air from the package
• Interacts between package atmosphere so that its composition is other than that of air
Uses include:
- meat
- seafood
- fruits
- vegetables

**Fun Fact:** It is estimated 25 to 40 percent of all fresh produce harvested will not reach the consumers table, due to spoilage and mishandling.
Properties of The Food Label
Identification

- Is the name of the product
- Must contain the contact information of the producer or manufacturer
- Also includes the size or weight of the product
• A full disclosure of the ingredients in descending order by predominance
• Location is not specifically regulated as long as the information is present and legible
• Should use common names such as sugar instead of the scientific name sucrose
Serving Size

• Is defined as a measurement of the approximate amount of food product recommended to consume at one time.

• Also contains the amount of servings per container.

• Is standardized for easy comparison with other similar foods.

• Is provided in familiar units, such as cups or pieces.
Include the following serving values:

- calories
- total fat
- cholesterol
- sodium
- total carbohydrates
- dietary fiber
- sugars
- protein
- vitamins
Daily Values

• Is a chart representing the per serving nutrition
• Most commonly are values based on a 2,000 calorie a day diet
• Sometimes include information based on a 2,500 calorie a day diet as well
• Can be shown adjacent to the actual nutritional breakdown or listed at the bottom of the label
Nutrition Keys

• Are part of a voluntary program which puts nutritional information on the front of packaging

• List the following per serving:
  - Calories
  - Saturated fat
  - Sodium
  - Sugars

• Help busy shoppers understand quickly the nutritional content of their food
• May also display nutrients which are important for a healthy diet including:
  • Potassium
  • Fiber
  • Vitamin A
  • Vitamin C
  • Vitamin D
  • Calcium
  • Iron
  • Protein
• Is a claim by the manufacturer of the product stating their food will reduce the risk of developing a disease

• Include the following:
  - low fat
  - low sodium
  - cholesterol-free
  - reduced calorie
Safety

• Is information regarding the handling and storage of food
• May also include a date which indicates when the product should be sold by
• May mention how soon a product should be consumed after opening

![Image of a food label with instructions: Refrigerate after opening, do not freeze for best results when near empty, store bottle upside down.](image)
• Must express both the month, day and the year, if food is shelf-stable or a frozen product
• Must have a phrase explaining the meaning of the date such as:
  ➢ best if used by (or before)
  ➢ sell-by
  ➢ use-by
Allergens

- Are defined as foods or substances which may cause allergies
- Most labels also indicate if a product was made in a facility which uses any of those products
- Eight foods account for 90 percent of all food-allergic reactions

Made in facility that uses wheat, soy, and dairy.
• Most Common Include:
  - dairy
  - egg
  - peanut
  - tree nuts
  - fish
  - shellfish
  - wheat
  - soy
• Food Packaging is used to protect food from damage and bacteria
• Food packaging’s major role is to ensure preservation
• A food contact substance is any material which comes in direct contact with food
• The FDA and USDA are all government services that work to ensure all food and food packaging meet regulation
• Food package containers are often made of metal, glass, plastic or paper
• Primary containers are the main packages to hold the food
• Secondary containers protect the primary container and are a major component of marketing the product
• Tertiary group product together and are used mostly in shipping and transportation
• CAP and MAP are both modification to the atmosphere around the food in order to extend product life
• The food label is an important part of the packaging process and has to include key information about the product such as nutritional facts, safety and ingredients
1. Common food allergens include all of the following except:
   A. Eggs
   B. Dairy
   C. Peanuts
   D. Water
   E. Fish

2. The government agency that ensures the safety of all food in the United States is the ________.
   A. FSIS
   B. FDA
   C. USDA
   D. MAP
   E. CAP
3. Which container box or wrapper holds individual food units together?
   A. Retail container
   B. Primary container
   C. Secondary container
   D. Tertiary container
   E. Plastic container

4. Which container protects and advertises the food for sale and storage?
   A. Retail container
   B. Primary container
   C. Secondary container
   D. Tertiary container
   E. Glass container
5. Which government agency was created in 1862 under President Lincoln?
   A. USDA
   B. FDA
   C. FFA
   D. FSIS
   E. FBI

6. A statement by the manufacturer of the product which reports their food will reduce the risk of developing a disease is the __________ information.
   A. Allergen
   B. Safety
   C. Health claim
   D. Serving size
   E. Ingredients
7. The identification must include all of the following except:
   A. Name of the product
   B. Date
   C. Contact information
   D. Size of product
   E. Weight of product

8. Packaging that evacuates or introduces gas to extend shelf life is?
   A. CAP
   B. MAP
   C. FSIS
   D. FDA
   E. USDA
9. Controlled Atmosphere Packaging includes what element?
   A. Aluminum
   B. Nitrogen
   C. Argon
   D. Fluorine
   E. Zinc

10. Functions of food packaging includes all of the following except:
    A. Food preservation
    B. Group product
    C. Communicate customer
    D. Educate customer
    E. Spoiling and mishandling
Sources


Sources


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