FDE 418
FOOD QUALITY CONTROL
LESSON-13

Prof. Dr. Kezban Candoğan

E-mail: candogan@eng.ankara.edu.tr,
kcandog@hotmail.com

Phone: 2033300 (3647 ext.)

Hazard and Risk

HAZARD: Biological, chemical or physical agent, capable of causing harm

RISK: Probability of harm combined with seriousness of outcome

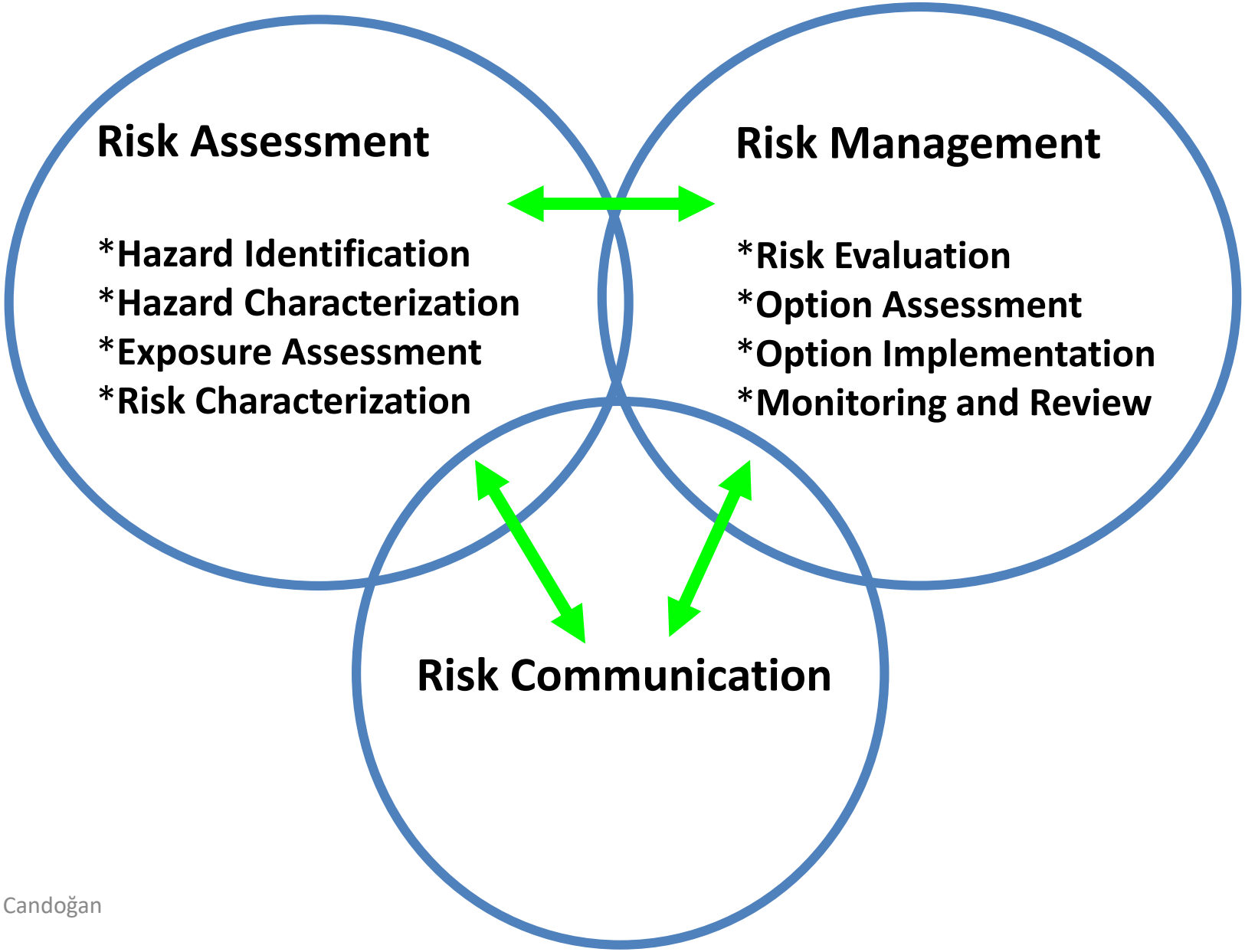
Is there any risk?

Risk analysis

- ***Risk analysis*** is defined for the purposes of the Codex Alimentarus Commission as;

  - *"A process consisting of three components: risk management, risk assessment and risk communication''* (WHO, 2010)

Structure of Risk Analysis



The FAO/WHO Food Safety Risk Analysis

- ✓ A guide for national food safety authorities- based on the risk analysis principles adopted by Codex
- ✓ Aims to help food safety control authorities understand and apply risk analysis in food control
- ✓ The purpose is: to improve consumer protection and trade outcomes both nationally and globally

Quality Changes in Foods

Reactions in foods affecting quality

- ✓ Quality indicators are not constant: the quality of a food changes over time
- ✓ The most important quality-related changes are:
  - ✓ ***Chemical reactions:***
  - ✓ ***Microbial reactions:***
  - ✓ ***Biochemical reactions***
  - ✓ ***Physical reactions***

Measurable food quality factors

- ✓ Microbial counts and types
- ✓ Nutrient content
- ✓ Color & appearance
- ✓ Moisture content
- ✓ Physical shape/size
- ✓ Mechanical properties
- ✓ Flavor panel scores
- ✓ Toxicant level (chemical risk)
- ✓ DAL (e.g. insect fragments)

Shelf-life of Foods

Definition of shelf-life of foods

- ✓ The period the food will retain an acceptable level of eating quality from a safety and organoleptic point of view under specific storage, processing and packaging conditions

- ✓ Depends on four main factors;

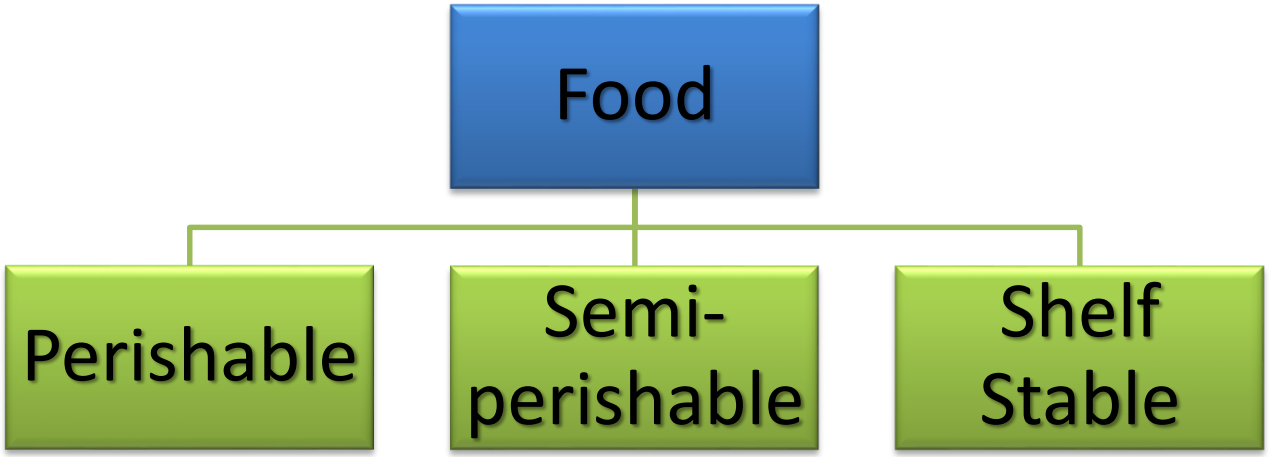
  - ✓ Formulation
  - ✓ Processing
  - ✓ Packaging
  - ✓ Storage and distribution

Classification of foods based on shelf-life

- ✓ **Perishable foods (properly stored):** have under 14 days of shelf-life
- ✓ **Semi-perishable foods:** have a shelf-life of up to 6 months
- ✓ **Shelf stable foods (non-perishable):** last over 6 months and as long as 3 years under proper storage conditions

Factors affecting shelf-life of foods

- ✓ Composition
  - Water
  - Fat
  - Protein
  - Carbohydrate
  - Other components



- ✓ Storage Conditions
  - Humidity
  - Air
  - Light
  - Temperature

Nutrient loss, Off-colors, Off-flavors, Microbial spoilage

Shelf-life tests in foods

- ✓ Types of tests to measure the progress of shelf-life:
  - ✓ **Microbiological examination, including challenge testing**
  - ✓ **Chemical analysis**
  - ✓ **Physical testing, measurement and analysis such as rheological measurements, microscopical examination and so on**
  - ✓ **Sensory evaluation**
  - ✓ These test can be used individually or in combination