



Food and Agriculture Organization  
of the United Nations

# Joint FAO/WHO Expert meeting on Microbiological Risk Assessment

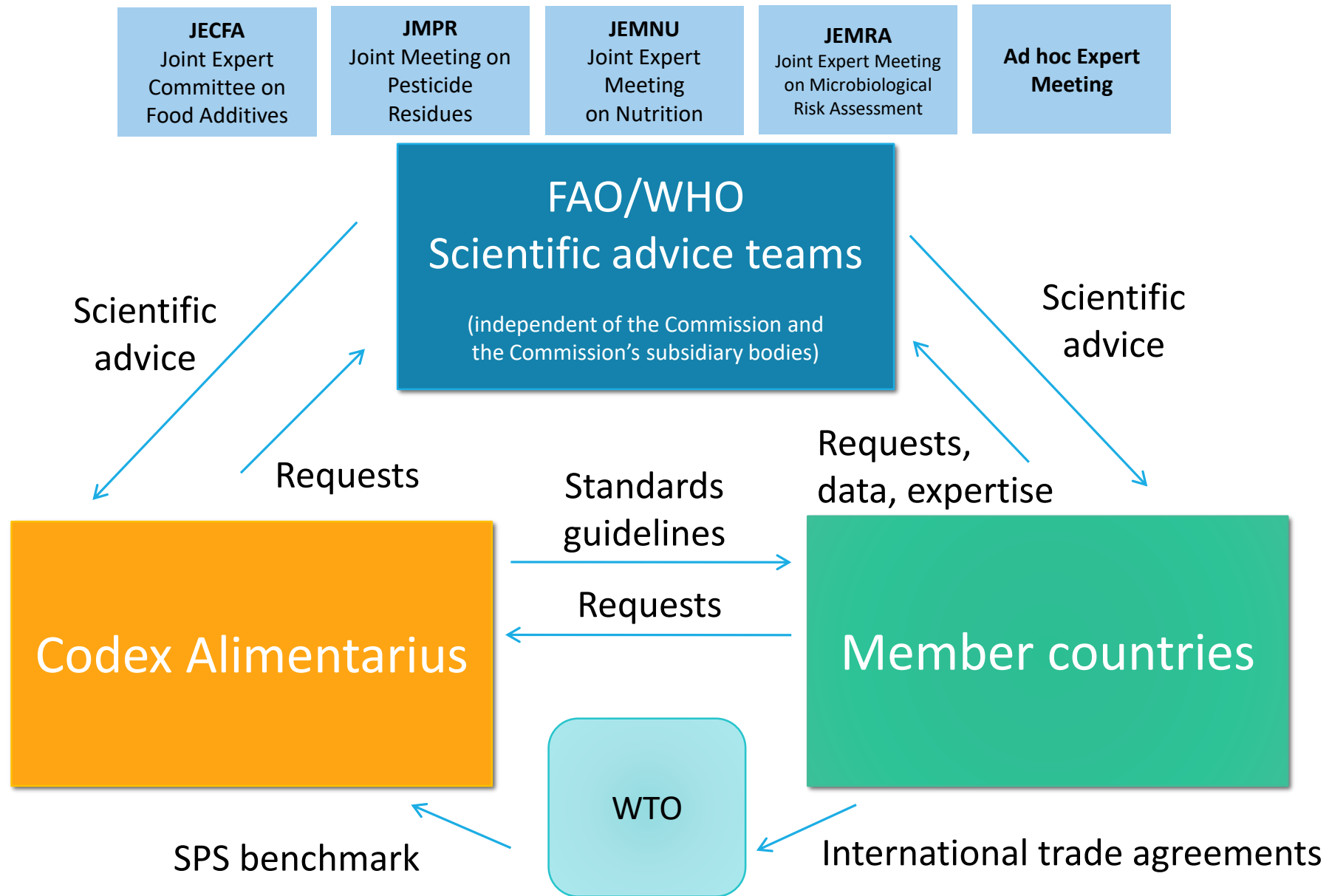
---

PANPILAD SAIKAEW, PROJECT COORDINATOR, FAORAP

REGIONAL TRAINING WORKSHOP

ENHANCING EFFECTIVE PARTICIPATION IN CODEX ACTIVITIES: DEVELOPING SCIENCE-BASED NATIONAL POSITIONS AND  
CONTRIBUTING SCIENTIFIC DATA TO THE CODEX STANDARD-SETTING ACTIVITIES

5- 7 DECEMBER 2018, TOKYO, JAPAN



# The main principles of developing scientific advice

---

## **Excellence**

Use of internationally recognized expertise, supported by the creation of a platform for global scientific discussions based on best practices in elaborating guidance

## **Independence**

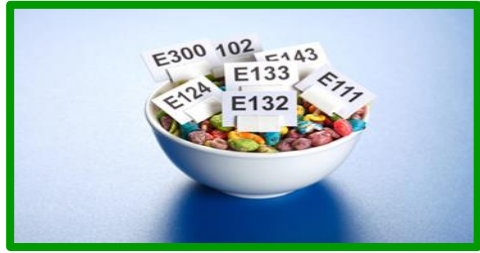
Experts contribute in their own capacity and not on behalf of a government or institution; they are required to declare possible conflicts of interest

## **Transparency**

Procedures and methods to ensure all interested parties understand the processes for the development of scientific advice and have access to the reports, safety assessments and evaluations, and other basic information.

## **Universality**

A broad base of scientific data is critical for the elaboration of international standards-setting activities. Therefore, institutions and all interested parties throughout the world are invited to make data available. It should be noted that in support of this principle, one of the objectives of the Codex Strategic Plan 2014 – 2019 is to “Increase scientific input from developing countries”



1956

**JECFA**

Joint FAO/WHO Expert Committee on Food Additives

**JMPR**

Joint FAO/WHO Meeting on Pesticide Residues

1963



2000

**JEMRA**

Joint FAO/WHO Expert Meeting  
Microbiological Risk Assessment

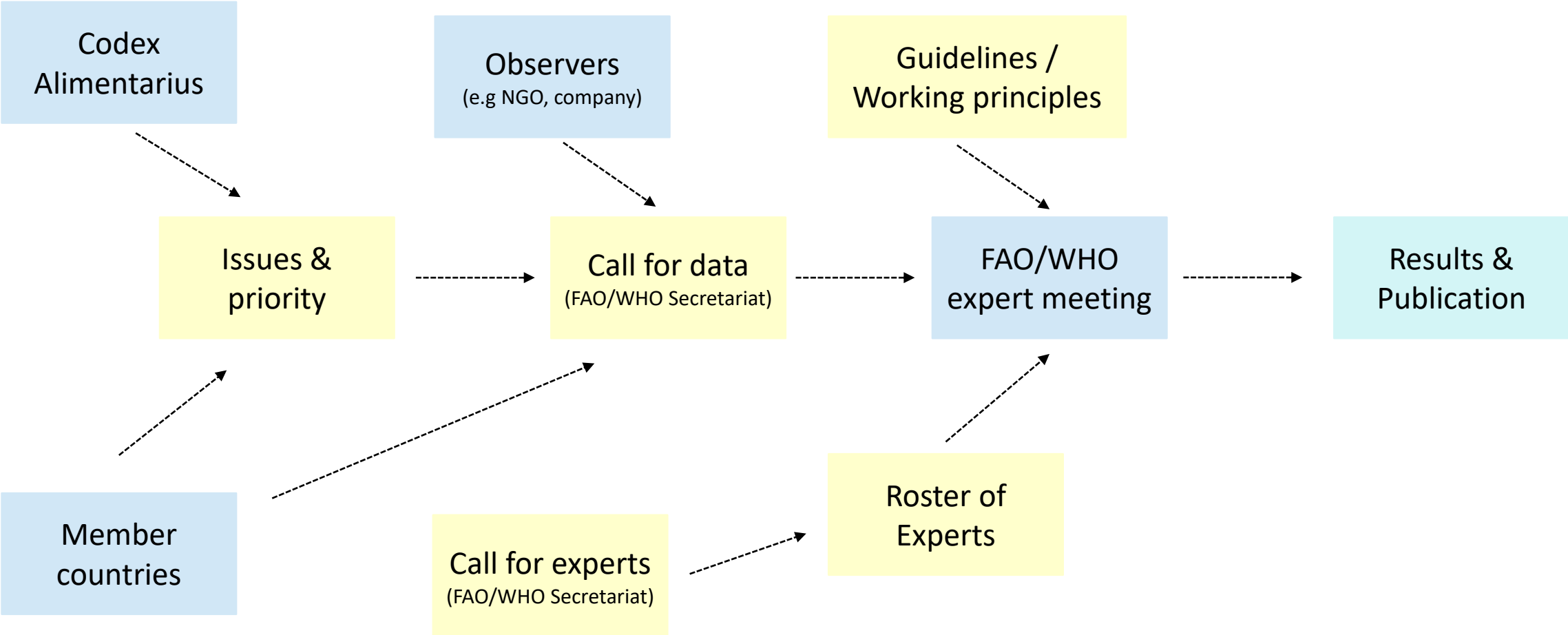
**JEMNU**

Joint Expert Meeting on Nutrition

2010



# General process for the provision of scientific advice by FAO/WHO Expert Bodies

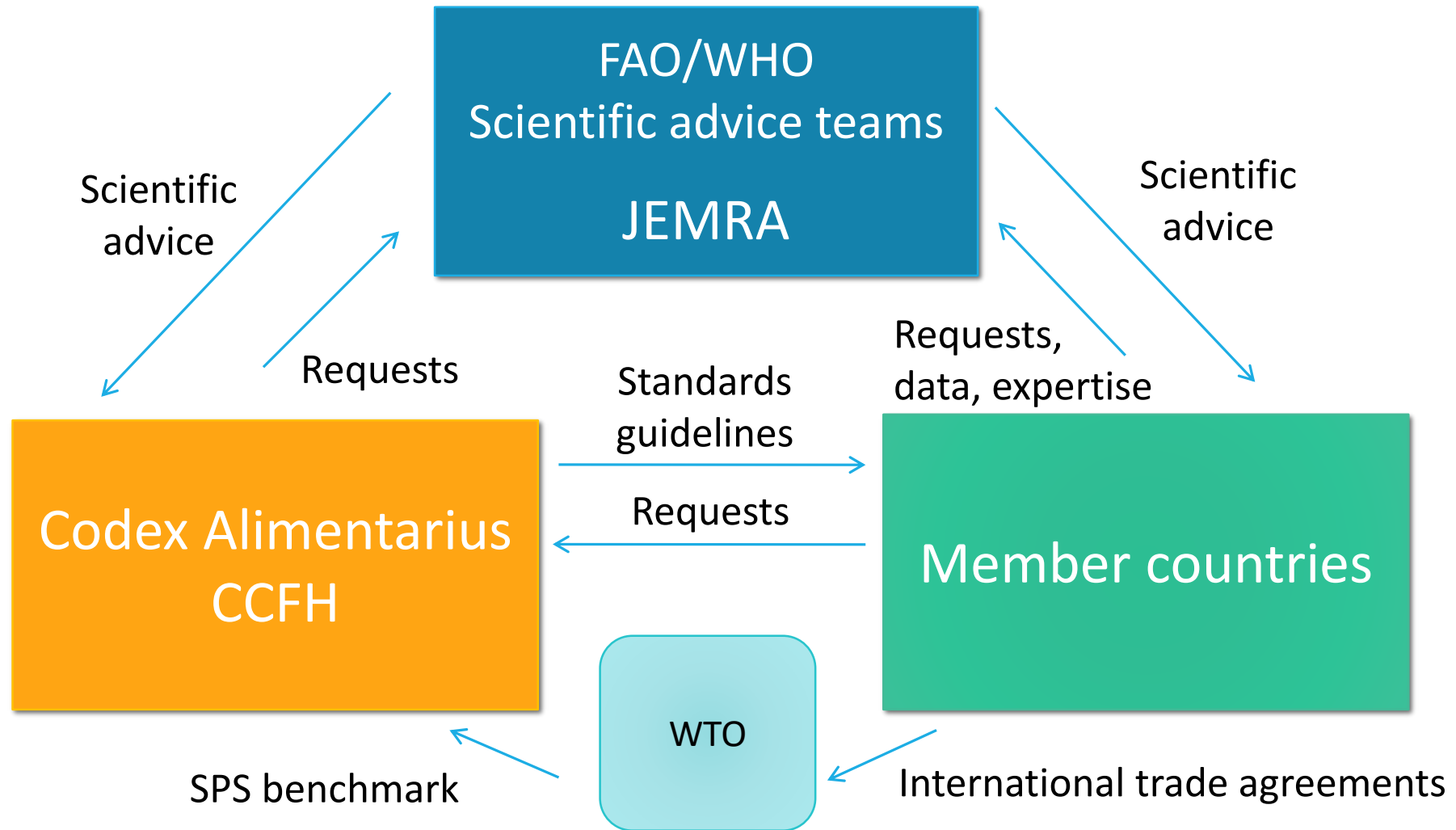


# JEMRA

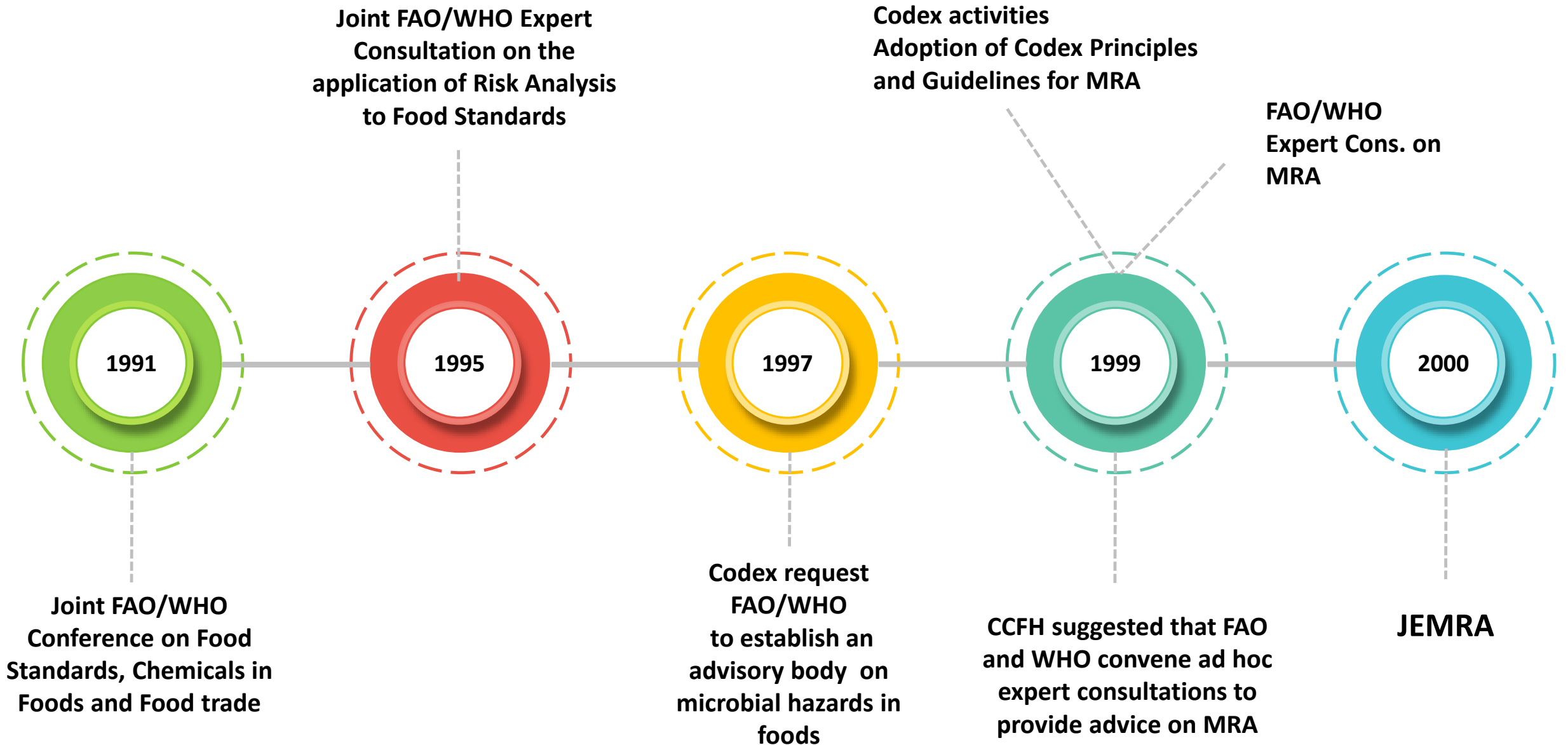
---

The Joint FAO/WHO Expert meeting on Microbiological Risk Assessment has been established in order to

- provide scientific advice on microbiological issues to Codex, and FAO and WHO member countries;
- address specific microbiological risk assessment questions from Codex committees (mainly the Codex Committee on Food Hygiene);
- develop “adaptable” risk assessments and data resources for countries to use in conducting their risk assessments.



# History of JEMRA





# JEMRA's objectives

1 Assessing the risk associated with foodborne pathogens

2 Providing guidance on data generation and access to relevant data

3 Developing guidelines on how to assess risks

4 Providing guidance on application of risk assessment

5 Developing risk assessment tools

# The activities of JEMRA

1

## Risk Assessments

Generate scientific information of quantitative risk assessments of specific pathogen-commodity combinations as the basis for scientific advice to Codex and member countries

2

## Guideline documents

develop guidelines to help the risk assessors do a risk assessment and the risk managers and other interested parties to understand the principles and science behind the risk assessment steps

3

## Data collection and generation

Identify the types and characteristics of data that can be used in MRA

5

## Information and technology transfer

- make all JEMRA information available to all stakeholders such as national governments, risk managers, Codex
- Basic Awareness Course on MRA



4

## Application of risk assessment in risk management:

A further aim of JEMRA is to provide guidance on how risk assessment can be effectively used by risk managers as a decision support tool.

# Microbiological risk assessment

## Hazard identification

- Is there a problem?
- What is it: pathogen?  
associated food?

## Hazard characterization

- What happen when pathogen is ingested?
- How likely people get sick after the exposure to the contamination food at the given dose?
- Establish Dose Response

## Exposure assessment

- How likely the food is contaminated??
- How many pathogens are likely to be in the food when you consume it?
- How much and How often the contaminated food is consumed.

## Risk characterization

- What are the nature and likelihood of the health risk? / How likely the adverse health effect?
- Who is likely to become ill ? How many?
- What are the sources of variability and uncertainty in the information uses?
- Advice to find effective interventions.

# Microbiological hazards vs chemical hazards

## Microbiological hazards:

- Usually acute effect
- Single exposure
- Pathogen/commodity combination
- Living hazards - numbers can change up or down
- Dynamic and adaptable - different characteristics & variable response
- Difficult to define acceptable levels

## Chemical hazards:

- Usually cumulative effect
- Multiple exposures
- One chemical - many foods
- Toxic levels stable or decrease during storage
- Processing has minimal effect
- Acceptable levels defined for many chemical hazards

# Examples of outcomes of MRAs

---

1. The chance of a person falling ill by consuming a food
2. The estimated number of cases of a certain illness (e.g. per 100 000 per year in a country) due to consumption of a specific food
3. The relative risk posed by a pathogen in different food products or uses
4. Risk estimates for different processing, distribution and consumer use conditions and risk reduction scenarios

# Example of Risk characterisation

---

It is estimated that c. 30 cases of listeriosis per year in the USA (280 million inhabitants) are caused by eating cold frankfurters

# Pathogen-commodity risk assessment

---

- Shiga toxin-producing *Escherichia coli* (STEC) and food: attribution, characterization and monitoring
- Microbiological safety of foods for malnourished populations
- Microbiological hazards associated with fresh produce
- Viruses in foods
- Enterohaemorrhagic *Escherichia coli* (EHEC) in meat and meat products
- *Salmonella* in eggs and broiler chickens
- *Listeria monocytogenes* in ready-to-eat foods
- *Vibrio* spp. In seafoods
- *Campylobacter* spp. In broiler chickens
- *Enterobacter sakazakii* and other micro-organisms in powdered infant formula
- Foodborne parasites

<http://www.fao.org/food/food-safety-quality/scientific-advice/jemra/risk-assessments/en/>



# Guidelines

---

Codex has developed [Principles and Guidelines for the conduct of Microbiological Risk Assessment \(1999\)](#). To complement and supplement these following guidelines FAO/WHO are developing guidelines on each of the components of the risk assessment process.

Hazard characterization

Exposure assessment

Risk characterization

Using microbiological risk assessment in risk management  
(in the process of development)





Merci

¡Gracias

Thank You

谢谢

Спасибо

شكرا