Series N°02

Exercise 1 :

a. Table completion

Organization	Primary Mandate	Risk Assessment or Management?	Geographical Scope
FAO	Lead international efforts to defeat hunger, improve nutrition, and promote sustainable agriculture. In food safety, provides scientific advice and capacity building.	Risk Assessment (provides scientific panels like JECFA, JMPR)+ Technical Assistance	Global
WHO	Direct and coordinate international health within the UN system. In food safety, focuses on public health protection and disease prevention.	Risk Assessment (scientific evaluation of health risks)	Global
Codex Alimentarius	Develop international food standards, guidelines, and codes of practice to protect consumer health and ensure fair trade practices.	Risk Management (translates scientific advice into standards)+guidelines	Global
EFSA	Provide independent scientific advice and communication on risks associated with the food chain in the EU.	Risk Assessment	European Union

b. Novel toxin in tropical spice

1. **Evaluate the toxin's risk → FAO/WHO Joint Expert Committee** (e.g., JECFA: Joint Expert Committee on Food Additives) would conduct the scientific toxicological risk assessment.
2. **Propose international max limits → Codex Alimentarius Commission**
   The Codex Alimentarius Commission would use JECFA's advice to propose international Maximum limits for this toxin in food.
3. **EU-specific risk assessment → EFSA (European Food Safety Authority)**
   EFSA would conduct a separate, context-specific risk assessment for the European population, considering EU dietary habits and exposure patterns.

c. Why Codex standards are WTO /SPS reference points

Under the **WTO/SPS Agreement**, members are encouraged to base their national measures on international standards.
Codex is explicitly recognized as the **reference for food safety**.

In a trade dispute, a country that follows Codex standards is presumed to comply with the SPS Agreement.
Codex standards are **not automatically binding** in a dispute, but they carry significant legal weight. A country deviating from Codex bears the **burden of proof** to justify its stricter regulation. Deviations must be justified by scientific risk assessment.

Exercise 2 :

a. Three essential PRPs for egg-based product

1. **Supplier approval** for pasteurized egg yolk (biological hazard control)
2. **Temperature control** during storage of raw materials (cold chain)
3. **Cleaning & sanitation** of mixing equipment (prevent cross-contamination)

b. Primary biological hazard
Salmonella (and *Listeria monocytogenes*)
Justification: Egg products historically linked to Salmonella; low pH (≤4.0) is the only barrier.

c. Why acidification/mixing is a CCP
No further killing step exists.
If pH is not low enough, pathogens survive.
Control is measurable (pH meter) and critical limit is set.

d. Calculation of Critical Limit
Target pH = 2.8

- **Calculate molar concentration of H^+**

$[H+]=10^{-pH} = 10^{-2.8} \approx 1.585\times10^{-3}$ mol/L

- **Calculate total moles of H^+ needed for 200 L**:

moles $H^+ = (1.585\times10^{-3})\times200=0.317$ mol

- **Calculate mass of pure acetic acid**

Acetic acid (assume full dissociation → 1:1 H^+:CH_3COOH)
Molar mass = 60 g/mol
Mass= $0.317\times60\approx19.02$ g
~19.0 g pure acetic acid for 200 L.

e. Deviation and Corrective Action (pH = 4.4)

- **Critical limit** = ≤4.0 → **4.4 is NOT within limit** → non-conformity.

Immediate corrective actions:

1. **Product:** Hold the batch, do not release.
2. **Process:** Check pH meter calibration, check vinegar addition, re-acidify if possible (small batch), or rework/redistribute under controlled conditions, else destroy.

Root cause analysis (e.g., 5 Whys or Ishikawa):

1. Measurement error (pH meter not calibrated).
2. Human error (operator added wrong amount of pre-mix).
3. Ingredient variation (vinegar strength lower than specified).
4. Equipment failure (acid pump malfunction).

- **Prevention:** Implement **double verification** of acid addition (e.g., weight check of vinegar container before/after), **automated pH control** with alarm, **calibration log** for pH meter before each shift.

Exercise 3:

a. Fundamental difference

- **ISO 9001:2015** – Quality management → customer satisfaction, process efficiency, continual improvement.
- **ISO 22000:2018** – Food safety management → controlling hazards to ensure safe food.

b. Risk vs Hazard

1. **ISO 9001 risk example:** Machine downtime causing delivery delay (business risk).
2. **ISO 22000 hazard example:** Chemical migration from plastic container into food.
3. **Critical difference:**
   - Risk = uncertainty affecting objectives (business).
   - Hazard = biological, chemical, physical agent in food that can cause harm. ISO 22000 manages hazards; ISO 9001 manages risks (including but not limited to safety).

c. Integration possibilities

Common elements that can be harmonized:

- **Documented information** (procedures, policies)
- **Internal audit** (combined quality & safety audits)
- **Management review** (joint review of QMS & FSMS)
- **Corrective actions** (single CAPA system)

d. Main advantage for customers

ISO 22000 directly ensures **food safety** through HACCP + PRPs + traceability + hazard control.

ISO 9001 alone does not guarantee food safety; a supplier could be quality-efficient but produce unsafe food.

Exercise 4 :

a. Origin & geographical influence

- **IFS** (International Featured Standards) – Developed in 2003 by German and French retailers federations (Carrefour, Metro) developed it, later joined by Italian retailers. Strong in **Continental Europe**.
- **BRCGS** (British Retail Consortium Global Standard) – Developed in 1998 by the British Retail Consortium (BRC) in the UK.
- Dominant in the **UK and Commonwealth countries ; now used in +130 countries worldwide.**

b. Why HACCP certification is insufficient

HACCP is a **methodology**, not a management system.

Private standards add:

- **Management system** (policies, documentation, audits)
- **Quality & food safety culture**
- **Facility standards** (building, equipment, pest control)
- **Product testing & traceability** frequency
- **Continuous unannounced audits** (for some)

c. Challenges & benefits for Southeast Snacks

Challenges:

1. High cost of certification & infrastructure upgrades.
2. Complex documentation & internal audit requirements.

3. Cultural and language barriers.

Benefits:

1. Access to major European retailers.
2. Reduced customer audits & competitive advantage.
3. Operational improvement.

d. Recommendation for French & UK markets

Recommend BRCGS initially (or IFS depending on main customer).
Reason: Mutual recognition exists (GFSI benchmarking), but if targeting both France (IFS) and UK (BRCGS), either is accepted by many retailers.
However, **BRCGS is more common in UK**, IFS in France. If one only: **BRCGS** because it is widely recognized globally and accepted by French retailers under GFSI.

Exercise 5 :

a. "One step up, one step down" traceability

- **Up:** Who supplied the contaminated paprika (Hungarian supplier).
- **Down:** Which ready meals received this batch, and where they were shipped.

Within 2 hours, system must provide:

- Batch codes of finished product.
- Quantities produced & shipped.
- Customer names & addresses.

Calculation:
Paprika per meal = 5 g = 0.005 kg
Maximum affected meals=50 kg/0.005 kg=10,000 meals

b. Immediate internal actions (1–2 hours)

1. Isolate all remaining stock of affected batch.
2. Identify all customers who received it.
3. Prepare recall communication draft.
4. Assemble crisis team.

External stakeholders (order):

1. **Competent authority** (German food safety authority – BVL).
2. **Affected customers** (retailers, distributors).
3. **Public / consumers** via press release.

c. Press release draft

FOR IMMEDIATE RELEASE
QuickMeal GmbH recalls "Chicken Paprikash" – Batch #PP2405
Reason: Possible Salmonella contamination in paprika powder.
Product: Chicken Paprikash ready meals, Batch code PP2405.
Action: Do not consume. Return to store for refund.
Contact: (phone and email)

d. CAPA (Corrective And Preventive Actions)

- **Supplier approval:** Require Salmonella negative certificates from paprika suppliers.
- **Incoming goods control:** Test each batch of spices for pathogens before use.
- **Process:** Review supplier audit frequency.

Exercise 6 :

a. Why EFSA vs Codex MRL differ

Even with science, differences arise from:

- **Precautionary principle** (EU stricter).
- **Different dietary exposure** (Europeans eat more wheat).
- **Different risk assessment models** (safety factor choice).
- **Policy goals** (EU promotes pesticide reduction).

b. Can EU reject shipment (0.3 mg/kg, EU limit 0.1)?

Yes, EU can reject under WTO SPS Article 5.

Justification: EU standard is based on risk assessment (EFSA) and precaution; higher protection level is allowed if scientifically justified, not arbitrary.

c. Challenges for Agraria exporter to EU

Challenges:

- Wheat-based cereals would exceed EU MRL (0.3 > 0.1).
- Need to source compliant wheat or remove/denature pesticide.

Options:

1. Use wheat from fields not treated with Zebracide.
2. Blend with lower-residue wheat to bring average below 0.1.
3. Apply processing that reduces residue (e.g., washing, milling fractions).

d. Role of Codex in WTO dispute

Codex standard is a **benchmark**, not automatically overruling.

EU can maintain stricter standard if it provides scientific justification.

If EU cannot justify, WTO may rule against EU, but Codex does not automatically override.