

Series N° 2

Exercise 1: International Organizations and Regulatory Framework

A new food safety consultant, "SafeFood Advisors," is preparing a training manual for junior staff. The first chapter must clearly explain the roles and interactions of key global and regional food safety bodies.

a. Complete the following table, clearly distinguishing the mandate, primary function (risk assessment vs. risk management), and geographical scope of each organization.

Organization	Primary Mandate	Risk Assessment or Management?	Geographical Scope
FAO			
WHO			
Codex Alimentarius			
EFSA			

b. A novel toxin is discovered in a tropical spice traded internationally.

- Which organization would provide the scientific expert committee to evaluate the toxin's risk?
- Which organization would use that scientific advice to propose international maximum limits for this toxin in food?
- If the spice is imported into the EU, which agency would conduct an updated scientific risk assessment for the European context?

c. Explain why the Codex Alimentarius standards are recognized as reference points in international trade disputes by the World Trade Organization (WTO) Sanitary and Phytosanitary (SPS) Agreement.

Exercise 2: HACCP Application – Acidified Mayonnaise

You are the quality manager in a small company manufacturing garlic mayonnaise (aioli) based on pasteurized egg yolk. The safety of the product relies on the pH being low enough to inhibit *Salmonella* and *Listeria monocytogenes*. The target pH for the final product is ≤ 4.0 . You use a vinegar solution (acetic acid) for acidification.

a. List three essential PRPs that must be in place before HACCP implementation, specifically critical for an egg-based product.

b. Identify the primary biological hazard and justify its significance.

c. Justify why the "acidification/mixing" step is a Critical Control Point (CCP).

d. Calculation of Critical Limit:

- You need to prepare 200 liters of a vinegar pre-mix. The target pH is 2.8.
- Using the formula for a strong acid approximation: $[H^+] = 10^{-pH}$.
- Calculate the molar concentration of H^+ needed.

- Acetic acid (CH_3COOH , Molar Mass = 60 g/mol) is a weak acid, but for this exercise, assume it dissociates fully to achieve the target pH. Calculate the mass of pure acetic acid needed for the 200 L batch.

e. Deviation and Corrective Action:

- During production, a pH check on a batch of finished mayonnaise shows a value of 4.4.
- Is this within the critical limit?
- Describe the immediate corrective actions on the product and the process.
- Propose a root cause analysis approach to prevent recurrence.

Exercise 3: ISO Systems Comparison

"Precision Packaging," a manufacturer of plastic food containers, is certified to ISO 9001:2015. They are now considering expanding their scope to include ISO 22000:2018 for their food safety management system, as their clients are demanding it.

a. Explain the fundamental difference in the scope or focus of ISO 9001 versus ISO 22000. What does each standard primarily aim to manage?

b. Risk vs. Hazard:

1. Provide an example of a business/quality risk that Precision Packaging would manage under ISO 9001.
2. Provide an example of a food safety hazard that would be managed under ISO 22000.
3. Explain the critical difference in managing these two concepts.

c. Describe how Precision Packaging could integrate ISO 22000 into their existing ISO 9001 structure. Mention at least two common elements that can be harmonized.

d. What is the main advantage for Precision Packaging's customers (the food companies) in having a supplier certified to ISO 22000 rather than just ISO 9001?

Exercise 4: Private Standards – IFS, BRCGS, FSSC 22000

"Southeast Snacks," a manufacturer of fried banana chips in Vietnam, wants to export to major European retailers like Carrefour (which often requires IFS) and Tesco (which often requires BRCGS).

a. Briefly describe the origin and primary geographical influence of the IFS and BRCGS standards. Who developed them and why?

b. The quality manager says, "We are already HACCP certified. Isn't that enough for Europe?" Explain to her why HACCP certification alone is insufficient for supplying most major European retailers and what additional requirements private standards impose.

c. List two major challenges and two major benefits for Southeast Snacks in pursuing certification to one of these private standards.

d. If they could only choose one standard initially (IFS or BRCGS) to target both French and UK markets, what would you recommend and why? (Consider mutual recognition).

Exercise 5: Traceability and Crisis Management (Recall Simulation)

"QuickMeal GmbH," a German ready-meal producer, used a batch of imported Hungarian paprika powder in their "Chicken Paprikash" ready meals. The Hungarian authorities notify them that this specific batch of paprika is contaminated with high levels of *Salmonella*.

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

You need to perform a mock recall. What specific information must your system provide within 2 hours?

If you received 50 kg of contaminated paprika, and each ready meal contains 5 g of paprika, what is the maximum number of potentially affected meals?

b. 1. List the immediate internal actions (first 1-2 hours).

2. List the external stakeholders you must notify and in what order.

c. Draft a concise press release/consumer alert for this recall. Include product name, batch codes, reason for recall, action for consumers, and company contact.

d. Beyond the recall, what corrective and preventive actions (CAPA) should QuickMeal implement to prevent this from happening again? Discuss supplier approval and incoming goods control.

Exercise 6: International Regulatory Divergence and Trade

The International Agency for Research on Cancer (IARC) classifies a common pesticide, "Zebicide," as "possibly carcinogenic to humans." Codex Alimentarius has a Maximum Residue Limit (MRL) for Zebicide on wheat at 0.5 mg/kg. The European Union, after an EFSA risk assessment, sets its MRL at 0.1 mg/kg based on stricter precautionary principles. Country "Agraria," a major wheat exporter, follows the Codex MRL of 0.5 mg/kg.

a. Explain why EFSA might arrive at a different MRL (0.1 mg/kg) than Codex (0.5 mg/kg), even though both are based on science. What factors can cause divergence?

b.

- A shipment of Agrarian wheat arrives in Rotterdam with residue levels of 0.3 mg/kg. It is compliant with Agrarian and Codex law, but exceeds the EU MRL. Can the EU legally reject this shipment under WTO SPS rules?
- On what basis would the EU justify this rejection? (Hint: Article 5 of the SPS Agreement).
- c.
- A food importer in Agraria bought this wheat to make breakfast cereals for the local market. They now have an opportunity to export a large quantity of these cereals to the EU.
- What challenges do they face?

What options do they have to make their product compliant?

d. In a WTO dispute, what role would the Codex Alimentarius standard (0.5 mg/kg) play?

Would it automatically overrule the EU standard?