



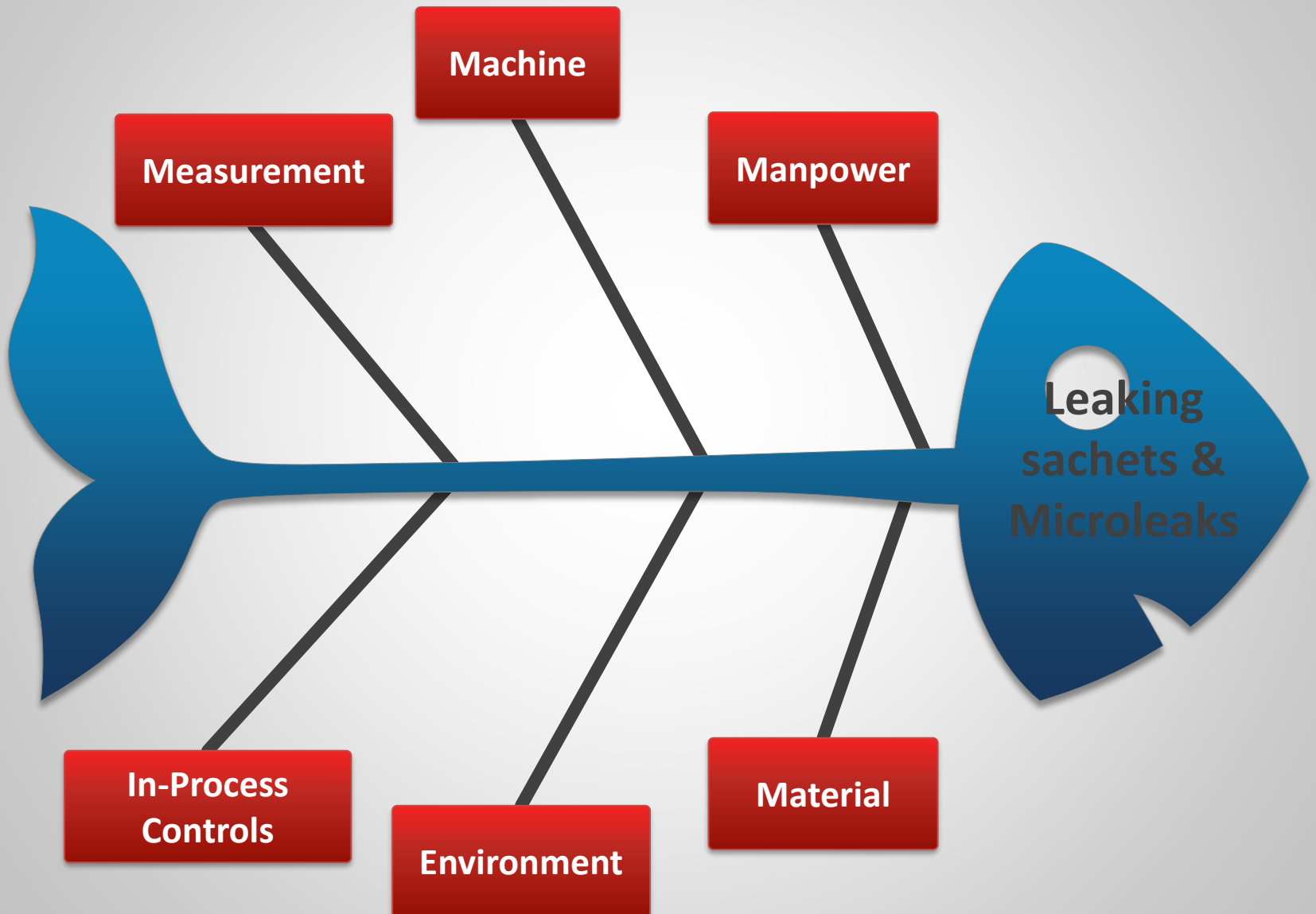
# 6P Fishbone Diagram for LNS leaking sachets

QA Specialist Kasra Ghasemi

Nutrition Supply Forum

Hosted virtually by UNICEF Supply Division, 25-27 January 2022

# 6P Fishbone Diagram for LNS leaking sachets



# Cause

# Effect

Measurement

Machine

Manpower

Packaging material

Qualification and validation

Lack of supervision

Filling temperature

Maintenance

Lack of training

Sealing parameters

Sealing jaws

Qualifications and practical experience

Acceptable Quality Limit

Temperature of sachets before packing

Change of packaging material supplier

Absence of SOP

Recurrent power failure

Fat content, source of protein, size of particle and mixing time and temperature

Quality controls at reception

Harsh climate conditions

RM specification and food recipe

In-Process Controls

Environment

Material

**Leaking sachets & Microleaks**

# Measurement



## Measurement – data generated from the process that is used to evaluate its quality

- Packaging material thickness and consistency
- Sealing parameters (temperature, dwell time, width)
- Pressure for both transversal and longitudinal seals / calibration of the machine (thermo logger)
- Speed of the machine (feeding speed)
- Filling temperature of the product before packing (buffer tank)
- Accuracy of sealing temperature (discrepancy between what is displayed and real temperature)

# Machine



## Machine – systems, tools, facilities and equipment used for production

- The maintenance frequency of the machines
- Qualification and validation of packing machines
- Alignment of the sealing jaws
- Sealing jaws profile and material
- Sharp edge on the packing machines
- Lack of detection system
- Residues on sealing bars and packaging material before sealing
- Feeding quantity and timing
- Construction of dosing system (depend on product properties)

## Manpower



**Man (people) – everyone is involved in the process and contributes to the manufacture and quality of the product**

- Lack of supervision/management (e.g., night shift)
- Rough / multiple handling
- Lack of training of staff to detect defects
- Human resources / necessary qualifications and practical experience.

## In-Process Controls



**In-Process Control – checks being performed during a production process for the purpose of monitoring and if necessary, to adjust the process to assure that the product conforms to its specifications**

- Quality controls at reception (laminare non-compliant)
- On-line quality controls (IPC)
- Release quality controls
- Extensive storage time
- Acceptable Quality Limit (AQL)
- Absence of SOP which describes/demonstrates good and bad sealing/packaging
- On-line sealing bars paste residues checks
- Viscosity and homogeneity of the product

# Environment



**Environment – the conditions, such as location, time, temperature, and culture in which the process operates**

- Harsh climate conditions during transport/storage (high temperature and RH)
- Recurrent power failure
- Temperature, humidity and ventilation in premises
- Temperature of sachets before packing in cartons or right after in carton box



# Material



## Materials– raw materials, packaging materials, parts etc. used to produce the final product

- Packaging material from different suppliers
- Variation in the thickness of the packaging roll
- Flexible laminate composition
- Laminate strength
- Hot tack strength (the force required to break the seal when it is still hot)
- Food recipe:
  - Fat content
  - Stabilizer / emulsifier
  - Size of particle
  - Protein conformation depending on the source of protein, type of oil etc.
  - Mixing time and temperature

Thank you!

