

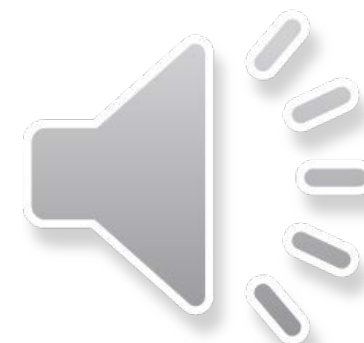
SPOILAGE ROOT CAUSE ANALYSIS

IFTPS 2021 ONLINE TECHNICAL SESSION
MARCH 01ST, 2021



THE BEGINNING OF THE STORY

Houston, we have a problem



Spoilage: *...food product becomes unsuitable to ingest by the consumer....*

.. Bacteria and various fungi are the cause of spoilage (source: Wikipedia)



SPOILED PACKAGES DETECTION

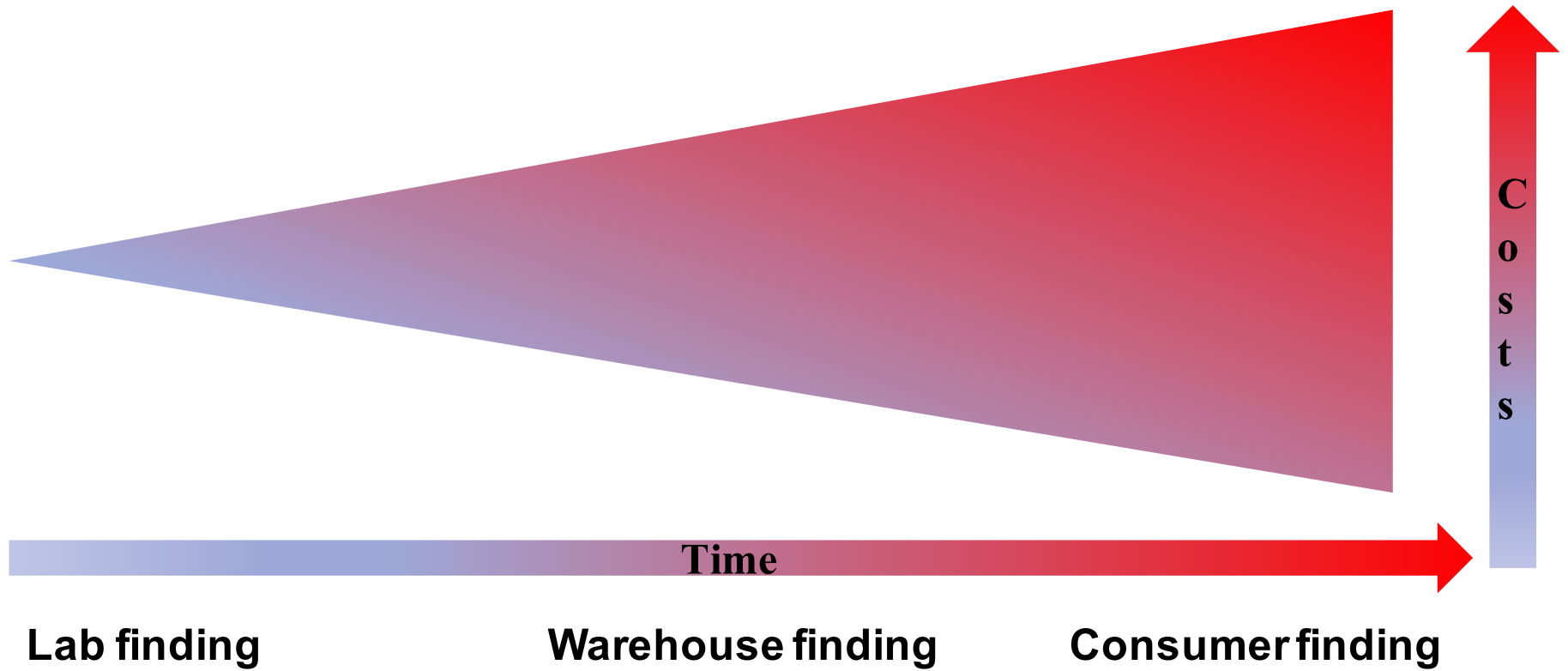
- **Lab finding (plates, pH, blown packs)**
- **Warehouse (blown, leakages)**
- **Retailer / final consumer**



- **Inform all stakeholders to align action plan**



SPOILAGE COSTS + EFFORT





BASICS ABOUT CONTAMINATIONS

Challenge during investigation:

- **Root cause located in the past**
- **CIP already executed**
- **No time for evaluation (production pressure)**
- **Exact details pending**
- **Goods partly not available**
- **Many different data to collect**
- **Info about contamination flora is pending**



BASICS ABOUT CONTAMINATIONS

Re-sampling, evaluation, data collection:

Key words:

**Package
tightness**

**Installation
condition**

**Production
events**

**Distribution
pattern**

**Operation
(qualification)**

**Contamination
flora**

**Contamination rate
+ development**

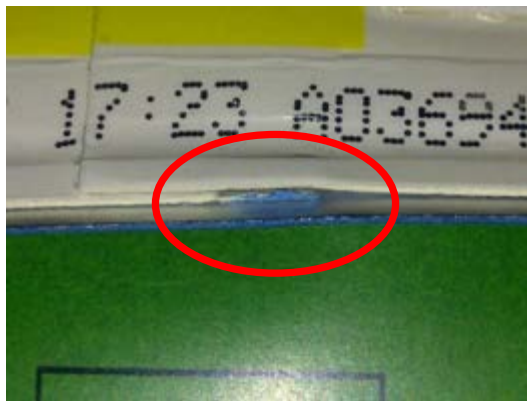
- involve all stakeholders (system knowledge supplier)
- investigation of complete line and environment



DO'S

Check package tightness

Integrity failure is easy to detect / to follow to origin



DO'S



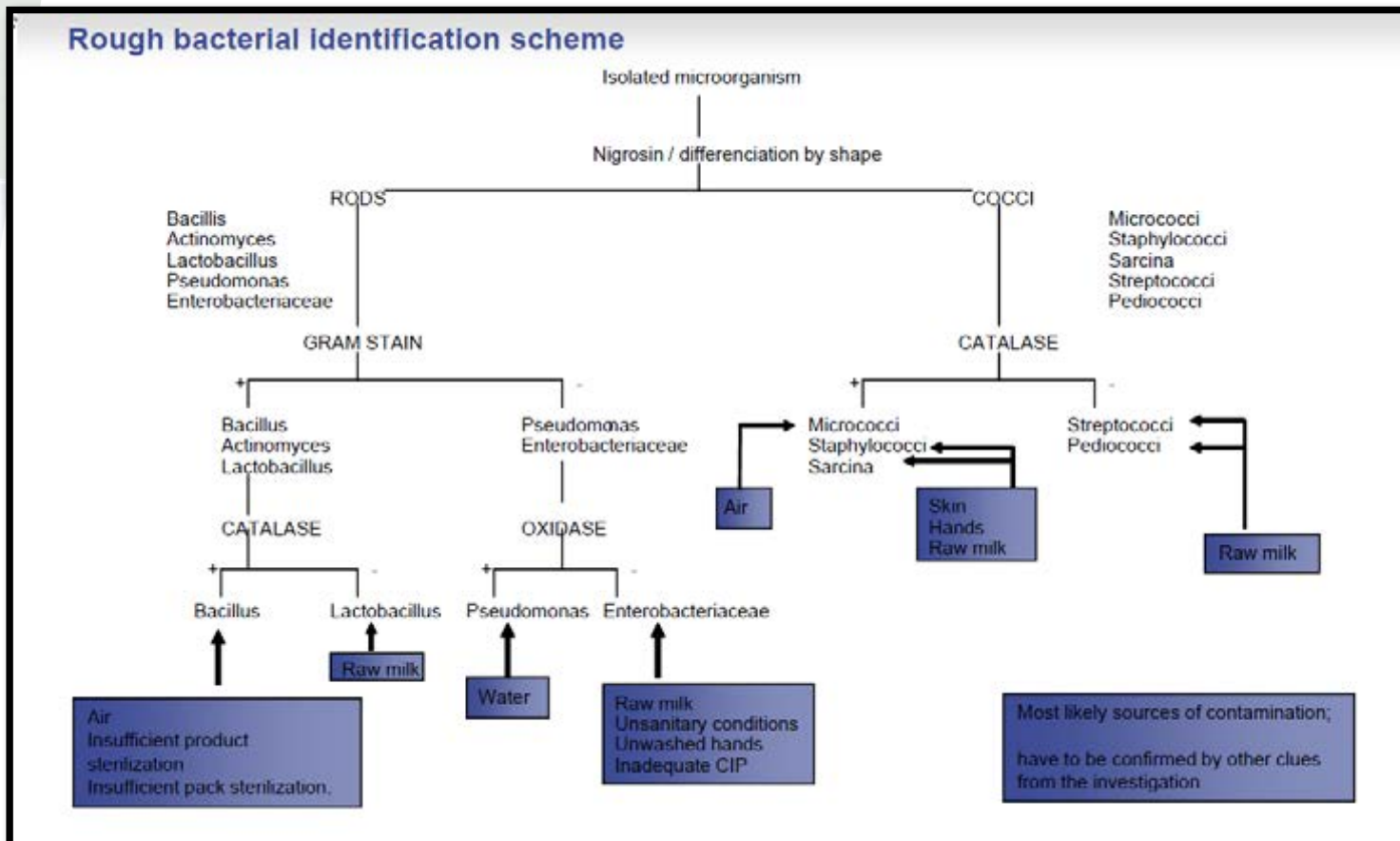
DO'S

Ask the bug's

1. Description of defect (blown, pH drop, ...)
2. Isolation of the spoilage organism
3. Result of plating (pure / mixed culture, ...)
4. Identification of spoilage bacteria

E. g.: mixed flora indicates a leakage (package, UHT, A-tank, piping);
pure culture (only 1 type) hints to a source close to product pathway!

DO'S



DO'S

Clarify:

- **find the start, not the end!**
- **trend (increase / decrease / constant / sporadic , etc.)**
= typical distribution curves have typical root causes!
- **Distribution (1 / several lines, 1/several production lots)**
- **Contamination flora (pure culture / mixed culture, etc.)**
- **Are consecutive production run's, ok?**

Failure mapping based on the “most probable root cause”



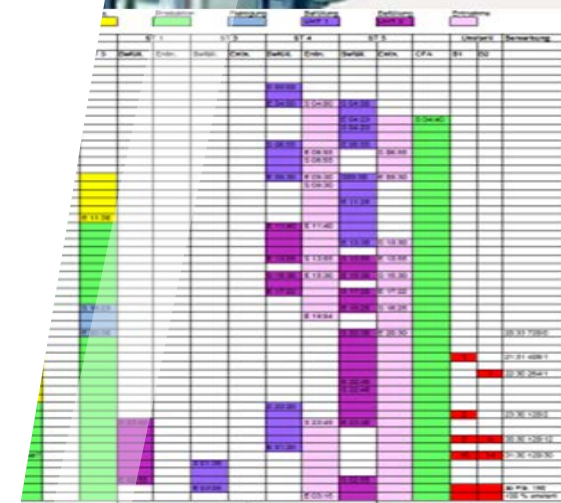
DO'S

Collect, analyze and conclude

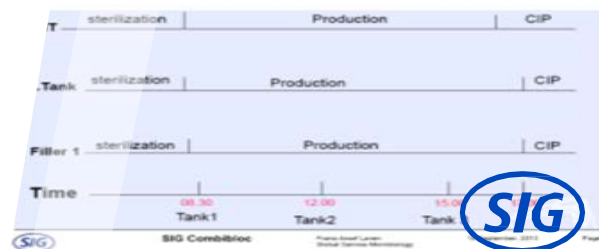
Compilation of all data:

- Lab results + chronology of contamination
- Installation / production findings
- Incidents and defects

**All information's guide to a
root cause hypothesis!**



Multiple Shooting Tools





DON'TS

- **Do not trust in package tightness (check and confirm)**
- **Don't trust on all information: (verify findings!)**
- **Don't forget parallel installation / other lines / other production runs:
(confirm sterility)**

**Most important: keep calm and
keep your own systematic!!**

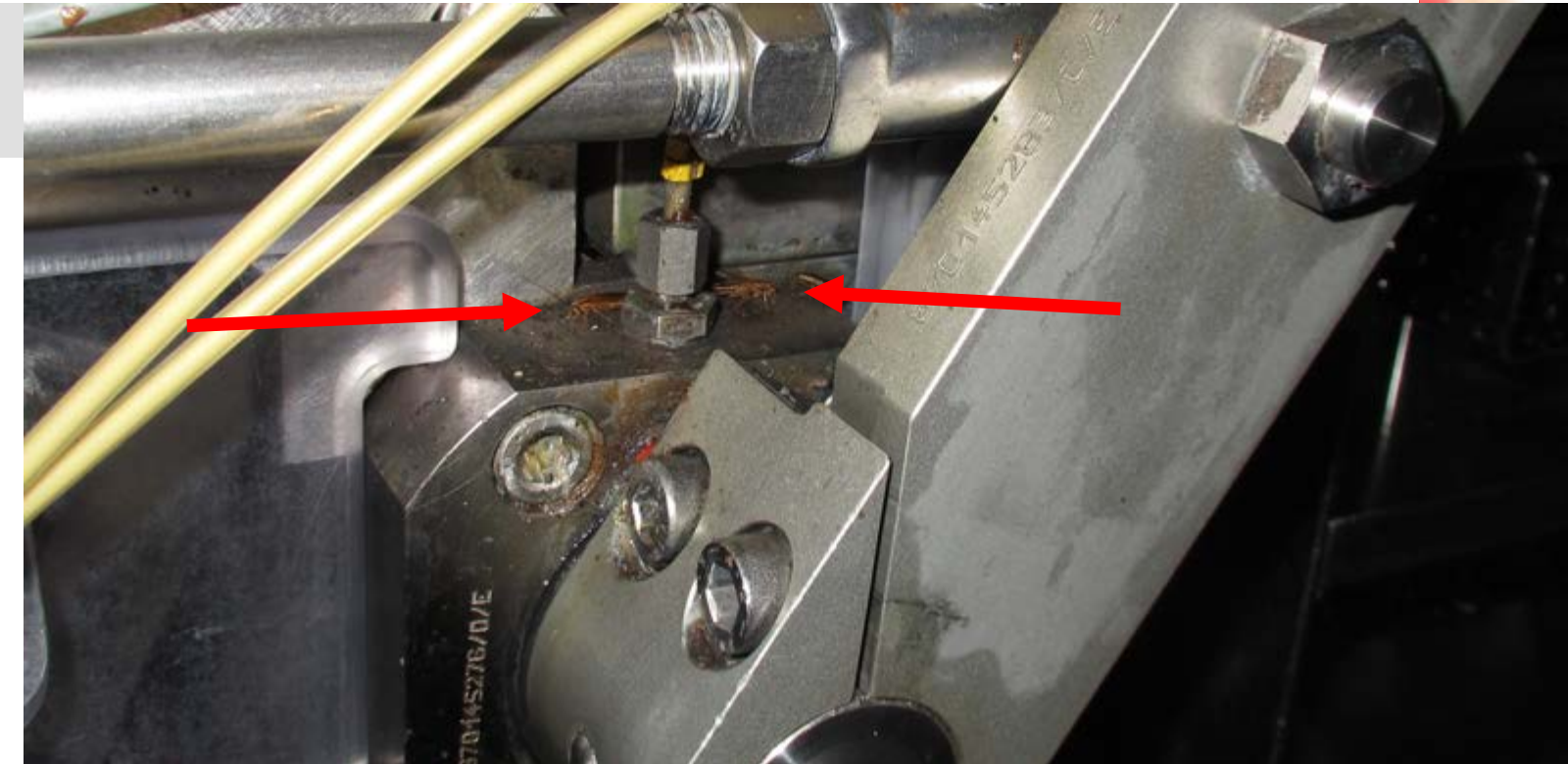


CONCLUSIONS

- ✓ **Finalize analysis / implement measures!**
- ✓ **Action catalogue for prevention in future!**
- ✓ **Verification of measures by execution of production with increased sampling!**
- ✓ **Force production with defect to check causality of defect vs. source!**



WHAT REMAINS



Excellent
Good
Average





**THANK
YOU**

Q&A



F.-J. Laven / IFTPS Online Conference 2021