Building a Resilient Environmental Monitoring Programme

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Introduction

- Introduction to building an Environmental Monitoring Programme
- Common Issues
- 7 steps to Creating an Environmental Monitoring Programme

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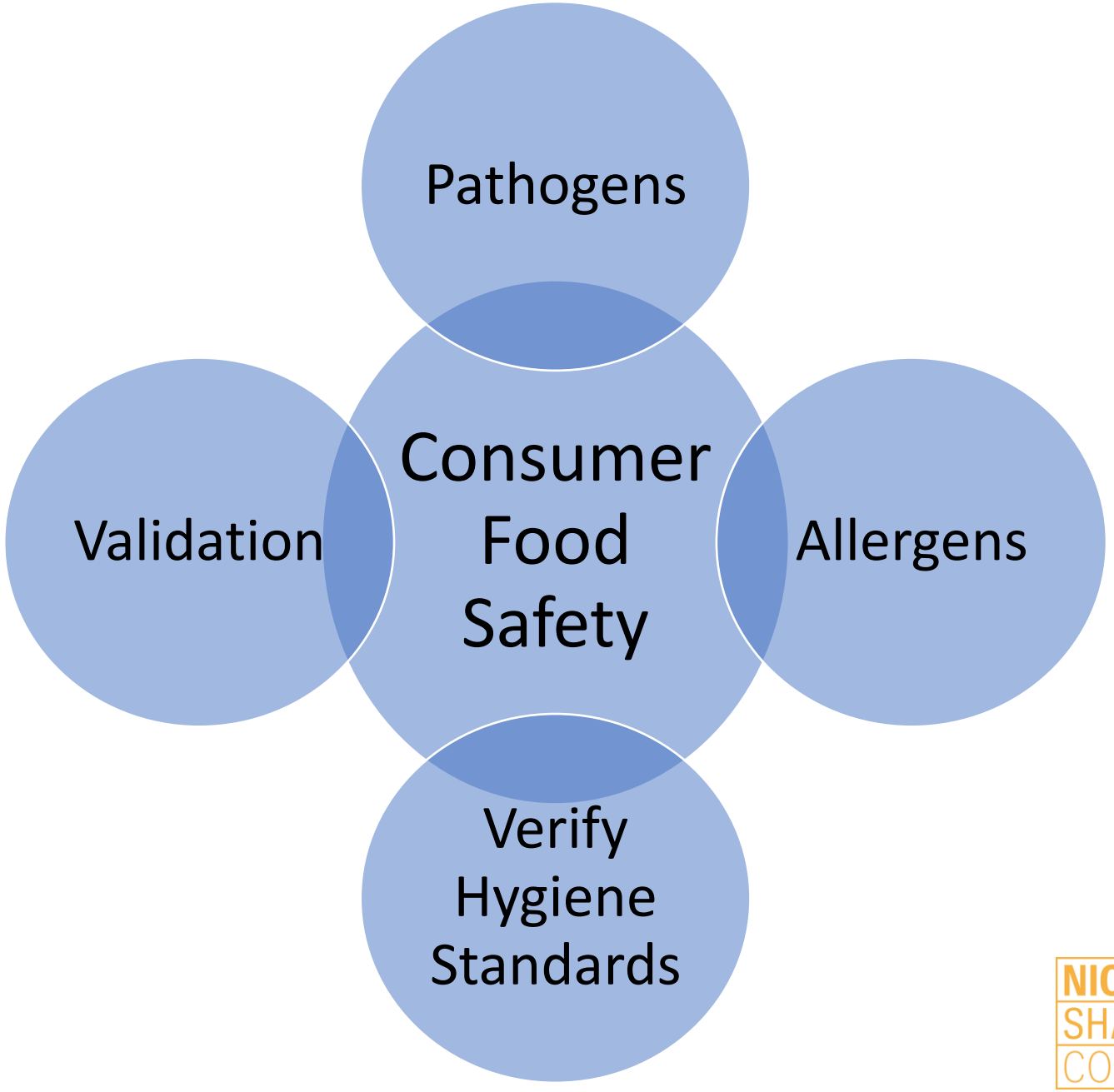
Purpose



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Common Issues

- Looking for incorrect microorganisms
- Lacks in depth – 10 swabs taken twice a year
- Lack of understanding
- No zoning

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Regulations

CODEX 2020 – ‘Food Code’

Global Food Safety Initiative (GFSI) Global Standards

Commission Regulation (EC) no 2073/2005

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How EMP can support the food safety management system

- Identify harbourage points
- Find and monitor cracks and crevices in equipment
- Verify cleaning standards
- Awareness of hot spot areas
- Meet Company KPI’s

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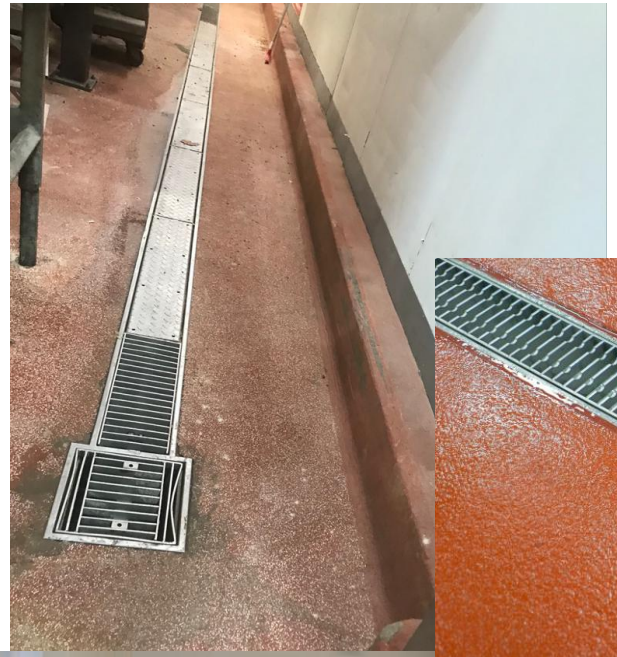
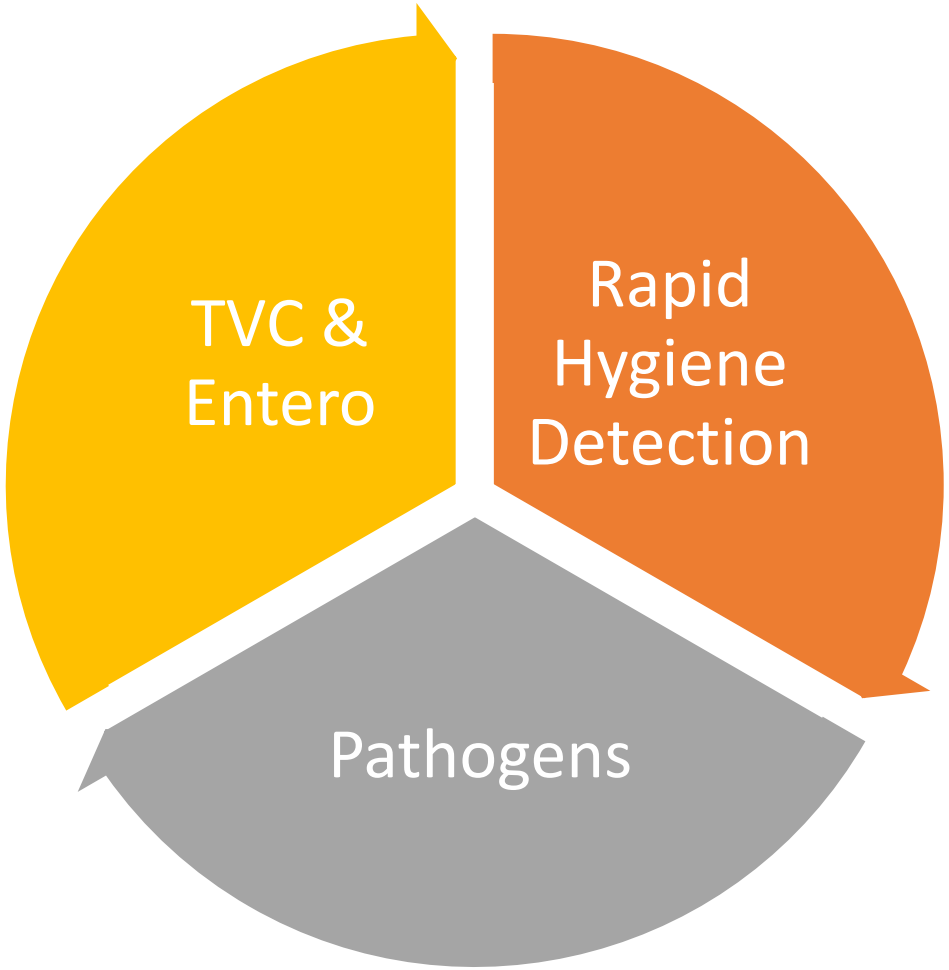
Hygienic Design



Pictures provided by Oakley Food Projects

Environmental Monitoring to assess Hygiene



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What pathogenic microorganisms to test for?

Risk Assessment of the following:

- Manufacturing facility condition
- Types of food produced in the factory
- Are the products Chilled or Ambient?
- If chilled, can they support the growth of *Listeria monocytogenes*?
- Is the factory wet or dry conditions?
- How is the factory cleaned and how frequently?

Environmental monitoring for pathogens depends on the above risk assessment outcome.

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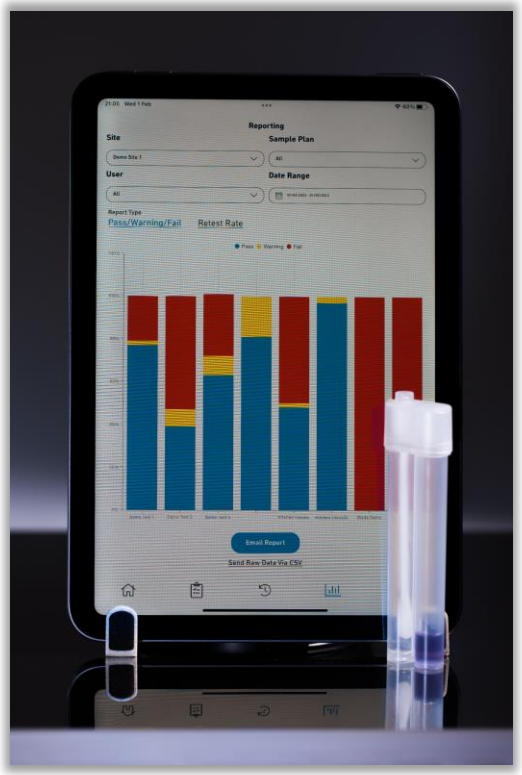
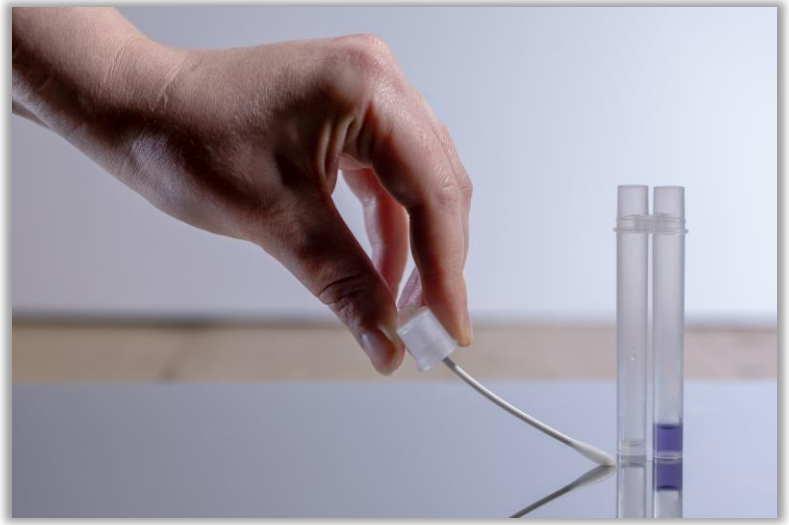
Environmental Monitoring to assess Hygiene





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Images provided by Fresh Check

FreshCheck HYGIENE VERIFICATION SYSTEM

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Environmental Monitoring to assess Hygiene

Default Apps

Quick Test
Run a test in two touches.

Users
Manage accesss with password protection and roles.

Sync
Wirelesslly sync data to SureTrend Cloud.

Locations
Create and edit test points with custom fields and pass/fail limits on the go.

Results & Reports
Easily view testing results and trend analysis.

Calibration
Verify calibration in just a few taps without having to send back to manufactured.

Plans
Easily group, schedule, and randomize testing locations to ensure sampling coverage.

Search
Quickly find the location or plan you're looking for.

Retest
Swipe through failed tests and instantly run re-tests to show effectiveness of corrective action.

Settings
Customize settings for language, custom fields, and test types.

Customized Apps

MicroSnap™
Test and show results for Coliforms, *E. coli*, *Enterobacteriaceae*, and Total Viable Count.

Enzymes
Test and show results for Alkaline Phosphatase and Acid Phosphatase.

Allergens
Record and show results for AlerTox® Sticks, AllerFlow Gluten, AllerSnap™, GlutenTox® Pro, and PRO-Clean™.

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Images provided by Hygiena

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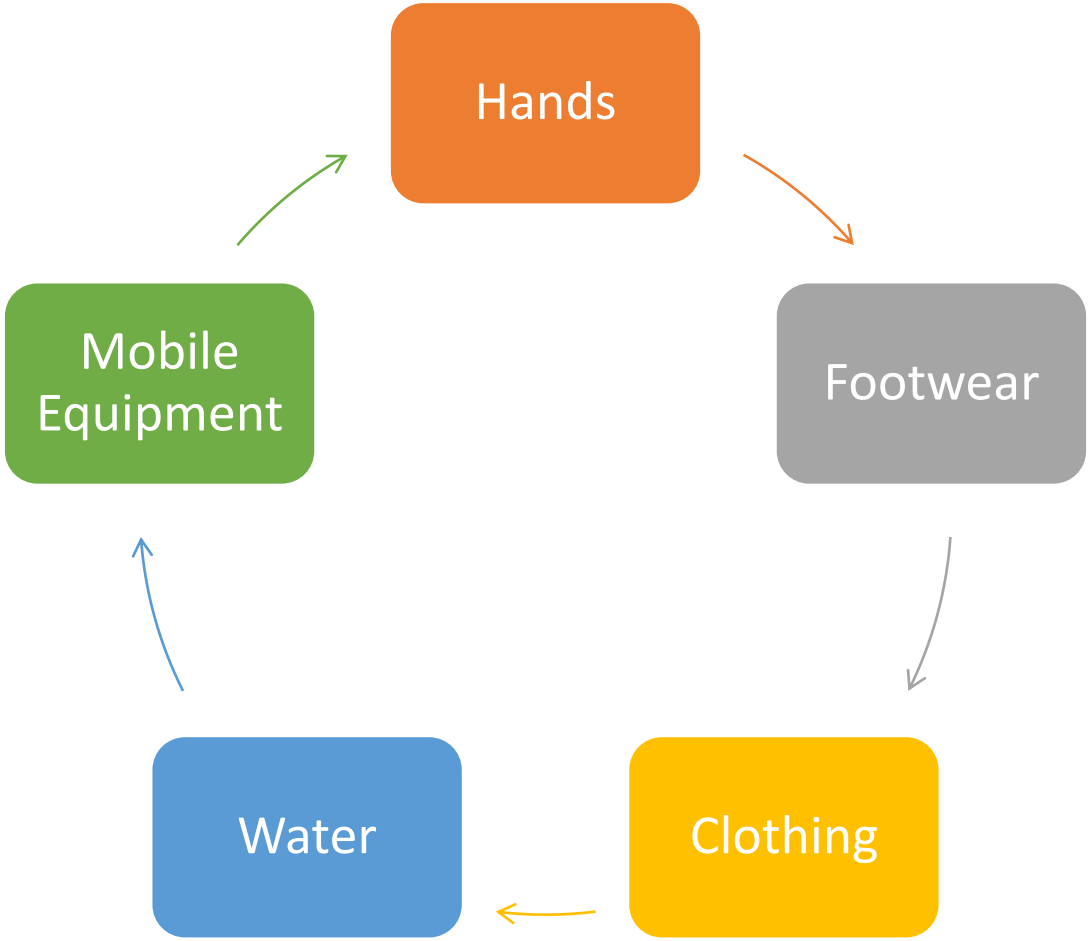
Vectors

Vectors are things that move the microorganisms around the factory



Important consideration for the EMP

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7 steps to designing an Environmental Monitoring Programme (EMP)

Step 1 – Create an EMP Team

Step 2 – Understand the factory environment and equipment

Step 3 – Create a master swabbing schedule for all sample locations and test type

Step 4 – Establish routine documentation

Step 5 – Determine frequency of testing and when to take the test

Step 6 – Establish trending documentation

Step 7 – Establish corrective action procedures

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Step 1 Create the team - Roles and Responsibilities

Board Member (Sponsor)	Operations (Lead investigations)	Hygiene
• Secures resources for the EMT. Responsible for reporting back to the board the Environmental Monitoring Programme.	• Provide information about equipment used and staff movements around the factory	• To provide information on cleaning methods, equipment knowledge, potential harbourage niches inside the equipment.

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Step 1 Create the team - Roles and Responsibilities

Engineering

- Knowledge of niches in equipment. Coordinate planned preventative maintenance with deep hygiene cleaning and removal of panels from equipment so that swabbing can also take place in harder to access areas.

Technical (Lead programme development)

- Coordinate all the information to develop and implement an environmental monitoring programme.
- Review results and feedback to the team

Sample collector

- Understand why locations have been identified
- Take samples according to schedule

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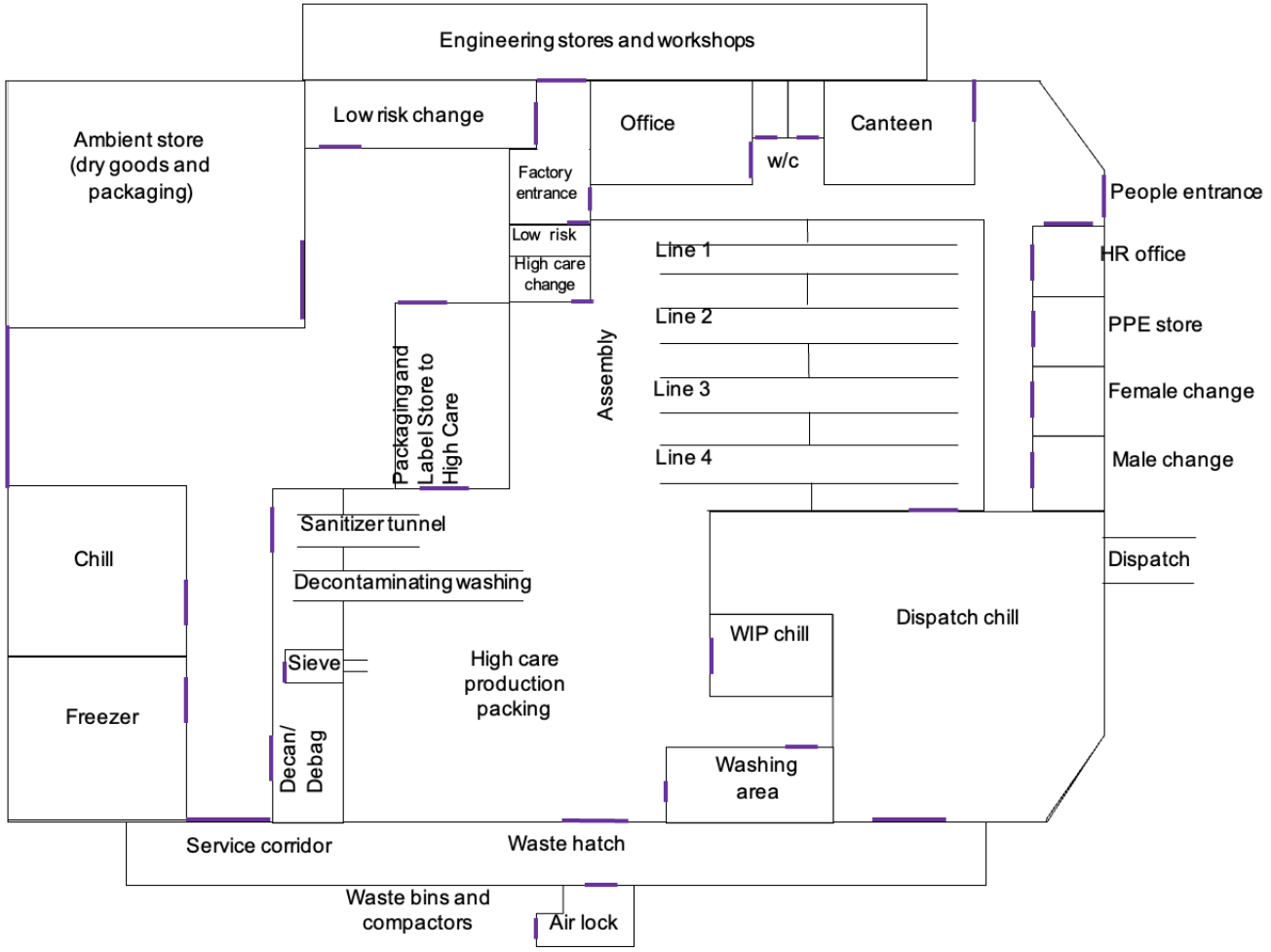
Step 2 – Understand your factory environment and equipment



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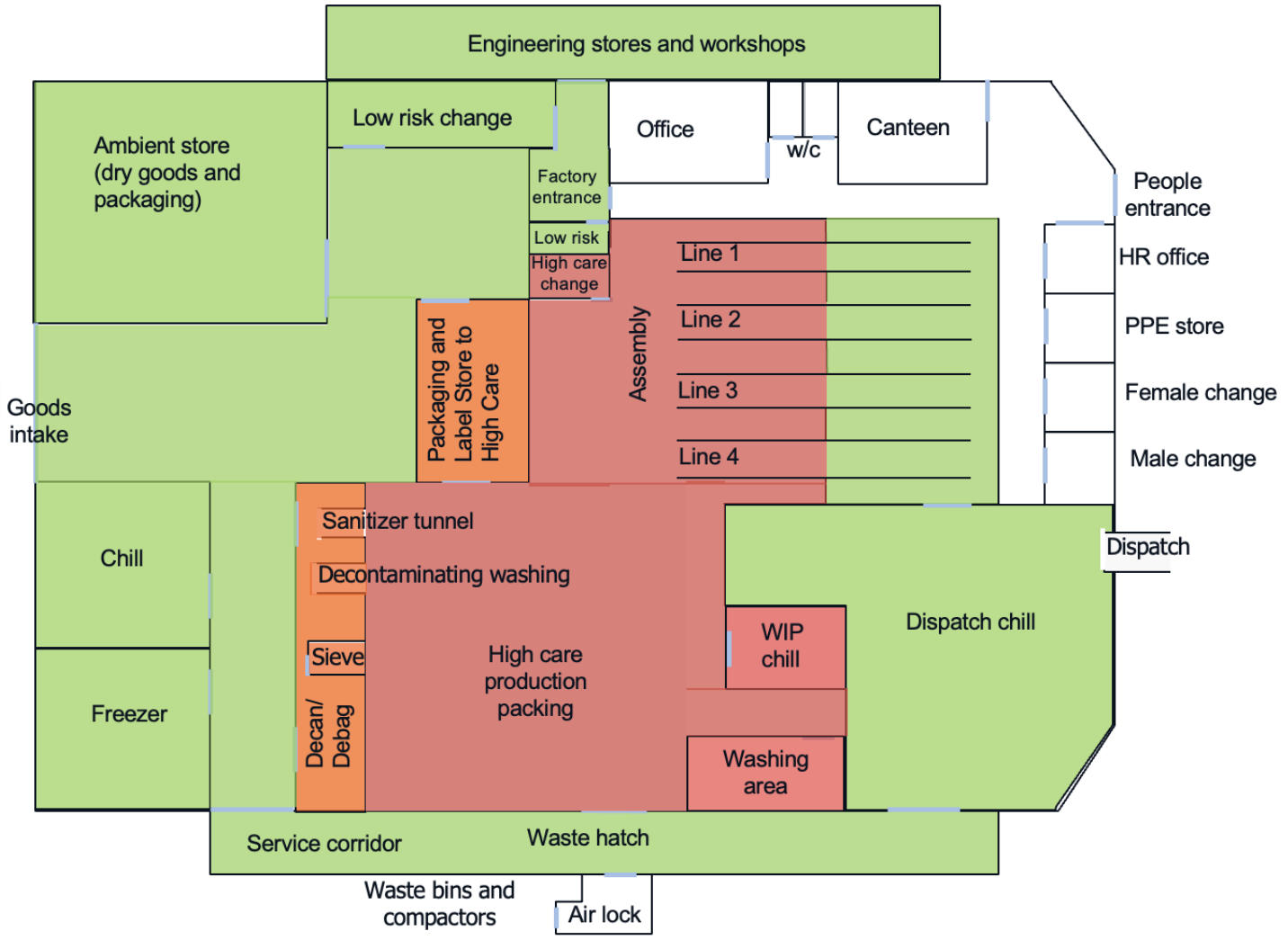
Hygiene zones

Green – Low risk
Raw materials

Amber – Medium risk
Packing removed and product exposed

Red – High risk
Exposed product microbiologically sensitive product



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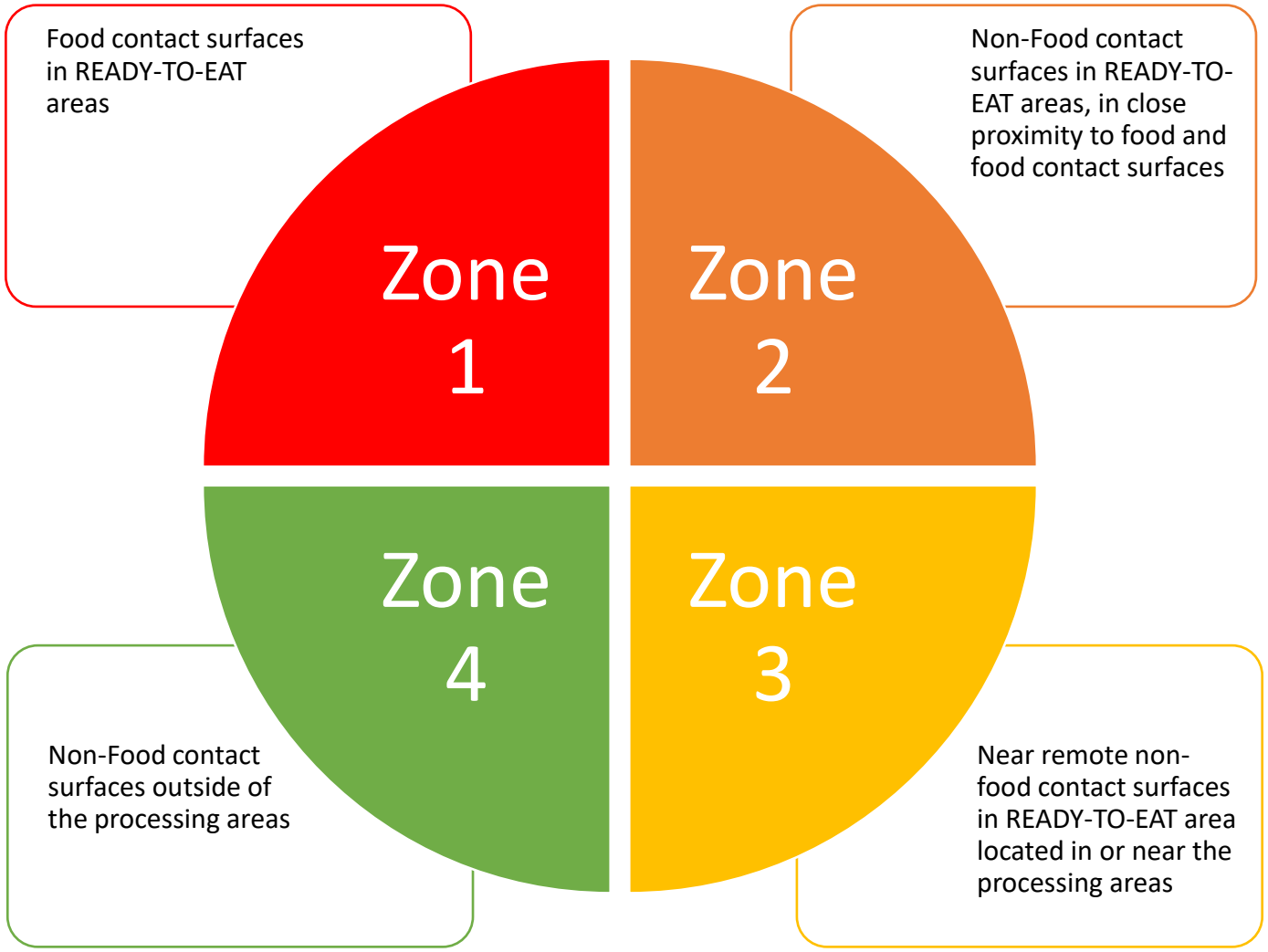
Swabbing Zones



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Step 3 – Create a master swabbing schedule

EMP Team to Walk the High Care Barrier on Low risk and High Care

Look for gaps in the barrier and the activities that takes place

Here are some examples of what could breach the barrier:

- Product ovens/tunnels/batch cookers exit
- Product pipework
- Sanitising tunnels
- Rack returns
- Packaging hatches/airlocks
- Factory changing room barriers
- Maintenance tools and activities
- Cleaning chemicals and equipment
- Waste

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Step 4 – Establish Routine Documentation

- Master Swabbing Schedule
- Informs sample collector
- When to sample
- Where to sample
- What method to use and what to test for

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Master Cleaning Verification Swabbing Schedule

Swab Reference Number	Location Description	Zone	TVC Entero	Week Number											
				1	2	3	4	5	6	7	8	9	10	11	12

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Master Pathogen Swabbing Schedule

Swab Reference Number	Location Description	Zone	Type of Swab Stick /Sponge	Week Number											
				1	2	3	4	5	6	7	8	9	10	11	12

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Master Pathogen Swabbing Schedule

Swab Reference Number	Location Description	Zone	Type of Swab Stick /Sponge	Week Number											
				1	2	3	4	5	6	7	8	9	10	11	12
1	Washing area In entrance	3	**Sponge**												
21	Line 1 Meat slicer	1	**Stick**												
24	Line 2 Assembly Tables	2	**Stick**												
34	Low Risk Decant/Debag Floor	4	**Sponge**												

During Production

After Cleaning

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Step 5 – Determine frequency of testing and when to take the test

Sampling Zone	When to collect Samples	Timeframe
1	Collect samples weekly after 3 hours of production	Test all sample locations within the month
2	Collect samples weekly after 3 hours of production	Test all sample locations within three months
3	Collect samples every other week	Test all sample locations within three months
4	Collect samples monthly	Test all sample locations within three months

Adapted from FDA Guidance document on *Listeria* Pg 37-38

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Step 6 – Establish trending documentation

Receive results from lab

Change schedule to red or green

Add a coloured dot to the failing sample point on the factory map

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Trending Data

Swab Reference Number	Location Description	Zone	Type of Swab Stick /Sponge	Week Number											
				1	2	3	4	5	6	7	8	9	10	11	12
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21	Line 1 Meat slicer	1	**Stick**												
24	Line 2 Assembly Tables	2	**Stick**												
34	Low Risk Decant/Debag Floor	4	**Sponge**												

Fail

Pass

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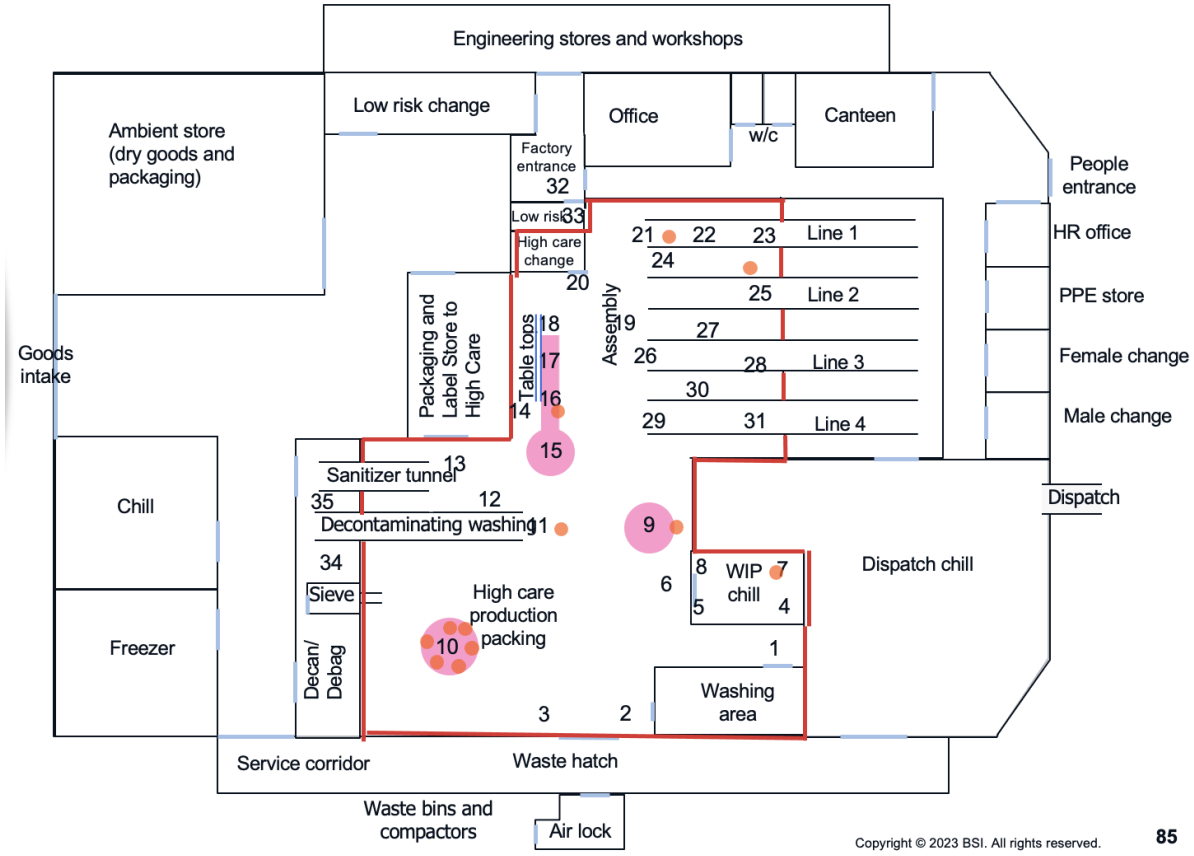
Trending data - using a hot spot map for *L. monocytogenes*



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When to Review EMP Sampling schedule

- Raw Material changes
- Different production hours
- Change in cleaning methods, time, or move to zone cleaning
- Introduction of new or used equipment
- Building work to extend, repair or replace structural parts of the building
- Invasive Line Maintenance
- Roof Leaks
- Blocked Drains
- Flooding

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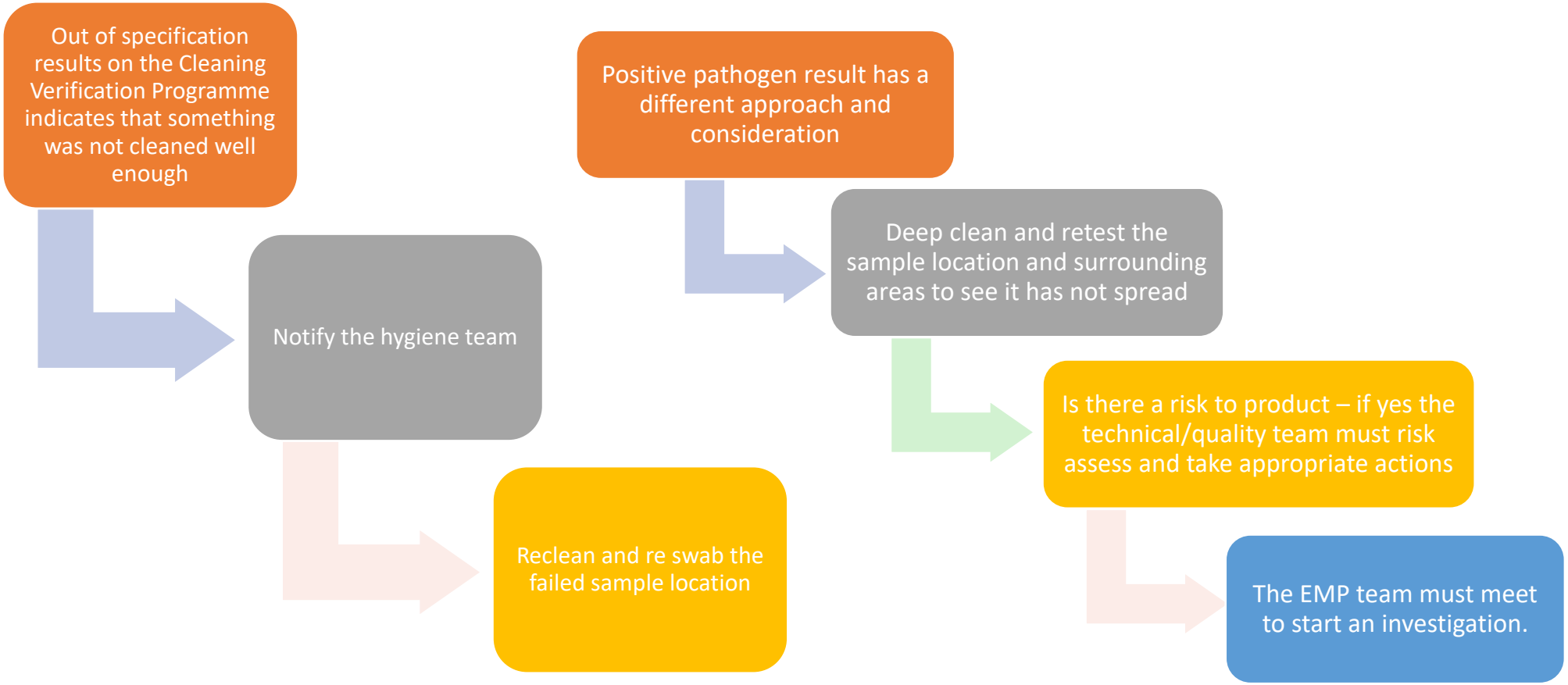
Step 7 – Establish corrective action procedures



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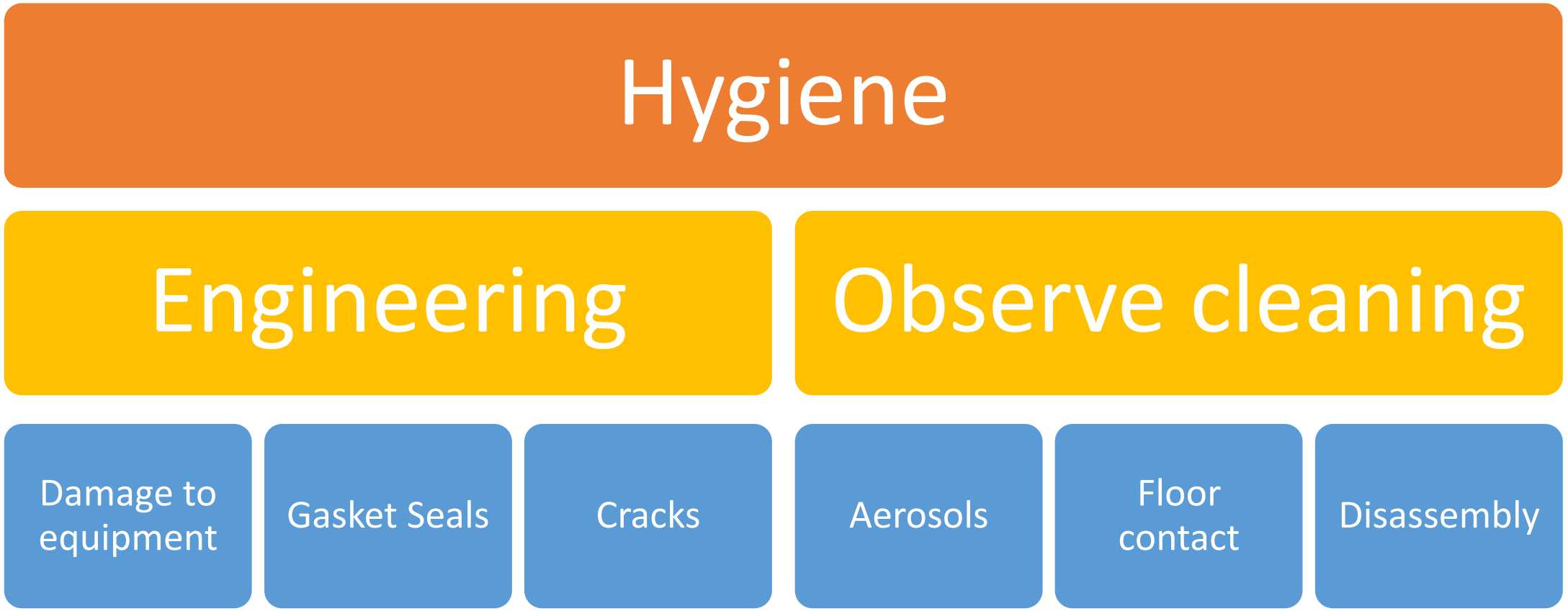
Tips for where to look…



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Investigation Data

Record all investigative swabs separately to the routine swabs, so progress can be seen.

Swab Reference Number	Location description	Zone	Type of swab Stick/Sponge	Day of Month					
				1	2	3	4	5	6
1	Pipe interior	1	Stick						
2	Slicer Blade	1	Stick						
3	Conveyor	1	Stick						
4	Screw on Blade	1	Stick						
5	Blade holder	1	Stick						
6	Inside Plastic & Metal Block	1	Stick						
Daily Percentage Pass Rate				66%	83%	50%	66%	66%	83%

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Summary

Follow the 7 steps to creating an environmental monitoring programme

Step 1 - Create an EMP Team
Step 2 - Understand the factory environment and equipment
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Any Questions?

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