

Treat Water Like Glass – Sanitation’s War on Water to Reduce Pathogen Risk

Karl Thorson, General Mills, Inc., James Ford Bell Technical Center, Plymouth, Minnesota

INTRODUCTION

Uncontrolled water is potentially a significant contributor to the growth and persistence of pathogens in food processing environments. We are proposing a shift in mindset to evaluate the food safety risks associated with uncontrolled water similar to prerequisite programs for foreign material control. We have developed a model for sanitation activities to ensure that the appropriate cleaning method is applied to ultimately achieve a sanitary condition and reduce food safety risks.

Prerequisite Program (PRP)

Physical hazard



Biological hazard



PURPOSE



Advantages of controlling water:

- Reduce water available for microbial growth
- Decrease human safety risk
- Improve equipment reliability
- Reduce water use and treatment
- Reduce cleaning time and frequency

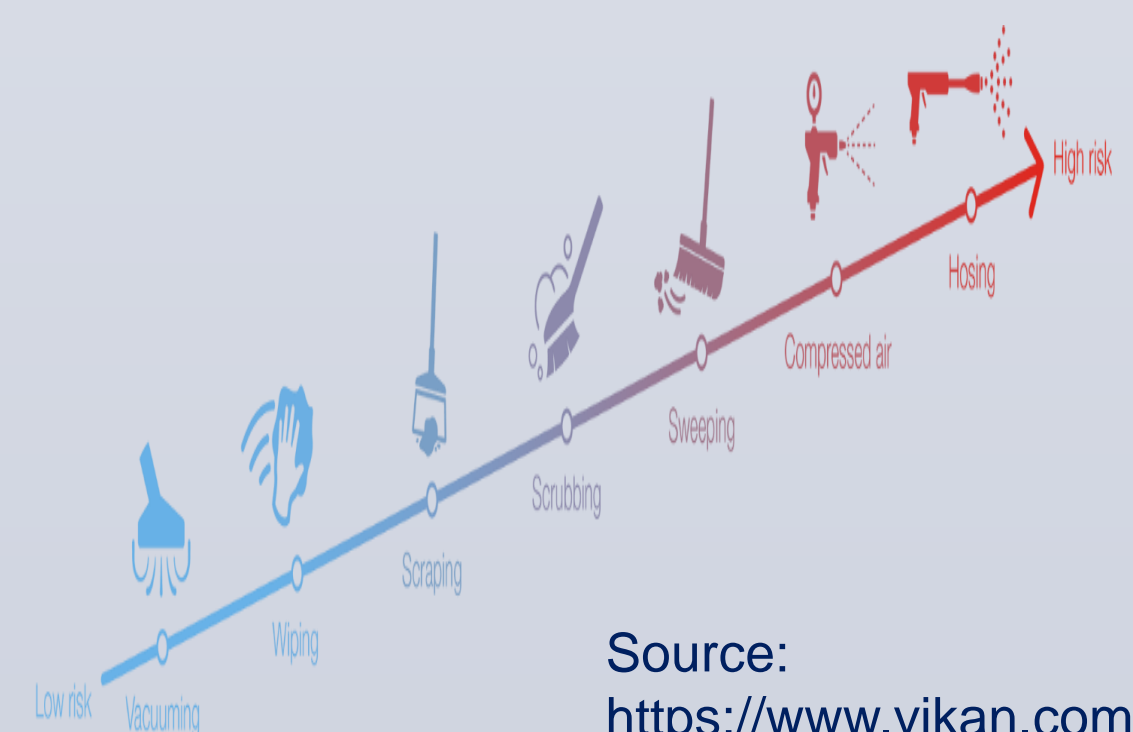


PROPOSAL

A sanitation model that prioritizes design coupled with cleaning methods.

Cleaning Methods Rank Order:

1. Dedication or redundancy
2. Purging
3. Dry cleaning
4. Dry cleaning with chemicals
5. Clean in Place (CIP)
6. Wet cleaning out of place
7. Manual CIP
8. Flood cleaning



CASE STUDY RESULTS

Low water activity product and does not support the growth of microorganisms

- Moved from #8 flood cleaning to #4 dry cleaning with chemicals
- Resolved condensation issues
- Achieved APC (aerobic plate count) and EB (Enterobacteriaceae) thresholds at all 48 sites
- Eliminated environmental *Listeria* findings
- Eliminated equipment rusting
- Reduced cleaning time

Dry baking mix system assessment

- Low water activity product
- Moved from #8 flood cleaning to #4 dry cleaning with chemicals
- Achieved APC and EB thresholds on all 21 sites
- Passed allergen testing on 17 surface swab sampling sites
- Reduced cleaning time

DISCUSSION

Define the success criteria of cleaning which may include qualitative and quantitative measures. All changes to cleaning protocols need to be validated and verified.

Visibly Clean – no remaining soil on a product surface based on visually assessment with the naked eye

Visual Standard – predetermined range of acceptable residual food material on the product surface



Conditions following chocolate granola production



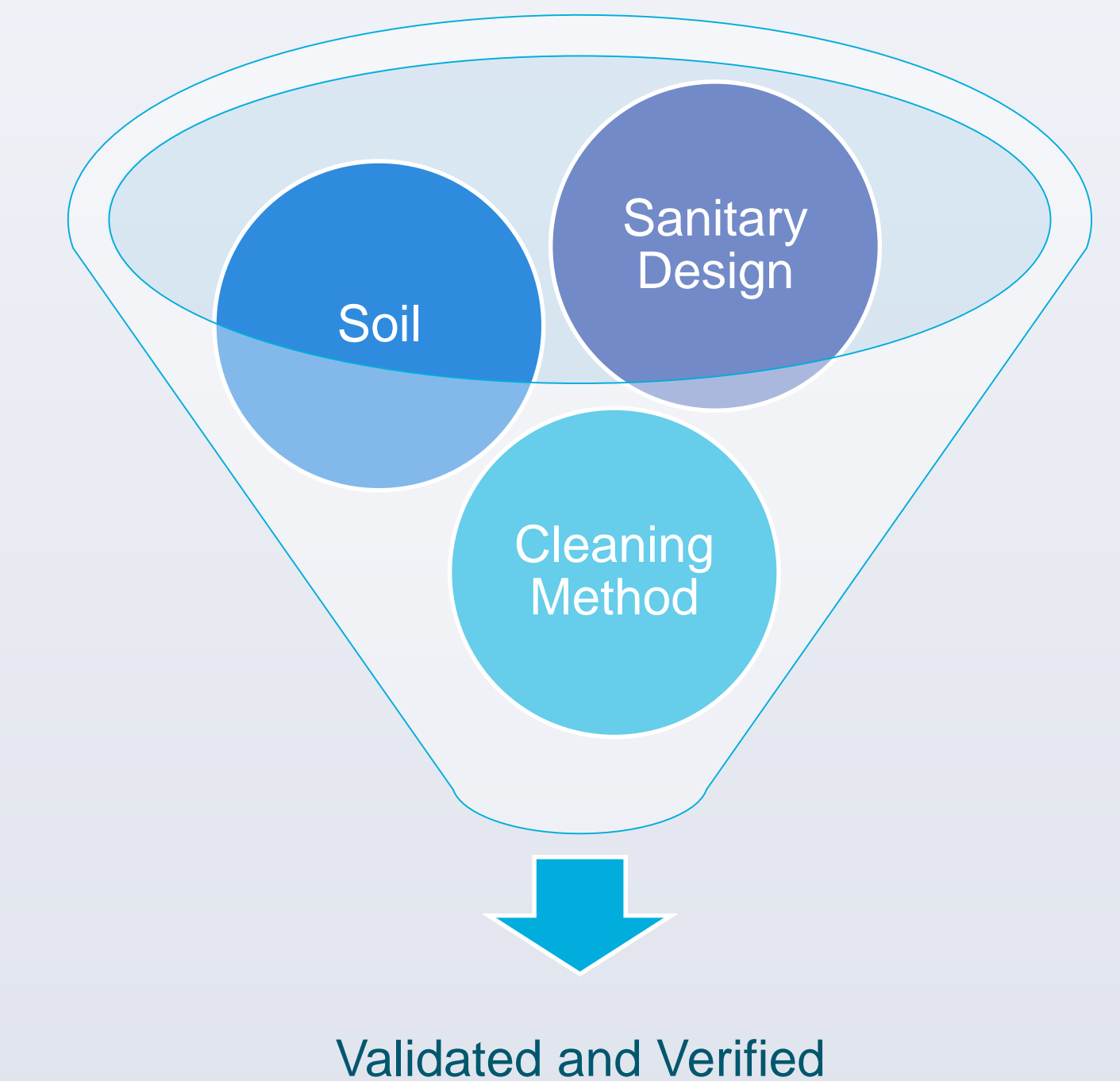
Purging with granola as an abrasive material



Conditions following the purging process

SIGNIFICANCE

Conversion to water-controlled methods has the potential to improve microbiological results during validation and verification of all sanitation tasks.



KEY TAKEAWAYS

- ! Develop a **Water Control Program**

- design
- train
- audit/inspect
- respond



Leaks
Drips
Condensation
Pooling
Stagnant

- ! Follow the **ranked cleaning method proposal** to minimize the impact of cleaning

- ! Establish a **risk based framework** to ensure that the appropriate cleaning and sanitation protocols are applied. This may include visual standards.

CONTACT

Karl Thorson
Food Safety and Sanitation Manager
karl.thorson@genmills.com