

**IMPACT OF CLEANING FREQUENCY ON SNACK PRODUCTION
PROCESS ENVIRONMENT AND MICROBIAL GROWTH AS AN
INDICATOR OF HYGIENE PRACTICE IN FOOD MANUFACTURING**

By

Reiza Athiya Akbar

21/472587/BI/10650

Supervisor: Dr. Miftahul Ilmi, S.Si., M.Si.

ABSTRACT

The food manufacturing sector plays a vital role in promoting public health, advancing the economy, and ensuring a stable food supply. A major ongoing concern in this industry is managing microbial contamination to maintain food product safety. This study investigates how different cleaning intervals influence microbial presence in a snack production environment by evaluating hygiene effectiveness through environmental surveillance. The research were conducted as performing microbiological analysis, including —Total Plate Count (TPC), Yeast and Mold (YM), and Coliform (CF)—at several post-cleaning time points: D+8, D+10, and D+12, following routine sanitation at D+6. Sampling was performed on four critical machines used after the frying stage: the tumbler, hopper, auger, and backformer. These machines represent both direct food-contact zones (Zone 1) and indirect, non-contact areas (Zone 2). Results revealed that some surfaces in Zone 1 remained within the acceptable microbial limits defined by food safety standards, whereas several Zone 2 surfaces exceeded those limits after D+10. Surfaces with residual moisture and high carbohydrate content showed elevated yeast and mold counts, and coliform bacteria displayed variable but concerning growth across both zones. These findings suggest that extending cleaning to D+10 could be feasible for specific equipment, provided that microbial counts (TPC, YM, CF) remain within regulatory boundaries. Nonetheless, implementing preventive strategies such as risk-based sanitation schedules and continuous microbial monitoring is crucial. This study contributes actionable recommendations for strengthening food hygiene systems and highlights the need for further research on microbial survival under diverse environmental and operational conditions.

Keywords: Cleaning Interval, Microbial Growth, Snack Manufacturing, TPC, Yeast and Mold, Coliform, Food Safety