

PureLine[®] CASE STUDY: Addressing Persistent Bacterial Contamination in a Dairy Processing Facility

ABSTRACT

This case study examines a dairy processing facility in the Western United States that experienced persistent bacterial contamination despite initial fumigation efforts. The study details the intervention by PureLine, focusing on the use of PureCIP, a chlorine dioxide solution, in a Clean-In-Place (CIP) system to eradicate the contamination. The efficacy of the treatment and its implications for standard CIP practices are discussed.

BACKGROUND

The facility, equipped with a 4000-gallon CIP system, experienced recurring bacterial contamination.

Initial efforts to address the issue involved fumigation of the production area. Despite these measures, the contamination persisted, suggesting the infection source was not adequately targeted.

INTRODUCTION

A dairy processing facility, producing packaged milk, encountered a significant bacterial infection presumed to be within the production environment. Initial fumigation efforts failed to eliminate the contamination, prompting a thorough investigation and subsequent intervention by PureLine. This case study outlines the diagnostic approach, treatment implementation, and the outcomes observed.

INITIAL DIAGNOSIS & INTERVENTION

Upon reviewing the initial fumigation treatment, it was hypothesized that the contamination was localized within the process piping rather than the air environment. PureLine recommended utilizing PureCIP, a chlorine dioxide-based solution, to disinfect the CIP system comprehensively.

METHODOLOGY

Before the second fumigation, the facility conducted four standard CIP cycles, which involved:

- **Caustic cleaning**
- **Rinsing**
- **Acid treatment**

However, these measures were insufficient in removing the biofilm and bacteria. PureLine's intervention involved treating the CIP system with a 10 ppm chlorine dioxide solution, recirculating it for 45 minutes. Additionally, another fumigation treatment was conducted to ensure thorough decontamination.



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RESULTS

Following the treatment, the facility reported damage to the filling machine. An investigation revealed that the filters, assumed to be new and thus overlooked, were clogged with biofilm and bacterial material.

The removal of these contaminants from the filters confirmed the efficacy of the chlorine dioxide treatment in addressing the root cause of the infection.

CONCLUSION

The intervention by PureLine successfully identified and addressed the source of bacterial contamination within the dairy processing facility. The use of PureCIP chlorine dioxide solution demonstrated superior efficacy in eradicating biofilms compared to standard CIP procedures.

This case study suggests that facilities facing similar issues should consider advanced disinfection methods and thorough inspections of all system components to ensure complete decontamination.

DISCUSSION

This case highlights the limitations of standard CIP procedures in removing biofilms and bacteria. The use of chlorine dioxide proved effective due to its different approach to disinfectant treatment, emphasizing the need for targeted interventions in persistent contamination scenarios.

The findings underscore the importance of comprehensive diagnostics and the consideration of all potential contamination sources, including often-overlooked components like filters.

RECOMMENDATIONS

- Facilities should incorporate advanced diagnostic methods to accurately identify contamination sources.
- Chlorine dioxide should be considered for CIP processes where biofilms and persistent bacteria are present.
- Routine checks of all components, including filters, should be implemented to prevent overlooked contamination sources.
- Further studies should be conducted to compare the long-term efficacy of chlorine dioxide against standard CIP treatments in various settings.

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