E. coli O157

Research and Education Strategy Fact Sheet

Cleaning Mechanical Tenderizing Equipment

Cleaning Meat Tenderizing Equipment

There are two objectives when cleaning meat tenderizing equipment. These are the removal of food particles and residues to obtain visibly clean equipment, and sanitizing to reduce numbers of bacteria on the equipment to acceptable levels. Tenderizing equipment can be more challenging to clean because of the presence of numerous thin blades or needles. If the equipment is not adequately cleaned and sanitized it is possible that bacteria will be transferred to meat that is passed through the equipment during tenderizing operations.

Research on Cleaning Procedures

The procedures used in a commercial operation for cleaning mechanical tenderizers and their effectiveness were studied. Microbiological samples were taken from the tenderizing equipment (Ross Industrial model TC700) before cleaning, immediately after cleaning and also before use on the morning of the next day.

Following cleaning at the commercial operation it was found that the number of bacteria on equipment varied by a factor of 10 from day-to-day. Further, the number of bacteria on the equipment after use was similar to levels found on the cleaned equipment just before use the next morning. This indicates that while the equipment appeared visibly clean, bacterial

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ALMA Alberta Livestock and Meat Agency Ltd.

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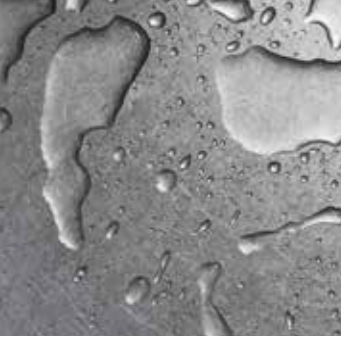
CCA CANADIAN CATTLEMEN'S ASSOCIATION National Voice Of Cattle Producers



contamination remained. However, in most instances the bacteria that remained after cleaning were of the types more likely to contribute to spoilage than foodborne illness.

The results of the microbiological testing were shared with cleaning personnel and several aspects of the cleaning methods were studied in the laboratory. Laboratory testing found that washing equipment with warm (55°C) water was very similar in effectiveness as hot (90°C) water. While hot water would be expected to help inactivate bacteria, it can also alter the detergent properties of cleaning agents and result in films of denatured protein to form on the equipment. It was also found that drying equipment following cleaning helped prevent growth of bacteria overnight. Drying may be particularly helpful to some facilities that are not able to store cleaned equipment at refrigeration temperatures until use the next morning.

Microbiological testing of the equipment at the commercial facility was then conducted following cleaning with the revised procedures and holding of the cleaned equipment in a cooler until use the next morning. The findings showed more than a 90% improvement in the total number of bacteria on the equipment with the modified cleaning methods and storing equipment in a refrigerated area overnight.

Conclusions

While the risk of hazardous bacterial contamination of tenderizing equipment would seem to be small, appropriate cleaning as well as drying and ideally refrigeration of tenderizing equipment is necessary if such risks are to be fully addressed. In small operations where microbiological testing is infrequent or not an option, it is especially important that cleaning and sanitation procedures are well developed. The objective of removing and controlling bacterial contaminants as well as visible residue on equipment should be well understood by cleaning personnel.

Examples of commonly used tenderizing equipment in commercial practice