Dairy Food Safety

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Minimising Food Safety Risks of Water used in Milking

Water can readily act as a vehicle for transporting unwanted organisms and other contaminants into the raw milk supply at the farm level. This Food Safety Note addresses ways to minimise food safety risks from the water used in the milking environment.

Dairy farms must have enough water, of suitable quality, to clean the premises, animals and equipment, and for the cooling of the milk to prevent the risk of contamination of the milk [1]. Under each farm's Food Safety Plan (FSP), a water management plan must include a description of the source, treatment and use of water in the dairy.

Water Used in Milking Sheds

Water used in milking sheds is usually sourced from permanent streams, rainwater storage, channels, underground bores, or a combination of these sources. A potential food safety risk arises when water carrying bacteria or chemical residues accidentally contaminates the bulk milk supply.

Microbial pathogens that may gain entry will in many cases be destroyed by pasteurisation during later processing, however heat resistant organisms (thermodurics) and microbial spores will not be eliminated. They can result in quality defects in the final product, and in the case of spores such as *Bacillus cereus*, pose a food safety risk. Any cleaning or other chemical residues that are present in the water will similarly not be destroyed by pasteurisation, and carried over into the manufactured product.

To minimise the spread of microbial contamination, floors should be kept clean and drains unclogged to assist in preventing contamination spreading onto milking cows. Milking platforms should be regularly hosed down; however care should be taken to avoid water splashing onto the udders and teats of milking cows, or exposed clean equipment. High volume, low pressure hoses should be used to remove dirt from soiled areas, whilst minimising any further spread of dirt. Areas near the milking shed should also be kept clean, and the build-up of manure prevented.

Effluent water from the cleaning process must also be discarded appropriately to ensure the water does not contaminant the environment or become a further food safety risk.

Hot/ warm water and detergent should be readily available, and the cleaning agents used for the washing of hands, equipment etc should be suitable for the intended purpose. Washing of teats that show evidence of debris/dirt build-up need to be effectively cleaned before milking. However, care should be taken to ensure residual water from washed teats does not end up in the milk. This may be avoided using individual paper towels to wipe off any excess residual water [2].

Water Used in Cleaning Milking Equipment

Water quality and temperature is particularly important for the cleaning and sanitising process. Factors which affect water quality include mineral salts (hardness), suspended solids and high levels of bacterial contaminants. Appropriate treatment taken to address these factors, if present, will:

- help reduce bacterial numbers in the milk from milkstone deposits.
- extend the working life of the milking system and water heating unit.

Chemical dosage rates and temperatures used should be within levels specified by the supplier. Rinse water used in the cleaning process is critically important, as any residual rinse water containing sanitiser may later come into contact with the milk [3]. Where a hot water rinse is used, it needs to maintain the recommended temperature throughout the entire system to effectively destroy any residual micro-organisms.

Dairy Food Safety Victoria

Victoria The Place To Be

Use of Reclaimed Water

Reclaimed water is water that has been derived from sewerage systems or industry processes and treated to a standard appropriate for its intended use [4].

The use of reclaimed water in Victoria is set by the Environment Protection Authority (EPA) Victoria, and is graded depending on the number of chemical and biological contaminants present. Reclaimed water is graded from A to D, and each grade of water must only be used in the appropriate circumstances according to what is stipulated in the EPA guidelines. These guidelines and restrictions of use are put in place to prevent any unwanted contaminants from entering the food supply or posing a threat to the environment.
Extra care should be taken when using reclaimed water to ensure it does not contaminate the milk. For example, it is not suitable for use as wash-down water for milking machinery [4].

For further information on the use of reclaimed water on dairy farms refer to Dairy Food Safety Note 7.

References

1. Dairy Food Safety Victoria. 2002. 'Code of Practice for Dairy Food Safety. Section 3.2.6 Water Supply and Quality'. Available at: http://www.dairysafe.vic.gov.au/pdf/DFSV_CodeOfPractice2002.pdf
2. Adams, M.R, Moss, M.O. 2000. Food Microbiology. 2nd Edition. The Royal Society of Chemistry. UK.
3. Department of Primary Industries Victoria. 2004. Dairy Farm Water Quality Assurance. Stage 1: A risk assessment of on-farm water use in the production of milk.
4. EPA Victoria. 2003. Guidelines for Environmental Management Use of Reclaimed Water. Publication 464.2. Available at: http://epanote2.epa.vic.gov.au/EPA/publications.nsf/PubDocsLU/464.2?OpenDocument

Further Information

Other Dairy Food Safety Notes on dairy food safety topics are available.

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