

CLEANING SYSTEMS FOR MILKING PLANT

REGULATIONS (EC) NOS. 852/2004 AND 853/2004 (AS AMENDED)

There are three main systems for cleaning milking parlours:-

Hot Circulation; Cold Caustic Circulation; Acidified Boiling Water.

◆ HOT CIRCULATION

This is probably one of the most effective cleaning methods.

The system involves the circulation of low foaming detergent–steriliser (normally called a circulation cleaner) around a milking plant for 5-10 minutes. The plant is rinsed before circulation to remove milk residues and again after circulation to remove detergent residues. Potable water (Mains or Private) should be used, that is, a supply that meets drinking water standards.

◆ Method

The external surfaces of the milking equipment, including jettors, clusters and milk pipes are washed and the plant is set up for cleansing. The system works best if the plant is rinsed with water at approximately 40°C to remove milk residues (around 10 litres per unit). However cold water may also be used.

The quantity of solution required depends on the size of the plant (10 – 15 litres per unit). Hot water, at a temperature of 80°C, containing a suitable dairy detergent–steriliser at the concentration recommended by the manufacturer, is circulated around the plant for up to, but not more than, 10 minutes allowing the first 8 litres to run to waste.

The plant is then rinsed with clean, cold water (at 10 litres per unit) to remove all traces of the detergent–steriliser.

The plant is drained after the final rinse.

◆ Milkstone

Periodic treatment of the plant with milkstone remover is essential. The required frequency of treatment will depend on the hardness of the water supply.

◆ Advantages of Hot Circulation

- Good flow of cleaning fluid through the plant;
- Suitable for all sizes of plant;
- Plant drains effectively between milkings

◆ **COLD CAUSTIC CIRCULATION**

Cold caustic cleaning is a cheaper cleaning system but is more labour intensive than other systems.

As before, a potable water supply must be used.

Cold caustic cleaning involves circulating a solution of a suitable cold caustic detergent, at a concentration recommended by the manufacturer, through the plant.

Before circulation, the plant needs to be rinsed to remove milk residues. The cleaning solution is left in contact with the internal surfaces of the plant between milkings and is pumped out prior to the next milking. The plant is then thoroughly rinsed before use.

A hot wash is an essential part of the routine. It should be carried out regularly, no less than once per week.

CLEANING ROUTINE

Morning – After Milking

The external surfaces of the milking equipment, including jettors, clusters and milk pipes are washed and plant is rinsed using 10 litres of water per unit. Cold caustic cleaning solution is prepared in a suitable lidded container using the manufacturer's recommended rate. Each unit requires 10-15 litres of this solution, which is circulated from the lidded container around the plant for 10 minutes, allowing the first 8 litres to run to waste. The vacuum pump is then switched off and the plant is not drained.

Evening – Before Milking

The vacuum pump is started and the cold cleaning solution is pumped from the plant back into the lidded container for re-use. The plant is then thoroughly rinsed with 10 litres of cold water per unit to remove caustic detergent residues. The plant is then drained in preparation for milking.

Evening – After Milking

The Morning routine is repeated, except that the cold cleaning solution collected in the lidded container is re-used.

Morning – Before Milking

The cold cleaning solution is pumped from the plant to waste. A fresh caustic solution should be made up each day. The plant is rinsed and drained prior to milking.

Hot Wash

A hot wash, carried out at least once per week, is essential when using cold cleaning. A suitable hot wash detergent, starting temperature 80°C is circulated for 10 minutes.

The plant is rinsed afterwards with cold water, using 10 litres of water per unit. Peracetic acid may be used in the final rinse, as per manufacturer's instructions.

◆ **Milkstone**

Periodic treatment of the plant with milkstone remover is essential. The required frequency of treatment will depend on the hardness of the water used.

◆ **Advantage of Cold Caustic Circulation**

Low cost with minimal use of hot water.

◆ **Disadvantage of Cold Caustic Circulation**

Plant must be rinsed and set up before each milking, therefore more labour intensive than other cleaning system.

Great care must be taken in the use of caustic detergents.

SAFETY WARNING!

Caustic soda is a potentially dangerous substance, liable to burn the skin. Extra care must be taken at all times in the storage, handling and use of caustic solutions.

◆ **ACIDIFIED BOILING WATER**

Acidified Boiling Water is a “once through” system which uses acidified water at or near boiling point to clean and sterilise the milking plant.

Acidified Boiling Water (ABW) is more suitable for smaller plants. Whilst labour saving, it is also the most expensive system to use. A potable water supply must be used.

◆ **Method**

The external surfaces of the milking equipment, including jettors, clusters and milk pipes, are washed and the plant is set up for cleansing.

Water, at not less than 96°C, is drawn directly from a water heater through the plant by vacuum. The flow of water is restricted so that it takes 6 – 7 minutes to pass through the plant to waste, raising the temperature high enough to sterilise the plant. The water going to waste and should be at a minimum of 75°C for 2 minutes.

A dilute acid is slowly released into the wash line during the first 2 – 3 minutes of the cycle to prevent the formation of scale and to assist cleaning.

Approximately 70 litres of hot solution are necessary for a four point plant. A further 10 litres should be provided for each additional unit.

Either sulphamic or nitric acid is used. A stock solution of acid is made up according to the manufacturer's instructions. The strength of the stock solution will depend on the size of the plant to be cleaned. Generally one litre of stock solution is used at each wash.

◆ **Advantages of Acidified Boiling Water**

Time saving – the complete process takes 6 – 7 minutes.

Simple to operate – “once through” system.

Suitable for direct-to-line milking systems.

◆ **Disadvantages of Acidified Boiling Water**

High fuel costs – water must be almost boiling.

The acidified solution is corrosive to concrete (wall and floor surfaces) and must be disposed of with care.

It is difficult to achieve the necessary temperature in larger plants, particularly with additional equipment such as automatic cluster removers and plate coolers.

Milk and dairy washings have the potential to cause severe pollution and must therefore never be allowed to enter a drain, watercourse or groundwater. All waste milk and dirty water produced on the farm must be collected and disposed of properly.

For further information contact your local DAERA Milk Inspector:

www.daera-ni.gov.uk/articles/complying-hygiene-regulations-dairy-farms

January 2021