The Co-operative Difference

Fonterra Dairy for life

Chlorates in Milk – FAQ's

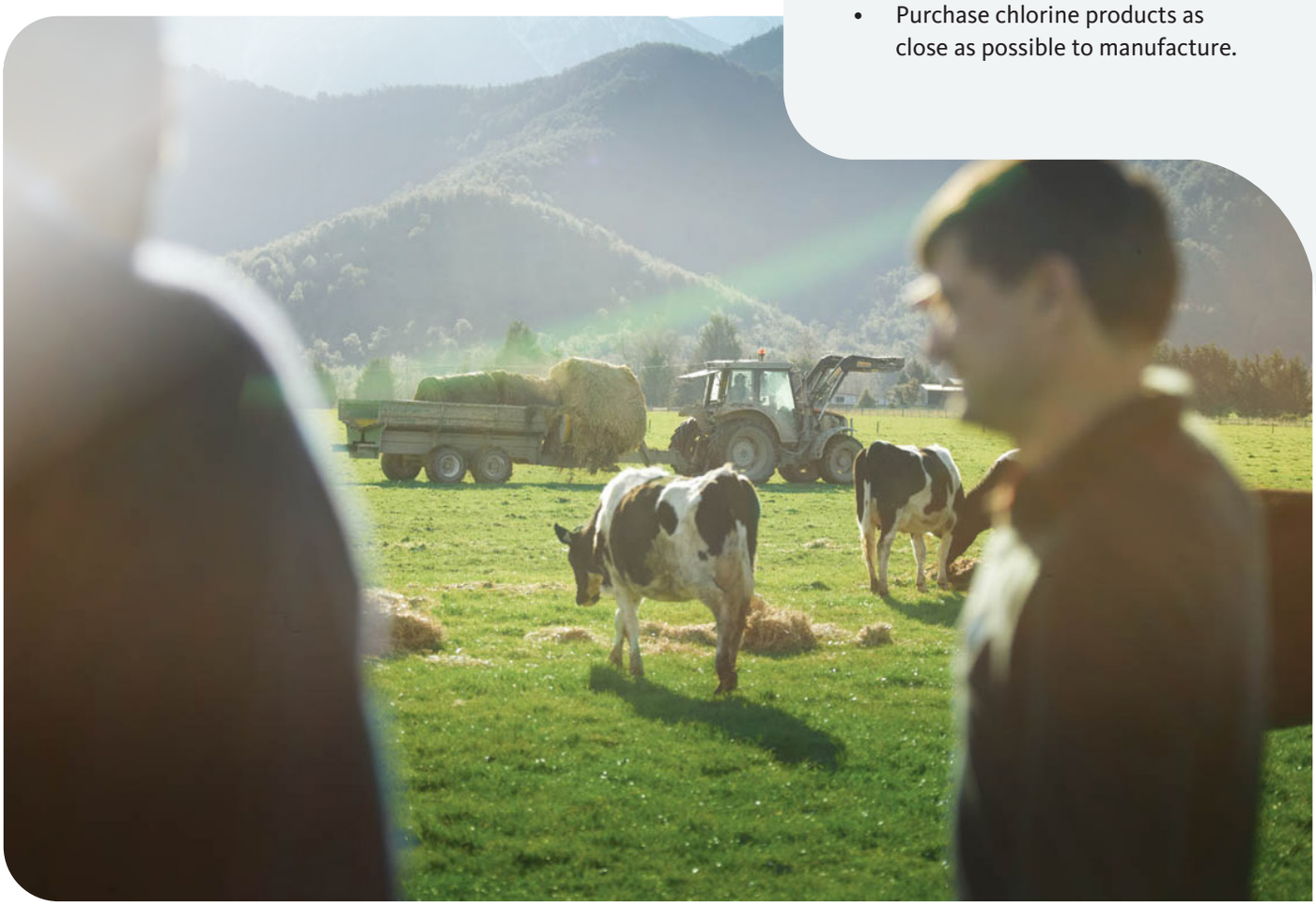
How does milk become contaminated by Chlorates?

Some common causes on farm:

- Overdosing of Chlorine treatment products in water treatment systems is a common cause of Chlorate residues in milk, dosage rates must be checked to ensure use as per product label.
- The use of Sodium Hypochlorite (XY12, Hypo, C3) products in the milking plant as a sanitiser. Wash residues in the plant increase the risk if the plant is not sufficiently drained prior to the following milking. In some cases, we have seen sanitiser added to already treated water increasing the risk and incurring an unnecessary cost.
- The lack of a final cold-water rinse following Chlorinated alkaline plant wash.

How do I reduce the risk of Chlorate residues?

- Store Chlorine products away from direct sunlight in a cool area.
- Ensure the dosage rate of Chlorine products is as per the product label.
- Talk to your chemical rep to understand your farms requirement for Chlorine use.
- Purchase chlorine products as close as possible to manufacture.



Chlorine is widely used as a cleaner/sanitiser in the dairy shed and for water treatment, however over time Chlorine-based products breakdown into Chlorates. These breakdown components can flow through into final dairy products and can cause elevated levels in final product.

Chlorates are considered health risks to humans and must be managed appropriately. It is therefore essential to treat Chlorine and Chlorine-based products carefully, such as storing appropriately, out of direct sunlight and in a cool area.

The presence of Chlorate in milk and dairy products can result from the overuse of Chlorine in water chlorination systems, and chlorinated detergents designed for the cleaning and sanitation of milking plants. Chlorates are formed through the decomposition of Chlorine molecules; this process occurs naturally over time, but the rate of decomposition can increase as a result of storage conditions.

Some markets such as the EU and several of our key customers are moving to ensure that Chlorate levels in final product meet the new requirements laid out as a result of increased focus in this area. Key areas within the supply chain are being addressed to better manage levels but Chlorate levels in raw milk also need attention.

How long will Chlorine last?

This is a hard question to answer as it depends on the storage conditions, but as a general rule of thumb; Liquid Chlorine should be used within 6 months from manufacture date.

- As Chlorine ages it's potency will drop this generally starts at about 12-13%, after 3 months it will typically drop to 10% and 8% after 6 months.
- As the potency drops Chlorates and chlorites are formed. Powdered Chlorine should be used within 12 months from manufacture date.
- Powdered Chlorine is more stable than liquid giving a longer shelf life.
- Storing powdered Chlorine for long periods can cause the packaging to degrade / disintegrate, especially in high humidity conditions. This will accelerate the breakdown of the Chlorine.

Impact of storage conditions on the formation of Chlorates?

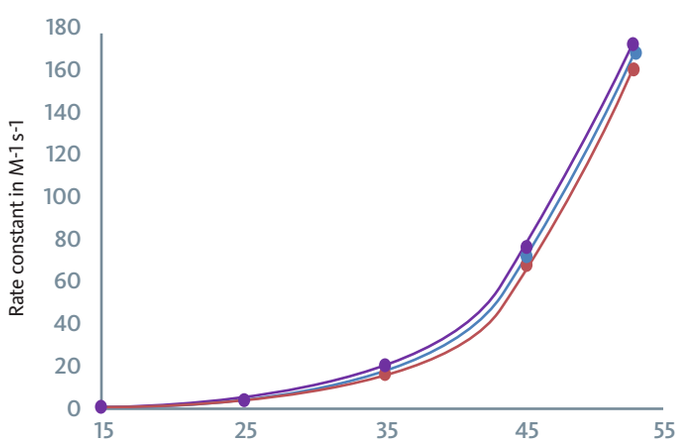
Time and temperature are the main factors which increase the rate of Chlorate formation in Chlorine based products. These are all factors which must be monitored on farm and during storage.

Temperature

The rate at which Chlorate molecules are formed is greatly affected by the storage temperature of the Chlorine product. The higher the storage temperature, the greater the rate of Chlorate formation, to mitigate this risk, containers should be stored in cool conditions.

Time

The decomposition of Chlorine molecules to Chlorates occurs naturally over time, the longer a Chlorine based product remains in storage, the higher the number of Chlorate molecules.



Effects of temperature on the formation rate constant of Chlorate from hypochlorite (Kriem, 2017)

Support

More information on Fonterra's Chlorate testing standards can be found in the Fonterra Farmers' Terms of Supply section 10. If you require additional information regarding Chlorates in milk, call the Farm Source Service Centre on: **0800 65 65 68.**