

Milk Quality Ireland

Technician Refresher Training Course

Chlorine Residue presentation

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Technical Development Team

Tirlán in Numbers

Exporting
to over
80
countries



11 World class
processing facilities



Low intensity
processing at state-
of-the-art facilities



Nutritional Solutions
and Specialised
Ingredients for infant
formula brands

Over
3.1bn
litres Milk Processed



6,000
family farms in Ireland



Approx. 80,000
truck loads of
milk

Partner to
some of the
world's leading
food brands



Living Proof is Glanbia Ireland's
commitment to farming, food
and the future. We have signed
up to Science Based Target
Initiative (SBTi), specifying
targets and timeframes for
reducing GHG emissions



A wide range
of award-
winning
brands

4,500 ROI

Milk suppliers



Family farms produce milk for Award Winning Dairy Products



For dairy, independent verification across core measures is key to consumer trust



Product quality



Cow and milk traceability



Environmental sustainability



Soil and grassland management



Origin Green Gold Members
and Sustainable Dairy Assurance Scheme for two successive years



ISO 17065
Awarded Gold CSR Rating and ranking in Top 1% of all suppliers assessed



Animal Welfare Approved
The only label that guarantees animals are raised outdoors on pasture for their entire lives on an independent farm using truly sustainable, high-welfare farming practices



Certified **Kosher** and **Halal**

Quality and Product Specifications

Product specifications are driven by:

- Legislation and Regulations for Food Safety
- Customer requirements specific to product type



Chlorate and perchlorate levels came into focus in 2016 – 2017

- Due to risk factors associated with these residues



Companies and Industry process mapped contaminant risk factors (from farm to factory)

On farm sources – detergents, teat disinfectants and water source

In house risks – water source, detergents

The industry spent three years until 2019 working on CF detergent ranges for on-farm use before beginning an en-masse switch

This work is ongoing even now – targeted refinement of detergent ranges

Chlorine free detergent – the journey on-farm

- Its an ongoing journey
 - Every single day
 - Every single milk load
 - Approx. 80,000 truckloads
- It is CRITICAL that all milk is produced without chlorine use on-farm
- Every advisor on-farm must always focus on chlorine free for industry success
- There isn't room for chlorine in milk production nowadays
- Support is there one-on-one

- *2010 – move from highly chlorinated products in factories due to TCM concerns and on-farm followed with recommendations to use content*
- *2018 suppliers with chlorine residue failures asked to change product*
- *2019 All suppliers asked to move to chlorine free on bulk tanks*
- *2020 All suppliers asked to use chlorine free detergents for tanks and machines*

Based on:

- 1. the success of 2019 strategy*
- 2. The testing and monitoring results*
- 3. Knowledge of the efficacy of the new ranges*
- 4. Customer needs*

Current Tirlán requirements nationally

- Use of only chlorine free chemicals on farm
- Teat disinfectants must not contain iodine or chloride or chlorine dioxide
- Compliance to Tirlán testing programme
 - In specification for TCM
 - In specification for Chlorate and Perchlorates

Suppliers are supported on the ground and our team understand that there will be queries and support needed on farm due to the change over

MQM will match the suppliers machine / tank system with best possible option taking into account history / water / size / supplier capacity



THIS IS AN ONGOING JOURNEY

Influencers



Communication is key



Can one farm make a negative impact?

What are the success factors ?



WHAT HAVE WE SEEN AS THE SUCCESS FACTORS ?

CRITICAL BIG PICTURE FOCUS

- Raw milk from cows has no chlorates or TCM
-
- Awareness of the importance of compliance
-
- Focus on industry outcomes

- Bigger picture focus

- A WIN for Irish dairy

- Realising it is different product that must be used differently

CRITICAL SMALL DETAILS FOCUS

- Change the routine
- Hot water
- Sufficient water volume
- Consistent routines
- Good detergent choices
-
- Focus on routines
- Attention to details
- Minimise mains water impacts on farm

There are no short cuts





Thermoduric and TBC top five

Fionnuala Malone Senior Milk Quality Manager

This month's focus is on water – temperature and also quantity. If there are issues with TBC and Thermoduric there is a need to fully audit your wash routine and cow preparation and the quality and quantity of water that you are using for these in your milking system.

Water temperature
Hot washes (water starting at 75C and dump temperature of 65C) are crucial. Water which is not hot enough will result in bacteria surviving the wash and building up in a biofilm layer. These bacteria coming in in raw milk will then respond to heating from pasteurisation by growing more and this affects product quality. Increased customers complaints and poor shelf life are direct consequences of higher thermoduric counts in milk.

Water quantity
Your wash trough must be large enough to store enough water for washing correctly. You need to allow for 12 litres per milking milk. If you do not have enough water flushing through the system there will not be enough force with washing to clean the parts fully. Measure the wash trough and replace with a bigger one if needed.

Water softener
Hard water has increased magnesium and calcium levels which have a negative effect on disinfectant efficacy when they build up on equipment surfaces. These mineral deposits on surfaces can result in biofilm formation. Using water softeners is essential to make sure that detergents are given every chance to work. Without a softener your wash routine will not be efficient. Build-up of scale will also damage water heaters and equipment. Get your water tested for hardness if you suspect this is an issue.

Detergent choice

Many detergents will have an add-on option for rinsing with very hard water. This might be as simple as incorporating powder washes into a liquid product wash routine weekly or spraying detergents periodically. Peroacetic acid also helps to sterilise a clean machine. Note that PEROACETIC ACID does not work as an acid detergent – we have come across cases where it's being used incorrectly. It will not work as an acid detergent.

Water quality

Many wells went very low this summer and therefore sediment was obvious in some wash water. You must only use water that is suitable for drinking when washing your machine and bulk tank. If there are high levels of bacteria in your water, such as EColi or Enterococci, the water will not be clean enough to use for washing your machine or bulk tank. Get your water tested and treat the well if necessary. UV filters are the best solution for a long-term fix for your well.

Contact your Milk Supply Manager with any queries.



CHLORINE RESIDUE UPDATE

Chlorine-by-products such as Chlorates, Perchlorates and Trichloromethane are residues that are not desirable in dairy products. The Irish industry has made huge progress in reducing any risk of issues. Regular testing and monitoring programmes are now in place across raw milk and products across all the Irish industry – some being in house programmes within Tirlán and others as part of Ornuia and Teagasc monitoring programmes.

To avoid any risk of your milk being identified as a concern:

- If you are on mains water ensure there is no water contaminating your milk;
- Fully drain milk plants and ensure there is no water / condensation in bulk tanks before milk enters the bulk tank
- A reminder to all suppliers that use of any chlorinated detergent products or test disinfectants that contain chlorine or chlorine dioxide is no longer permitted.

- Perchlorates and Chlorates build up over time due to the breakdown of chemicals;
- Detergents must be kept stored out of sunlight and should only be used fresh to avoid residues.

This is to ensure milk is compliant with both regulations and matches customers specifications.

Chlorine free

A reminder to all Glanbia Ireland (GI) suppliers that the only non-chlorinated detergents must be used for washing. Peroacetic acid should be considered for use in the final rinse gives and gives an added boost during the challenging summer months and therefore, can help to remove any build up. Currently customers require declarations from GI that no chlorinated products are being used, so we ask that all suppliers comply with this at all times to ensure that dairy products remain within specification for customers.

Test disinfectants that contain chlorine dioxide should not be used at all. They have been found both by Teagasc and by ourselves to be linked to elevated chlorate and perchlorate levels in milk. Use of these products is in breach of the Milk Purchasing Policy, and may jeopardise valuable customer contracts for premium products.

Please ensure you check all products being used in your dairy to ensure they comply fully with the Milk Purchasing Policy.

The three product ranges we have found that work the best over time are the:

- Diversey Range
- Grassland Agro Range
- Kílco Range

The above products are available directly from Glanbia Ireland Agri Branches and on-line at Glanbia Connect. Contact your Milk Quality Manager to discuss which one will suit your wash system.



<https://www.tirlanfarmlife.com/farm-advic/detail/all/milk-quality-chlorate-failures-root-cause>



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Milk Quality: Chlorate failures – root cause



To minimise chlorine residues in milk – Glanbia Ireland (in line with has asked suppliers to remove all chlorine detergents from their

FundEquip

FINANCE IRELAND



SOLAR POWER



Chlorate failures – root cause

by Fionnuala Malone Senior Milk Quality Manager

Glanbia Ireland requires all suppliers to remove all chlorine based detergents and test disinfectants from their milking systems. This requirement is in line with industry norms. Since January 2021, Ornuia have implemented a full-scale ban on chlorine, as have infant formula companies. Glanbia Ireland has committed to our customers that our dairy suppliers are using non-chlorine detergents.

It is vital that all suppliers follow this requirement as they risk endangering GI's ability to continue to supply key customers.

Testing

All dairy products are tested and any that have levels of Chlorate or TCM out of spec will be downgraded and penalised. One farm with high chlorate or TCM levels can lead to downgrading of a full batch of product.

TCM / perchlorate failures can come from where bovine treated water from a mains system or are breached suppliers will be suspended – clear before they can come back to supply. Suppliers are released back onto supply after it is your responsibility to know what ingredients (foods and test disinfectants. Your milk goes thin and feeds vulnerable consumers and dairy specification to meet market needs.

Reminders

Don't use any chlorinated products to clean the milking machine / bulk tank. It is not suitable for use and no longer permitted. Rinse it periodically (e.g. once a month or just when you have problems) is not permitted. Rain all water out of your plant and bulk tank before milking specially if on mains or group water. Use detergents up fully – if decanting into a clear drum for ease use from barrels – ensure you empty the drum to ensure old detergent isn't building up in the base of the drum.

- Ensure you wash off all residues from teats before next milking.
- Only buy smaller quantities of detergent. Buying large stocks of detergent allows chlorates to build up over time even with nonchlorine detergents.
- Store detergents in dark areas, away from sunlight.
- Reset your cleaning regime by checking product strength and hot water temperature. Hot water is key. Your dumping temperature after a hot wash should be circa 55°C. Any lower shows that the start temperature is too low. Pre-rinsing the machine to warm the pipes makes a big difference to wash temperatures. Hot washes should be short and sharp. Upgrade your hot water system. There are plenty of options available – Solar, Gas, Electric and Dairy Geyser.
- Water quality is another area to focus on – get your water tested for EColi and Enterococci – if these are found – install a UV filter. High levels of these in your water will make it harder for your milking detergents to be effective. High levels are unsuitable for drinking.
- Water softeners are another area to look at – if you have hard water – using a softener will ensure there is less build up of minerals throughout your systems and allow detergents to work.
- Retaining detergent wash water is no longer the ideal in many cases. The solution should not be allowed stagnate overnight if the wash troughs are unclean. Keep an eye on well water quality. Contact your Milk Supply Manager to work through which wash regime is ideal for your systems.
- Avoid using any test disinfectants with chloride or chlorine dioxide as active ingredients. These have been found to lead to chlorate levels building up.

Myth busting

There has not been a decrease in milk quality since moving to chlorine free. Yes – there can be periodic issues on farm and the Milk Quality Team is there to assist to solve these as they occur. However, this has occurred through the years even when chlorine was used. If you have a TBC, Thermoduric failure – don't reach for chlorine. Contact your Milk Supply Manager for support to deal with issues as they occur.

Q&A

Thank you!

