



Lessons from the Poultry Industry and Disinfectant Guidelines



Introduction

Disinfectants – They’re all the same, right?

Do you know your phenols from your iodophores?

There’s quite a few things to consider when choosing the appropriate disinfectant:

- How long a contact time is required?
- Will the disinfectant leave a residue that could impact feeding or milking equipment?
- Will it be effective against the bugs I’m trying to target?
- Is a specific disinfectant required by legislation, for the situation?
- Am I using it at the correct concentration?
- Will it be deactivated by other substances? E.g. organic matter.
- Is it toxic?

Disinfectants are tested by Defra at 4°C, and their efficacy actually increases as the water temperature increases, so it’s best to use warm water whenever possible. Some disinfectants such as hypochlorites and iodophors will work well in cold water, but be aware that some may not work as well as expected below 4°C.

Lessons from the Poultry Industry

At our client meeting in January 2024 we heard from Boehringer Ingelheim’s poultry expert Jen Lock about what the poultry industry are doing well when it comes to cleaning and disinfection:

- Sheds and equipment are meticulously cleaned, washed and disinfected between batches. This includes heating and ventilation systems as reservoirs of pathogenic bacteria can form here, particularly enterococcus.
- The appropriate disinfectants are used for building surfaces, drinkers and feeders, and left for the appropriate contact time.
- Bedding is stored indoors and tested for pathogens before use.
- Biosecurity is extremely strict – visitor vehicles are not permitted into livestock areas, visitors and farmers change their clothing and boots between sheds (sheds on the same farm, not just from farm to farm!), there are copious boot dips.



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Included in this bulletin

- Introduction-- Disinfectants are they all the same.
- Lessons from the Poultry Industry.
- Applying to calving areas and calf sheds.
- Disinfectant for cryptosporidium
- Detergent and disinfectant lists and uses.

Continued—Lessons from the Poultry Industry

- Vaccine uptake is extremely high; chicks are vaccinated for nearly everything it is possible to vaccinate them against, which improves their immunity and greatly reduces the incidence of these diseases.
- Regular disease monitoring – of both the environment, and by post-mortem examination of fallen birds.
- DATA, DATA, DATA!! Data is gathered on everything possible – mortality, daily weight gain, disease, shed output, even heating efficiency, so they can see which changes are effective. Knowledge is power!



While tackling an enterococcus problem, one poultry farm was able to show that by cleaning their heating system effectively (and after discounting the gains made from improved bird health), they improved their heating efficiency enough to save £61,000 in a year. The poultry industry gathers enough data that they can easily see where these gains can be made.

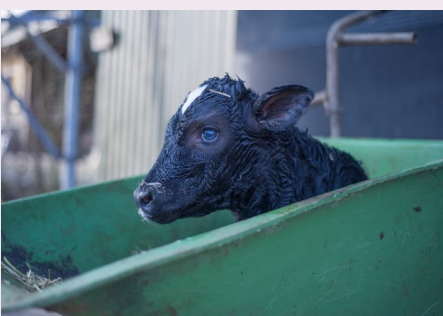
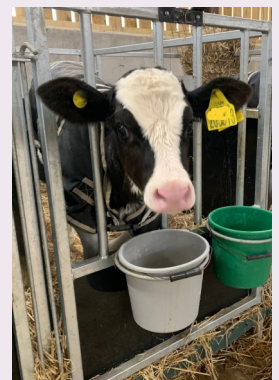
So how can we translate this to ruminants? After all, the poultry industry does have it a lot easier since they rear in ‘all in-all out’ batches, often with a week or more to thoroughly clean and disinfect between batches. Their sheds are also often purpose-built, with easy-to-clean surfaces and disinfection in mind from the start.

Let’s take calving areas and calf sheds as an example.

Pen Cleaning

Both calving boxes and calf pens can be considered ‘all in-all out’, so should be thoroughly cleaned and disinfected between animals. How long is the required contact time of your disinfectant? Some need up to two hours, is this achievable in your system? Does the building have wooden posts that are very difficult to effectively clean and disinfect?

Phenols are the only disinfectant to have a good efficacy against coccidia (hydrogen peroxide and peracetic acid are considered adequate). Lime is also useful as it acts as a desiccant and does a good job of reducing pathogen load. Be aware lime should not be followed by a disinfectant, e.g. phenols, as it may neutralise the disinfectant and reduce its efficacy.



Calf Transport

Think about how you are moving the calf from the calving box to the calf pens – aim to avoid taking faeces of adult cows into the calf unit. Is the wheelbarrow clean? Have you washed off and disinfected your waterproofs and wellies, or changed into a clean set of overalls? How clean is the calf (i.e. how clean is the calving box), has it got large chunks of muck between its hooves? ‘Cuddle boxes’ are an option for reducing exposure of the calf to pathogens like crypto, while still allowing the dam to stimulate the calf.

Colostrum

While chicks are born with antibodies transferred from the hen via the yolk (and then given potentially 20+ vaccines, starting from one day old), colostrum is the calf’s source of immunity, and initially its *only* protection from the pathogens it comes into contact with. Getting good quality colostrum into a calf as soon as possible after birth is *essential* to a good start. Remember the ‘5 Qs’: Quality, Quantity, Quickly, sQueaky clean, and Quantify. Colostrum quality can be improved by using a rotavirus, coronavirus and E coli vaccine in the dams, and calves can be given additional immunity through the use of respiratory vaccines.



Feeding Equipment Hygiene

Milk feeding equipment needs to be cleaned carefully to prevent biofilm formation. The proteins in milk and milk powder can be denatured by hot or boiling water and 'stick' to the inside of tube feeders, buckets etc, creating the perfect growth medium for bacteria. Bacteria can then form a biofilm which is difficult to remove, so make sure to use warm water rather than hot. A good protocol is to use a detergent and rinse, followed by an alcohol and rinse, as the alcohol won't leave a residue.



Interestingly Jen told us that some poultry farms had experienced problems with leaking pipes and damaged rubber seals after switching to a peroxygen disinfectant. So Jen put a rubber seal in a jar of peroxygen, and forgot about it for three years... it was perfectly fine when she found it again! What was likely happening is that the biofilms present on the rubber were sealing up existing damage, and their removal by effective disinfection meant the rubber now leaked! NB. This is not a reason to not disinfect thoroughly!!



Biosecurity

A lot of the pathogens that cause disease in calves are shed asymptotically by adult cows. It's a great idea to have a biosecurity barrier between the cows and the calves, e.g. by housing them in a separate airspace, washing boots and boot dipping before entering the calf area, and not sharing equipment with the adults.

Vaccination

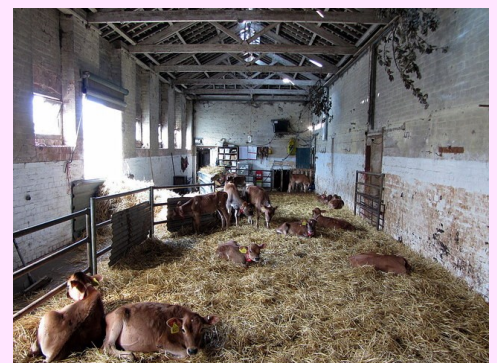
For calves vaccines are available for many diseases such as pneumonia and calf scour (the two biggest causes of calf death), and whole herd vaccines for BVD, IBR, Lepto and salmonella reduce infection pressure on calves.



Take home messages

Remember that we're all just trying to do the best we can with what we have, often working with old modified buildings, rather than purpose built facilities. Most farms can see benefits from small changes. Choose just one or two things to change; this is more manageable, so more likely to be effective. It also allows you to work out what is working, rather than changing everything at once!

Please talk to the vet and tech team if you would like more information about calving protocols, disinfectants, vaccinations, or colostrum management, and we can help to find the best solutions for your system.



Disinfection against cryptosporidium

We have a new product available called Prophyl S, which is a phenol disinfectant effective against cryptosporidium oocysts and Eimeria oocysts (coccidia). It can be used in boot dips (contact time 1 minute) and vehicles (5 minutes), and works on equipment (30-60 minutes) and surfaces (30 minutes to 4 hours). We are stocking this product now so please speak to the farm team for more information.



Detergent and Disinfectant Information Charts

Detergents

Detergent type	Brand examples	Best use	Tips
Alkaline	Morning wash Autosan blue Blast off BioTurbo Plus EcoFoam Advanced Target Powergel	- Organic matter removal from housing	- Apply with a low pressure foaming lance. - Leave on for the contact time stated by the manufacturer and then rinse off with pressure no higher than 1500psi.
Acidic	Nightwash Milkstone remover Dual acid cleaner GP Acid Cold wash	- Feeding equipment - Buckets - Water troughs	- Most manufacturers recommend a dilution based on soiling level, always aim for the highest dilution when cleaning housing.

Chemical active best uses

Chemical active type	Brand examples	Best use	Tips
Phenols / Chlorocresols	- Kilcox Extra - BioOCyst - Interkokask Concentrate - Cyclex	- Pen (floor and walls) disinfection	- Leave on surface for 2 hours to work as this is the standard contact time - Check the phenol/chlorocresol content per product and aim for 15-20% phenol/chlorocresol content N.B: No products Defra approved under TB orders
Peroxygens	- Hydracare - Hyperox - Huwasan - Virodex - Virex - Virkon	- Rubber teats - Feeders - Water system/water - Pen (floor and walls) disinfection	- Leave for 30 minutes – 1 hour on surface - Leave for 2 hours in water systems N.B: No products Defra approved under TB orders
Iodophors	- Virophor - Fam 30	- Boot dips - Pen (floor and walls) disinfection	- Use in cold weather scenarios
Alcohol	- 70% Isopropyl alcohol - Surgical spirit	- Feeding equipment - Tubes - Vaccinating syringes	- Apply after washing (once dry) - Leave to air dry - Can be used 20 minutes later N.B: No products Defra approved under TB orders
Aldehydes	- Viroshield - Bioshield P - GPC8	- Pen (floor and walls) disinfection	- Apply if washing time has been restricted (poor wash) N.B: No products Defra approved under TB orders
Chlorine (Hypochlorites)	- Milton	- Water system/water	- Treat water continuously at low level



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Chemical active pros and cons

Chemical active	Pros	Cons
Quaternary ammonium compounds	<ul style="list-style-type: none"> - Good bacterial efficacy - Widely available and cost effective - Not corrosive - Long residual 	<ul style="list-style-type: none"> - Weak and/or variable for viruses - Inactivated by organic matter - Not as effective in hard water solutions
Aldehydes	<ul style="list-style-type: none"> - Good bacterial efficacy - Widely available and cost effective - Not corrosive on rubber or plastic - Remain efficacious in presence of organic material 	<ul style="list-style-type: none"> - Not the best choice for non-enveloped viruses - Long contact time required for some microbes - Highly toxic
Phenols	<ul style="list-style-type: none"> - Effective in lower temperatures - Most effective for Coccidiosis 	<ul style="list-style-type: none"> - Stains metal and plastic equipment
Peroxygen and peroxygen with silver	<ul style="list-style-type: none"> - Most broad spectrum efficacy - Most effective for Endospores - Good for water sanitation - Very good degreaser 	<ul style="list-style-type: none"> - Can be corrosive on metal, plastic and rubber - Slow to act on fungi - Loses efficacy quickly after contact with organic matter
Hypochlorites, chlorine dioxides and iodophors	<ul style="list-style-type: none"> - Cost effective as generally low dilution - Work well in cold water solutions 	<ul style="list-style-type: none"> - Generally less effective on mycobacteria and endospores - Deactivated by organic material
Alcohol	<ul style="list-style-type: none"> - Good for hand-held equipment disinfection - Non-toxic residue - Fast acting (20 mins) 	<ul style="list-style-type: none"> - Weak on non-enveloped viruses - Not widely available - Affected by organic matter - Flammable!