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THE CREDENCE SWINE DISINFECTION PROGRAMME

Introduction

Control of diseases in the swine industry is necessary for compliance with consumer and regulatory demands, and for increased profitability. Good animal husbandry and effective control of environmental conditions are vital for producing healthy, disease free stock and produce. This can only be achieved by having clearly defined and effective biosecurity programmes. It is recognised by the industry that such programmes need to be based on preventative measures rather than curative reactions to outbreaks, for maximum security and profitability.

Implementation of effective disinfection into these programmes is of paramount importance. Two basic programme criteria must be met. Disinfection programmes must:

- Be practical, easy to understand and implement.
- Use wide-spectrum disinfectants, verified to kill microorganisms of concern.

The CREDENCE Disinfection Programme

A system known as the Hazard Analysis Critical Control Point (HACCP) system is now recognised internationally for providing the most secure method of designing and implementing food safety programmes, from farm to fork. The system follows seven basic principles, which identify, monitor and control potential hazards in the food safety chain. These seven principles are:

- 1) Conduct a hazard analysis by identifying all potential food safety hazards at each step in the production process.
- 2) Identify the points in the process which are critical for control and monitoring – these are known as Critical Control Points (CCPs).
- 3) At each identified CCP the critical control limits are established and set e.g. water temperature, *Salmonella* count etc.
- 4) Monitoring procedures are established to ensure that the critical limits established at each control point are being met.
- 5) Procedures are implemented to take corrective action if a critical limit goes out of control.
- 6) Verification procedures are established to ensure that the system is working properly.
- 7) Documentation is necessary to record the proof of effectiveness of the system.

The CREDENCE Disinfection Programme has been designed and validated to be consistent with HACCP system principles, by addressing the disinfection needs at critical control points in swine production.

This disinfection programme covers:

- the provision of safe drinking water.
- routine disinfection.
- terminal disinfection for farrowing rooms, boar pens, weaner and finishing houses.

Drinking Water Disinfection

Water is the most important nutrient for swine development, but the monitoring and provision of safe drinking water is often overlooked. Disinfection of the water is vitally important to ensure the health of the herd.

Water Disinfection:

The water should be continuously disinfected, either by hand dosing or by the use of auto-dosing systems (details of which are available from Agil). The water is dosed to a sufficient level to achieve a residual 'free available chlorine' level of about **0.5ppm** (mgs per litre) at the last drinking water point in the line. The 'free available chlorine' level can be simply measured by using Free Chlorine Test Strips. Where the residual 'free available chlorine' level cannot be measured, then a dosage of **1.5 to 3ppm** has been shown to be effective in clear water, and **4 to 6ppm** in dirty water. This will keep the water disinfected and help prevent the build up of biofilm and algae.

The entire water system should always be kept under positive pressure, with the pipework always full of treated water.

When administering medicaments etc. in the drinking water, the **CREDENCE** should be neutralised. In conjunction with the medicaments, 2.5gms. of skimmed milk (powder) per litre is recommended to be added to the water at a point in the system after it has been disinfected. The milk neutralises the **CREDENCE** and also colours the water, showing when the medicated water comes on-line and off-line.

Routine Disinfection

- 1) Foot Baths:** All personnel should use footbaths at the entrance point to each house, and on leaving each house. The foot bath should be used in conjunction with a stiff brush to help penetrate and remove hardened material. Use **CREDENCE** at a dosage of **1000ppm**, and replenish regularly (at least twice per week). Use of foot baths will help prevent the transport of contaminated materials from one production area to another. It should be remembered that personnel movement should be in the direction of high-risk areas to low-risk areas. Thus farrowing rooms should be visited first in the day, followed by weaners and then finishers.
- 2) Vehicles:** Wheel dips should be provided for entrance and exit to the site. Use **CREDENCE** at a dosage of **1000ppm**, and replenish regularly (at least twice per week). Transport vehicles and equipment should be thoroughly cleaned and then disinfected with a **CREDENCE** solution of **500ppm** between each run. Many disease outbreaks (including Porcine Reproductive and Respiratory Syndrome (PRRS), Classical Swine Fever (CSF) and Enzootic Pneumonia (EP)) have been attributed to the use of contaminated vehicles.
- 3) Entrance to houses and pathways between houses:** these areas should be kept clear of waste and refuse that can harbour vermin, the vectors of many Salmonella species. They should be regularly cleaned, followed by pressure spraying with a **CREDENCE** solution of **500ppm**. If they have a pebble surface, they should be regularly sprayed to ensure no weed growth (that would provide cover for vermin).
- 4) Dry sow house / service area:** the area behind the sows should be regularly cleaned, followed by disinfection with a **CREDENCE** solution of **500ppm**, (the sows will still be present). This will help prevent the occurrence of metritis, cystitis and kidney infections, usually caused by *E. coli* species. The service area should be thoroughly cleaned and disinfected with a **CREDENCE** solution of **1000ppm** when vacated (usually on a weekly basis). This area has a lot of pig and staff movement and the act of service or insemination puts the sow at risk from environmental contamination.
- 5) Misting / Fogging:** Misting or fogging is sometimes used to reduce aerial cross infections between pigs, whilst pigs are *in situ*. This is particularly relevant for prevention of respiratory diseases such as Enzootic Pneumonia (EP). A **CREDENCE** solution strength of **50ppm** should be used.
- 6) Sow Washing:** Sows should be washed prior to farrowing to prevent cross infections to new born piglets. The sow can act as a source of various diseases such as Haemophilus parasuis (Glasser's Disease), or Staphylococcus hyicus (Greasy Pig Disease), and be responsible for infecting her offspring. A **CREDENCE** solution of **500ppm** is recommended for washing the sow.

Terminal Disinfection

Farrowing Rooms, Service House, Weaner Houses and Finisher Houses

- 1) Remove all pigs and movable equipment, including feeders, drinkers, pen divisions, crates, lamps etc.
- 2) Remove unused feed. Brush, blow or vacuum all dirt and dust from vents, ducts, posts, ledges, light fittings, walkways, steps, equipment and any other areas where organic material from the outgoing batch may be found. Move from top to bottom.
- 3) Remove all litter and debris from the house, scraping where necessary, and remove to a safe point as far away as possible from the house (at least 500m.), where it can be buried or composted.
- 4) Pressure hose down all items and areas (using a detergent, if necessary). Manually clean difficult areas. The run-off water should be directed to a pit at the site edge, from where it can be tankered away.
- 5) Disinfection should commence as soon as possible after washing. A **CREDESCENCE** solution is power sprayed to thoroughly wet all roofline, wall and floor surfaces, including vents, ducts etc. Areas where electrical fittings are exposed should be treated by fogging. Surfaces should be uniformly sprayed at 100 litres of **CREDESCENCE** solution per **500** sq.m., and then left to dry off. Move from top to bottom, and back to front. Use a dosage of **500ppm** for porous surfaces (e.g. concrete) and **350ppm** for non-porous surfaces (e.g. tiles).
- 6) Hose down to clean all equipment removed from the house, and then disinfect using a **CREDESCENCE** solution of **500ppm**.
- 7) The entire water system should be drained. Where there is algal growth and biofilm accumulation, this should be physically removed from the tanks and the pipework flushed with an acid cleaner (e.g. **SALKIL Liquid**). The entire system should then be flushed out to remove debris. **CREDESCENCE** should be added to the header tank at a dosage of **25ppm**, and the entire system filled with the solution, and allowed to stand for 30 mins. The system is then drained and refilled with fresh water.
- 8) In the period prior to re-stocking, the entire housing area should be fogged weekly with **CREDESCENCE** at a dosage of **50ppm**. All houses should be empty of stock for at least 4 weeks prior to restocking.

Disease Outbreak Programmes

Such situations would include, for example, outbreaks of neonatal diarrhoea; PRRS; EP, etc.

- 1) The procedures for isolation, cleaning and disinfection should be completed as given in the terminal disinfection programme.
- 2) The **CREDESCENCE** solution strength for disinfection of walls, floors, equipment etc. should be **1000ppm**.

Advantages of CREDESCENCE

- Improved weight gain.
- Mortality reduction.
- Improved feed conversion efficiency.
- Improved egg quality.
- Improved laying performance

Versus liquid / powders

- Unit Dose – Easy to measure.
- Condensed – Lower transport and storage costs.
- Assayable – Product strength determinable.

Versus other chlorine products:

- Less corrosive.
- Lowers pH.
- Ensures deposit free pipework.
- More effective and stable.

Manufacturing

- Modern manufacturing facility
- Regulatory and technical support.
- Quality standards (GMP, ISO9002, FDA, UN reg., WCB).
- HACCP.
- Application programmes.

CREDESCENCE 1000 Dilution Guide

| | Solution Strength (ppm Available Chlorine) One Tablet Per Volume of Water | | | | | |
|-------------|--|--------------------------------------|---------------------|--------------|---------------|----------------|
| Litres | 5 | 10 | 15 | 100 | 200 | 1000 |
| ppm | 1000 | 500 | 350 | 50 | 25 | 5 |
| Application | Foot Baths, Wheel Dips | Vehicles, Equipment, Porous Surfaces | Non-porous Surfaces | Hand Washing | Water Systems | Drinking Water |