

A large, stylized red checkmark graphic that starts from the bottom left and extends diagonally upwards to the right, passing behind the 'Virukill' text.

**Virukill<sup>®</sup>**

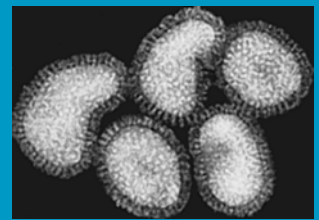
# **CONTINUAL DISINFECTION PROGRAM IN THE FACE OF AVIAN INFLUENZA VIRUS**

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## CONTINUAL DISINFECTION PROGRAM IN THE FACE OF AVIAN INFLUENZA VIRUS

Can you really afford NOT to make use of the full **Virukill® Continual Disinfection Program** when there is Avian Influenza around?



The very mention of **Avian Influenza (AI)** gets poultry producers and their Veterinary authorities into a state – for very good reasons.

AI is traditionally transmitted by migrating water birds, mostly in North America. By now, the virus has a world-wide distribution with resident virus population in wild birds around the world.

This is by far the most devastating of the poultry pathogens and can easily cause 100% mortality in unvaccinated birds in a very short period of time. Many veterinary authorities around the world do not allow for the vaccination of birds against AI and the control policy is a “stamping out” policy – that is

completely destroying the infected flocks. Another major concern with an AI outbreak is that it is a notifiable disease and the OIE must be notified of any outbreak. The news of any AI outbreak normally results in the immediate ban on any poultry products to be imported from the infected country.

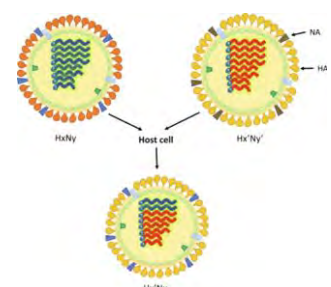
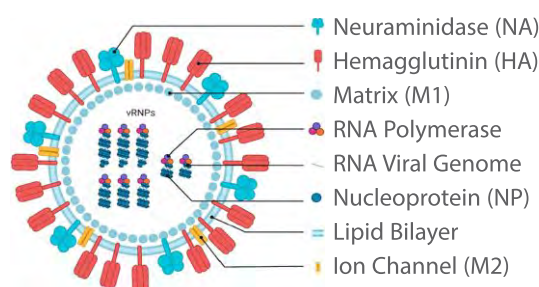
Let us also not forget that the most significant outbreak of influenza virus in humans started in a poultry farm in the USA and moved over to a pig farm and was spread around the world with the movement of American troops in 1918 – resulting in the Spanish flu pandemic which killed between 50 000 000 and 100 000 000 humans!

### The Virus

AI is a member of the Orthomyxoviridae family of viruses. This is an enveloped virus with two main antigens on the surface of the virus namely neuraminidase (N) and hemagglutinin (H). These antigens give the virus its name. For example, Influenza virus H5N1. These antigens can change by two main methods. The one is called “antigen drift”. This is when there are random mutations in the genetic material of the virus (in this case single stranded RNA).

The more significant way the virus can change is called “antigenic shift”. This is when different viruses which normally infect different hosts infect the same individual. As the genome of the virus is segmented, when this situation of multiple different viruses in the same host occurs – there can be re-assortment of the genes. In other words, the emerging virus may have some human virus genes, some bird virus genes and some pig virus genes. This make a completely new virus. These antigenic shift events are the cause of many of the human influenza pandemics.

The different antigens on the surface of the virus play a major role in protective immunity. If the birds have been vaccinated against one combination of antigens (such as a vaccine containing H5N1) and the virus in the outbreak differs – the vaccine may not work.



## How does *Virukill*® work against Avian Influenza?

*Virukill*® is a novel, highly effective disinfectant, registered with Act 36/1947 as well as NRCS, which can be used in a full continual disinfection program in commercial poultry. **Please see different brochures with full details of the *Virukill*® Continual Disinfection Program.**

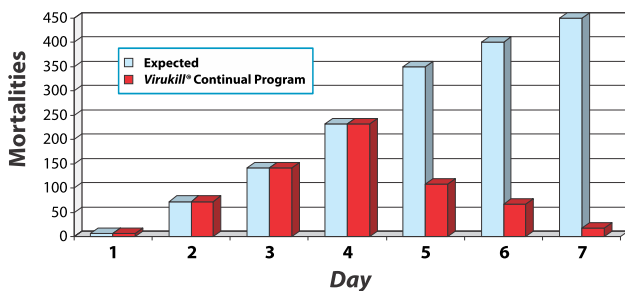
*Virukill*® is an effective disinfectant against enveloped viruses. *Virukill*® disrupts the envelope of these viruses through the surfactant activity of *Virukill*®. Once a virus envelope is disrupted, the virus can no longer fuse with the host cell membrane and release the virus genome into the host cell. This means that the virus cannot replicate in the host. Changes to the antigens on the virus can have a major impact on the efficacy of vaccines, but these changes have no effect on the mode of action of *Virukill*® against the virus.

There are a number of reports on the efficacy on *Virukill*® against AI. The most significant of these reports was obtained from the OIE reference laboratory for avian Influenza. Ask your distributors for these reports.

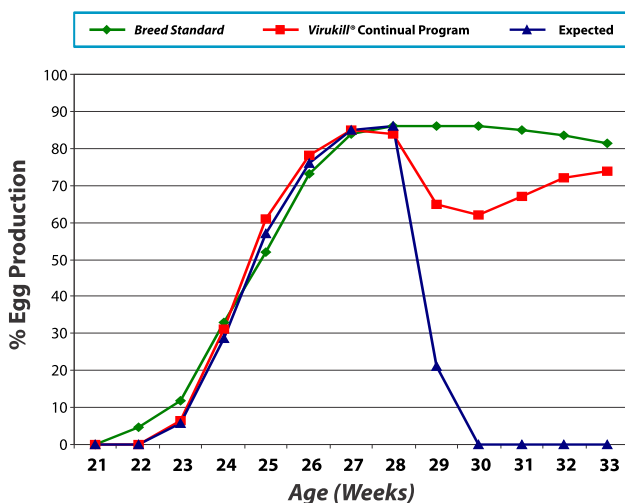
The active ingredient of *Virukill*® is a modified formulation containing DDAC. *Virukill*® is not the same as the many other DDAC containing disinfectants on the market. *Virukill*® is different. The main difference can be seen when looking at disinfectant resistance profiles of various bacteria. These bacteria are highly resistant to DDAC, but not *Virukill*®. This clearly shows that *Virukill*® is not just another DDAC.

**Please see different brochure on resistance to disinfectants.**

## The *Virukill*® full continual disinfection program is your best answer in the face of Avian Influenza virus



**Fig 1:** Expected and Actual mortalities in a case of AI challenge on a commercial broiler breeder farm.



**Fig 2:** Weekly egg production data collected from a commercial broiler breeder farm which became infected with Avian Influenza and treated with the full *Virukill*® Continual Disinfection Program.

In a recent disease outbreak, the *Virukill*® Continual Disinfection Program was able to reduce the spread of AI on a commercial broiler breeder farm. In Fig 1, the expected mortalities in a poultry house are presented.

The actual daily mortalities obtained in the house infected with AI are shown as the *Virukill*® treated group. It can be seen that the daily mortalities in this house were reduced to acceptable levels in relation to potential downside of such an outbreak.

On another farm the actual weekly egg production (expressed as a percentage calculated from the total number of eggs over the total number of birds) as recorded on this farm, while experiencing an AI infection and while using the full *Virukill*® Continual Disinfection Program, is presented in Fig 2. Both the breed standard under normal conditions and the expected egg production in the face of an AI challenge are also presented in the Fig 2.

As an illustration the data from this commercial broiler breeder operation shows that the use of the *Virukill*® Continual Disinfection Program can restrict the daily mortalities associated with this infection (Fig 2). Even though the AI infection also caused a drop in egg production in the surviving birds, with the help of the *Virukill*® Continual Disinfection Program, the egg production started to return to normal within 5 weeks after AI outbreak were recorded.



# Methods and dilutions for the use of **Virukill®** in the full *Continual Disinfection Program*

## Pre-placement disinfection

- 1) Dry clean the house and get rid of as much dust and dirt as possible.
- 2) Wash with a 0.02% dilution of **Virukill®** in water (20ml **Virukill®** per 100L water) and apply like you would apply the water for washing – at least 2 litres per m<sup>2</sup>. This can be sprayed making use of the high pressure washing system.
- 3) Allow to dry
- 4) Disinfect house with a 1% solution of **Virukill®** (1L **Virukill®** per 100L water) at around 600 ml per m<sup>2</sup>. The volume is dependent on how long the floor takes to dry. The floor must preferably remain wet for 30 minutes. If the floor starts drying before this time, add more of the 1% **Virukill®** solution.
- 5) Disinfect cooling pads with a 0,2% **Virukill®** (200ml per 100L water) solution. If **Virukill®** is used in cooling pads for the first time it is recommended to pre-disinfect the cooling pad with 1% **Virukill®** solution.
- 6) Disinfectant all equipment – including the drinking water system from the header tank through all of the drinkers with a 1% **Virukill®** solution.
- 7) Add bedding and all other items.
- 8) Replace all disinfected equipment.
- 9) Do a final fogging if desired at the following application rates:

### ULV:

- 500ml **Virukill®**, 5000ml Propylene glycol, 14500ml water.

### Fogging Solution (Cold or Thermal):

- 500ml **Virukill®**, 17000ml Propylene glycol, 2500ml water.

The rate for both fogging and misting is 550ml per 1000m Cube.

## Footbaths

Use a 1% **Virukill®** solution and change once dirty.

## Drinking water application

Add 100 ppm **Virukill®** (10ml per 100L water) to the drinking water of the birds on a continual basis. The drinking system must first be flushed clear with a 1% **Virukill®** solution which the birds should not drink.

## Disinfection of the air in the presence of birds

Spray the air around the birds with a 1% solution of **Virukill®** at application rate of approximately 4ml per bird as often as required. The process has been safely tested up to three sprays per day.



Virukill® (Poli dimethylammonium chloride/ Didecyl dimethylammonium chloride (DDAC) 120g/ℓ). Reg. No: G2838 (Act 36 of 1947) Caution & NRCS Reg. no. NRCS/8054/243642/441.

ICA International Chemicals (Pty) Ltd. | Reg. No: 2001/013319/07  
Tel: +27-21-886-9812 | [www.icaonline.co.za](http://www.icaonline.co.za) | 28 Planken Street,  
Plankenbrug Industrial, Stellenbosch, 7600, South Africa.