

# VETERINARY CLINIC CLEANING AND DISINFECTION PROGRAM



## THE CLEANING AND DISINFECTION GUIDE FOR ANIMAL HEALTH FACILITIES

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# HOW TO USE THIS DOCUMENT

## ICONOGRAPHY

This document is interactive. It allows you, with a simple click, to navigate directly to a specific section, to consult related information on the topic you are reading, or simply to link to a Web page by the following the icons you will encounter throughout Vetoquinol's cleaning and disinfection guide for animal health facilities.

	Click on this icon to go directly to a section.
	Click on this icon for more information related to a topic. A pop-up image will appear and with a second click on the "X", the pop-up image collapses and you return to the page.
	Click on this icon to link to a Web page.

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# INTRODUCTION

Welcome to the cleaning and disinfection guide for animal health facilities. This guide provides step-by-step protocols and techniques for employees responsible for the cleaning and disinfection of animal care facilities.

- ▶ **Biosecurity in animal health**
- ▶ **Cleaning and disinfection program**



# BIOSECURITY

## IN ANIMAL HEALTH

Biosecurity includes **all** of the measures and protocols taken to protect animals and humans from the introduction and transmission of pathogens within the same environment.

A good cleaning and disinfection program will help to:

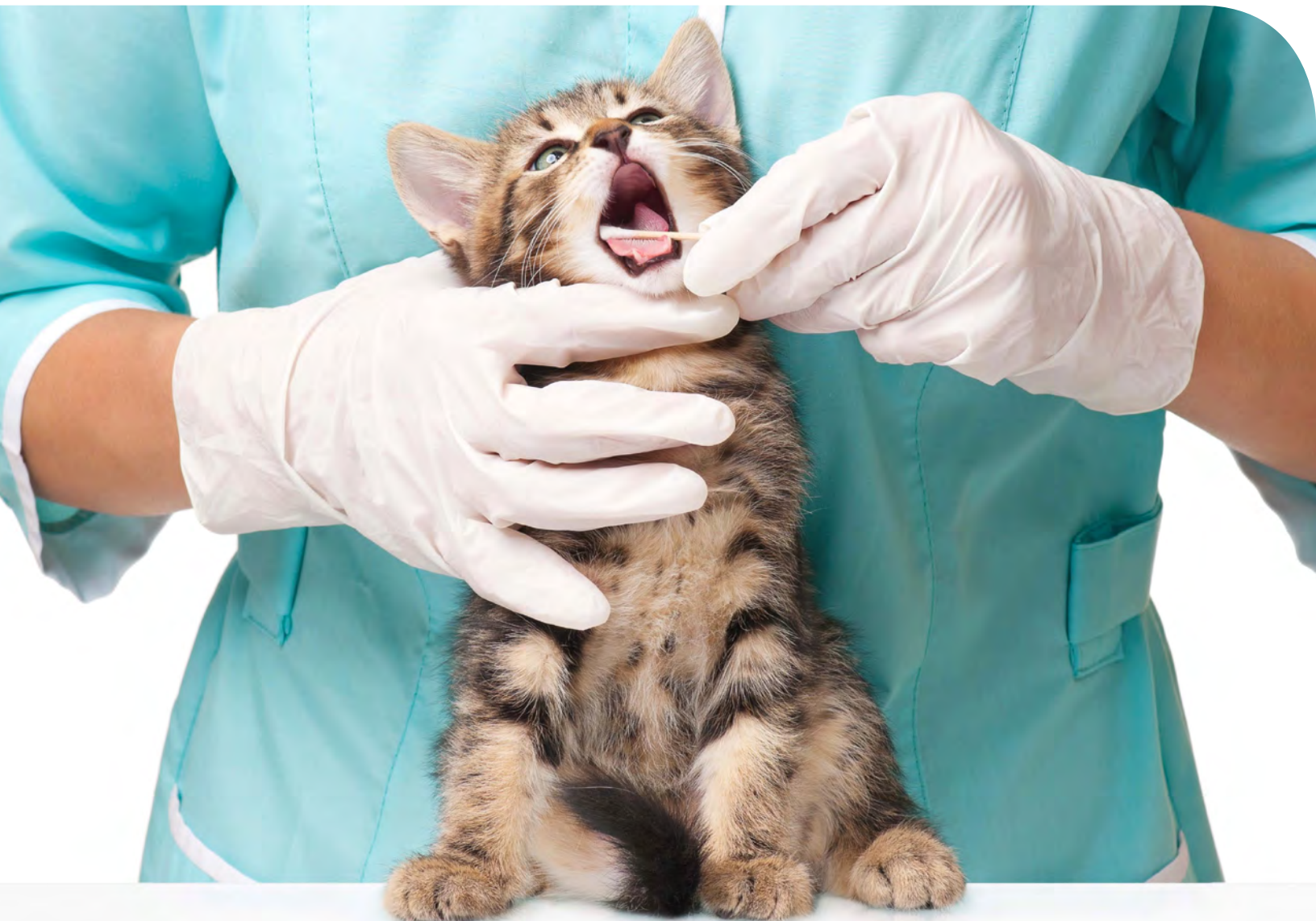
- Deter and prevent the introduction of harmful organisms
- Control environmental pathogens
- Reduce and prevent the transmission of infectious diseases
- Improve safety for humans and animals within the clinic



# CLEANING AND DISINFECTION PROGRAM

In this document, we will review the following topics:

- Organic contamination and mineral deposits
- The importance of using a cleaner
- Principles of disinfection
- Cleaning and disinfection steps
- Risk assessment
- Application and equipment
- Frequently asked questions
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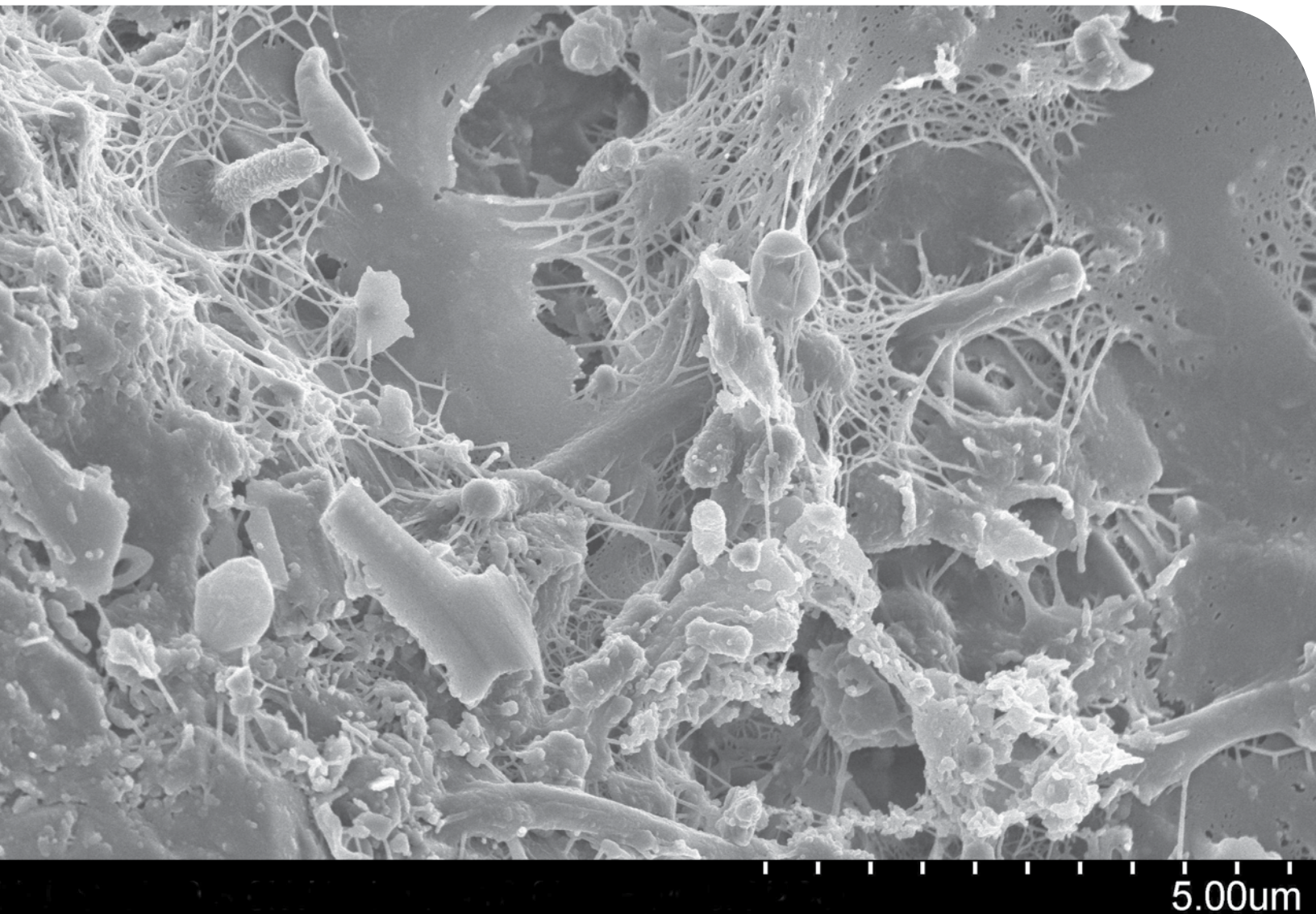
# PRINCIPLES OF CLEANING

- ▶ Biofilm
- ▶ Mineral deposits
- ▶ What is a cleaner?
- ▶ Selection of an appropriate cleaner



# BIOFILM

**Biofilm** is formed when bacteria adhere to a surface and secrete a protective, sticky polymeric substance. Biofilm forms a community and can be composed of a single or multiple strains of micro-organisms (bacteria, fungi, algae, protozoa). Biofilm can be less than 1 mm thick and is often not visible to the naked eye. Biofilm provides a protective barrier that makes organisms highly resistant to disinfection. Removal of biofilm is crucial prior to disinfection of any surface. Biofilm should be removed using an **alkaline** cleaner.





# MINERAL DEPOSITS

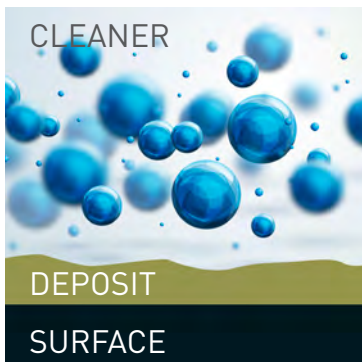
In addition to the formation of biofilm on surfaces, mineral deposits or scaling may be another source of surface contamination. Mineral scale will accumulate over time when using water with high levels of iron, calcium, manganese or magnesium. Hard water and urine are responsible for mineral deposits in animal care facilities. It is important to remove mineral deposits using an **acidic** cleaner prior to disinfection.



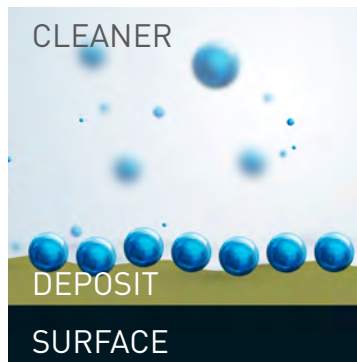
# WHAT IS A CLEANER?

A cleaner is a blend of components that act together to penetrate, detach and break down surface deposits. The components of a cleaner may include:

- **Surfactants** – to facilitate penetration and breakdown of deposits.
- **Sequestrants and chelating agents** – to fix and hold metals and minerals.
- **Emulsifiers** – to help suspend soil particles in solution to facilitate rinsing.
- **Foaming agents** – to help the solution stick to surfaces for improved contact time and visibility.
- **Acidifiers or alkalinizers** – to adjust pH depending on the soiling challenge (organic or mineral).



Detergent molecule dissolves and dissociates in water to form charged particles.



The hydrophobic charge on the detergent molecule adheres to the deposit.



Detergent particles cling to the deposit, helping to break it up and suspend it in solution when the water is rinsed away.

# WHAT IS A CLEANER?



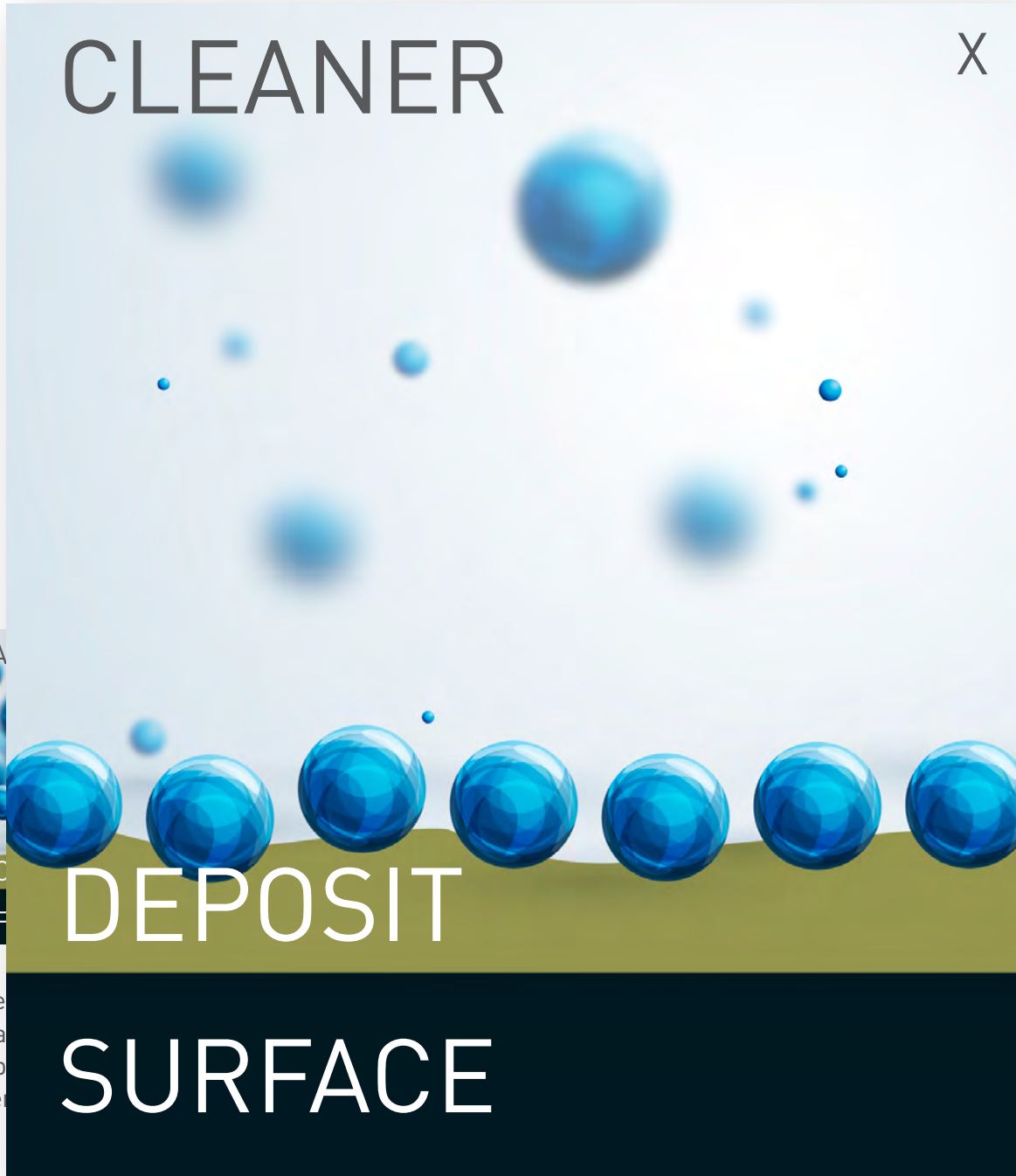
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# WHAT IS A CLEANER?



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# WHAT IS A CLEANER?



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# WHAT IS A CLEANER?

Cleaners are an integral part of a cleaning and disinfection program. Washing with water alone does not adequately remove deposits of organic and mineral residue. The benefits of using a good cleaner include:

- Prepares surfaces for disinfection
- Reduces bacterial challenge by 90% to 99%
- Removes biofilm and mineral deposits prior to disinfection
- Reduces cleaning time by 30% to 40%
- Reduces labour costs and water consumption



# SELECTION OF AN APPROPRIATE CLEANER

- The primary soiling challenge in animal care facilities is organic in nature. Organic soiling requires frequent use of an **alkaline** cleaner.
- After repeated cleaning, an accumulation of surfactant residue and water minerals may result. For this reason, periodic use of an **acidic** cleaner may be required.
- The frequency of alkaline/acid cleaner rotation varies according to the rate of mineral deposition. An alkaline cleaner may be used four or six times for every one acidic application.

## VETOQUINOL CLEANERS

▶ Alkaline cleaner – Biosolve™ Plus

▶ Acidic cleaner – Biosolve™ AFC





# BIOSOLVE™ PLUS

**Biosolve™ Plus** is a powerful **alkaline** cleaner with superior degreasing properties. It is especially useful for removal of biofilm and biologic material such as manure and other fatty or greasy animal residues.

- Ideal to clean and prepare surfaces for optimal disinfection with **Virkon®**, **BioSentry® 904** or **Clinicide**.
- Recommended dilution rate for veterinary clinics: 2 to 16 mL per litre of water
- Formulated with biodegradable detergents.



**PRODUCT DETAILER**



**CVP PAGE**





# BIOSOLVE™ AFC

**Biosolve™ AFC** is an **acidic** cleaner and deodorizer for use in animal facilities. It cleans and brightens stainless steel, plastic, concrete, and tile. It is ideal for removal of cleaner residues, mineral scale and other hard-to-remove elements.

- For use in an alternating pH program with **Biosolve™ Plus**.
- Ideal to clean and prepare surfaces for optimal disinfection with **Virkon®**, **BioSentry® 904** or **Clinicide**.
- Recommended dilution rate for veterinary clinics: 2 to 16 mL per litre of water.
- Formulated with biodegradable detergents.

 **PRODUCT DETAILER**

 **CVP PAGE**

# PRINCIPLES OF DISINFECTION

Although washing with a cleaner removes a significant amount of microbes, what remains is still enough to pose a risk for infection.

**Disinfection** is a process that destroys and reduces pathogens to a low level of contamination. Disinfection typically follows washing with a cleaner and rinsing with water.

- ▶ Sensitivity to disinfectants
- ▶ All disinfectants are not created equally



# SENSITIVITY TO DISINFECTANTS

**Disinfectants** act by damaging cell walls and cell membranes. Organisms vary in their sensitivity to disinfectants based on their cell wall and membrane construction. Organisms with high phospholipid (fat) and low protein cell wall/membrane content tend to be easier to kill with disinfectants than organisms with high protein and low fat cell wall/membrane contents.

- ⊕ Sensitivity of **organisms** to disinfectants
- ⊕ Sensitivity of **small animal pathogens** to disinfectants
- ⊕ Sensitivity of **equine pathogens** to disinfectants
- ⊕ Sensitivity of **bovine pathogens** to disinfectants



# SENSITIVITY TO DISINFECTANTS

X

## SENSITIVITY OF ORGANISMS TO DISINFECTANTS

### MORE SENSITIVE TO DISINFECTANTS

	Fungi	
	<i>Mycoplasma</i>	
	Gram + bacteria	
▼	Gram - bacteria	
	<i>Rickettsia</i>	
	<i>Pseudomonas</i>	▼
	Enveloped viruses (gp A)	
▼	Yeasts and algae	
	<i>Chlamydia</i>	▼
	Non-enveloped viruses (gp C)	
	<i>Mycobacteria</i>	
▼	Fungal spores	
	Non-enveloped viruses (gp B)	▼
	Bacterial spores	
▼	Viroids	
	Oocysts	
	Prions	▼

### LESS SENSITIVE TO DISINFECTANTS



# SENSITIVITY TO DISINFECTANTS



## SENSITIVITY OF SMALL ANIMAL PATHOGENS TO DISINFECTANTS

X

### MORE SENSITIVE TO DISINFECTANTS

Fungi	
<i>Mycoplasma</i>	
Gram + bacteria	<i>Streptococcus, Staphylococcus</i>
Gram - bacteria	<i>Bordetella, Campylobacter, E. coli, Salmonella</i>
<i>Rickettsia</i>	
<i>Pseudomonas</i>	
Enveloped viruses (gp A)	Herpes, Paramyxo (kennel cough, distemper), Corona (feline infectious peritonitis), Retro (feline immunodeficiency virus, feline leukemia virus), Rhabdo (rabies)
Yeasts and algae	
<i>Chlamydia</i>	
Non-enveloped viruses (gp C)	Adeno (infectious canine hepatitis)
<i>Mycobacteria</i>	
Fungal spores	
Non-enveloped viruses (gp B)	Calici, Parvo (panleukopenia, canine parvovirus)
Bacterial spores	<i>Clostridium</i>
Viroids	
Oocysts	
Prions	

### LESS SENSITIVE TO DISINFECTANTS

# SENSITIVITY TO DISINFECTANTS



## SENSITIVITY OF EQUINE PATHOGENS TO DISINFECTANTS X

### MORE SENSITIVE TO DISINFECTANTS

Fungi	
<i>Mycoplasma</i>	
Gram + bacteria	<i>Bacillus, Clostridium, Dermatophilus</i> (rain scald), <i>Staphylococcus aureus</i> , <i>Streptococcus equi</i>
Gram - bacteria	<i>E. coli, Klebsiella, Pasteurella, Salmonella, Taylorella</i> (contagious equine metritis), <i>Haemophilus</i>
<i>Rickettsia</i>	
<i>Pseudomonas</i>	
Enveloped viruses (gp A)	Corona, Herpes (rhinopneumonitis), Toga (Eastern, Western, Venezuelan Equine Encephalitis), Orthomyxo (influenza), Pesti (equine arteritis), Flavi (West Nile virus), Retro (equine infectious anemia), Rhabdo (rabies)
Yeasts and algae	
<i>Chlamydia</i>	
Non-enveloped viruses (gp C)	Adeno, Papilloma, Reo (African horse sickness), Rota (scours)
<i>Mycobacteria</i>	
Fungal spores	
Non-enveloped viruses (gp B)	Picornavirus
Bacterial spores	<i>Bacillus, Clostridium</i>
Viroids	
Oocysts	
Prions	

### LESS SENSITIVE TO DISINFECTANTS

# SENSITIVITY TO DISINFECTANTS



## SENSITIVITY OF BOVINE PATHOGENS TO DISINFECTANTS

X

### MORE SENSITIVE TO DISINFECTANTS

Fungi

*Mycoplasma*

Gram + bacteria

*Bacillus, Clostridium, Listeria, Streptococcus, Staphylococcus.*

Gram - bacteria

*Campylobacter, E. coli, Histophilus, Pasteurella, Mannheimia, Salmonella*

*Rickettsia*

*Pseudomonas*

Enveloped viruses (gp A)

Corona, Herpes (infectious bovine rhinotracheitis), Paramyxo (parainfluenza 3), Retro (bovine leukosis), Rhabdo (rabies), Flavi (bovine viral diarrhea)

Yeasts and algae

*Chlamydia*

Non-enveloped viruses (gp C)

Pox (cowpox), Papilloma (warts), Rota (scours)

*Mycobacteria*

Johne's disease

Fungal spores

Non-enveloped viruses (gp B)

Picornas (foot-and-mouth disease, bovine enterovirus)

Bacterial spores

*Bacillus, Clostridium*

Viroids

Oocysts

Prions

### LESS SENSITIVE TO DISINFECTANTS


# ALL DISINFECTANTS ARE NOT CREATED EQUALLY

Disinfectants vary in their ability to penetrate different types of cell walls and cell membranes.

Most products registered for hard surface disinfection have been proven to achieve “low level disinfection”, meaning they are effective for destroying vegetative fungus and bacterial cells. Destruction of more resistant organisms (e.g. parvovirus, calicivirus, and spores) may require a disinfectant with proven specific efficacy.

**Virkon®** is registered as a low-level disinfectant, however, independent laboratory testing has shown it to perform as an intermediate or high-level disinfectant for many organisms including non-enveloped viruses and spores. Data is available upon request.

## VETOQUINOL DISINFECTANTS

- 
- ▶ **Virkon®**
  - ▶ **BioSentry® 904**
  - ▶ **Clinicide**





# VIRKON®

**Virkon®** is a broad-spectrum disinfectant possessing the broadest virucidal, bactericidal and fungicidal activity. Because of its high detergency and mode of action, **Virkon®** can be used in an exceptional variety of situations for effective cleaning and optimal disinfection. A partial list of pathogens susceptible to **Virkon®** includes parvovirus, calicivirus, herpesvirus, *E. coli*, *Salmonella* and *Campylobacter*. **Virkon®** is environmentally friendly and is capable of intermediate to high levels of disinfection.

**Recommended use:** all areas of the clinic, especially where the risk is high.

**Dilution rate:** 1 tablet per 500 mL of water or 10 g of powder per litre of water for a 1% solution.



**PRODUCT DETAILER**



**CVP PAGE** Virkon® powder



**CVP PAGE** Virkon® tablets



# BIOSENTRY® 904

**BioSentry® 904** is a concentrated, chemically balanced fifth-generation quaternary ammonium disinfectant. It kills a broad range of bacteria, fungi and viruses, including canine parvovirus.

**Recommended use:** low to intermediate risk areas.

**Dilution rate:** 4 mL per litre of water results in 920 ppm solution.

[+](#) **PRODUCT DETAILER**

[🔗](#) **CVP PAGE**



# CLINICIDE

**Clinicide** is a fifth-generation quaternary ammonium multi-purpose germicidal detergent (virucidal, bactericidal, fungicidal) that deodorizes and disinfects.

**Recommended use:** in low and intermediate risk areas.

**Dilution rate:** 8 mL per liter of water results in 600 ppm solution.



 [PRODUCT DETAILER](#)

 [CVP PAGE](#)

# CLEANING AND DISINFECTION STEPS

There are 3 basic steps for routine cleaning and disinfection

- ▶ Removal of organic material
- ▶ Cleaner application
- ▶ Disinfection

  One-step cleaning and disinfection

# CLEANING AND DISINFECTION STEPS

X

## One-step cleaning and disinfection

While it is ideal to use two products (**a cleaner followed by a disinfectant**) there are situations where minor soiling or contamination could be resolved by cleaning and disinfecting in one step.

One-step cleaning and disinfection involves use of a single product, such as **Virkon®**, with both cleaning and disinfection properties.

To use **Virkon®** in one-step: spray to wet surfaces, wait 10 minutes and wipe dry.



## REMOVAL OF ORGANIC MATERIAL

Organic material acts as a physical barrier and inhibits the actions of cleaners and disinfectants.

- Remove bedding, papers, feces, feed, and debris
- Scrape visible residues



# CLEANER

## APPLICATION

Select a cleaner suited to the cleaning task at hand:

- Alkaline: for **organic** soiling (e.g. **Biosolve™ Plus**)
- Acidic: for **mineral** deposits and cleaner residues (e.g. **Biosolve™ AFC**)

Mix your cleaner solution according to label directions and apply as a high or low-pressure spray or foam, or with a mop. Thoroughly wet all surfaces and allow to soak 10 to 15 minutes. Do not allow the surfaces to dry. Scrub if required.

- Rinse with water using a hose or a mop.  
Allow surfaces to dry before disinfection.



### Mixing directions



# CLEANER

## APPLICATION

Select a cleaner suited to the cleaning task at hand:

- Alkaline: for **organic** soiling (e.g. **Biosolve™ Plus**)

MIXING DIRECTIONS				
Product	Mix this much product	Into this much water	Purpose	Comment
<b>Biosolve™ Plus</b>	10 to 80 mL (sprayer or mop) or 40 to 80 mL (foamer)	5 L	Routine cleaning of surfaces with <b>organic</b> soiling	<b>Alkaline pH</b> cleaner
<b>Biosolve™ AFC</b>	10 to 80 mL (sprayer or mop) or 40 to 80 mL (foamer)	5 L	Routine cleaning of surfaces with <b>mineral</b> scaling or cleaner residue	<b>Acidic pH</b> cleaner





# DISINFECTION

Ensure surfaces are dry before you begin. Select an appropriate disinfectant based on risk zones within the clinic (refer to section “**Risk zones within the clinic**”). Mix according to the label and apply by low pressure spraying or foaming, or by using a mop, sponge or cloth. Let stand wet at least 10 minutes. Allow the surfaces to dry; use fans or ventilation or a dry cloth as required.

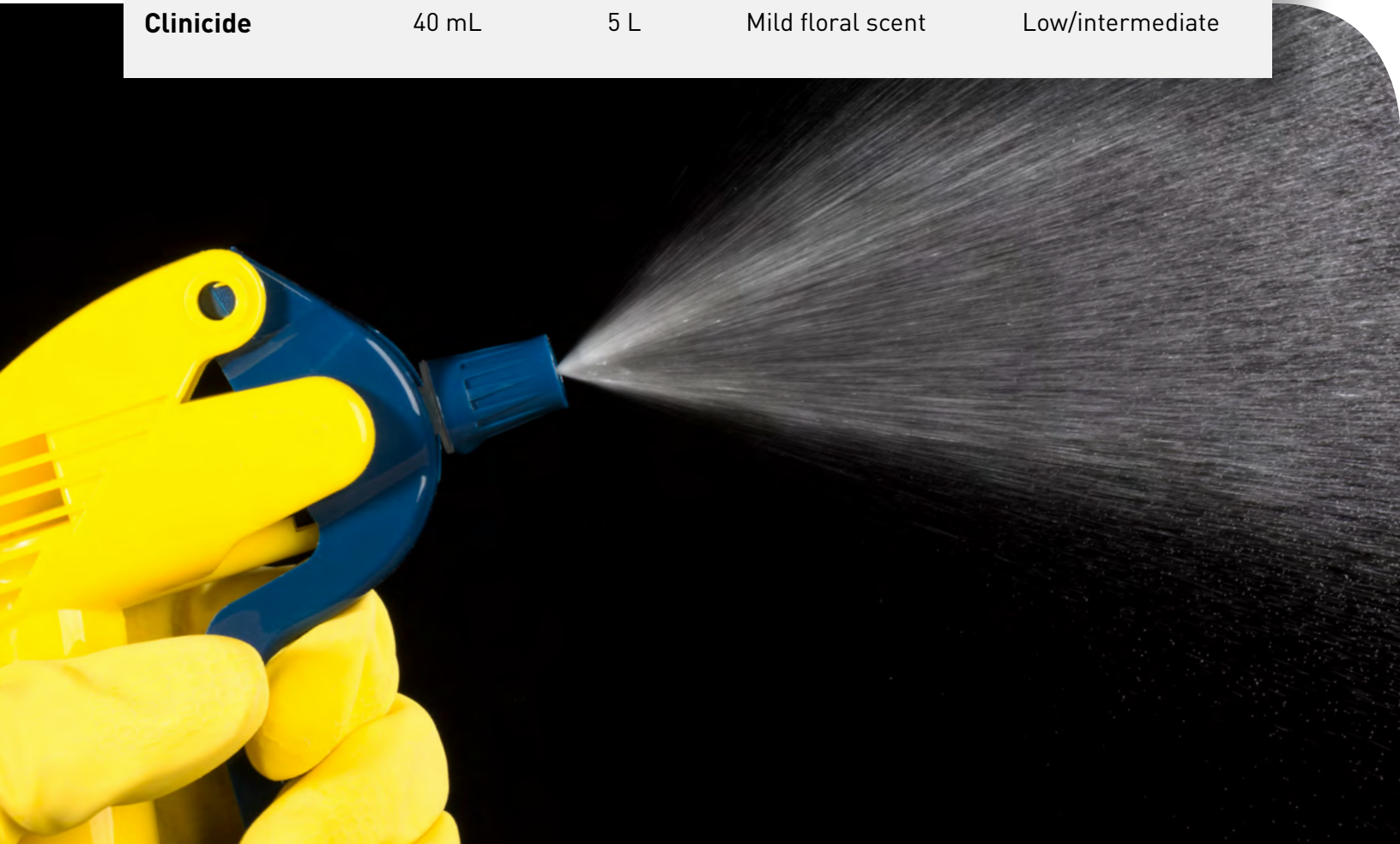
- ⊕ Mixing directions
- ⊕ Mixing directions for spray bottles



# DISINFECTION

Ensure surfaces are dry before you begin. Select an appropriate disinfectant based on risk zones within the clinic (refer to section “**Risk zones within the clinic**”). Mix according to the label and apply by low pressure spraying or

MIXING DIRECTIONS				
Product	Mix this much product	Into this much water	Comment	Risk zones
<b>Virkon®</b>	50 g	5 L	Mild lemon scent	Low/intermediate/high
<b>BioSentry® 904</b>	20 mL	5 L	Unscented	Low/intermediate
<b>Clinicide</b>	40 mL	5 L	Mild floral scent	Low/intermediate



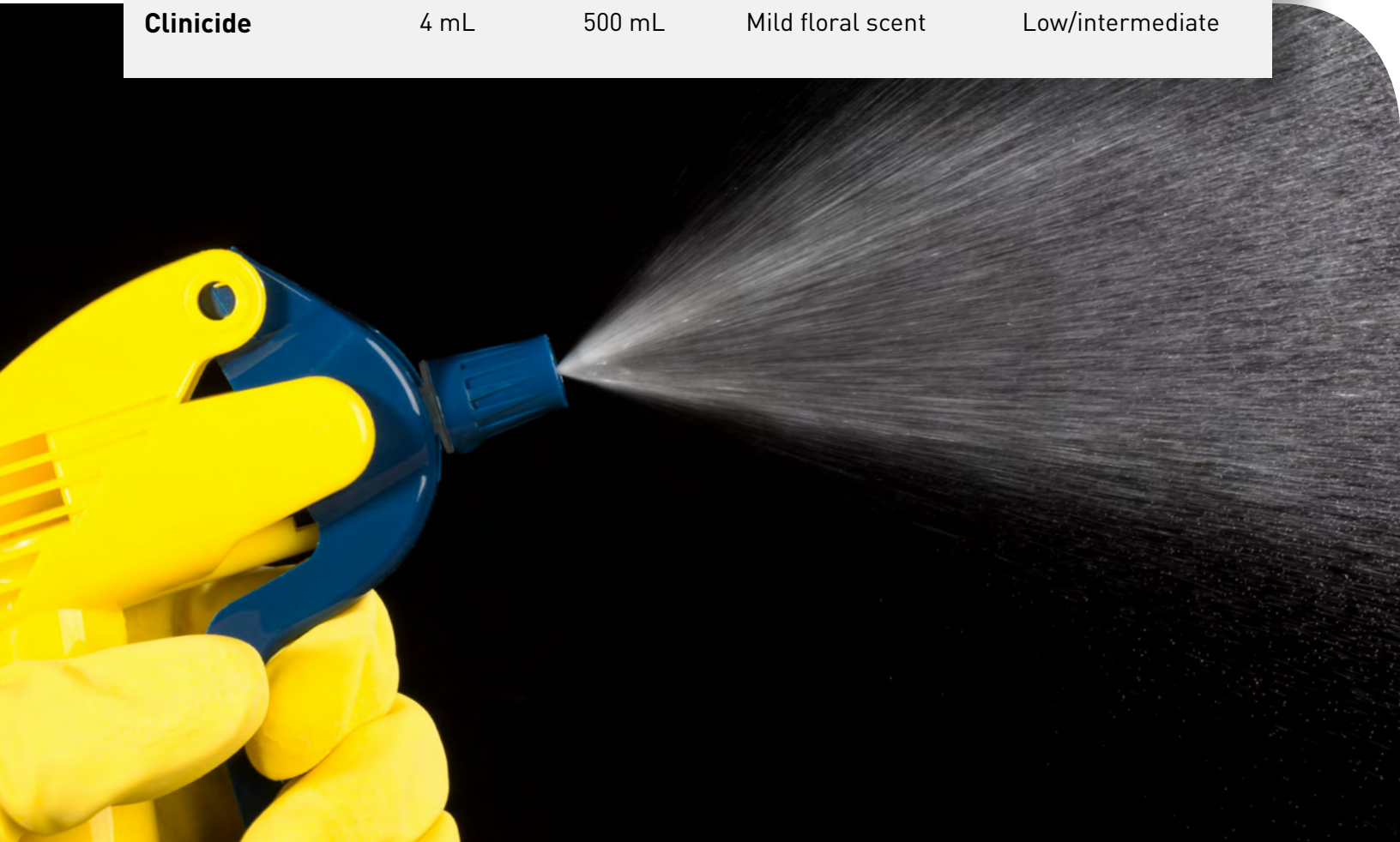
# DISINFECTION

Ensure surfaces are dry before you begin. Select an appropriate disinfectant based on risk zones within the clinic (refer to section “**Risk zones within the clinic**”). Mix according to the label and apply by low pressure spraying or

## MIXING DIRECTIONS FOR SPRAY BOTTLES



Product	Mix this much product	Into this much water	Comment	Risk zones
<b>Virkon® tablets</b>	One 5 g tablet	500 mL	Mild lemon scent	Low/intermediate/high
<b>BioSentry® 904</b>	2 mL	500 mL	Unscented	Low/intermediate
<b>Clinicide</b>	4 mL	500 mL	Mild floral scent	Low/intermediate



# CLEANING AND DISINFECTION STEPS

## FOR ANIMAL HOUSING

- 
- ▶ Runs and kennels
  - ▶ Cages
  - ▶ Large animal stalls
  - ▶ Calf crates

# CLEANING AND DISINFECTION STEPS

## FOR RUNS AND KENNELS

1. Remove all feed, feces, and bedding from the run.
2. Remove feed and water containers.
3. Select an appropriate cleaner and mix prior to application.  
For a feces-soiled dog run, an alkaline cleaner like **Biosolve™ Plus** will work best to strip away organic material.
4. Using a sprayer or foamer, apply the cleaner to all surfaces until it runs off. Apply the cleaning solution to feed and water containers. Allow the surfaces to soak for 10 to 20 minutes. Do not allow the cleaning solution to dry.
5. Rinse the cleaner from all surfaces and feed and water bowls with water. Allow to dry.
6. Mix and apply a disinfectant solution using a low pressure sprayer. Surfaces should remain wet with disinfectant for a minimum of 10 minutes and then be allowed to dry.
7. **BioSentry® 904** residues should be rinsed from feed and water containers after disinfection. **Virkon®** and **Clinicide** residues do not need to be rinsed.



# CLEANING AND DISINFECTION STEPS

## FOR CAGES

1. Remove all bedding and feed and water containers from the cage.
2. Remove feces and newspaper or other absorbent materials.
3. Cages that are soiled should be cleaned with an alkaline cleaner like **Biosolve™ Plus** prior to disinfection.
4. Select an appropriate cleaner and mix prior to application.
5. Apply the cleaner to all surfaces until it is thoroughly wet. Apply the cleaning solution to feed and water dishes also. Allow the surfaces to soak for 10 to 20 minutes. Do not allow the cleaning solution to dry.
6. Wipe with a water-soaked cloth or rinse the cleaner from all surfaces and feed and water bowls with water. Allow to dry.
7. Mix and apply a disinfectant solution using a low pressure sprayer. Surfaces should remain wet with disinfectant for a minimum of 10 minutes and then be allowed to dry.
8. **BioSentry® 904** residue should be rinsed from feed and water containers after disinfection. **Virkon®** and **Clinicide** residues do not need to be rinsed.



### One-step cleaning and disinfecting for cages and kennels



# CLEANING AND DISINFECTION STEPS

## FOR CAGES

X

### One-step cleaning and disinfecting for cages

1. Cages that have contained an apparently healthy animal for a short time and have no obvious soiling or contamination may be cleaned and disinfected in one step with a product like **Virkon**<sup>®</sup>.
2. Remove all paper, bedding, and bowls.
3. Spray all surfaces of the kennel with a 1% **Virkon**<sup>®</sup> solution until wet.
4. Allow to remain wet with **Virkon**<sup>®</sup> for a minimum of 10 minutes.
5. Wipe remaining **Virkon**<sup>®</sup> solution from surfaces.



# CLEANING AND DISINFECTION STEPS

## FOR LARGE ANIMAL STALLS

1. Remove all feed, manure, straw, and shavings from the stall.
2. Remove detachable feed and water buckets.
3. Select an appropriate cleaner and mix prior to application. For a manure-soiled stall, an alkaline cleaner like **Biosolve™ Plus** will work best to strip away organic material.
4. Using a sprayer or foamer, apply the cleaner to all surfaces until it runs off. Apply the cleaning solution to feed and water buckets also. Allow the surfaces to soak for 10 to 20 minutes. Do not allow the cleaning solution to dry. Mechanical scrubbing may be required for heavily soiled surfaces.
5. Rinse the cleaner from all surfaces and feed and water buckets with a water spray. Allow to dry.
6. Mix and apply a disinfectant solution using a low pressure sprayer. Surfaces should remain wet with disinfectant for a minimum of 10 minutes and then be allowed to dry.
7. **BioSentry® 904** residues should be rinsed from feed and water containers after disinfection. **Virkon®** and **Clinicide** residues do not need to be rinsed.





# CLEANING AND DISINFECTION STEPS

## FOR CALF CRATES

1. Remove feed, manure, and bedding (if present) from the crate.
2. Remove detachable feed and water containers.
3. Remove any panels or floor grates that detach easily.
4. Select an appropriate cleaner and mix prior to application. For a manure-soiled crate, an alkaline cleaner like **Biosolve™ Plus** will work best to strip away organic material.
5. Using a sprayer or foamer, apply the cleaner to all crate surfaces and components until it runs off. Apply the cleaner solution to feed and water containers also. Use a brush to scrub slats and crevices in floor pieces. Allow the surfaces to soak for 10 to 20 minutes. Do not allow the cleaning solution to dry.
6. Rinse the cleaner from all surfaces and feed and water containers with water. Allow to dry.
7. Mix and apply a disinfectant solution using a low pressure sprayer. Surfaces should remain wet with disinfectant for a minimum of 10 minutes and then be allowed to dry.
8. **BioSentry® 904** residue should be rinsed from feed and water containers after disinfection. **Virkon®** and **Clinicide** residue does not need to be rinsed.



# RISK ZONES

## WITHIN THE CLINIC

Some areas in the clinic represent a higher risk for transmission of infectious disease than others and require different types of biosecurity measures, and different levels of disinfection.

▶ Low risk



▶ Intermediate risk



▶ High risk



Risk zones within the clinic



# RISK ZONES

## WITHIN THE CLINIC

Some areas in the clinic represent a higher risk for transmission of infectious disease than others and require different types of biosecurity measures, and different levels of disinfection.

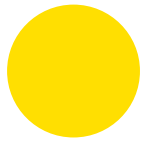
RISK ZONES WITHIN THE CLINIC		X
<b>LOW RISK</b>	<ul style="list-style-type: none"> <li>▪ Offices</li> <li>▪ Pharmacy</li> <li>▪ Warehouse</li> <li>▪ Hallways</li> <li>▪ Service areas</li> </ul>	
<b>INTERMEDIATE RISK</b>	<ul style="list-style-type: none"> <li>▪ Reception and waiting rooms</li> <li>▪ Consultation rooms</li> <li>▪ Examination rooms</li> <li>▪ Treatment area</li> <li>▪ Pre-operation rooms</li> <li>▪ Kennels and cages</li> </ul>	
<b>HIGH RISK</b>	<ul style="list-style-type: none"> <li>▪ Surgical rooms</li> <li>▪ Isolation rooms</li> <li>▪ Contaminated consultation/examination rooms</li> <li>▪ Contaminated treatment/pre-operation rooms</li> </ul>	

# ● LOW RISK

The main criteria to designate an area in a veterinary clinic as “**low risk**” is the low likelihood of exposure to infectious disease. Low contamination risk areas include: the offices, pharmacy, warehouse, hallways, and service areas. Low to intermediate level disinfection is recommended on at least a weekly basis in these areas.

Use of a cleaner followed by a disinfectant is ideal, however, in these low risk areas, use of a single product with both cleaning and disinfection properties such as **Clinicide**, **BioSentry® 904** or **Virkon®** may be adequate on most days. This is referred to as “**one-step cleaning and disinfection**”.





# INTERMEDIATE RISK

**Intermediate risk areas** are where there is no known infectious disease, although an increased risk of exposure is present. These areas include: the waiting room, consultation and examination rooms, treatment and pre-operation rooms, cages, and kennels. Low to intermediate level disinfection is recommended on at least a daily basis in these areas. Kennels, cages, and animal handling surfaces should be disinfected between patients. A cleaning and disinfection protocol using cleaners such as **Biosolve™ Plus** or **Biosolve™ AFC** and disinfectants such as **Clinicide**, **BioSentry® 904** or **Virkon®** is recommended.



# ● HIGH RISK

**High risk areas** are where vulnerable, sick or contagious animals are present, or where there is high traffic with contaminated footwear. These contaminated areas include: the surgical rooms, isolation rooms, and potentially consultation/examination rooms and treatment/pre-operation rooms. These areas need to be cleaned and disinfected on at least a daily basis. Kennels, cages, and animal handling surfaces should be disinfected between patients. Cleaning and disinfection is recommended using cleaners such as **Biosolve™ Plus** or **Biosolve™ AFC**. It is recommended to disinfect with **Virkon®** in these high risk areas. Immediately clean and disinfect after each patient, or spill or surface contamination (urine, feces, vomit, body fluids).



# APPLICATION

## METHODS

- ▶ Spraying versus foaming
- ▶ Equipment
- ▶ Dedication of equipment by risk zone
- ▶ Footwear disinfection

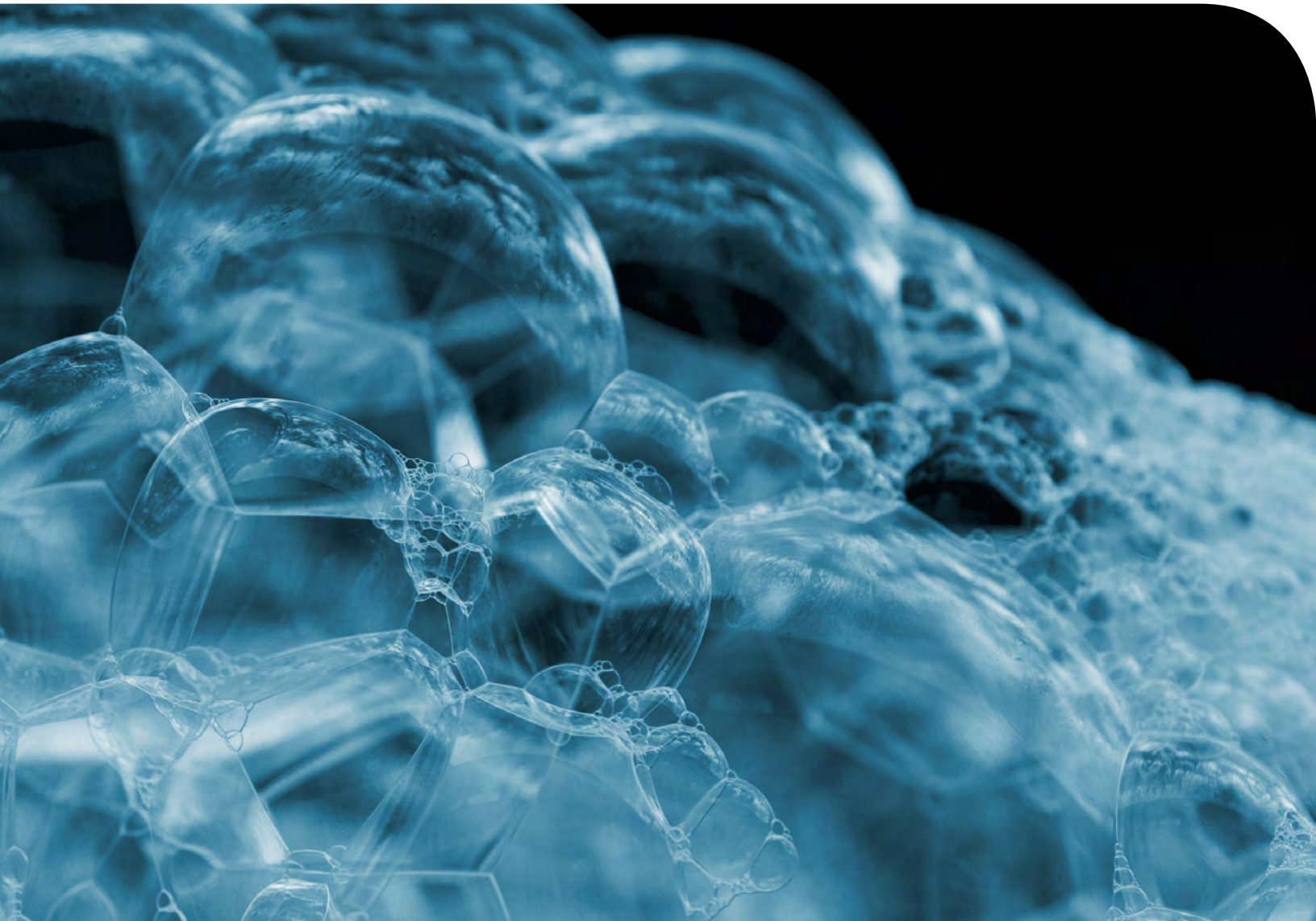


# SPRAYING VS FOAMING

Cleaners and disinfectants may be applied to surfaces or areas as a spray or as a foam. Each method has its own unique advantages.



## Spraying vs foaming





# SPRAYING VS FOAMING

Cleaners and disinfectants may be applied to surfaces or areas as a spray or as a foam. Each method has its own unique advantages.

X

## SPRAYING VS FOAMING

	ADVANTAGES	DISADVANTAGES
<b>Spraying</b>	Provides better penetration on porous surfaces	Contact time can be less Surfaces may dry faster
<b>Foaming</b>	Offers better contact time on smooth surfaces	Less penetration on porous surfaces Requires a stronger dilution rate

# EQUIPMENT

For the selection of equipment used to clean and disinfect, many considerations must be made.

- Size of the room, cages or kennels
- Presence of a floor drain
- Surface types
- Application methods (foaming, spraying, mopping)



## Equipment characteristics



# EQUIPMENT

For the selection of equipment used to clean and disinfect, many considerations must be made

X

## EQUIPMENT CHARACTERISTICS

EQUIPMENT	ADVANTAGES	DISADVANTAGES	APPLICATION	USE WITH CLEANER	USE WITH DISINFECTANT
Pressure washer	High capacity to remove soiling  Reduces scrubbing time  Perfect for rinsing	Produces large quantity of water, floor drain needed  Difficult to move	Dog runs  Livestock pens  Chutes	●	
Handheld sprayer	Low pressure for ideal application	Small containers need to be refilled often	Kennels/cages  Floors  Equipment	●	●
Foaming gun	Easy to use  Application easily visible  Requires less water than a pressure washer	Produces large quantity of water, floor drain needed	Dog runs  Kennels/cages  Floors	●	●
Brushes, cloths, mops	Less messy  Hard-to-reach areas  Small equipment	Renewal of brushes, cloths, and mops  Potential disease vector	Cages  Small equipment  Floors	●	●



## DEDICATION OF CLEANING AND DISINFECTION EQUIPMENT BY ZONE

To prevent the spread of contagious disease within the facility, equipment can be colour-coded and reserved for use only in specific areas, for example the surgery room, isolation ward, treatments rooms, kennels, and runs.



# FOOTWEAR

## DISINFECTION

Pathogens can be easily transmitted by footwear while walking from one room to another, and from visitors tracking in contamination from unknown sources. Footwear disinfection can be done using a footbath, a sponge mat or by spraying on disinfectant. Use signs to identify areas for footwear disinfection.

**Virkon®** has been proven in independent trials to be the most efficient disinfectant for foot baths when used according to recommendations.



Easy steps to disinfect footwear



# FOOTWEAR

## DISINFECTION

Pathogens can be easily transmitted by footwear while walking from one room to another, and from visitors tracking in contamination from unknown sources. Footwear disinfection can be done using a footbath, a sponge mat or by spraying

X

nfectant

### Easy steps to disinfect footwear

1. Fill a suitable container or a sprayer with a solution of 1% **Virkon**<sup>®</sup>.  
(To create a 1% solution [1:100], add a 5 g **Virkon**<sup>®</sup> tablet to 500 mL, or add 50 g of **Virkon**<sup>®</sup> powder to 5 L of water. Stir until dissolved.)
2. **Ensure footwear is free of visible mud and manure.**
3. Dip footwear into the foot bath, stand on the sponge mat, or spray soles.
4. Replace disinfectant every 4 to 5 days, or when dirty, or when the pink colour is lost.



# VETOQUINOL CLEANING AND DISINFECTION PRODUCTS

## VETOQUINOL CLEANERS

- ▶ Alkaline cleaner – **Biosolve™ Plus**
- ▶ Acidic cleaner – **Biosolve™ AFC**

## VETOQUINOL DISINFECTANTS

- ▶ **Virkon®**
- ▶ **BioSentry® 904**
- ▶ **Clinicide**



# FREQUENTLY ASKED QUESTIONS

## Q

Does my water quality or water pH influence the effectiveness of the products I use?

## A

In most cases, your water will not influence the effectiveness of your products, however, very hard water may affect foamability of alkaline cleaners. In Canada, all approved disinfectants have been tested and approved for use in hard water.

## Q

What about using bleach as a disinfectant?

## A

Bleach loses activity quickly in the presence of organic debris and therefore should only be applied to clean surfaces. Reaction between chlorine bleach and amino acids from urine, body fluids and feces leads to formation of potentially toxic chloramines and chlorine gas. It is also important to use fresh solutions, as bleach is inactivated by sunlight and some metals. In addition to the strong odour, high concentrations of bleach that are required to kill viruses like parvo and calicivirus can be irritating to the eyes, skin, and mucous membranes. There are other commercial products like **Virkon**<sup>®</sup> that are more effective, safer for human and environmental exposure, and less damaging to clothing and surfaces.

## Q

What is biofilm?

## A

Biofilm is formed when microbial cells adhere to each other and on to surfaces, and become embedded in a matrix of self-produced extracellular substances including DNA, protein, and sugars. Depending on the situation, biofilm may harbour different types of microbes such as bacteria, viruses, and fungi. Biofilm protects the microbes from the action of disinfectants. Eventually, bits and pieces of the biofilm can detach and contaminate other surfaces and spread disease. Biofilm can be less than 1 mm thick and is often not visible to the naked eye.



# FREQUENTLY ASKED QUESTIONS

## Q

How do I remove biofilm?

## A

The most efficient way to remove biofilm is by using an appropriate cleaner according to its recommended label directions. Cleaners contain high amounts of surfactants that penetrate, break down and detach the organic matter and/or mineral deposits found in the biofilm. They also contain emulsifiers to ensure that the soiling stays in suspension so that it can be rinsed off and removed from surfaces.

## Q

Why do I need to rotate cleaners?

## A

Organic matter is more efficiently removed with alkaline cleaners, while scale and mineral deposits are more efficiently removed with acidic cleaners. Since the most important heavy soiling challenge in a veterinary clinic consists of organic matter, using alkaline cleaners is recommended most of the time. In the presence of hard water and/or high mineral content, rotating with an acidic cleaner will ensure that scale and mineral deposits will be better managed.

## Q

Why does **Virkon**<sup>®</sup> sometimes leave a white film on surfaces after drying?

## A

**Virkon**<sup>®</sup> is licensed as a disinfectant/cleaner that contains a surfactant and inorganic salts. After drying, a light surfactant and salt residue may remain. This residue can be easily removed with water or a damp cloth.

# FREQUENTLY ASKED QUESTIONS

## Q

Why is it important to use a cleaner?

## A

The use of a cleaner improves the efficacy of the cleaning and disinfection process. Cleaning products help by removing biofilm, mineral deposits and soiling from surfaces. They also reduce cleaning time and the volume of water required. Disinfectants work better when applied to clean surfaces.

## Q

Do I really need to wash a surface before I disinfect?

## A

Although disinfectants may contain surfactants, these surfactants are present to help the active ingredient penetrate and adhere to the surface. Unlike cleaners, they are not meant to penetrate heavy layers of organic soiling or minerals; some disinfectant families are quickly neutralized by organic and mineral compounds. Disinfectants will work better on soiled surfaces that have been cleaned with a cleaner prior to disinfection.

## Q

What else can affect the products I use?

## A

Too much water remaining on surfaces will dilute the cleaner or disinfectant, which reduces its effectiveness.

Too much water remaining on surfaces will impede the adherence and penetration of the cleaner or disinfectant solution. Residue from previous products on surfaces may interfere and neutralize the next product that is applied.

# FREQUENTLY ASKED QUESTIONS

## Q

Hot water versus cold water?

## A

Although hot water is better than cold water to detach and remove soiling, it is not as efficient as hot water with cleaner for dissolving fats. If the water is too hot, however, it may cook and “fix” proteins to surfaces.

Wash water temperature should be less than 60 degrees C.

## Q

What do I do if the cleaning solution has dried onto the surface before rinsing?

## A

Re-apply the same cleaning solution and let it soak again for 10–15 minutes and then rinse off before it dries.

## Q

Why is **Virkon**<sup>®</sup> pink, and how do I know it is still active?

## A

**Virkon**<sup>®</sup> has a pink dye indicator when mixed. Fading of the pink colour indicates the activity has decreased and it is time to replenish the solution. When the pink colour is gone and the solution becomes cloudy white, it is inactive. Direct sunlight will also cause the pink colour indicator to fade more rapidly.

# FREQUENTLY ASKED QUESTIONS

## Q

How long does **Virkon**<sup>®</sup> normally last after mixing?

## A

**Virkon**<sup>®</sup> activity decreases over time. There is a 20% loss of activity of 1% solutions of **Virkon**<sup>®</sup> after 14 days in very hard water (350 ppm). To maintain high efficacy, it is recommended that **Virkon**<sup>®</sup> solution be discarded after 7 days.

## Q

What precautions should be used when handling **Virkon**<sup>®</sup> powder in dry form?

## A

Keep out of reach of children. Powder is irritating to eyes, skin, and mucous membranes. May be harmful if swallowed or inhaled. Do not get powder in eyes. Avoid contact of powder with skin. Handle in such a way as to minimize dust release. Consult the label for a full list of precautions and first aid advice.

## Q

How safe is **Virkon**<sup>®</sup> after mixing into a 1% solution?

## A

There are no occupational exposure limits for 1% **Virkon**<sup>®</sup> solution. It is considered a non-irritant to skin and eyes, and is of low toxicity.

# FREQUENTLY ASKED QUESTIONS

## Q

Is **Virkon**<sup>®</sup> safe for the environment?

## A

Yes, **Virkon**<sup>®</sup> consists mainly of inorganic salts which decompose into harmless by-products.

## Q

What are recommended storage conditions for **Virkon**<sup>®</sup>?

## A

It is recommended that **Virkon**<sup>®</sup> powder or tablets are stored dry at 15 to 25 degrees C. **Virkon**<sup>®</sup> solution can be stored at room temperature, however, higher temperatures will reduce lifespan of the solution.

## Q

The scoop in the **Virkon**<sup>®</sup> container is labelled to contain millilitres but mixing instructions relate to grams of powder. How do I use the scoop correctly?

## A

One mL of **Virkon**<sup>®</sup> powder weighs approximately 1 gram.

# BIOSECURITY

## REFERENCES

Veterinary personnel are frequently in close contact with both sick and healthy animals, some of who may be shedding or harbouring pathogens transmissible to humans. In addition, sick animals can be a direct or indirect source of infection for other animals entering the facility. It is important for veterinary clinics to have an infection control plan to mitigate these risks. The following links provide reference material for developing this plan.

1. *Model Infection Control Plan for Veterinary Practices*. National Association of State Public Health Veterinarians (NASPHV). Veterinary Infection Control Committee (VICC). 2015. Available at: <http://www.nasphv.org/documents/Compendia.html>
2. *Compendium of Veterinary Standard Precautions for Zoonotic Disease Prevention in Veterinary Personnel*. National Association of State Public Health Veterinarians (NASPHV). Veterinary Infection Control Committee (VICC). 2015. Available from: <http://www.nasphv.org/Documents/VeterinaryStandardPrecautions.pdf>
3. *Infection Prevention and Control Best Practices For Small Animal Veterinary Clinics*. The Canadian Committee on Antibiotic Resistance (CCAR). 2008. Available from: <http://designit.ca/ccar/english/pdfs/GuidelinesFINALDec2008.pdf>
4. For product MSDS information, go to the Vetoquinol website – lower right corner “[Safety Data Sheets](#)”.



# VETERINARY CLINIC CLEANING AND DISINFECTION PROGRAM

# BIOSOLVE™ PLUS

MULTI-PURPOSE HEAVY DUTY CLEANER AND DEGREASER | RISK ASSESSMENT  
● LOW ● INTERMEDIATE ● HIGH



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# VETERINARY CLINIC CLEANING AND DISINFECTION PROGRAM

## MULTI-PURPOSE HEAVY DUTY CLEANER AND DEGREASER

### BIOSOLVE™ PLUS

BIOSOLVE™ PLUS IS AN ALKALINE FOAMING CLEANER AND DEGREASER THAT RAPIDLY REMOVES PROTEIN, FAT AND OTHER ORGANIC SOIL FROM SURFACES.

#### OVERVIEW

**Biosolve™ Plus** may be used for the removal of fecal matter and soiling in animal facilities. In addition, **Biosolve™ Plus** removes stubborn fats and grease from surfaces.

#### PHYSICAL PROPERTIES

STATE: VISCOUS LIQUID

COLOUR: BLUE

ODOUR: MILD

pH: 13-14

FREEZING POINT: 0 °C

#### BENEFITS

- Superior cleaning, degreasing, and foaming properties
  - Easily applied and rinsed
  - Formulated with biodegradable detergents
  - Nonylphenol\* ethoxylate- and phosphate-free
  - Breaks through grease, fat, and organic matter
- \* Nonylphenols are a component of some detergents outside of Europe, where they are banned as a hazard to human and environmental safety.

#### MODE OF ACTION

**Biosolve™ Plus** saponifies and emulsifies oils, fats, and greases into water soluble forms that rinse easily.

- Alkaline pH

#### DILUTION RATE

FOAM CLEANING 8-24 mL/L

LOW OR HIGH PRESSURE SPRAYING 2-24 mL/L

#### FORMATS



3.8 L



18.9 L

Biosolve™ Plus is a registered trademark of Lanxess.

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# VETERINARY CLINIC CLEANING AND DISINFECTION PROGRAM

## BIOSOLVE™ AFC

SUPERIOR HEAVY DUTY HIGH-FOAMING  
CLEANER AND DESCALER

RISK ASSESSMENT

● LOW ● INTERMEDIATE ● HIGH



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# VETERINARY CLINIC CLEANING AND DISINFECTION PROGRAM

## ACIDIC CLEANER FOR USE IN ALTERNATING pH PROGRAMS

### BIOSOLVE™ AFC

SUPERIOR HEAVY DUTY HIGH-FOAMING CLEANER AND DESCALER

#### OVERVIEW

**Biosolve™ AFC** is recommended for use in animal facilities. This product is ideal for use in an alternating pH program to remove detergent residues, mineral scale, dirt, grime, protein, and oils as well as minerals and adherent films.

#### PHYSICAL PROPERTIES

STATE: LIQUID

COLOUR: YELLOW

pH: 0.5 to 1.5 at 25 °C

FREEZING POINT: 0 °C

#### MODE OF ACTION

The acid combination package in **Biosolve™ AFC** chelates metal salts, "lifting" them and forming water soluble complexes that are easily removed.

■ Acidic pH

#### FORMATS



Biosolve™ AFC is a registered trademark of Lanxess.

#### BENEFITS

- Improved foaming and foam stability: excellent for vertical surfaces
  - Easily applied and rinsed
  - Phosphate-free
  - Non corrosive acid package: no muriatic or sulphuric acids
  - Formulated with biodegradable detergents.
  - Nonylphenol-free\*
  - Cleans and brightens stainless steel, glass, plastic, concrete and tile
- \* Nonylphenols are a component of some detergents outside of Europe, where they are banned as a hazard to human and environmental safety.

#### DILUTION RATE

LOW OR HIGH PRESSURE SPRAYING: 2–24 mL/L

FOAM CLEANING: 8–24 mL/L

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# VETERINARY CLINIC CLEANING AND DISINFECTION PROGRAM

# VIRKON®

MULTIPLE USE  
BROAD-SPECTRUM DISINFECTANT

RISK ASSESSMENT  
● LOW ● INTERMEDIATE ● HIGH



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# VETERINARY CLINIC CLEANING AND DISINFECTION PROGRAM

## MULTIPLE USE BROAD-SPECTRUM DISINFECTANT

### **VIRKON®**

VIRUCIDAL, BACTERICIDAL AND FUNGICIDAL DISINFECTANT FOR HARD SURFACES.

#### OVERVIEW

**Virkon®** is a disinfectant possessing broad-spectrum virucidal, bactericidal and fungicidal activity. The effectiveness of **Virkon®** is further enhanced by its excellent detergent properties, so that clean, disease-free surfaces can be achieved. **Virkon®** is unique in its composition. Its activity is based on a buffered synergized acid peroxygen system containing a high percentage of surfactant. **Virkon®** can be used on all surfaces and in all situations. Once diluted in a 1% solution, **Virkon®** is of low toxicity, non-tainting, and non-irritant. Because of its high detergency and mode of action, **Virkon®** can be used in an exceptional variety of situations for effective cleaning and virucidal disinfection in a single operation. **Virkon®** can be applied manually or through all types of cleaning and spraying equipment.

#### PHYSICAL PROPERTIES

STATE: SOLUBLE POWDER

COLOUR: PINK

ODOUR: LEMON 🍋

pH: 2.5–3.0 (1% SOLUTION)

FREEZING POINT: -11 °C (1% SOLUTION)

#### MODE OF ACTION

**Virkon®** is a powerful oxidant. Its activity is based on a buffered synergized acid peroxygen system.

#### BENEFITS

- Broad spectrum
- Easily applied
- Formulated with biodegradable ingredients

#### DILUTION RATE

DISINFECTION OF SURFACES

10 g/L (1% solution)

#### FORMATS



Virkon® is a registered trademark of Lanxess.

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# VETERINARY CLINIC CLEANING AND DISINFECTION PROGRAM

BIOSENTRY®

# 904 DISINFECTANT

BROAD-SPECTRUM VIRUCIDAL, BACTERICIDAL, FUNGICIDAL ACTION IN HARD WATER AND UNDER SOIL LOAD CONDITIONS

RISK ASSESSMENT

● LOW ● INTERMEDIATE



BACTERICIDE  
VIRUCIDE  
FUNGICIDE  
FOR INDUSTRIAL  
AND COMMERCIAL USE ONLY



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# VETERINARY CLINIC CLEANING AND DISINFECTION PROGRAM

## VETERINARY CLINIC DISINFECTION

### BIOSENTRY® 904 DISINFECTANT

BROAD-SPECTRUM VIRUCIDAL, BACTERICIDAL, FUNGICIDAL ACTION  
IN HARD WATER AND UNDER SOIL LOAD CONDITIONS.

#### OVERVIEW

**BioSentry® 904** is effective in 400 ppm hard water (as CaCO<sub>3</sub>). Disinfects in 5% organic soil load. Useful in veterinary clinics and animal care facilities. **BioSentry® 904** contains sequestering agents to prevent the precipitation of minerals and metals from hard water.

- Deodorizes by killing most micro-organisms that cause offensive odours
- Contains no perfume to mask or hide any odours that might exist

**BioSentry® 904** is a versatile product that can be used in all animal facilities. Be it terminal disinfection, vehicle disinfection or foot baths, **BioSentry® 904** is a product that can address your challenges.

#### PHYSICAL PROPERTIES

STATE: VISCOUS LIQUID

COLOUR: STRAW COLORED

pH: 8-10

#### BENEFITS

- Effective in 400 ppm hard water
- Effective in 5% organic soil load
- Fast-acting bactericide, fungicide and virucide
- Non-staining/non-corrosive use solution
- Safe to use on all wettable surfaces

#### FORMATS



3.8 L



18.9 L

#### DILUTION RATE

ROUTINE DISINFECTION AND  
VEHICLE DISINFECTION

4 mL/L

FOOT BATH

8 mL/L

BioSentry® is a registered trademark of Neogen Corporation.

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# VETERINARY CLINIC CLEANING AND DISINFECTION PROGRAM

## VETOQUINOL CLINICIDE

BROAD-SPECTRUM GERMICIDAL  
DETERGENT AND DEODORANT

RISK ASSESSMENT

● LOW ● INTERMEDIATE



BACTERICIDE  
VIRUCIDE  
FUNGICIDE  
FOR VETERINARY  
HOSPITAL AND ANIMAL  
FACILITY USE



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# VETERINARY CLINIC CLEANING AND DISINFECTION PROGRAM

## CLINICIDE

### BROAD-SPECTRUM GERMICIDAL DETERGENT AND DEODORANT

#### OVERVIEW

**Clinicide** is recommended for use in veterinary clinics and other animal facilities. **Clinicide** is a concentrated, multi-purpose germicidal detergent and deodorant that disinfects, cleans, and deodorizes. **Clinicide** has been tested in up to 400 ppm hard water (calculated as CaCO<sub>3</sub>) plus 5% organic serum and shown to be effective against the organisms listed below according to current test methods at a dilution rate of 1:128.

#### PHYSICAL PROPERTIES

STATE: LIQUID

COLOUR: CLEAR

ODOUR: FLORAL 

pH: 7.6 to 8.0

FREEZING POINT: 0 °C

#### BENEFITS

- Broad spectrum
- Easily applied
- Formulated with biodegradable ingredients

#### FORMATS



3.8 L



18.9 L

#### BACTERICIDAL

*Pseudomonas aeruginosa, Staphylococcus aureus, Salmonella choleraesuis, Enterobacter cloacae, Streptococcus pyogenes, Streptococcus faecalis, Enterobacter aerogenes, Salmonella typhimurium, Klebsiella pneumoniae, Proteus vulgaris, Serratia marcescens, Shigella flexneri, Shigella sonnei, Salmonella typhi, Proteus mirabilis, Escherichia coli*

#### FUNGICIDAL

*Trichophyton interdigitale, Candida albicans*

#### VIRUCIDAL

Influenza A/Hong Kong, herpes simplex types I and II, vaccinia, rubella, adenovirus type 4, feline picornavirus, feline leukemia, canine distemper, rabies, pseudorabies, avian IBV.

#### DILUTION RATE

DISINFECTION OF SURFACES:

8 mL/L

Clinicide is a registered trademark of Bimeda-MTC Animal Health Inc., or its affiliates.

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