Disease Control

Vaccination

Disease control

Medication

Biosecurity
Elements of a Biosecurity Program

• Terminal Disinfection
  – Control of internal microbiology
  – Without livestock in the room or barn

• Continuous Protection
  – Control of external microbiology
  – With livestock in the room, barn, or adjacent pens
TERMINAL DISINFECTION – IN ABSENCE OF ANIMALS

1. Initial Insect Control
   - Space spray
2. Organic Matter Removal
3. Water Line Cleaning and Disinfection
4. Detergent Application
   - Spraying / foaming
5. Washing and Rinsing
   - High pressure water
TERMINAL DISINFECTION
— IN ABSENCE OF ANIMALS...

6. Disinfection
   - Spraying / foaming

7. Second Optional Disinfection
   - Misting / fumigating

8. Second Insect Control
   - Wall spray

9. Rodent Control
1. INITIAL INSECT CONTROL – SPACE SPRAY

- The build-up of fly & insect populations can cause an **additional stress** to livestock
- Insects also are **great vectors** for many diseases

- **It is ideal to treat while the barn is empty, as soon as livestock has been taken out!**
Space Spray Insecticides*
2. ORGANIC MATTER REMOVAL
SURFACES
3. WATER LINE CLEANING AND DISINFECTION...
Formation of Biofilms

Settling and attachment; Colonization and biofilm formation; Growth and clogging of water lines

Microorganisms

Residues

Formation of viscous substance

Obstruction
Organic and Mineral Deposits...
3. WATER LINE CLEANING AND DISINFECTION...

- Ensure treated waterline is not supplying water to livestock in another room / building!
- Choose an appropriate detergent depending on issues: organic matter or mineral deposits (see « pH rotation », step 4)
Organic and Mineral Deposits

Biosolve Plus

Acid a Foam XL
3. WATER LINE CLEANING AND DISINFECTION...

- Prepare stock solution to ensure proper dilution rate and volume, depending on delivery system
- Inject solution in waterline
- Ensure product is present everywhere
3. WATER LINE CLEANING AND DISINFECTION...

- **Let stand** (soaking time depends on condition of the waterline)
- **Rinse / flush** the line
- Preferably repeat steps using an appropriate **disinfectant**
Water Lines in Swine Production
4. DETERGENT APPLICATION
4. DETERGENT APPLICATION
– SPRAYING / FOAMING

• Thorough washing with a detergent is essential to:
  ✓ Reduce time and water required for the cleaning process
  ✓ Help remove biofilms and minerals
  ✓ Help maximize the efficacy of disinfectants
Definitions

• Cleaners, Detergents (Sanitizers)
  – Are potent surfactants
  – Provide good penetration
  – May have some germicidal activity
  – Are an essential part of any good disinfection program

❖ But they are not disinfectants!!!
Surface Biofilms

Acid a Foam XL

Biosolve Plus
**pH Rotation of Detergents**

- Presence of **organic matter** implies the **regular use of alkaline detergents**
- Presence of **hard water & minerals** implies the **periodical use of acid detergents**

❖ **Rotation between alkaline and acid detergents is recommended!**
  - 7/1 could be ideal in most cases
  - 3/1, 5/3, 1/1 could be required for very hard water situations
4. DETERGENT APPLICATION
– SPRAYING / FOAMING...

➢ Choose an appropriate product depending on issues (organic matter / mineral deposits)

➢ Prepare stock solution to ensure proper dilution rate and volume, depending on delivery system

➢ Use the appropriate concentration level for the product.
FOAMING VS SPRAYING

• Spray or foam detergent on all surfaces to be washed
• Foaming
  – Low pressure, injection of air
  – Good for visual
  – Good for smooth surfaces
• Spraying
  – Low pressure, higher volume
  – Good for porous surfaces
  – Good penetration
Biofilms...
4. DETERGENT APPLICATION
– SPRAYING / FOAMING...

✔ Usual application rates:
  • 500 – 1000 mL/m² at high pressure, OR:
  • 250 – 500 mL/m² at double dose (or +) if soaked and foamed

➢ Let stand (soaking time depends on amount of soiling on surfaces)

❖ Detergent solution should be removed / rinsed off before it dries!
(see next step)
5. WASHING AND RINSING
5. WASHING AND RINSING
– HIGH PRESSURE WATER

❖ Before detergent solution dries…

➢ Thoroughly wash all surfaces, to remove any remaining organic / mineral material, and rinse detergent solution off

➢ Let dry before moving on to the next step (no puddles or excess water)
6. DISINFECTION
6. DISINFECTION – SPRAYING / FOAMING

• Even though cleaning eliminates > 90% of microbes, what’s left is still more than enough to be harmful to livestock

• Live animals and porous surfaces ⇒ high contamination / more viruses

❖ Using a disinfectant proven efficient against bacteria, fungi and especially viruses is therefore essential!
**Definitions…**

- **Disinfectants**
  - Usually *chemical* but can be physical agents
  - Used only on *inanimate objects*
  - Reduce risk of infections
  - *Kill vegetative forms* of microbes, not just inhibit
  - Do not necessarily kill spores

  ❖ They are not sterilants!!!
Definitions…

- Germicides (bact..., fung..., vir...)  
  - Kill microorganisms, especially **pathogens**

  “For the purposes of this group of guidelines ⇒ germicide, bactericide and disinfectant  
  (low level, general purpose)

  are **synonyms*** ”!

*EPA 1999
Spectrum of Disinfectants ...

More susceptible

Fungi *
Mycoplasma
Gram + *
Gram - *
Rickettsia
Pseudomonas *
Enveloped Viruses (gr A)

Yeast & Algae

B

Chlamydia
Non-env. Viruses (gr C) *

Mycobacteria *
Fungal Spores

Non-env. Viruses (gr B) *

Bacterial Spores

Viroids
Oocysts
Prions

Less susceptible
Sensitivity to Disinfectants: swine

More susceptible

- Fungi *
- Mycoplasma
- Gram *
- Rickettsia
- Pseudomonas *
- Enveloped Viruses (gr A)

Yeasts & Algae
- Chlamydia
- Non-env. Viruses (gr C) *
- Mycobacteria *
- Fungal Spores

Non-env. Viruses (gr B) *
- Bacterial Spores
- Viroids
- Oocysts
- Prions

Less susceptible

- Corona: TGE, Orthomyxo: Influenza, Retro, Rhabdo, Toga: CSF, PRRS, WN
- Picorna*/Aphto*: FMD, Circo: PMWS, Entero: SVD, Parvo*
- Clostridium
# Comparison of Efficacy

## TABLE 28.2. Chemical guide to viral inactivation—minimum concentration of virucide inactivation in 10 min

<table>
<thead>
<tr>
<th>Virus</th>
<th>Sodium hypochlorite</th>
<th>Isopropanol</th>
<th>Ethanol</th>
<th>Benzalkonium chloride and derivatives</th>
<th>Iodophor as I₂</th>
<th>Ortho phenylphenol</th>
<th>Glutaraldehyde</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gr B</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polio</td>
<td>200 ppm(^a)</td>
<td>95% active</td>
<td>70% active</td>
<td>10% active(^b) D-125 inactivates in 30 min</td>
<td>150 ppm(^a)</td>
<td>12% inactive(^b)</td>
<td>2%(^a)</td>
</tr>
<tr>
<td>Coxsackie B</td>
<td>200 ppm(^a)</td>
<td>95% active</td>
<td>50% active</td>
<td>10% inactive(^b) 70–1,000 ppm active (400 ppm partial)</td>
<td>150 ppm(^a)</td>
<td>12% inactive(^b)</td>
<td>1%(^a)</td>
</tr>
<tr>
<td>Adeno 2</td>
<td>200 ppm(^a)</td>
<td>50% active</td>
<td>50% active</td>
<td>100 ppm(^c)</td>
<td>75 ppm(^a)</td>
<td>0.12%(^c)</td>
<td>0.04%(^a)</td>
</tr>
<tr>
<td><strong>Gr C</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccinia</td>
<td>200 ppm(^a)</td>
<td>30% active</td>
<td>40% active</td>
<td>100 ppm(^c)</td>
<td>75 ppm(^a)</td>
<td>0.12%(^c)</td>
<td>0.02%(^a)</td>
</tr>
<tr>
<td>Herpes</td>
<td>200 ppm(^a)</td>
<td>20% active</td>
<td>30% active</td>
<td>100 ppm(^c)</td>
<td>75 ppm(^a)</td>
<td>0.12%(^c)</td>
<td>0.04%(^a)</td>
</tr>
<tr>
<td>Influenza A</td>
<td>200 ppm(^a)</td>
<td>30% active</td>
<td>30% active</td>
<td>1,000 ppm(^c)</td>
<td>75 ppm(^a)</td>
<td>0.12%(^c)</td>
<td>0.02%(^a)</td>
</tr>
<tr>
<td>HIV-1 (AIDS)</td>
<td>50 ppm(^e)</td>
<td>35% active(^e)</td>
<td>50% active(^e)</td>
<td>BTC 2125 dualf</td>
<td>ppm(^f)</td>
<td>ppm(^f)</td>
<td>ppm(^f)</td>
</tr>
<tr>
<td><strong>Gr A</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feline(^d) parvovirus</td>
<td>≥24 log reduction in 10 min</td>
<td>50% inactive in 10 min</td>
<td>50% inactive in 10 min</td>
<td>5,000 ppm inactive in 10 min</td>
<td>5,000 ppm inactive in 10 min</td>
<td>10% inactive in 10 min</td>
<td>1% (2-log reduction)</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>Limited data of Bond et al. (1983) and Prince, D.L. (unpublished) and Thraenhart, O. suggest the absence of marked resistance.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) Shows the marked activity of halogen and glutaraldehyde.
\(^b\) Shows the marked activity of lipophilic substances against hydrophilic viruses in 10 min.
\(^c\) Shows the marked activity of lipophilic substances against lipophilic viruses, which generally mimics effects against vegetative bacteria.
\(^d\) Some inactivations can occur with high-passage strains and a combination of agents and synergists in the formulation; contact times may have to be extended in presence of minimum protein load of 5% serum. Data from Scott (1980). Customary 10-min contact time ineffective (incomplete to partial inactivation). Similar results are seen with canine parvovirus.
\(^e\) See Martin et al., 1985.
Comparison of Efficacy ...

More susceptible

- Fungi *
- Mycoplasma
- Gram + *
- Gram - *
- Rickettsia
- Pseudomonas *
- Enveloped Viruses (gr A)

Yeasts & Algae

- Chlamydia
- Non-env. Viruses (gr C) *

Mycobacteria *
Fungal Spores

Non-env. Viruses (gr B) *

Bacterial Spores

Viroids
Oocysts
Prions

Less susceptible
COMPARISON OF EFFICACY...

**More susceptible**
- Fungi *
- Mycoplasma
- Gram + *
- Gram - *
- Rickettsia
- Pseudomonas *
- Enveloped Viruses (gr A)

**Less susceptible**
- Yeasts & Algae
- Chlamydia
- Non-env. Viruses (gr C) *
- Mycobacteria *
- Fungal Spores
- Non-env. Viruses (gr B) *
- Bacterial Spores
- Viroids
- Oocysts
- Prions

Vetoquinol the biosecurity specialist!
6. DISINFECTION – SPRAYING / FOAMING...

- Ensure that there are no puddles or excess water on floor, walls and equipment before moving on.

- **Surfaces that are dry as possible:**
  - Prevent **over-dilution**
  - Prevent chemical **incompatibilities**
  - Improve **penetration** of the disinfectant
Choose an appropriate product, according to ambient temperature, presence of specific pathogens and contamination / risk level

Prepare stock solution to ensure proper dilution rate and quantity to be used depending on delivery system
6. DISINFECTION
– SPRAYING / FOAMING...

➢ Spray or foam disinfectant solution to all surfaces that have been previously washed with detergent

✓ Usual application rates:
  • 250 – 300 mL/m², (run-off) or:
  • 125 mL/m² at double dose if foamed
6. DISINFECTION
– SPRAYING / FOAMING...

- **Let stand** at least 10 minutes
  - Minimal contact time for disinfectants in general
- **Dry** as quickly as possible afterward
- **Too long a contact time is not necessarily preferable nor desirable!**
- **Some disinfectants need to be rinsed off!**
7. SECOND OPTIONAL DISINFECTION
7. SECOND
OPTIONAL DISINFECTION
– MISTING / FOGGING

• Misting / fogging is recommended to disinfect inaccessible areas, or simply to complete disinfection, after mobile equipment and litter are returned

• Sometimes called « double disinfection »

❖ Misting / fogging do not replace disinfection by spraying!!!
7. SECOND
OPTIONAL DISINFECTION
– MISTING / FOGGING...

✓ Usual application rate:
  • 1.0 – 1.5 L/ 100 m³ (depending on product)

❖ Can be increased if necessary!
7. SECOND
OPTIONAL DISINFECTION
– MISTING / FOGGING...
7. SECOND OPTIONAL DISINFECTION – MISTING / FOGGING…

- Start ventilation after an appropriate contact time has elapsed
- **Let dry** before moving on to the next step (no puddles or excess water on floor, walls and equipment)
8. Secondary Insect control
CONTINUOUS PROTECTION
– IN PRESENCE OF LIVESTOCK

1. Visitor control
   - Access, vehicles, clothing, foot baths

2. Continuous insect control
   - Bait, traps, livestock spray, etc.

3. Continuous rodent control

4. Additional routine measures
   - Water, equipment disinfection

5. Specific measures
   - Veterinarian and service person
1. VISITOR CONTROL
   – ENTRY

➢ Use clean or disposable **protective clothing**
   – Coveralls, hats, gloves, boots
➢ Require **hand washing and sanitizing**
➢ Consider a danish entry protocol
2. CONTINUOUS INSECT CONTROL – TRAPS AND BAITS
3. RODENT CONTROL

- For continuous control of rodents at all times, implement a Rodent Control Program.
VÉTOQUINOL’S PROGRAM...

**FAST DRAW**
The newest technology with the latest active ingredient on the market!
- Difethialone, 2nd generation anticoagulant
- No wax paste presentation
- High attractiveness
- High acceptance
- 0.0025% concentration (25 PPM)

Formats: Pouches 3.5 kg - 7 kg

**HOMBRE**
The newest active ingredient formulated at the lowest concentration!
- Difethialone, 2nd generation anticoagulant
- The most efficient active ingredient against rats and mice
- Single feed rodenticide that prevents bait shyness
- The newest and 1st anticoagulant registered in more than a decade
- 25 ppm concentration: makes it nearly impossible for rodents to detect

Formats: Bar 12 x 454 g, Placa falso 150 x 25 g * 200 x 25 g, pellets (bulb) 10 kg, Mini-licos 1.2 kg * 5 kg * 10 kg

**BOOT HILL**
Single feed anticoagulant — proven, trusted!
- Bromadiolone, 2nd generation anticoagulant
- Trusted for more than three decades
- Paraffinized pellets for maximum weatherability
- Whole food-grade grains

Formats: Bar 12 x 454 g, Placa falso 150 x 45 g, pellets (bulb) 10 kg, Mini-licos 1.2 kg * 10 kg
VÉTOQUINOL’S PROGRAM...

WHY DO YOU NEED TO IMPLEMENT A RIGOROUS BIOSECURITY PROGRAM FOR RODENT CONTROL?

RODENTS
- First and second most destructive vertebrates on earth
- Rats destroy 20% of the crops worldwide each year
- Major damage to barn structure & insulation
- Feed, water and barn contaminants
- Rats & mice are responsible for more than 25% of the fires in farm houses & barns.

FOR HEALTH REASONS
Rats and mice are responsible for the spread of numerous diseases. Rodents eat and contaminate your animals' feed supplies with virus and bacteria that are detrimental to the health of your livestock. Therefore, a rodent control program is of primary importance to prevent infestations.

FOR ECONOMICAL REASONS
Rodent infestations cause damage to buildings. Holes, walls and insulation material have to be repaired or replaced. Also, by gnawing on electrical wires, rodents become a fire hazard to your farm buildings.

Rodent infestation adds stress on your livestock, resulting in decreased production.

Rodents eat and contaminate your feed supplies. For example, a single Norway rat can eat up to 18 kg (40lbs) of feed in a year. This means net losses since you are basically buying feed for the rodents.

SIGNS
- Urine deposits
- Droppings
- Chewing damage
- Rub marks
- Paths
- Place bait and devices near these signs
VÉTOQUINOL’S PROGRAM...

MANAGING YOUR RODENT CONTROL

THE KEY IS CONSISTENCY

To have a good rodent control program, consistency is important to prevent infestation. Well attended bait stations and devices will keep your farm building free from rodents seeking feed and nesting for reproduction.

BAITING TIPS

- Secure bait in bait station to keep the bait fresh and not accessible to non-target species.
- In the attic secure bait with a rail or with a wire.
- Place bait in areas with less quantity.
- Do not place bait only on the floor, rodents are very good climbers. Install bait on post, pipes...
- Bait near activity signs.
- Mice prefer back rodenticides.
- Rats prefer granular rodenticides.
- Fill up holes in walls with rodenticide before sealing.
- Put place packs or blocks in burrows and cover with gravel or soil to see activity.

RODENTICIDES

Avoid multi-dose anticoagulants (1st generation) like warfarin, dicoumarol, and chlorophacinone. Consumption doses are too high and will take several days or even weeks before lethal dose is ingested.

Use grain based rodenticides that will attract rodents. Heavy eyes and paraffin deter rodents from feeding.

Keep bait fresh in station, replace bait when mold and moisture affects the bait. Rodents have a superior sense of smell and will not eat decayed bait.

MAKE REPAIRS

- Make all the necessary repairs around the buildings.
- Plug all holes and burrows.
- Doors should close tightly with no gap.
- Pay attention to the corners of the building for infiltration under siding.
- Check ventilation grills to prevent rodents and birds from entering the barn.
- Keep building surroundings clean: avoid weeds, bushes, litter heaps, animal carcasses and debris.
- Remove any feed spills off the ground.
- Cut tree branches that touch the building.

MECHANICAL TRAPS

Multiple catch: Can catch many mice, ideal beside doors. They can be baited with peanut butter. Some glue boards will fit inside the device and it will keep the device clean, and makes it easier to dispose of carcasses. Place hole of device along a wall.

Snap traps: Place the trap so that the trigger is facing a surface (walls, boards, cabinets...). Bait snap traps with peanut butter.
### Rodent Control Program

#### Table of device frequency check-up

<table>
<thead>
<tr>
<th>Management</th>
<th>Period</th>
<th>Frequency*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rodent multiple catch devices and traps</td>
<td>All year</td>
<td>Weekly</td>
</tr>
<tr>
<td>Outside bait stations</td>
<td>April to November</td>
<td>Monthly</td>
</tr>
<tr>
<td>Inside bait stations</td>
<td>All year</td>
<td>Monthly</td>
</tr>
<tr>
<td>Attica</td>
<td>Spring and fall</td>
<td>Bi-annual</td>
</tr>
</tbody>
</table>

*The frequencies suggested are the minimum check-ups that must be done. Additional check-ups may be needed if bait consumption is high. Application of rodenticides must be entered in the Rodenticide Use Log (page 5).*

#### Details

1. **Rodent multiple catch devices and traps:**
   - To control rodent infiltration inside the building. These devices should be installed near the doors, and feed storage areas. The frequency of verification should be done weekly. Catchers should be recorded in the *Rodent Control Device Data Log* (page 8). Clean devices after removal of carcasses. Bait devices with peanut butter. Place devices against a wall with the trigger facing the wall or hole of device along the wall.

2. **Outside bait stations:**
   - These stations are the first line of defense against rodent infiltration. They must be installed at intervals of 20-40 feet around buildings and around feed sites. The perimeter around buildings must be free of debris and vegetation to deter rodents from venturing near the buildings. The frequency of verification should be done monthly, but check them more often when the bait consumption is high (fail). Rodent consumption and the use of rodenticides must be recorded in the *Rodenticide Use Log* (page 9).

3. **Inside bait stations:**
   - These bait stations must be installed in all areas of the barn, near the doors, the feed storage, haylofts, mechanical rooms, offets, shipping... keep out of reach from animals. These stations must be checked monthly, check stations weekly when bait consumption is high. The bait consumption and the use of rodenticides must be recorded in the *Rodenticide Use Log* (page 9).

4. **Attica:**
   - Baiting must be done at least twice yearly, spring and fall is recommended. Install baits to cover the entire attic along the perimeter of the wall every 10 feet. The bait consumption and the use of rodenticides must be recorded in the *Rodenticide Use Log* (page 9). If the presence of birds, raccoons and insects is observed make the necessary repairs and treatments to eliminate them.
VÉTOQUINOL’S PROGRAM...

**RATS**

- **Life Span**: 1-3 years
- **Number of litters**: 6-10 litters
- **Number of babies / litter**: 8-9 pups
- **Sexual maturity**: 8-12 weeks
- **Length**: 410 mm (16 inches)
- **Weight**: 340 g (0.75 lbs)
- **Home range span**: 8-80 meters (~26-262 feet)
- **Food consumption**: 15-30 g / day (approx. 28 g = one mini-block)
- **Water consumption**: 29-59 ml / day (2 to 4 tablespoons)
- **Behaviour**: Suspicious

Rats are very suspicious of everything in their environment. They are intelligent and can avoid traps and even eating bait when they see others fall. Place traps or bait stations, without setting the traps or baiting for a few days, in order for the rats to get used to them.

**FOOT PRINTS**

**FECES**

1.90 cm (0.75 inches)
VÉTOQUINOL’S PROGRAM...

MICE

<table>
<thead>
<tr>
<th>Trait</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Span</td>
<td>1-2 years</td>
</tr>
<tr>
<td>Number of litters</td>
<td>6-10 litters</td>
</tr>
<tr>
<td>Number of babies / litter</td>
<td>5-6 kittens</td>
</tr>
<tr>
<td>Sexual maturity</td>
<td>6-10 weeks</td>
</tr>
<tr>
<td>Length</td>
<td>65-95 mm (2.5 to 4 inches)</td>
</tr>
<tr>
<td>Weight</td>
<td>13.30 g (~ 0.03-0.07 lbs)</td>
</tr>
<tr>
<td>Home range</td>
<td>2-10 meters (~ 6.5-33 feet)</td>
</tr>
<tr>
<td>Food consumption</td>
<td>2-4 g / day (~ 0.004-0.009 lbs / day)</td>
</tr>
<tr>
<td>Water consumption</td>
<td>6 ml / day (about 1 teaspoon)</td>
</tr>
<tr>
<td>Behaviour</td>
<td>Curious</td>
</tr>
</tbody>
</table>

- Mice are very curious of anything new in their environment and they will explore new baits or traps.
- Mice can live without water for days.
- Mice will follow the smell of other mice.
- A 0.63 cm hole is enough for infiltration.

**FOOT PRINTS**

**FECES**

- 0.63 cm (0.25 inches)
VÉTOQUINOL’S PROGRAM...

Calendar of Devices
Frequency Check-Up

Legend
1. Rodent multiple catch devices and traps
2. Outside bait stations
3. Inside bait stations
4. Attics

Weekly
Monthly
6-annual
VÉTOQUINOL’S PROGRAM...
# VÉTOQUINOL’S PROGRAM

## RODENTICIDE USE LOG

<table>
<thead>
<tr>
<th>Date</th>
<th>Site</th>
<th>Remarks</th>
<th>Inside bait station</th>
<th>Outside bait station</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 3rd, 2012</td>
<td>Mer Lalonde</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Add traps</td>
</tr>
<tr>
<td>5</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>6</td>
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</tr>
<tr>
<td>16</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>17</td>
<td>X</td>
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<td></td>
</tr>
<tr>
<td>18</td>
<td>X</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>19</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Legends of comments

- **Consumption**: 0. No bait consumption. 1. Low bait consumption (1-10). 2. Medium bait consumption (11-50). 3. High bait consumption (>50).

---

Follow up: Check bait stations every week. Cut grass around electrical pipes. Track activity at high bait consumption.

- **Note**:
  - House: 25 g
  - Boot Hill: 25 g
  - Boot Hill pack: 45 g
  - Fast Draw: 10 g
  - Bird safety.
### VÉTOQUINOL’S PROGRAM

#### RODENT CONTROL

**DEVICE DATA LOG**

<table>
<thead>
<tr>
<th>Device</th>
<th>Device checked</th>
<th>#</th>
<th>Rodent</th>
<th>Inspection &amp; comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-1</td>
<td>✓</td>
<td>3</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>M-2</td>
<td>✓</td>
<td>2</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>M-3</td>
<td>✓</td>
<td>0</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>M-4</td>
<td>✓</td>
<td>3</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>M-5</td>
<td>✓</td>
<td>4</td>
<td>M</td>
<td></td>
</tr>
</tbody>
</table>

- **Add traps and wait for mice.**
- **Holes were opened and Tape placed.**
- **Holes around electrical pipe were sealed.**

**Device**

- Mechanical rodent trap (MR)
- Mouse trap (MT)
- Rat Trap (RT)

**Building #**

- Barn: #1
- Rodents: M: Mice; R: Rats

**Name**

- March Solando

**Date**

- March 3rd, 2012

---

**DEVICE DATA LOG**

<table>
<thead>
<tr>
<th>Device</th>
<th>Device checked</th>
<th>#</th>
<th>Rodent</th>
<th>Inspection &amp; comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-1</td>
<td>✓</td>
<td>1</td>
<td>M</td>
<td>✓ 1 M</td>
</tr>
<tr>
<td>M-2</td>
<td>✓</td>
<td>1</td>
<td>M</td>
<td>✓ 1 M</td>
</tr>
<tr>
<td>M-3</td>
<td>✓</td>
<td>1</td>
<td>M</td>
<td>✓ 1 M</td>
</tr>
<tr>
<td>M-4</td>
<td>✓</td>
<td>0</td>
<td>M</td>
<td>✓ 0</td>
</tr>
<tr>
<td>M-5</td>
<td>✓</td>
<td>0</td>
<td>M</td>
<td>✓ 0</td>
</tr>
</tbody>
</table>

- **Mice added**
- **Dropping under cabinets.**
- ** Moved under desk.**

**Device**

- Mechanical rodent trap (MR)
- Mouse trap (MT)
- Rat Trap (RT)

**Building #**

- Barn: #1
- Rodents: M: Mice; R: Rats

**Name**

- March Solando

**Date**

- March 10th, 2012

---

**Vétoquinol the biosecurity specialist**
# VÉTOQUINOL’S PROGRAM

## Baiting of Attics

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Building #</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 23rd, 2011</td>
<td>Marc Lalonde</td>
<td>Barn #1</td>
</tr>
</tbody>
</table>

**Products**
- [✓] Hombre: 2 Kg
- [ ] Bot Hill: Kg
- [ ] Fast Draw: Kg

**Comments**
1. Low bait consumption.
2. Mice
3. Increase monitoring schedule.

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Building #</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 3rd, 2012</td>
<td>Marc Lalonde</td>
<td>Barn #1</td>
</tr>
</tbody>
</table>

**Products**
- [ ] Hombre: Kg
- [ ] Bot Hill: Kg
- [✓] Fast Draw: 2 Kg

**Comments**
3. High bait consumption.
4. Mice

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Building #</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 3rd, 2012</td>
<td>Marc Lalonde</td>
<td>Barn #1</td>
</tr>
</tbody>
</table>

**Products**
- [ ] Hombre: Kg
- [ ] Bot Hill: Kg
- [✓] Fast Draw: 2 Kg

**Comments**
1. Low bait consumption.

**Legend of Comments**
- 0. No bait consumption
- 1. Low bait consumption
- 2. Medium bait consumption
- 3. High bait consumption
- 4. Bait decayed
- 5. Mold on bait
- 6. Insects / slugs on bait
- 7. Birds or Raccoons

---

10
**VÉTÖQUINOL’S PROGRAM**

**CALCULATOR FOR BAIT AND BAIT STATION REQUIREMENTS**

**CONTROLLING OUTSIDE YOUR BUILDINGS**

<table>
<thead>
<tr>
<th>Outside bait stations</th>
<th>Calculation to be done for each building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (feet)</td>
<td>Width (feet)</td>
</tr>
<tr>
<td>= Total linear feet</td>
<td></td>
</tr>
<tr>
<td>Number of outside bait stations</td>
<td></td>
</tr>
</tbody>
</table>

Outside bait stations is recommended to place bait stations every 20 to 40 feet apart. However, in certain areas (grass, water pans, etc.) it may be more difficult to place a bait station. It is recommended to consult the bait station for the outside bait stations. This is essential in the area of the building for the outside bait stations.

**Required bait for the bait stations outside the buildings**

<table>
<thead>
<tr>
<th>No. of bait stations</th>
<th>Deck up frequency</th>
<th>Quantity in grams of bait to place into the bait station</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is highly recommended to check outside bait stations three or four times a year, and never more. It is recommended to consult the manufacturer for bait instructions and advice for increasing bait use.

**CONTROLLING YOUR ATTICS**

<table>
<thead>
<tr>
<th>Attic bait stations</th>
<th>attic space between bait stations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bait stations are placed in attics that are free from interference with the proper placement. The bait stations should be placed every 10 to 20 feet. Using a bait station in an attic will allow for a more efficient and targeted baiting effort.

**CONTROLLING INSIDE YOUR BUILDINGS**

**Inside bait stations**

It is not possible to control varmints in or on buildings. Buildings and other structures are not covered by the regulations set for bait stations. However, it is recommended to consult the manufacturer for bait instructions and advice for increasing bait use.

<table>
<thead>
<tr>
<th>Inside bait stations</th>
<th>Calculation to be done for each building</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of bait stations</td>
<td>Quantity in grams of bait to place into the bait station</td>
</tr>
<tr>
<td></td>
<td>Checkup frequency</td>
</tr>
</tbody>
</table>

It is highly recommended to check inside bait stations once a week. However, it is not possible to control varmints in or on buildings. Buildings and other structures are not covered by the regulations set for bait stations. However, it is recommended to consult the manufacturer for bait instructions and advice for increasing bait use.

---

**Vétoquinol the biosecurity specialist!**
VÉTOQUINOL’S PROGRAM...

PRODUCT ROTATION IS IMPORTANT

It is recommended to change both the chemistry (type of ingredient: benzenesulfonamide, diphosphonate) and format (pellets, mini-blocks, place packs, etc.) to excite rodents’ appetite. Alternating chemistry and format is the best way to prevent bait shyness, resistance and to improve bait acceptance during the rodent’s life cycle.

4 months August to November
HOMBRE

4 months December to March
FAST DRAW

4 months April to July
BOOT HILL

ROTATE BAITS TO PREVENT SHYNESS AND RESISTANCE
VÉTOQUINOL’S PROGRAM...

**MSDS:**
Current MSDS for all Vétoquinol rodenticides are available on [www.vetoquinol.ca](http://www.vetoquinol.ca). Click on the link on the left hand side.

**PRODUCT LABELS:**
Current Vétoquinol rodenticide product labels are available on the Vétoquinol website at [www.vetoquinol.ca](http://www.vetoquinol.ca) and use the search engine at the top right.

A Biosecurity Program for Rodent Control helps you understand, identify, control and successfully prevent future rodent infestations. In combination to innovative bait station design, we provide advanced, efficient and diversified solutions to your specific needs. We make sure that all our rodent pest management knowledge and expertise is added to what they are.

---

**PAMPHLETS AVAILABLE TO YOU AND YOUR CLIENTS**

**SHARE THE KNOWLEDGE!**

FOR FURTHER INFORMATION
PLEASE CONTACT OUR BIOSECURITY TECHNICIANS

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(Atlantic Provinces, Quebec & Ontario)

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mlalonde@vetoquinol.ca

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(Manitoba, Saskatchewan, Alberta & British Columbia)

Dave Van Walleghem
204 612 6065
dvanwalleghem@vetoquinol.ca
5. SPECIFIC MEASURES
– VETERNAIRIAN AND SERVICE PEOPLE

- Extra protocols depending on area
  - Higher population
  - Disease challenges
  - Type of barn
  - Stage in production
Disease Control

Vaccination  Disease control  Medication

Biosecurity
David Van Walleghem b.s.a.
National Biosecurity Specialist
Vetoquinol Canada inc.
1-204-612-6065
Dave.vanwalleghem@vetoquinol.com
# The Bleach Issue

<table>
<thead>
<tr>
<th>BLEACH (5.0%) Inclusion Rate</th>
<th>Dilution Ratio</th>
<th>% NaOCl</th>
<th>ppm avail. Cl</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 tbsp / 1 gal.</td>
<td>1:256</td>
<td>~ 0.02</td>
<td>~ 195</td>
<td>Common household use</td>
</tr>
<tr>
<td>1 oz / 1 gal.</td>
<td>1:128</td>
<td>~ 0.04</td>
<td>~ 390</td>
<td></td>
</tr>
<tr>
<td>~ 1/3 cup / 1 gal.</td>
<td>1:50</td>
<td>0.1</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>1 cup / 1 gal.</td>
<td>1:16</td>
<td>~ 0.3</td>
<td>3125</td>
<td></td>
</tr>
<tr>
<td>~ 1.5 cup / 1 gal.</td>
<td>1:10</td>
<td>0.5</td>
<td>5000</td>
<td>Very strong solution; → use on limited basis</td>
</tr>
<tr>
<td>1 part / 1 part H₂O</td>
<td>1:2</td>
<td>2.5</td>
<td>25000</td>
<td>CFIA’s recommendation for HP AIV</td>
</tr>
<tr>
<td>2 parts / 1 part H₂O</td>
<td>2:3</td>
<td>3.33</td>
<td>33333</td>
<td>Effective for FMDv; → use with caution!</td>
</tr>
</tbody>
</table>

Adapted from: *Disinfectant 101*, Dr Glenda Dvorak, Center for Food Security & Public Health, Iowa State University