



**Wisconsin Veterinary  
Diagnostic Laboratory**  
UNIVERSITY OF WISCONSIN-MADISON

## **Biosecurity for Dairy Farms**

### **Introduction**

Outbreaks of infectious disease have shown that it pays to be conscientious about preventing and controlling infectious disease on livestock operations. This concept is known as biosecurity. Biosecurity refers to management practices that reduce the chances infectious diseases will be carried onto the farm by animals or people. Biosecurity also reduces the spread of infectious disease on farms.

### **Animal + infectious agent + environment = disease**

All infectious diseases result from the interplay between the animal and its ability to resist disease (its immunity), an infectious agent (bacteria, viruses and parasites) and the environment. For example, producers can prevent some diseases by using vaccination to increase immunity. Producers can also prevent disease by keeping infectious agents from coming onto their farm. If an infectious agent is already on the farm, producers can try to eradicate it or control its spread.

### **Strategic vaccination**

Vaccination is an essential component of disease prevention. Setting up a well-planned strategic vaccination program means determining what diseases to vaccinate against, identifying who will most benefit from vaccination and finding out when they will most need the protection that vaccines provide. For more details on planning a vaccination program, please contact your herd veterinarian.

### **Preventing the introduction and spread of infectious diseases**

Note: Every animal that dies unexpectedly on your farm should be examined by your herd veterinarian to determine the cause of death.

#### **1. Keeping a closed herd**

Keeping a closed herd is one way to protect cattle from infectious disease. In a closed herd, no cattle enter the farm either by purchase or loan, and resident cattle do not make contact with any cattle from other farms. A herd is **not** closed if

- Cattle are purchased or boarded;
- Cattle return to the herd after going to shows, community pastures or performance evaluation centers;
- Cattle use a pasture that shares a fence line with cattle in pasture on a different farm;
- Bulls are purchased, borrowed or loaned; and
- Cattle from the herd are transported by someone else or in someone else's vehicle

#### **2. Purchasing new cattle**

It is important to plan the introduction of animals to minimize the risk that an infectious disease will be brought in at the same time. Three factors are important in reducing the risk of infectious diseases when purchasing new cattle.

- The protection you have given your herd by proper vaccination
- The source of purchased cattle, including how they are transported to the farm
- The method you will use to actually introduce the new cattle to the rest of the herd

#### **3. Resident cattle**

Make certain your own cattle are properly vaccinated according to the manufacturer and your herd veterinarian's recommendations before bringing new cattle into the herd.

#### 4. The source of purchased cattle

- Bring in only animals from herds where you know the health status.
- Bring in only animals from herds with a known effective vaccination program. Get specific information about the vaccination history such as when vaccine was used and when it was given. If killed vaccines were used, make sure that a primary series (two doses given a few weeks apart) was given.
- Avoid purchasing animals from unknown sources or that have been mixed with other cattle.
- Buy heifers when purchasing a group of cattle, as they are not milking and are easier to quarantine.
- Request health information about purchased cattle. Ask for the DHIA somatic cell count information on milking cows. Inquire on having the bulk tank tested for contagious mastitis pathogens.
- Transport animals in a vehicle that has been cleaned and disinfected before pick up.

#### 5. Introducing new arrivals

- Quarantine new animals for 30 days before allowing contact with animals on-farm.
- Designate your quarantine area. It should be separated from other cattle on your farm. To prevent the spread of respiratory diseases, quarantined cattle should not share the same airspace with resident cattle.
- Quarantined cattle should not share feeders, waterers or equipment with resident cattle.
- Use a medicated foot bath before allowing purchased cattle to enter the herd.
- Prevent the spread of contagious mastitis by milking the new animals last. Sanitize the milking equipment after milking newly purchased cattle.
- Check the new animal's temperature daily or at least every other day during the quarantine period. If these animals develop a fever, have them examined by your herd veterinarian.
- Vaccinate cattle while they are in quarantine directed by your herd veterinarian.

#### 6. Test all purchased cattle for infection with

- Bovine viral diarrhea (BVD) virus
- Johne's disease
- Mastitis caused by *Staphylococcus aureus*, *Streptococcus agalactiae* and *Mycoplasma bovis*
- Bovine leukosis (optional)

It can take 1 -2 weeks to get test results for these pathogens so collect and submit the appropriate samples as soon as the animal arrives.

#### 7. Controlling farm traffic

Infectious diseases can be carried by people and equipment too. If you borrow equipment from other farms, make sure it has been cleaned before using it on your farm. Producers should limit access on the farm to calves and fresh cows since they are most susceptible to infectious disease.

Some steps to reduce the risk of introducing infectious diseases include:

- Limit people's access to the barn. This may mean restricting access to employed personnel only as well as locking the doors to the barns.
- Posting warning signs asking visitors to keep out. It helps to provide information on who to contact or a telephone number to call instead of entering the barn.
- Make sure visitors wear clean boots and clothing in the barn. This is important if visitors have already been in other barns. Provide some large size coveralls and boots in the barn for visitors to wear. Disposable plastic boots can be used but they wear out quickly.
- Make sure visitors use a foot bath and clean their boots with a brush and disinfectant **before** entering your barn.
- Have bull calves and other sale animals picked up without allowing the dealer or transporter to enter the barn.
- Have dead animals picked up without allowing the livestock renderer to enter your barn or come in contact with live animals.
- Keep a record of visitors.
- Use your own halters and ropes.

It is difficult to control all traffic on the farm but you can identify the traffic that represents the most risk. These include people who frequently visit other farms and people who have already visited other farms on the day they visit your farm.

#### 8. Cleaning and Disinfection of Livestock Trailers Livestock Pens and Buildings

It is important that livestock trailers and calf pens be properly cleaned **before** the disinfectant is applied. If calf pens and livestock trailers are not properly cleaned; the disinfection step is much less effective at killing disease causing microorganisms. High pressure washing **should not** be used due to the risk of cross-contamination of the environment. More importantly livestock owners and managers should understand that while high pressure washers do remove gross soils, such as dried fecal material, it does not consistently remove biofilms. Biofilm removal is an essential and vital component of proper cleaning. The following is a simple cleaning and disinfection protocol that is widely used in livestock operations in the United States.

**1. Remove all bedding material**

After the bedding material has been removed, a barn broom should be used to sweep up the remaining feed, dust and organic debris.

**2. Soak with water**

Thoroughly wet the calf pen or livestock trailer with water using a garden hose. Water should be applied from high to low, starting at the highest point in the livestock trailer or calf pen and ending at the lowest point such as a floor drain.

**3. Alkaline foam cleaning**

Apply an alkaline (pH of 11-12) foaming detergent (Total Alkaline Presoak™, Triton Chemical, Lakeville, MN) to the calf pen or livestock trailer using either a hand-held airless foamer (Lafferty Compact Model 25 Airless Foamer, Lafferty® Equipment Manufacturing Inc., Little Rock, AR). Start at the lowest point of the livestock trailer or calf pen and finish at the highest point. Apply the alkaline foaming detergent evenly to all the surfaces. Using plastic, pH indicator strips (Hydrion®, Micro Essential Laboratory, Brooklyn, NY) verify the pH of the alkaline foaming detergent is correct.

**4. Alkaline foam soak**

Allow for ≥ 10-15 minutes for the detergent to soak. Do not allow the foaming alkaline detergent to dry.

**5. Rinse**

Rinse thoroughly with water using a garden hose going from the highest point to the lowest point of the calf pen or livestock trailer.

**6. Acid foam cleaning**

Apply an acid (pH of 3-4) foaming detergent (Surface Brite™, Triton Chemical, Lakeville, MN) to the calf pen or livestock trailer using either a hand-held airless foamer (Lafferty Compact Model 50 Airless Foamer, Lafferty® Equipment Manufacturing Inc., Little Rock, AR) or an air driven foamer. Start at the lowest point of the livestock trailer or calf pen and finish at the highest point. Apply the acid foaming detergent evenly to all the surfaces. Using plastic, pH indicator strips (Hydrion®, Micro Essential Laboratory, Brooklyn, NY) verify the pH of the acid foaming detergent is correct.

**7. Acid foam soak**

Allow for ≥ 10-15 minutes for the detergent to soak. Do not allow the foaming acid detergent to dry.

**8. Rinse**

Rinse thoroughly with water using a garden hose going from the highest point to the lowest point of the calf pen or livestock trailer.

**9. Dry**

Allow the calf pen or livestock trailer to completely dry out before the disinfectant is applied.

**10. Disinfection**

Twelve to 24 hours prior to use, disinfect the calf pen or livestock trailer with a 250 ppm solution of chlorine dioxide going from the highest point to the lowest point of the calf pen. There should be 5-10 minutes of contact time. A hand held sprayer with Viton® seals or an airless foam applicator (Lafferty Compact Model 25 Airless Foamer, Lafferty® Equipment Manufacturing Inc., Little Rock, AR) can be used to apply the chlorine dioxide. It is obligatory that the working concentration of chlorine dioxide be verified with plastic test strips (Insta-Test®, high range chlorine dioxide, La Motte, Chestertown, MD). When using chlorine dioxide at concentrations of ≥ 200 ppm, operators should wear protective eyewear and an R95 approved particulate respirator mask that is carbon lined (grey color). The masks can be obtained in the paint section of any local hardware store.

## Major infectious diseases of cattle in Wisconsin and their primary means of spread

| <u>Disease</u>   | <u>Major Means of Spread</u>                             |
|--|--|
| Anaplasmosis   | Vector spread to animals originating from endemic areas  |
| Bovine viral diarrhea (BVD) virus  | Direct contact with infected cattle or their body fluids |
| Contagious mastitis (ie. <i>Staph. aureus</i> , <i>Strep. agalactiae</i> ) | Contact with infected milk, usually at milking           |
| <i>Mycoplasma bovis</i>  | Contact with respiratory carrier or infected milk        |
| Bovine leukosis virus (BLV)  | Contact with blood of infected cattle                    |
| IBR, BRSV and PI <sub>3</sub> viruses                                      | Spread through the air                                   |
| <i>E. coli</i> , rotavirus and coronavirus                                 | Contact with manure from infected cattle                 |
| Salmonellosis  | Contact with manure from infected cattle                 |
| Leptospirosis  | Contact with urine from infected carrier cattle          |
| Hairy heel warts (Digital Dermatitis)                                      | Contact with environment of infected cows                |
| Johne's disease  | Contact with manure from infected cattle                 |

Reprinted with permission from the Ontario Ministry of Agriculture, Food and Rural Affairs, Fergus, Ontario, Canada