



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

## **Proper Cleaning and Disinfection of Livestock Trailers, Livestock Pens and Buildings**

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It is important that livestock trailers and calf pens be properly cleaned **before** the disinfectant is applied. If the calf pen and livestock trailer are not properly cleaned; the disinfection step is much less effective at killing disease causing microorganisms. High pressure washing **should not** be used because of the risk of cross-contamination of the environment and 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 the 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. The 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 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 (Hydriion®, Micro Essential Laboratory, Brooklyn, NY) verify the pH of the alkaline, foaming detergent is correct.

### **4. Soak ≥ 10-15 minutes**

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 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



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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. Soak**  $\geq$  10-15 minutes

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  $\geq$  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.