

FOMITES

Managing them to Minimize Disease Spread

Fomites are inanimate objects that can become contaminated with manure, blood, urine, saliva, or fetal fluids. If not cleaned and disinfected between uses, these objects could spread diseases to the next animal, or a person, that comes in contact with it. This handout serves as a guide to the many fomites found on a farm that could spread disease if not handled properly.

The phrase ‘the solution to pollution is dilution’ should be remembered when handling fomites on farm. Washing the item(s) first with water and soap removes all visible material. This allows disinfectants to do their job better and kill the germs left behind.

When cleaning, water quality is important to keep in mind. Hard water can interfere with the cleaning

action of soaps and also disinfectants. Water temperature can also affect how well organic matter is removed and the effectiveness of disinfectants. By using large amounts of warm or tepid water (100.4°F), 90% of the organisms can be removed. Then before disinfecting, read the product label to see if you need to use cold or hot water for them to work effectively.

Proper Cleaning Procedures

1. Wear personal protective wear—gloves, long pants, long sleeves, and possibly a mask if you are cleaning an area that will generate dust.
2. Dry clean—remove all visible material by brushing, scraping, sweeping and hauling to a central disposal area. The waste material should be handled in such a way to prevent contamination of other areas such as feed, water or other animals.
3. Soak—soak the area with hot water and a detergent or cleaning agent. Be sure to wash and soap down all equipment in the area- waterers, feed troughs, pails, etc.
4. Wash—wipe, spray or scrub the area, starting with the dirtiest or highest area (ceiling), after it has soaked for a period of time. This step can be enhanced by the use of pressure washers when cleaning wood, cement, or other porous surfaces. Use caution when using high pressure washers (200-1000 psi) as they can aerosolize disease organisms and spread them to other areas or expose the person cleaning.
5. Rinse—remove all detergent residue by applying a low pressure water rinse on all surfaces, starting with the highest area and working your way to the floor. Certain disinfectants (quaternary ammonium compounds, bleach- see page 3) are inactivated by detergents and soaps.
6. Dry—it is important to allow the area to dry completely before applying a disinfectant so that it can work effectively.

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Proper Disinfecting Procedures

1. Read the product label—this is important to make sure the solution is handled correctly. Personal protective wear (gloves, mask) may be needed when mixing up solutions. Other considerations to review before applying solutions to fomites include specific dilutions, water temperature, environmental temperature, ventilation and the disease organisms killed by the disinfectant.
2. Disinfect—apply the product at the correct dilution and let it “sit and work” for the suggested amount of time.
3. Final rinse—remove all disinfectant by applying a low pressure water rinse on all surfaces, starting with the highest area and working your way to the floor.
4. Dry—it is important to allow the area to completely dry before allowing animals to have contact with the area or item that was just cleaned and disinfected.

Proper Storage

If the equipment or area will not be used immediately, it is important to avoid contamination between uses. Small items can be placed into plastic bags and sealed; larger items can be placed into closed cabinets. Equipment and housing areas are more difficult to protect for long periods of time and may need to be rinsed again before contact with animals.

When managing disease risk on farm, use the list of fomites on page 2 as a reminder of some of the things that may need special attention when cleaning and disinfecting.



DRY CLEANING



WASHING



DISINFECTING

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When managing disease risk on farm, use this list of fomites as a reminder of some of the things that may need special attention when cleaning and disinfecting.

Vehicles/Equipment		
Trucks	Tractors/Skid loader	Loader buckets
Trailers	Feed wagon/hay wagon	4-Wheelers

Personnel		
Boots	Gloves	Hats
Coveralls	Rain suit	Hands
Other clothes		

Feed/Water Equipment		
Feed buckets/pans	Water troughs/Tanks	Hay Feeders
Pails	Feed bunks	Bottles, nipples
Shovels		

Animal Handling		
Chute	Brushes	Ropes
Crowding panels	Clippers	Nose tongs
Alley way	Halter	Whips
Loading chute (Portable)	Lead rope	Sorting sticks

Animal Treatment		
Balling gun	Needles**	Straps
Oral/vaginal speculum	Syringes**	Fetotome/ OB wire
Stomach tube	Calf jack	Dehorner
Drench gun	OB chains	Castration knife
Esophageal feeder**	Snares	Implant gun
IV tubing**		

Milking		
Milking unit- liners	Teat dip applicators	Towels

Animal Housing		
Calf hutches	Fences	Gates
Neck tethers		

Types of material that need to be cleaned:

Some of the materials fomites on farm are made out of are listed below. Differences in porosity (braided cotton, cement, nylon, wood) will mean more soaking or scrubbing to make sure all visible material is removed. Smooth surfaces (metal, glass, plastic) will stand up to a variety of cleaning and disinfecting steps. Keep in mind the type of material being cleaned and disinfected to ensure all visible material is removed to allow the soap or disinfectant to penetrate and kill the disease organisms.

Braided cotton	Cement	Cloth
Fiberglass	Glass	Leather
Metal	Nylon	Plastic
Rubber	Silicone	Skin
Vinyl	Wood	

In an outbreak situation, specific disinfectants may be recommended for use because of their killing action against a specific disease organism. These products may be caustic or cause damage to certain objects being disinfected. However, during an outbreak situation, it is more important to destroy and control the disease organism than to protect the fomites. Consult with your veterinarian to choose a disinfectant that is most appropriate in a specific disease situation.

***If the item being cleaned will be used for antibiotics, electrolytes or hormones, special precautions must be taken. Certain disinfectants have a lasting action that will inactivate medication. See the "Care of Veterinary Vaccine Syringes" publication by University of Nebraska- Lincoln on the CD Rom or at www.cfsph.iastate.edu*



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Characteristics of Selected Disinfectants*

Disinfectant Category	Alcohols	Aldehydes	Biguanides	Halogens: Hypochlorites	Halogens: Iodine Compounds	Oxidizing Agents	Phenols	Quaternary Ammonium Compounds (QAC)
Sample Trade Names	Ethyl alcohol Isopropyl alcohol	Formaldehyde Glutaraldehyde	Chlorhexidine Nolvasan® Chlorhex®	Bleach Clorox®	Betadine® Povidone®	Hydrogen peroxide Peroxyacetic acid Virkon-S®	One-Stroke Environ® Tek-trol® Pine-Sol® Lysol®	Roccal-D Plus® Parvasol®
Advantages	<ul style="list-style-type: none"> • Fast acting • Leaves no residue 	<ul style="list-style-type: none"> • Broad spectrum 	<ul style="list-style-type: none"> • Broad spectrum 	<ul style="list-style-type: none"> • Broad spectrum • Short contact time • Inexpensive • Effective in the presence of hard water 	<ul style="list-style-type: none"> • Stable in storage • Relatively safe 	<ul style="list-style-type: none"> • Broad spectrum 	<ul style="list-style-type: none"> • Non-corrosive • Stable in storage • Effective over large pH range • Effective in the presence of hard water 	<ul style="list-style-type: none"> • Stable in storage • Non-irritating to skin • Effective at high temperatures and high pH (9-10)
Disadvantages	<ul style="list-style-type: none"> • Rapid evaporation 	<ul style="list-style-type: none"> • Irritating to mucous membranes (eyes) and tissues • Efficacy is reduced in the presence of hard water 	<ul style="list-style-type: none"> • Only works in limited pH range (5-7) 	<ul style="list-style-type: none"> • Inactivated by sunlight and some metals • Requires frequent application • Corrodes metals • Irritating to mucous membranes (eyes) and skin 	<ul style="list-style-type: none"> • Stains clothes or treated surfaces • Inactivated by QACs • Requires frequent application • Corrosive 	<ul style="list-style-type: none"> • Damaging to some metals 	<ul style="list-style-type: none"> • Cause skin and eye irritation 	<ul style="list-style-type: none"> • Inactivated by hard water
Precautions	<ul style="list-style-type: none"> • Flammable 	<ul style="list-style-type: none"> • Can cause cancer • Use in well ventilated areas 	<ul style="list-style-type: none"> • Toxic to fish (environmental concern) 	<ul style="list-style-type: none"> • Never mix with ammonia- a toxic chlorine gas will form 			<ul style="list-style-type: none"> • Toxic to animals, especially cats and swine 	<ul style="list-style-type: none"> • Toxic to fish (environmental concern)
Efficacy with soaps or detergents	Unknown	Reduced	Inactivated	Inactivated	Effective	Unknown	Effective	Inactivated

* Disinfectants undergo testing to determine what bacteria or viruses they will kill. Some disinfectants can be harmful for certain materials. When selecting a disinfectant, read the label and select a product that has been tested against the disease agent you are concerned about killing.

DISCLAIMER: Use of trade names does not in any way signify endorsement of a particular product. For additional product names, please consult your veterinarian.