

It is important to remember that disinfectants will not work if the surface to be disinfected is not clean before applying the disinfectant! It is almost impossible to disinfect dirt! In other words, cleaning and disinfection are two entirely separate procedures. Any premises must be cleaned first, and only after that, it should be disinfected.

This note will help you understand the cleaning and disinfection process better.

Cleaning

The cleaning procedure may involve two steps, a dry cleaning followed by wet cleaning. The process of dry cleaning removes the organic material before wet cleaning occurs. With the dry-cleaning, residual dirt, debris, stains, and organic matter, which might neutralize the disinfectant, must be removed first. Bedding, feed, and manure and any carcasses must be removed. Vermin such as rodents, insects, or any other animal needs to be trapped and removed from the premises/facility. The facility should be swept out. The sills and floor should be hand-scraped if necessary, to remove any caked-on manure, food, or debris. Scrape, scrub and clean all permanently attached equipment such as waterers, feeders, etc. Removable equipment or anything not attached should be taken outside to allow thorough cleaning and subsequent disinfection.

Wet cleaning involves the use of water and usually a soap or detergent. Soaps and detergents are good cleaning agents. They help penetrate and break up stubborn materials and are mildly germicidal, but they are not suitable for use as disinfectants. The soap or detergent used must be compatible with the disinfectant that will be used in the subsequent disinfection process.

There are four basic steps to the wet cleaning process: soaking, washing, rinsing, and drying. With a wet cleaning, allow a soaking time to loosen debris so it can easily be removed with a brush or sprayer. Steam and high-pressure washers are very useful for cleaning porous surfaces during wet cleaning. Hot water of at least 200°F should be used for wet cleaning. Hot water is far more effective than cold water at killing microorganisms. Hot water can also be used in pressure sprayers. A detergent may be added to the sprayer to increase its effectiveness. All spray should be applied at a minimum of 200 psi (pounds per square inch) for good penetration. However, this amount of pressure could blow holes in aging materials or a thin cover. Care should be taken not to get the spray into electrical motors. A systematic approach to spraying should be used, such as starting at the back of the facility and working toward the front, spraying the ceiling first, then the walls, and finally, the floor. Thorough rinsing with clean water afterward removes the detergent and any lingering organic debris and pathogenic organisms that could interfere with the effectiveness of the disinfectant to be used. Rinsing will also decrease the possibility of harm to the animals by accidental absorption of any residual detergent or soap.

The final step of cleaning is letting the wet areas dry quickly and thoroughly. If the facility is not dried properly the excess moisture will result in the multiplication of bacteria to even higher levels than before the cleaning! Thus, improper cleaning can do more harm than good. Proper cleaning should remove more than 90% of the disease-causing organisms (pathogens). Once the facility has been properly cleaned and dried thoroughly, then the disinfection procedure can begin.

Disinfection:

Disinfectants are chemical agents that kill disease-causing agents on contact. Disinfection is the destruction of all vegetative forms of microorganisms, but the spores may not be destroyed. There are some basic principles to consider for disinfection. An important point to remember is “hard” water

can neutralize the activity of some disinfectants. Also, some disinfectant solutions may only be active for a few days after mixing or preparing. Failure to make a fresh solution of disinfectant after it has been prepared longer than a few days, or after it has become visibly contaminated by organic material like manure, may result in using a product that will no longer be effective. Even worse, it may generate a false sense of security to the disinfection process. Sufficient concentration and contact time may overcome some of these problems with certain classes of disinfectants, but often increasing the concentration or contact time makes use of the product impractical, expensive, caustic, or dangerous to the users or to the animals.

Disinfectants also vary considerably in their activity against the assorted bacteria, viruses, fungi, and protozoa. The product label should be checked for the expiration date. Use of an expired disinfectant may not ensure the effectiveness of the disinfection procedure. Many widely used disinfectants are not active against bacterial spores, the environmentally resilient life form of the bacteria that causes tetanus, blackleg, botulism, and anthrax.

It is important to select a disinfectant that will be active against a wide spectrum of pathogenic organisms under the conditions in which it will generally be used. These conditions include hard water, contamination with organic debris, and the potential for toxicity or damage to environmental surfaces, skin, and clothing. It is also important to keep solutions clean and freshly made as per the manufacturer's directions. All disinfectants, whether they are sprays, foams, aerosols, or fumigants, work best at temperatures above 65°F. Temperatures for chlorine- and iodine-based disinfectants should not exceed 110°F. Disinfectants must have sufficient contact time with the surfaces to which they are applied in order to allow them to kill the pathogens concerned. Few disinfectants kill instantaneously. The amount of contact time needed will vary with the product used and the pathogen. A quick splash of a dirty boot into a footbath will not accomplish anything except to give a false sense of security. Usually, 20-30 minutes is a sufficient contact time for most disinfectants.

An important point to remember is that disinfectants are not to be applied to animals directly unless labeled for such use, and the label of the product must be followed closely to make sure there are no warnings against using them around feeders and in animal quarters. A general recommendation is to thoroughly rinse both the cleaning agents and the disinfectants off and dry the surfaces after the appropriate amount of contact time with the disinfectant if animals have contact with the disinfected surfaces.

Rotating low pH with high pH compatible disinfectants have proved to be more effective than continuous use of the same disinfectant to reduce the possibility of microbial resistance. Microbes can acquire resistance to disinfectants, just as they can to antibiotics. Label directions should be strictly followed, and different classes of disinfectants should not be mixed. Adverse, even deadly, chemical reactions may occur.

On most farms, disinfectants will be used in footbaths, for disinfecting equipment, and to disinfect livestock and poultry premises. The disinfection should occur as soon as possible after the cleaning procedures. The disinfectant needs to be applied to all cleaned surfaces and allowed to dry completely. It is optional but recommended to reapply the disinfectant and allow it to dry a second time. Usually, one gallon (approximately four lit) of diluted disinfectant is ordinarily applied to about 100-150 square feet of surface area.