



Cattle Producer's Handbook

Animal Health Section

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Chemical Disinfection: A Guide for the Cow-Calf Operation

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Disinfection is the *reduction* in number of infectious microorganisms on inanimate objects. This is compared to *sterilization*, which is the destruction or removal of all microorganisms from inanimate objects.

It is clear from the outset that disinfection is a key component in biosecurity, for that matter in any and all management schemes, for the cow-calf operator to further limit exposure and spread of infectious agents within the operation. Disinfection can be achieved by the use of chemical agents (disinfectants), such as hypochlorites, quaternary ammonium compounds, and tamed iodines.

Innumerable chemical disinfectants are available and, unfortunately, every one has limitations in range of activity as well as other advantages and disadvantages. Factors to be considered when selecting a chemical disinfectant are:

- Organism(s) to be controlled.
- Type (cleanability/porosity—wood, metal, etc.) and condition (amount of organic matter present) of material to be disinfected.
- Length of time material can be treated (contact time).
- Ambient temperatures.
- Quality of water (pH and hardness).

It is important to follow manufacturer's directions when preparing chemical disinfectants. With chemical disinfectants, "more is better" does not apply; in fact, many of the listed disinfectants are less active when used in more concentrated solutions!

THE key factor to achieving the desired reduction in infectious organisms is thorough cleaning *BEFORE* the application of the disinfectant. Disinfectants are active against their designated organisms *if and only if* they come into direct contact with the organism; organic matter (blood, manure, foodstuffs, bedding). The organic matter must be removed to allow the disinfectant to interact with the organism(s).

Cleaning, therefore, requires the removal of all gross contamination and organic material. High pressure washers or "brush and bucket" scrubbing with a detergent are effective means to clean surfaces before disinfection. This serves two important functions in the disinfection process:

1. Destruction of organic matter so that it can be removed by the rinsing process, and
2. Dilution (reducing the number) of the organisms remaining on the object's surface.

Detergents may also have activity against many organisms by disrupting the organisms' outer layers and further enhancing the ability of the disinfectant to destroy the organisms.