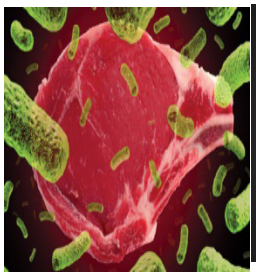
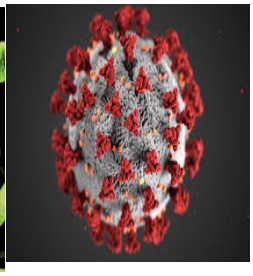
Cleaning and Disinfection: Six Steps for Success!

This Instruction Manual outlines six steps for keeping hard surfaces clean during COVID-19.

Hard surfaces in homes, like kitchen sinks, must be kept in a state of microbiological control to combat COVID-19. This is achieved with the application of detergents and disinfectants.

The object of cleaning and disinfecting is to achieve appropriate microbiological cleanliness levels for a healthy home. Thus, the cleaning

and disinfecting of hard surfaces in a home is an important part of contagion control.

This manual outlines the eight key steps that should be followed, for cleaning and disinfecting, so your home can be contagion free.

SIX KEY STEPS FOR KEEPING A HOME CLEAN

Step 1: Understanding Cleaning and Disinfecting

Cleaning and disinfecting mean different things, and they are sometimes confused. Most importantly cleaning, using a detergent, must come before disinfecting. Detergents are cleaning agents and are deployed to remove soil (such as dirt, dust, and grease) from a surface. The removal of soil is an important step prior to the application of a disinfectant, for the greater the degree of soiling which remains on a surface, then the less effective the disinfection step becomes.

Detergents work by penetrating soil and reducing the surface tension. This fixes the soil to the surface to allow its removal. In other words, the detergent increases the “wettability” of water.

A disinfectant is a chemical germicide which can eliminate a population of vegetative microorganisms. Some disinfectants are sporicidal.

Step 2: Selecting the most appropriate agents

Selecting the most appropriate cleaning and disinfectant agents is important. Care needs to be taken as some agents are not compatible with each other.

In selecting detergents, it is important that the detergent be compatible with the disinfectant (that is the residues of the detergent will not inactivate the disinfectant).

Points to consider when selecting a disinfectant:

a.Two disinfectants should be used in rotation. For this, the two agents selected should have different modes of activity. It may be wise for one of the disinfectants to be sporicidal.

b.The disinfectant should have a wide spectrum of activity. The spectrum of activity refers to the properties of a disinfectant being effective against a wide range of vegetative microorganisms including Gram-negative and Gram-positive bacteria.

c.Ideally the disinfectant should have a rapid


action. The speed of action depends upon the contact time required for the disinfectant to destroy a microbial population. The contact time is the period of contact when the surface to which the disinfectant is applied must remain wet.

d.Residues from organic materials or with detergent residues should not interfere with the disinfectant.

e.The disinfectant should not damage the material to which it is applied. If it does other measures should be taken. Many sporicidal disinfectants are chlorine based and will damage material like stainless steel unless the residue is wiped away after use.

f.The disinfectant should be safe for normal household use and meet local health and safety laws.The disinfectant should be cost effective and be available in the required formats like trigger spray bottles or ready-to-dilute concentrates.

Step 3: Understanding types of disinfectants

There are a number of different types of disinfectant with different modes of activity and of varying effectiveness against microorganisms. Disinfectant action against the microbial cell include: acting on the cell wall, the cytoplasmic membrane (where the matrix of phospholipids and enzymes provide various targets), and the cytoplasm. Understanding the distinction between different disinfectants is important when selecting between non-sporicidal and sporicidal disinfectants, the division between non-oxidizing and oxidizing chemicals.

Non-oxidizing disinfectants include alcohols, aldehydes, amphoterics, biguanide, phenolics, and quaternary ammonium compounds. Oxidizing disinfectants include halogens and oxidizing agents like peracetic acid and chlorine dioxide.

Step 4: Factors which affect disinfectant efficacy

There are several factors which affect how well disinfectants work in practical situations, and it is important to understand these for your cleaning routine to be affective. Factors affecting disinfectant efficacy include:

g.Concentration: this is the optimal dilution of the disinfectant to give the greatest microbial kill. It is a misconception to think that by making the concentration of a disinfectant greater it will kill more bacteria.

h.Time: The time that the disinfectant is used for is important. Sufficient time is needed for the disinfectant to bind to the microorganism, traverse the cell wall, and to reach the specific target site for the disinfectant's particular mode of action.

i. The numbers and types of microorganisms, in terms of some disinfectants being less effective against certain species which are more resistant. If high numbers of bacterial spores are isolated, a non-sporicidal disinfectant will be ineffective.

j.Temperature and pH: each disinfectant has an optimal pH and temperature at which it is most effective. If the temperature or pH are outside this optimal range, then the rate of reaction (the log kill over time) is affected.

Step 5: Cleaning materials

The cleaning materials used to apply disinfectants and detergents must be appropriate. The materials must be able to apply an even layer of

each agent. A material that can either be disposed after each use or can be disinfected between uses is ideal for disinf ectants and detergents used on floors, surfaces, and walls in your home.

Step 6: Cleaning techniques

The cleaning and disinfection techniques are important. If detergents and disinfectants are not used in the correct way, areas will not be cleaned effectively, and unduly high levels of microbial contamination will remain as the disinfectant will not penetrate layers of dirt.

Defined cleaning and disinfection steps must be in place, such as:

- Sweeping away dust and debris (if applicable).
- Applying a detergent solution through wiping or mopping.
- Ensuring that the detergent has dried.
- Applying a disinfectant solution through wiping or mopping.
- Keeping the surface wet until the contact time has elapsed.
- Removing disinfectant residue through wiping or mopping with 70% Isopropyl Alcohol (IPA).

Detergents and disinfectants for use on surfaces (walls, floors) must be applied using the double or triple-bucket system to avoid cross contamination. Both of these techniques involve using a bucket of disinfectant and a bucket of water. In the “two-bucket” technique there is a “wringer” (for the mop) over the bucket of water. In the “three-bucket” technique there is a third bucket, empty except for having a wringer mounted over it.

SUMMARY

This manual has presented a six-step approach to keeping hard surfaces in your home clean during COVID-19.

References:

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