Cleaning and Disinfection – Disinfection

Your Objectives:

At the end of the lesson, you should be able to describe the distinction between disinfecting and sterilising, and to identify some different types of cleaning agents.

Further distinctions

As we learned in Lesson 15, a distinction need be made between cleaning, disinfecting and sterilising.

Bacterial and fungal spores are one of the most pervasive and resilient microorganisms on the planet. Microorganisms differ greatly in their resistance to disinfection agents. By definition, a sterile environment is 100 per-cent free of all microorganisms, including spores. This is a crucial point in bioscience pharmaceutical facilities, as microbiologically clean environments and contamination procedures must be strictly followed under federal law.

There are so many different technologies and chemicals that will provide disinfection and sterilization. The distinction between sterilization and disinfection is an important one. Sterilization methods require the elimination of all microbial life including their spores** , while disinfection methods only address vegetative cells. Although disinfection methods may slow, disrupt, or hinder, the proliferation of contaminants, they are not considered **sporicidal**. Hence, sterilization and disinfection need be differentiated.

Distinctions between sterilization, disinfection and sporicidal properties (as stated in the USP,* Chapter 1072)

Antiseptic—An agent that inhibits or destroys microorganisms on living tissue, including skin, oral cavities, and open wounds.

Chemical disinfectant—A chemical agent used on inanimate surfaces and objects to destroy any infectious fungi, viruses, and bacteria, but not necessarily their spores.

Cleaning agent—An agent for the removal from facility and equipment surfaces of product residues that may inactivate sanitizing agents or harbour microorganisms.

Decontamination—The removal of undesirable microorganisms, either by disinfection or by sterilization.

Disinfectant—A chemical or physical agent that destroys or removes vegetative forms of harmful microorganisms when applied to a surface. Disinfectants are often categorized as high-level,

intermediate-level and low-level, by medically oriented groups, based on their efficacy against various undesirable microorganisms.

Sanitizing agent—An agent for reducing, on inanimate surfaces, the number of all forms of microbial life including fungi, viruses, and bacteria.

Sporicidal agent—An agent that destroys bacterial and fungal spores when used in sufficient concentration for a specified contact time. It is designed to kill all vegetative microorganisms.

Sterilant—An agent that destroys all forms of microbial life including fungi, viruses, and all forms of bacteria and their spores. Sterilants are liquid or vapour-phase agents.

* USP stands for United States Pharmacopeia, a compendium of official conventions for compounding clean-rooms.

Further information here:
https://blog.gotopac.com/2018/11/07/guide-to-usp-disinfectants-sporicides/
For Newsletter:
https://www.uspnf.com/
App available for MacOSx: (4.00 CHF):
https://apps.apple.com/us/app/800-hazrx/id1287841111?ls=1
App available for Android (3.90 CHF):
https://play.google.com/store/apps/details?id=org.usp.android.HazrxApp
Additional info re. Covid-19:
https://www.uspnf.com/notices/delayed-implementation-comment-covid-response-20200327?_ga=2.40411810.1401929157.1621780776-1739098156.1621780776

** The main difference between **spore** and **endospore** is that a **spore** is an active reproductive structure mainly produced by plants and fungi, whereas **endospores** are a dormant, non-reproductive structure of bacteria.