BIOGENIX

# FORMULATION OF DISINFECTANTS

| | NAME | DESIGNATION | SIGNATURE | DATE |
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# 1. TABLE OF CONTENT

## 2 REVISION HISTORY

| # | Version | Date | Changes Made by | Reason for Changes | Clause Changed |
|---|---|---|---|---|---|
| 1 | 1.0 | | | | |
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# 4 POLICY STATEMENT:

4.1 This policy outlines the list of disinfectants used in Biogenix laboratory, its uses and guidelines about formulation of disinfectants.

4.2 Biogenix laboratory has a list of cleaning agents and disinfectants that are approved by EPA.

4.3 MSDS of all cleaning agent and disinfectants are accessible in all the area of laboratory.

4.4 The housekeeping and other relevant staff who are handling chemicals will undergo periodic training on the concentration, dilution and contact time to be provided by the infection control Officer.

4.5 Infection control committee along with safety and quality control committee will review the cleaning and disinfection agents monthly.

4.6 Biogenix laboratory ensures all chemicals both in its primary and secondary container is labeled with hazardous signage's.

# 5 PURPOSE

5.1 This is to ensure and provide general guidelines and description steps regarding how to formulate all cleaning agent and disinfectants used in Biogenix Laboratory.

5.2 Guides the storage requirements as per the manufacturer instructions and selection of cleaning and disinfection agents.

# 6 SCOPE

6.1 The scope of this policy extends to proper formulation and use of cleaning agents and disinfectant used in Biogenix Laboratory.

# 7 DEFINITIONS

7.1 **Cleaning** refers to the removal of germs, dirt, and impurities from surfaces. It does not kill germs, but by removing them, it lowers their numbers and the risk of spreading infection.

7.2 **Disinfecting** refers to using chemicals, for example, EPA-registered disinfectants, to kill germs on surfaces. This process does not necessarily clean dirty surfaces or remove germs, but by killing germs on a surface after cleaning, it can further lower the risk of spreading infection.

# 8 ACRONYMS

8.1 PPE – Personal Protective Equipment

8.2 ICC: Infection Control Committee

8.3 DOH – Department of Health

8.4 EPA - Environmental Protection Agency

# 9 RESPONSIBILITIES

9.1 It is the responsibility of the infection control officer/representative in Biogenix Laboratory to review the cleaning agent and disinfectants and verify the effectiveness of agents as well as cleaning and disinfection procedure through environmental swabbing techniques.

9.2 The HSE officer is responsible to evaluate the hazardous chemical handling program is followed throughout the use of chemicals.

# 10 PROCEDURE

10.1 General requirements:

10.1.1 Disinfectants should have broad-spectrum bactericidal, virucidal, fungicidal, and sporicidal effects.

10.1.2 Organic materials, soap, or plastics should not easily neutralize them.

10.1.3 Disinfectant items should not lose efficiency in a short time and should have rapid action.

10.1.4 Preferably to be low corrosive and low irritant.

10.1.5 Disinfectant items should be cost effective.

10.1.6 Disinfectant items should also be environmentally friendly (EPA approved).

10.2 Safety Precautions:

10.2.1 Bulk amount of hazardous disinfectants and chemicals will be stored in the chemical cabinet.

10.2.2 Appropriate PPE should be used while using disinfectants

10.2.3 MSDS of all disinfectants should be available in all the area.

10.2.4 Eye wash solution and emergency shower is available at the area where chemicals are stored.

10.2.5 Provision for chemical spill kit in all the area.

10.3 List and formulation of Disinfectants:

10.3.1 Chlorine based product:

10.3.1.1 Hypochlorite-based products include liquid (sodium hypochlorite), solid or powdered (calcium hypochlorite) formulations.

10.3.1.2 These formulations dissolve in water to create a dilute aqueous chlorine solution in which undissociated hypochlorous acid (HOCl) is active as the antimicrobial compound.

10.3.1.3 Hypochlorite displays a broad spectrum of antimicrobial activity and is effective against several common pathogens at various concentrations.

10.3.1.4 Biogenix laboratory uses Clorox which contains 52,500 ppm available chlorine which is diluted 1:10 dilution to provide 5250 ppm.

10.3.1.5 Dilution of Clorox:

10.3.1.5.1 Calculation:

*Total parts of water for each part sodium hypochlorite = [% chlorine in liquid sodium hypochlorite ⁄ % chlorine desired] − 1*

10.3.1.5.2 To prepare 0.525 % (≈5000 ppm) dilute 100 ml Clorox with 900 ml of clean water.

10.3.1.5.3 Diluted Clorox is stable for 24 hours.

10.3.1.6 Contact Time:

10.3.1.6.1 10 minutes

10.3.1.7 Precaution:

10.3.1.7.1 After the contact time, chlorine residue should be removed by wiping the surface with clean water.

10.3.1.8 Disadvantage:

10.3.1.8.1 Hypochlorite is rapidly inactivated in the presence of organic material; therefore, regardless of the concentration used, it is important to first clean surfaces thoroughly with soap and water.

10.3.1.8.2 High concentrations of chlorine can lead to corrosion of metal and irritation of skin or mucous membrane, in addition to potential side-effects related to chlorine smell for vulnerable people such as people with asthma.

10.3.2 Alcohol:

10.3.2.1 Ethyl alcohol, at concentrations of 60%–80%, is a potent bactericidal and virucidal agent and act by denaturing protein.

10.3.2.2 Preparation of 75% Ethanol.

10.3.2.2.1 75% Ethanol is available as ready to use. In situation where ready to use 75% Ethanol is not available, it can be prepared by diluting 75 ml absolute ethanol with 25 ml distilled water.

10.3.3 12% Sanibios Ag+:

10.3.3.1 SANIBIOS Ag+ is based on hydrogen peroxide at 12% and silver sulfate.

10.3.3.2 Silver Hydrogen Peroxide, as the name suggests is a synergized composition of hydrogen peroxide stabilized with silver ions in the form of silver nitrate or infused Silver Nano particles. In either of the cases, the disinfecting property of AgH2O2 remains superior compared to all other known forms and compositions of disinfectants till date.

10.3.3.3 H2O2 is stabilized using silver so as to increase its efficacy. Silver acts both as a stabilizer and an activator. In addition to this, silver is shown to have certain disinfectant properties of its own. Addition of silver greatly reduces the quick decomposition of H2O2. In presence of silver, the peroxide decomposes only in presence of biological contaminants. The decomposed H2O2 oxidizes the cell wall, cell membrane and cytoplasm of the pathogens, the DNA is destroyed thus killing the organism. Silver is known to react with certain proteins in the DNA and act as a biostat, inhibiting further growth of the pathogens. All the while the unused peroxide remains stable in the environment owing to the silver present. This is called “depot action”.

10.3.3.4 Hydrogen Peroxide and Silver are neither toxic nor produce DPBs upon decomposition. It dissociates producing water and oxygen and the residual silver has been proven to have no ill effects on man and environment.

10.3.3.5 Silver Hydrogen Peroxide is by far the best all-purpose multi-utility disinfectant because:

10.3.3.5.1 It is effective against all kinds of bacteria, viruses, yeast, mould and spore formers

10.3.3.5.2 It is Environmentally friendly — practically 100% degradable breaking down to water and oxygen

10.3.3.5.3 Does not create odor or alter the taste of foodstuffs or treated water

10.3.3.5.4 Highly effective over long periods even at very high water temperatures

10.3.3.5.5 Has no toxic effect in its diluted state

10.3.3.5.6 No carcinogenic or mutagenic effect

10.3.3.5.7 Long shelf life: maximum loss of concentration 3% per year

10.3.3.5.8 Low corrosive effect

10.3.3.5.9 Equipment and operation costs are low

10.3.3.6 Preparation: It is ready to use.

# 11 CROSS REFERENCE:

11.1 https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cleaning-disinfection.html

11.2 Cleaning and disinfection of environmental surfaces in the context of COVID-19-Interim guidance by WHO. 15 May 2020

11.3 https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2-covid-19

11.4 https://medium.com/@SilverHydrogenPeroxide/silver-hydrogen-peroxide-disinfecting-the-eco-friendly-way-9e176f1e9e97

# 12 RELEVANT DOCUMENTS & RECORDS:

12.1 N/A