

Disinfectant	Recommended Use	How They Kill	Advantages	Disadvantages
<p>Quaternary Ammonium Compounds</p> <ul style="list-style-type: none"> • Long-proven history of use and effectiveness • Large list of selected healthcare and insitutional EPA registered formulations to choose from • Eye and skin irritant • Corrosive • Toxic 	<ul style="list-style-type: none"> • Disinfection and cleaning of hard, nonporous surfaces (walls, floors, countertops, furniture, etc.) • Healthcare and institutional settings 	<p>Attaches to cell wall and affects the proteins and cell membrane of the microorganism, causing death. Releases nitrogen and phosphorous from the cell.</p>	<ul style="list-style-type: none"> • Can be formulated with surfactants (cationic or nonionic) to provide effective cleaning and disinfecting in one easy step • Rapid action, colorless, odorless, and highly stable • May be used on food preparation surfaces. • Broad spectrum kill 	<ul style="list-style-type: none"> • Does not eliminate spores, TB bacteria, and some viruses • Effectiveness influenced by hard water • Layer of soap interferes with action
<p>70% Isopropyl Alcohol Solution</p> <ul style="list-style-type: none"> • Flammable • Eye irritant • Toxic 	<ul style="list-style-type: none"> • Cleaning some instruments • Cleaning skin 	<p>Changes protein structure of microorganism. Presence of water assists with killing action.</p>	<ul style="list-style-type: none"> • Fairly inexpensive 	<ul style="list-style-type: none"> • Using < 50% not very effective • Flammable • Not active when organic matter is present • Not active against certain types of viruses • Evaporates quickly; contact time is not sufficient
<p>Chlorine Compounds</p> <ul style="list-style-type: none"> • >1000 ppm Sodium Hypochlorite • Use caution when handling • Eye, skin, and respiratory irritant • Corrosive • Toxic 	<ul style="list-style-type: none"> • Cleaning up human bodily fluids • Bactericidal • Fungicidal • Sporicidal 	<p>Hypochlorous acid forms when chlorine is added into water. The hypochlorous acid allows oxygen to combine with the cell protoplasm and the chlorine inhibits enzymatic activities, destroying the microorganism.</p>	<ul style="list-style-type: none"> • Kills hardy viruses • Kills a wide range of organisms • Inexpensive • Penetrates well • Relatively quick microbial kill • May be used on food preparation surfaces • Tuberculocidal with extended contact time 	<ul style="list-style-type: none"> • Corrodes metals such as stainless steel and aluminum • Organics may reduce activity • Increase in alkalinity decreases bactericidal property • Unpleasant taste and odor • Unstable • Will bleach and discolor
<p>Glutaraldehyde</p> <ul style="list-style-type: none"> • Eye, skin, and respiratory irritant • Sensitizer • Toxic 	<ul style="list-style-type: none"> • Sterilize precleaned equipment • Bactericidal • Fungicidal • Excellent Tuberculocidal • Virucidal • Sporicidal 	<p>Denatures cell proteins by reacting with cell constituents.</p>	<ul style="list-style-type: none"> • Nonstaining and relatively noncorrosive • Usable as a sterilant on plastics, rubber, lenses, stainless steel, and other items that can't be autoclaved 	<ul style="list-style-type: none"> • Not stable in solution • May leave greasy residue • Has to be in alkaline solution • Deactivated by organic matter • Needs high ppm for effect: Sanitizing: > 1,000 ppm; Disinfection: > 1%

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<p>Iodophors</p> <ul style="list-style-type: none"> • Don't confuse skin antiseptic iodophors for disinfectants • Dilution is critical • Eye and skin irritant • Corrosive • Toxic 	<ul style="list-style-type: none"> • Disinfecting some semi-critical medical equipment • Bactericidal • Excellent Fungicidal • Excellent Virucidal 	<p>Free iodine enters microorganism and binds with cellular components. Surfactant (carrier) helps penetrate soil/fat. Need 30 - 50 ppm. Kills by disorder of protein synthesis due to oxidation of amino acids.</p>	<ul style="list-style-type: none"> • Kills broad range of organisms • Highly reactive • Low issue toxicity • Kills immediately rather than by prolonged period of stasis • Not affected by hard water • May be used on food preparation surfaces • Tuberculocidal with extended contact time 	<ul style="list-style-type: none"> • May stain plastics or corrode metal • May stain skin or laundry • Stains most materials • Unpleasant odor • Some organic and inorganic substances neutralize effect • Effective only in acid solutions • Costly
<p>Phenolic Compounds</p> <ul style="list-style-type: none"> • Very toxic to handle • Eye and skin irritant • Sensitizer • Corrosive 	<p>Excellent as a:</p> <ul style="list-style-type: none"> • Bactericidal • Fungicidal • Tuberculocidal • Virucidal 	<p>Gross protoplasmic poison disrupts cell walls and precipitates cell proteins. Low concentrations inactivate essential enzyme systems.</p>	<ul style="list-style-type: none"> • Nonspecific concerning bactericidal and fungicidal action • While boiling water could cause rusting, the presence of phenolic substances produce an antirusting effect 	<ul style="list-style-type: none"> • Unpleasant odor • Some areas have disposal restrictions • Effectiveness is reduced by alkaline pH, natural soap, or organic material • Effective over narrow pH range • Easily deactivated by nonionic surfactants • Photodegradable • Too toxic for use on hands
<p>Hydrogen Peroxide</p> <ul style="list-style-type: none"> • Strong oxidizer that is not compatible with many chemicals • Very dangerous to work with at concentrated levels • Corrosive 	<ul style="list-style-type: none"> • Bactericidal • Virucidal • Fungicidal • Antiseptic 	<p>Hydrogen Peroxide combines with and oxidizes necrotic matter and bacteria.</p>	<ul style="list-style-type: none"> • Does not leave a residue • Degrades into oxygen and water 	<ul style="list-style-type: none"> • Strong oxidizer; reacts with a variety of chemicals • Useful at a limited pH range (avoid alkalinity) • Corrosive • While Hydrogen Peroxide is inflammable, the oxygen produced from it is flammable • Reactions with Hydrogen Peroxide can cause fire due to excess heat • Ineffective as a disinfectant at low concentrations