

## Summary and Comparison of Liquid Disinfectants

| Class                          | Recommended Use   | How They Work  | Advantages   | Disadvantages  | Comments & Hazards  | Examples  |
|--------------------------------|---|--|--|--|---|---|
| 70% Isopropyl Alcohol Solution | <ul style="list-style-type: none"> <li>▪ Cleaning some instruments</li> <li>▪ Cleaning skin</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Changes protein structure of micro-organism</li> <li>▪ Presence of water assists with killing action</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Fairly inexpensive</li> </ul>   | <ul style="list-style-type: none"> <li>▪ &lt;50% solution not very effective</li> <li>▪ Not active when organic matter present</li> <li>▪ Not active against certain types of viruses</li> <li>▪ Evaporates quickly</li> <li>▪ Contact time not sufficient for killing</li> </ul>                    | <ul style="list-style-type: none"> <li>▪ Flammable</li> <li>▪ Eye irritant</li> <li>▪ Toxic</li> </ul>  |   |
| Chlorine Compounds             | <ul style="list-style-type: none"> <li>▪ Spills of human body fluids</li> <li>▪ Bactericidal – good</li> <li>▪ Fungicidal – good</li> <li>▪ Sporocidal – good at &gt; 1000 ppm Sodium Hypochlorite</li> </ul> | <ul style="list-style-type: none"> <li>▪ Free available chlorine combines with contents within microorganism, reaction byproducts cause its death</li> <li>▪ Need 500 to 5000 ppm</li> <li>▪ Produce chemical combination with cell substances</li> <li>▪ Depends upon release of hypochlorous acid</li> </ul> | <ul style="list-style-type: none"> <li>▪ Kills hardy viruses (e.g., hepatitis)</li> <li>▪ Kills a wide range of organisms</li> <li>▪ Inexpensive</li> <li>▪ Penetrates well</li> <li>▪ Relatively quick microbial kill</li> <li>▪ May be used on food prep surfaces</li> </ul> | <ul style="list-style-type: none"> <li>▪ Corrodes metals such as stainless, aluminum</li> <li>▪ Organics may reduce activity</li> <li>▪ Increase in alkalinity decreases bactericidal property</li> <li>▪ Unpleasant taste and odor</li> <li>▪ Tuberculocidal, with extended contact time</li> </ul> | <ul style="list-style-type: none"> <li>▪ Follow spill procedure and dilution instructions</li> <li>▪ Make fresh solutions before use</li> <li>▪ Eye, skin and respiratory irritant</li> <li>▪ Corrosive</li> <li>▪ Toxic</li> </ul> | <ul style="list-style-type: none"> <li>▪ Bleach solutions (sodium hypochlorite)</li> <li>▪ Clorox</li> <li>▪ Cyosan</li> <li>▪ Purex</li> </ul> |
| Glutaraldehyde                 | <ul style="list-style-type: none"> <li>▪ Bactericidal – good</li> <li>▪ Fungicidal – good</li> <li>▪ Tuberculocidal – excellent</li> <li>▪ Virucidal – good</li> <li>▪ Sporocidal – good</li> </ul>           | <ul style="list-style-type: none"> <li>▪ Coagulates cellular proteins</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Non-staining, relatively noncorrosive</li> <li>▪ Useable as a sterilant on plastics, rubber, lenses, stainless steel and other items that can't be autoclaved</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Not stable in solution</li> <li>▪ Has to be in alkaline solution</li> <li>▪ Inactivated by organic material</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Eye, skin and respiratory irritant</li> <li>▪ Sensitizer</li> <li>▪ Toxic</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Calgocide 14</li> <li>▪ Cidex</li> <li>▪ Vespore</li> </ul>  |

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|---------------------------------------|---|--|--|---|--|--|
| Iodophors<br>(Iodine with carrier)    | <ul style="list-style-type: none"> <li>▪ Disinfecting some semicritical medical equipment</li> <li>▪ Bactericidal – very good</li> <li>▪ Fungicidal – excellent</li> <li>▪ Virucidal - excellent</li> </ul>                           | <ul style="list-style-type: none"> <li>▪ Free iodine enters microorganism and binds with cellular components</li> <li>▪ Carrier helps penetrate soil/fat</li> <li>▪ Need 30 to 50 ppm</li> <li>▪ Probably by disorder of protein synthesis due to hindrance and/or blocking of hydrogen bonding</li> </ul> | <ul style="list-style-type: none"> <li>▪ Kills broad range of organisms</li> <li>▪ Highly reactive</li> <li>▪ Low tissue toxicity</li> <li>▪ Kills immediately rather than by prolonged period of stasis</li> <li>▪ Not affected by hard water</li> <li>▪ May be used on food prep surfaces</li> </ul> | <ul style="list-style-type: none"> <li>▪ May stain plastics or corrode metal</li> <li>▪ May stain skin/laundry</li> <li>▪ Stains most materials</li> <li>▪ Odor</li> <li>▪ Some organic and inorganic substances neutralize effect</li> <li>▪ Tuberculocidal, with extended contact time</li> <li>▪ Sporocidal, some</li> </ul> | <ul style="list-style-type: none"> <li>▪ Dilution critical</li> <li>▪ Follow directions!</li> <li>▪ Use only EPA registered hard surface iodophor disinfectants</li> <li>▪ Don't confuse skin antiseptic iodophors for disinfectants</li> <li>▪ Skin and eye irritant</li> <li>▪ Corrosive</li> <li>▪ Toxic</li> </ul> | <ul style="list-style-type: none"> <li>▪ Bactergent</li> <li>▪ Hy-Sine</li> <li>▪ Ioprep</li> <li>▪ Providone (iodine /betadine)</li> <li>▪ Wescodyne</li> </ul> |
| Phenolic Compounds                    | <ul style="list-style-type: none"> <li>▪ Bactericidal – excellent</li> <li>▪ Fungicidal – excellent</li> <li>▪ Tuberculocidal – excellent</li> <li>▪ Virucidal – excellent</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Gross protoplasmic poison</li> <li>▪ Disrupts cell walls</li> <li>▪ Precipitates cell proteins</li> <li>▪ Low concentrations inactivate essential enzyme systems</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Nonspecific concerning bactericidal and fungicidal action</li> <li>▪ When boiling water would cause rusting, the presence of phenolic substances produces an antirusting effect</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Unpleasant odor</li> <li>▪ Some areas have disposal restrictions</li> <li>▪ Effectiveness reduced by alkaline pH, natural soap or organic material</li> <li>▪ Sporocidal, no</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Skin and eye irritant</li> <li>▪ Sensitizer</li> <li>▪ Corrosive</li> <li>▪ Toxic</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Hil-Phene</li> <li>▪ Lph</li> <li>▪ Metar</li> <li>▪ Vesphene</li> </ul>  |
| Quaternary Ammonium Compounds (QUATS) | <ul style="list-style-type: none"> <li>▪ Ordinary housekeeping (e.g., floors, furniture, walls)</li> <li>▪ Bactericidal – excellent</li> <li>▪ Fungicidal – good</li> <li>▪ Virucidal – good (not as effective as phenols)</li> </ul> | <ul style="list-style-type: none"> <li>▪ Affects proteins and cell membrane of microorganism</li> <li>▪ Releases nitrogen and phosphorous from cells</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Contains a detergent to help loosen soil</li> <li>▪ Rapid action</li> <li>▪ Colorless, odorless</li> <li>▪ Non-toxic, less corrosive</li> <li>▪ Highly stable</li> <li>▪ May be used on food prep surfaces</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Does not eliminate spores, TB bacteria, some viruses</li> <li>▪ Effectiveness influenced by hard water</li> <li>▪ Layer of soap interferes with action</li> </ul>  | <ul style="list-style-type: none"> <li>▪ Select from EPA list of hospital disinfectants</li> <li>▪ Skin and eye irritant</li> <li>▪ Toxic</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Coverage 258</li> <li>▪ End-Bac</li> <li>▪ Hi Tor</li> </ul>  |

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