GENERAL GUIDE LIST FOR SELECTING THE PROPER DISINFECTANT THAT MEETS YOUR PARTICULAR REQUIREMENTS:

DISINFECTANT	RECOMMENDED USE	HOW THEY WORK	USE PARAMETERS AND EXAMPLES	ADVANTAGES	DISADVANTAGES/ HAZARDS
Alcohols	- Cleaning some instruments - Cleaning skin - Variable against some bacterial and fungal species.	- changes protein structure of microorganism - presence of water assists with killing action	- 70% - ethyl, isopropyl	- good general use disinfectant, fast acting, leaves no residue, and compatibility combined with other disinfectants (quaternaries, phenolics, and iodine) to form tinctures. - Fairly inexpensive	- Flammable, not to be used near a flame. - <50% solution not very effective - Not active when organic matter present - Not active against certain types of viruses. - Evaporates quickly. - Contact time not sufficient for killing. - Toxic and an eye irritant.
Aldehydes	- Effective against wide spectrum of bacteria and viruses. Sporicidal when used properly (10 hour contact period) - Bactericidal (good) - Fungicidal (good) - Tuberculocidal (excellent) - Virucidal (good) - Sporicidal (good)	- Coagulates cellular proteins	- Formaldehyde Solutions (8%) - Formaldehyde-Alcohol Solutions (8% in 70% alcohol) - Activated glutaraldehyde (2% solutions) - Formalin – liquid water solution - Paraformaldehyde – solid polymerized compound - E.g., Calgocide 14, Cidex, Vespore	- Good activity against vegetative bacteria, spores, and viruses - Non-staining, relatively noncorrosive. - Useable as a sterilant on plastics, rubber, lenses, stainless steel and other items that can't be autoclaved.	- Toxic properties (carcinogen) - Not stable in solution. - Has to be in alkaline solution. - Inactivated by organic material. - Limited and controlled use because of its toxic properties and potential damage to eyes, must only be used in ventilated hood, and limited stability after activation (for alkaline glutaraldehyde). - Sensitizer
Chlorine Compounds	- Good disinfectant for cleanup of blood or body fluids spills. - Bactericidal (good) - Fungicidal (good) - Sporicidal (good at >1000ppm Sodium Hypochlorite)	- Free available chlorine combines with contents within microorganism, reaction byproducts cause its death. - Need 500 to 5000 ppm. - Produce chemical combination with cell	- 1:10 dilution (500 ppm available chlorine with tap water). - Biocidal effect on *M. tuberculosis, S. auerus,* other vegetative bacteria, and HIV after 10-20 minutes, 1:5 dilution (250 ppm) for bacterial spores and mycobacteria, decay	- Kills hardy viruses (e.g. hepatitis) - Kills a wide range of organisms. - Inexpensive. - Penetrates well. - Relatively quick microbial kill.	- Corrodes metals such as stainless, aluminum. - Organics may reduce activity - Increase in alkalinity decreases bactericidal properties. - Unpleasant taste and odor. - Tuberculocidal with extended contact time.

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		combination with cell substances. - Depends upon release of hypochlorous acid	and mycobacteria, decay rate of diluted chlorine bleach stored at room temperature in a closed plastic container will deteriorate by one half after one month, neutralizes rapidly in the presence of organic matter, good for decontamination of HBV, HCV, HIV, and cleanup of biohazardous spills. - Undiluted bleach for surface disinfecting after possible contamination with the CJD virus; however NIH is recommending 1.0 N NaOH. - E.g., Bleach solutions (sodium hypochlorite), Clorox, Cyosan, Purex	- May be used on food prep surfaces.	- Eye, skin, and respiratory irritant.
Iodophor	- Disinfecting some semicritical medical equipment. - Vegetative bacteria and viruses.	- Iodine with carriers. - Free iodine enters microorganism and binds with cellular components. - Carrier helps penetrate soil/fat. - Probably by disorder of protein synthesis due to hindrance and/or blocking of hydrogen bonding.	- Dilution critical. - 100 ppm available iodine - Need 30 to 50 ppm. - E.g., Bactergent, Hy-sine, Ioprep, Providone (iodine/ betadine), Wescodyne	- Highly reactive - rapid biocidal action. - Kills broad range of organims – effective against Gram-negative & Gram positive organisms, some viruses, and tubercle bacilli. - Low tissue toxicity. - Kills immediately rather than by prolonged period of stasis. - Most effective in acid solutions. - Stable in storage if	- Poor activity against bacterial spores. - May stain plastics or corrode metal. May tarnish silver, silver plate, and copper. - May stain skin/laundry. - Stains most materials. - Odor. - Some organic and inorganic substances neutralize effect ie., reduced effectiveness. - Vaporize at 120^{o}F to 125^{o}F (should not be used in hot water). - Tuberculocidal with extended contact time. - Sporicidal (some).

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				kept cool and tightly covered. - Not affected by hard water. - May be used on food prep surfaces. - Built in indicator (still active if solution born or yellow)	
Mercurials	- Exhibit good activity against viruses, but are not recommended for general use.	- The affinity of Hg for sulfhydryl groups in proteins.	- Exhibit good activity against viruses at 1:1000 concentration - Organic mercurials include: Mercurochrome, Merthiolate, and Metaphen	- Used as a disinfectant and as a preservative – (BANNED IN THE US).	- Not recommended for general use; they have poor activity against vegetative bacteria and are - They are toxic!!! - Create difficulties in waste disposal, and therefore are not recommended. - Useless as sporicides. - Potent neurotoxins.
Phenolic compounds	- Bactericidal (excellent) - Fungicidal (excellent) - Tuberculocidal (excellent) - Virucidal (excellent)	- Gross protoplasmic poison. - Disrupts cell walls. - Precipitates cell proteins. - Low concentrations inactivate essential enzyme systems.	- 500 ppm active agent. - E.g., Hil-Phene, Lph, Metar, Vesphene	- Nonspecific concerning bactericidal and fungicidal action. - When boiling water would cause rusting, the presence of phenolic substances produces an antirusting effect. - Stable in storage. - Germicidal against Gram-negative and Gram-positive organisms and tubercle bacilli. - Effective over large pH range.	- Unpleasant odor. Leaves a gummy residue. - Some areas have disposal restrictions. - Effectiveness reduced by alkaline pH, natural soap or organic material. - Sporicidal, no. Limited sporicidal activity. - Low solubility in water, - Prolonged contact deteriorates rubber. - Can cause skin and eye irritation. - Not for use on food contact surfaces. - Corrosive and toxic.

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Quaternary ammonium compounds (QUATS)	- Ordinary housekeeping (e.g. floors, furniture, walls). - Bactericidal (excellent) - Fungicidal (good) - Virucidal (good, but not as effective as phenols) - Acceptable to control vegetative bacteria and non-lipid-containing viruses.	- Affects proteins and cell membrane of microorganism. - Release nitrogen and phosphorous from cells.	- 400 ppm active agent - E.g., Coverage 258, End-Bac, Hi Tor	- Contains a detergent to help loosen soil. - Rapid action. - Colorless, odorless (but act as a deodorizers). - Non-toxic, less corrosive. - Highly stable. - May be used on food prepsurfaces. - Stable in storage. - Effective at temperatures up to 212^{o}F. - Effective against Gram-positive organisms, bacteriostatic in high dilutions - More effective in alkaline than acid solutions.	- Does not eliminate spores, T bacteria, some viruses. - Effectiveness influenced by hard water. - Layer of soap interferes with action. - Non-irritating to skin but avoid skin or eye contact. Toxic - Ineffective against tubercle bacilli, spores and viruses. - Neutralized by soap and effectiveness reduced by organic material.

NOTE: The US/EPA and Cal/EPA categorized disinfectants (antimicrobials) as pesticides. All EPA registered antimicrobials must be used according to California worker safety regulations. This information is available in the California Code of Regulations (Title 3, Division 6). http://www.cdpr.ca.gov/docs/inhouse/calcode/subchpte.htm#0303