Appendix H Disinfectants (Advantages and Disadvantages)

Disinfectant Chart:

<table>
<thead>
<tr>
<th>Disinfectant Class</th>
<th>Bactericidal</th>
<th>Tuberculocidal</th>
<th>Pseudomonas sp.</th>
<th>Sporicidal</th>
<th>Virucidal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quaternary Ammon. Cpds.</td>
<td>good</td>
<td>none</td>
<td>fair</td>
<td>none</td>
<td>moderate</td>
</tr>
<tr>
<td>Phenolic Compounds</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>poor</td>
<td>moderate</td>
</tr>
<tr>
<td>Iodine</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>moderate</td>
<td>good</td>
</tr>
<tr>
<td>Chlorine Compounds</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
</tr>
<tr>
<td>Glutaraldehyde</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
</tr>
<tr>
<td>Alcohols</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>moderate</td>
</tr>
<tr>
<td>Acids/alkalies</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>good</td>
</tr>
<tr>
<td>Mercurials (not recommended)</td>
<td>fair</td>
<td>none</td>
<td>fair</td>
<td>none</td>
<td>fair</td>
</tr>
</tbody>
</table>

QUATERNARY AMMONIUM COMPOUNDS

Advantages
- + good disinfectant action - Gram (+) microbes
- + soluble in water and alcohol
- + generally nontoxic and non-allergenic
- + easily prepared and used
- + EPA registered as a disinfectant
- + inexpensive

Disadvantages
- - decreased activity against Gram (-) microbes
- - no sporidical activity
- - poor activity against pseudomonas
- - not effective against all nosocomial infections
- - lack tuberculocidal properties
- - poor activity against hydrophilic viruses
- - development of resistant bacterial strains
- - incompatible with soaps
- - inactivated by stoppers, gauze, cotton, etc.
- - reports of contact dermatitis

PHENOLICS

Advantages
- + wide spectrum of antimicrobial activity
- + readily miscible with additives (e.g. soap)
- + many formulations available
- + good sanitizer/germicide for housekeeping
- + phenol coefficient readily attainable
- + EPA registered as a disinfectant
- + good cleansing action

Disadvantages
- - relatively poor sporicide
- - skin and mucous membrane irritant
- - inactivated by organic matter
- - relatively expensive
- - possesses unpleasant odor
- - toxic
- - materials incompatible (stains and odors)

IODOPHORS

Advantages
- + powerful germicidal properties of iodine
- + readily miscible with water
- + relatively free of toxicity and irritancy
- + safe and convenient to use
- + stable in storage
- + EPA registered as a disinfectant
- + powerful detergent action
- + generally non-corrosive

Disadvantages
- - corrosiveness of some surfaces
- - unstable above 54°C
- - relatively expensive
- - not considered instrument-safe
CHLORINE COMPOUNDS

Advantages
+ wide spectrum of rapid biocidal properties
+ facility of handling and use
+ insignificant residues
+ acceptable odor
+ deodorizing/sanitizing properties
+ low levels of toxicity and irritancy
+ non-staining and colorless
+ low cost

Disadvantages
- sporidical properties questionable
- possible bronchial irritation from inhalation
- corrosion of metals
- bleaching effect on fabrics
- not registered as disinfectant by EPA
- skin irritation on prolonged contact
- general caustic effects
- product deterioration on standing
- non-wetting action
- possible CO-carcinogenic properties

GLUTARALDEHYDE

Advantages
+ broad spectrum of antimicrobial properties
+ good activity in presence of organic matter
+ low volatility (vapor pressure like water)
+ EPA registered as disinfectant
+ EPA registered as a sporicide
+ relatively rapid disinfecting action - 10 minutes
+ compatibility with metal, rubber, and plastic materials
+ nonflammable
+ low volatility (vapor pressure like water)
+ EPA registered as a sporicide

Disadvantages
- activation required
- rinsing required to remove residual disinfectant
- slightly to moderately toxic
- not recommended for carbon steel surfaces
- can cause allergic contact dermatitis
- tissue irritation (especially to eyes and mucous membranes)
- definite shelf-life

FORMALDEHYDE

Advantages
+ wide spectrum of biocidal properties
+ can be rapidly neutralized
+ stable when properly stored
+ active in the presence of organic matter
+ readily available
+ registered as a disinfectant by EPA
+ excellent vapor phase disinfectant paraformaldehyde
+ readily available
+ stable when properly stored
+ registered as a disinfectant by EPA

Disadvantages
- extremely pungent and suffocating odor
- can cause allergic dermatitis
- skin and mucous membrane irritant

ALCOHOLS

Advantages
+ highly effective bactericides
+ effective virucidal agents
+ pleasant odor
+ non-staining
+ easily obtainable and used
+ non-irritating
+ stable when stored properly
+ effective tuberculocidal agents
+ time to kill - in seconds
+ evaporation without residue formation
+ cleansing activity
+ generally nontoxic
+ inexpensive
+ non-allergenic

Disadvantages
- nonsporidical
- skin and mucous membrane irritation
- volatile flammable
- inventory and procurement problems
- activity against hydrophilic viruses questionable
- organic matter interference
- some incompatibility with rubber and plastic materials
- not registered as a disinfectant by EPA