

# Characteristics of Disinfectants

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**Agricultural Education Program**

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# Characteristics of Selected Disinfectants

FOR MORE INFORMATION, SEE THE 'DISINFECTION 101' DOCUMENT AT [www.cfsph.iastate.edu](http://www.cfsph.iastate.edu)

Disinfectant Category	Alcohols	Aldehydes	Biguanides	Halogens: Hypochlorites	Halogens: Iodine Compounds	Oxidizing Agents	Phenols	Quaternary Ammonium Compounds (QAC)
<b>Sample Trade Names</b>	Ethyl alcohol Isopropyl alcohol	Formaldehyde Glutaraldehyde	Chlorhexidine Nolvasan <sup>®</sup> Virosan <sup>®</sup>	Bleach	Betadyne <sup>®</sup> Providone <sup>®</sup>	Hydrogen peroxide Peracetic acid Virkon S <sup>®</sup> Oxy-Sept 333 <sup>®</sup>	One-Stroke Environ <sup>®</sup> Pheno-Tek II <sup>®</sup> Tek-Trol <sup>®</sup>	Roccal <sup>®</sup> DiQuat <sup>®</sup> D-256 <sup>®</sup>
<b>Mechanism of Action</b>	<ul style="list-style-type: none"> <li>•Precipitates proteins</li> <li>•Denatures lipids</li> </ul>	<ul style="list-style-type: none"> <li>•Denatures proteins</li> <li>•Alkylates nucleic acids</li> </ul>	<ul style="list-style-type: none"> <li>•Alters membrane permeability</li> </ul>	<ul style="list-style-type: none"> <li>•Denatures proteins</li> </ul>	<ul style="list-style-type: none"> <li>•Denatures proteins</li> </ul>	<ul style="list-style-type: none"> <li>•Denature proteins and lipids</li> </ul>	<ul style="list-style-type: none"> <li>• Denatures proteins</li> <li>• Alters cell wall permeability</li> </ul>	<ul style="list-style-type: none"> <li>• Denatures proteins</li> <li>• Binds phospholipids of cell membrane</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>•Fast acting</li> <li>•Leaves no residue</li> </ul>	<ul style="list-style-type: none"> <li>•Broad spectrum</li> </ul>	<ul style="list-style-type: none"> <li>•Broad spectrum</li> </ul>	<ul style="list-style-type: none"> <li>•Broad spectrum</li> <li>•Short contact time</li> <li>•Inexpensive</li> </ul>	<ul style="list-style-type: none"> <li>•Stable in storage</li> <li>•Relatively safe</li> </ul>	<ul style="list-style-type: none"> <li>•Broad spectrum</li> </ul>	<ul style="list-style-type: none"> <li>• Good efficacy with organic material</li> <li>• Non-corrosive</li> <li>• Stable in storage</li> </ul>	<ul style="list-style-type: none"> <li>• Stable in storage</li> <li>• Non-irritating to skin</li> <li>• Effective at high temperatures and high pH (9-10)</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>•Rapid evaporation</li> <li>•Flammable</li> </ul>	<ul style="list-style-type: none"> <li>•Carcinogenic</li> <li>•Mucous membranes and tissue irritation</li> <li>•Only use in well ventilated areas</li> </ul>	<ul style="list-style-type: none"> <li>•Only functions in limited pH range (5-7)</li> <li>•Toxic to fish (environmental concern)</li> </ul>	<ul style="list-style-type: none"> <li>•Inactivated by sunlight</li> <li>•Requires frequent application</li> <li>•Corrodes metals</li> <li>•Mucous membrane and tissue irritation</li> </ul>	<ul style="list-style-type: none"> <li>•Inactivated by QACs</li> <li>•Requires frequent application</li> <li>•Corrosive</li> <li>•Stains clothes and treated surfaces</li> </ul>	<ul style="list-style-type: none"> <li>•Damaging to some metals</li> </ul>	<ul style="list-style-type: none"> <li>• Can cause skin and eye irritation</li> </ul>	
<b>Precautions</b>	Flammable	Carcinogenic		Never mix with acids; toxic chlorine gas will be released			May be toxic to animals, especially cats and pigs	
<b>Vegetative Bacteria</b>	Effective	Effective	Effective	Effective	Effective	Effective	Effective	YES—Gram Positive Limited—Gram Negative
<b>Mycobacteria</b>	Effective	Effective	Variable	Effective	Limited	Effective	Variable	Variable
<b>Enveloped Viruses</b>	Effective	Effective	Limited	Effective	Effective	Effective	Effective	Variable
<b>Non-enveloped Viruses</b>	Variable	Effective	Limited	Effective	Limited	Effective	Variable	Not Effective
<b>Spores</b>	Not Effective	Effective	Not Effective	Variable	Limited	Variable	Not Effective	Not Effective
<b>Fungi</b>	Effective	Effective	Limited	Effective	Effective	Variable	Variable	Variable
<b>Efficacy with Organic Matter</b>	Reduced	Reduced	?	Rapidly reduced	Rapidly reduced	Variable	Effective	Inactivated
<b>Efficacy with Hard Water</b>	?	Reduced	?	Effective	?	?	Effective	Inactivated
<b>Efficacy with Soap/Detergents</b>	?	Reduced	Inactivated	Inactivated	Effective	?	Effective	Inactivated

? Information not found

*DISCLAIMER: The use of trade names does not in any way signify endorsement of a particular product.*

*For additional product names, please consult the most recent Compendium of Veterinary Products.*

REFERENCES: Linton AH, Hugo WB, Russel AD. Disinfection in Veterinary and Farm Practice. 1987. Blackwell Scientific Publications; Oxford, England; Quinn PJ, Markey BK. Disinfection and Disease Prevention in Veterinary Medicine, In: Block SS, ed., Disinfection, Sterilization and Preservation. 5th edition. 2001. Lippincott, Williams and Wilkins: Philadelphia.