

## Appendix E: Disinfectants and Properties

All surfaces should be cleaned thoroughly before disinfection. For basic disinfection, a 1:100 dilution of household bleach (i.e., 2.5 tablespoons per gallon) or a 1:1,000 dilution of quaternary ammonium compounds (e.g., Roccal or Zephiran) may be used. For disinfection when a particular organism has been identified, use the table below. All compounds require a contact time of  $\geq 10$  minutes. Local or state environmental health officers might have recommendations for appropriate disinfectant selection and precautions for environmental effect. Additional information is available from the Purdue University National Biosecurity Resource Center for Animal Health Emergencies. Available at [www.biosecuritycenter.org/dismixchrt.htm](http://www.biosecuritycenter.org/dismixchrt.htm).

### Chemical compounds used for disinfection, effectiveness of chemical disinfectants against certain organisms, and selected properties of chemical disinfectants that should be considered when used for cleaning and disinfection

Chemical compounds	Chlorine* 0.01–5%	Iodine iodophor 0.5–5%	Chlorhexidine 0.05–0.5%	Alcohol† 70%	Oxidizing agents 0.2–3%	Phenol 0.2–3%	Quaternary ammonium 0.1–2%
<b>Selected products</b>	Clorox®	Tincture/ Provodine	Nolvasan®	Rubbing alcohol	Virkon-S®	pHisoHex®	Roccal-D®
<b>Effectiveness of chemical disinfectants against certain organisms<sup>§</sup></b>							
<b>Bactericidal</b>	Good	Good	Good	Good	Good	Good	Good
<b>Bacterial spores</b>	Good <sup>¶</sup>	Poor	Poor	Poor <sup>¶</sup>	Fair to good	Poor	Poor
<b>Virucidal</b>	Good	Good	Poor	Fair	Good	Poor**	Poor
<b>Envelope viruses</b>	Yes	Yes	Limited	Yes	Yes	Limited	Limited
<b>Non-envelope viruses</b>	Yes	Limited	No	No	Yes	No	No
<b>Fungicidal</b>	Good	Fair	Fair to good	Good	Fair	Fair	Fair
<b>Protozoal parasites</b>	Fair (concentrated)	Poor	Poor	Poor	Poor	Poor	Fair (ammonia)
<b>Properties of chemical disinfectants<sup>††</sup></b>							
<b>Effectiveness in organic matter</b>	Poor	Poor	Fair	Poor	Poor	Good	Poor
<b>Inactivated by soap</b>	No	Yes	No	No	No	No	Yes
<b>Effective in hard water</b>	Yes	No	Yes	Yes	Yes	Yes	No
<b>Residual activity</b>	Poor	Poor	Good	Fair	Poor	Poor	Fair

**Source:** Adapted from the Nebraska Cooperative Extension and the U.S. Department of Agriculture, 2003.

- \* Bleach should be diluted to 1:32, mixed fresh daily and replaced whenever contaminated with organic matter (1:32 dilution of 5.75% solution provides > 1500 ppm chlorine).
- † Rubbing alcohol is flammable.
- § Effectiveness as a bactericidal, virucidal, or fungicidal agent and effectiveness in eliminating bacterial spores and protozoal parasites: Good indicates effective, Fair indicates some effect, Poor indicates inferior effect; Effectiveness in eliminating envelope and non-envelope viruses: Yes indicates effective, limited indicates moderate effect, no indicates not effective
- ¶ Alcohol synergistically potentiates the sporicidal effect of hypochlorites (chlorine). Mix 5.75% solution of hypochlorite 1:1 with 50% ethyl alcohol/water. Mix fresh at the time of use and provide contact time of at least 30 minutes.
- \*\* 2-phenylphenol (ortho-phenylphenol) is fair.
- †† Effectiveness in organic matter: Good indicates effective, fair indicates some effect, poor indicates inferior effect; Inactivated by soap and Effective in hard water: Yes indicates chemical compound has this property, No indicates chemical compound does not have this property; Residual activity: Good indicates chemical compound has residual activity, fair indicates some residual activity, poor indicates inferior residual activity