Table 7.4. Properties of some laboratory disinfectants[a]

	Active against							Inactivated by					Toxicity		
	Fungi	Bacteria		Myco-bacteria	Spores	Lipid viruses	Non-lipid viruses	Protein	Natural materials	Synthetic materials	Hard water	Detergents	Skin	Eyes	Lungs
		Gram-positive	Gram-negative												
Phenolic compounds	+++	+++	+++	++	–	+	v	+	++	++	+	C	+	+	–
Hypochlorites	+	+++	+++	++	++	+	+	+++	+	+	+	C	+	+	+
Alcohols	–	+++	+++	+++	–	+	v	+	+	+	+	–	–	+	–
Formaldehyde	+++	+++	+++	+++	+++[b]	+	+	+	+	+	+	–	+	+	+
Glutaral	+++	+++	+++	+++	+++[c]	+	+	NA	+	+	+	–	+	+	+
Lodophors	+++	+++	+++	+++	+	+	+	+++	+	+	+	A	+	+	–

[a] +++ good; ++ fair; + slight; – nil; v depends on virus; C cationic; A anionic; NA not applicable. [b] above 40 °C. [c] above 20 °C. Source: Adapted from reference *10* by kind permission of the publishers.

Some are toxic to the skin, eyes or lungs and care is needed in handling them. Eye protectors and gloves should be worn when chemical disinfectants are diluted for use. Table 7.4 gives the properties of some laboratory disinfectants.

Although different compounds and formulations may have specific applications, the "universal" disinfectant used in the health-care laboratory is chlorine, normally as sodium hypochlorite solution. Commercial formulations vary in the amount of available chlorine. Commercial solutions and household bleaches may contain 50 g/L (50 000 ppm). The final concentration for "clean" situations, i.e. general laboratory use is 1 g/L (1000 ppm) and the hypochlorite should be diluted to 1/50 with water. For blood spillages and blood-contaminated objects a stronger solution containing 5 g/L (5000 ppm) should be used, made by diluting the hypochlorite to 1/10 with water. Dilute hypochlorite solutions lose their activity when stored and solutions for use should be made up daily. Other chlorine-releasing compounds are available and are listed, along with the appropriate dilutions, in Table 7.5.

For further information on disinfectants see the *WHO Laboratory Biosafety Manual* (*2*) and other publications (*44–46*).

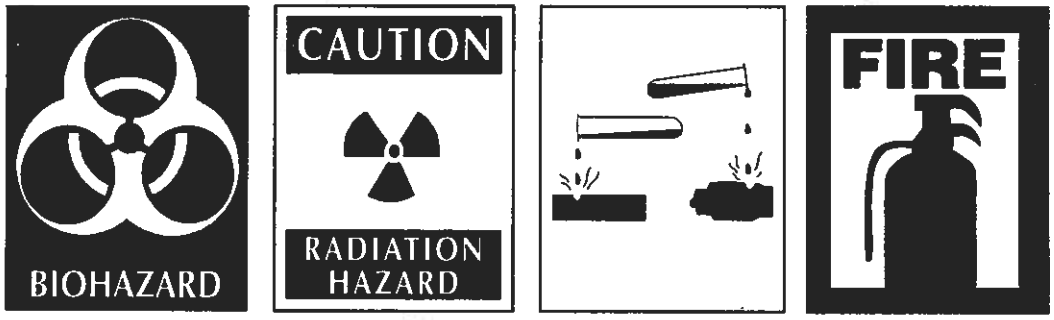
Table 7.5. Other chlorine-releasing compounds and recommended dilutions

	"Clean" conditions[a]	"Dirty" conditions[b]
Available chlorine required	0.1% (1 g/L)	0.5% (5 g/L)
Sodium hypochlorite solution (5% available chlorine)	20 mL/L	100 mL/L
Calcium hypochlorite (70% available chlorine)	1.4 g/L	7.0 g/L
NaDDC powder (60% available chlorine)	1.7 g/L	8.5 g/L
NaDDC tablets (1.5 g available chlorine per tablet)	1 tablet/L	4 tablets/L
Chloramine (25% available chlorine)	20 g/L	20 g/L

[a] After removal of bulk material. [b] For flooding, e.g. on blood or before removal of bulk material. Source: *WHO Laboratory Biosafety Manual*

WHO/LAB/97.1
Distr.: GENERAL
Original: ENGLISH

SAFETY IN HEALTH-CARE LABORATORIES



World Health Organization
Geneva