

Chemical	Techniques where used	Typical bench quantities and concs	Risks	Risk Numbers	Assigned maximum exposure limit (8hr, unless otherwise)	Controls required to work safely at typical bench quantities and concs	Further controls: Local rules / separate CoSHH
Acetic acid	General lab reagent. Destaining protein gels in methanolic solution	500ml @ 10% stock. 5% in 500ml destain	Flammable@ 100%. This material is strongly corrosive and causes serious burns.	R10 R35		GLP for bench concs & vols. Always handle stock volumes in FC	See separate assessment for decanting stocks
Acetic anhydride	Acetylation of proteins. In situ hybridization	25% in 100ul final volume. 0.25% in situ hybridization fix	Poison. Corrosive. Causes severe burns. Harmful if swallowed or inhaled. Causes severe respiratory irritation. Eye contact may cause serious irritation or burns.	R10-34			Undertake separate assessment
Acetone	General lab reagent	500ml	Highly flammable	R11 R36 R37 R38 R66 R67		GLP. Use nitrile gloves only	
Acetonitrile	HPLC solvent	5 litres @ 20%	Highly flammable. Toxic	R23/24/25		GLP	
Acrylamide	Gel electrophoresis	1 litre stock @ 40%	Toxic. May cause cancer. Possible teratogen. May cause heritable genetic damage. Readily absorbed through skin. Inhalation may be fatal. May cause CNS damage.	R23/24/25 R45/46 R48	MEL = 0.3mg/m ³		See separate assessment
Actinomycin D	Staining (intercalates with DNA)	Stock of 1ml @ 1mg/ml	Very toxic	R28			Undertake separate assessment
Ammonium acetate	General lab reagent	100ml @ 9.5M	Irritant	R36/37/38		GLP	
Ammonium chloride	General lab reagent	1 litre @ 1M	Irritant	R22-36		GLP	
Ammonium persulphate	10ml @ 15%	10ml @ 10%	Harmful	R8 R34 R22		GLP	
Ammonium sulphate	General lab reagent	100ml @ 1M		R36/37/39		GLP	
Benzamidine	Physiological or cellular assay buffers	5ml @ 10mM	Irritant	R36/37/38		GLP	
Benzene	THE USE OF THIS CHEMICAL IS PROHIBITED – CONTACT YOUR SAFETY OFFICER IF HOLDING STOCKS						
Benzidine	THE USE OF THIS CHEMICAL IS PROHIBITED – CONTACT YOUR SAFETY OFFICER IF HOLDING STOCKS						

Chemical	Techniques where used	Typical bench quantities and concs	Risks	Risk Numbers	Assigned maximum exposure limit (8hr, unless otherwise)	Controls required to work safely at typical bench quantities and concs	Further controls: Local rules / separate CoSHH
Boric acid	Molecular biology reagent	1 litre @ 4M in TBE buffer	Harmful. May cause harm to the unborn child	R63 R62 R36/37/3		GLP	
Botulinum toxin	Used as a neurotoxin		Extremely hazardous	R26/27/28			Undertake separate assessment
Bromophenol Blue	DNA staining	10ml @ 0.3% in loading	Harmful	R21 R36/37/3		GLP	
Bungarotoxin	Used as a neurotoxin	1ml @ 1mg/ml	May be fatal if enters bloodstream	None assigned		GLP for bench concs & vols	See separate assessment for preparing toxin
Butan-1-ol	Solvent		Harmful. Flammable.	R10 R36/37		GLP	
Butan-2-ol	Solvent		Harmful. Flammable.	R10 R36/37 R67		GLP	
Caesium chloride	Nucleic acid purification	76g per 100ml	Irritant, may be harmful	None assigned		GLP	
Calcium carbonate	Physiological reagent	1 litre @ 1M	Irritant	R37/38 R41		GLP	
Calcium chloride	Physiological reagent	100ml @ 100mM	Irritant, may be harmful	R22 R36/37/3		GLP	
Calcium hydroxide	General lab reagent	500ml	Corrosive - causes burns. Strongly exothermic on mixing with water or acids	R34 R36 R37 R38		GLP	
Calcium phosphate	Physiological reagent	0.2M	Irritant	R36/37/38		GLP	
Chloralose	Anaesthetic	100ml @ 10%	Harmful	R20/22			Undertake separate assessment ("anaesthesia")
Chloroform	General lab reagent	500ml	Probable human carcinogen. Inhalation and ingestion are harmful and may be fatal. Irritant.	R20 R22 R38 R40 R48	OES = 2ppm		Undertake separate assessments
Cholera toxin	Cell culture, disruption of cellular processes	10ml @ 10ug/ml	Harmful	R21/22 R36/37/38		GLP for bench concs & vols	See separate assessment for preparing toxin
Chromic acid	Cleaning glassware	500ml	Toxic. May cause cancer by inhalation. Causes severe burns	R49 R8 R25 R35 R43			Undertake separate assessment
Colchicine	Disruption of mitosis	ug quantities	Very toxic	R26/28		GLP for bench concs & vols	See separate assessment for preparing toxin
Copper sulphate	Stain (Alcian blue)	5% working concentration	Harmful	R22 R36/38/50/53		GLP	

Chemical	Techniques where used	Typical bench quantities and concs	Risks	Risk Numbers	Assigned maximum exposure limit (8hr, unless otherwise)	Controls required to work safely at typical bench quantities and concs	Further controls: Local rules / separate CoSHH
Curare (tubocurarine)	Cholinesterase inhibitor	ug quantities	Toxic	R		GLP for bench concs & vols	See separate assessment for preparing toxin
Cyanogen bromide	Protein cleavage. Affinity chromatography	mg quantities	May be fatal if inhaled, swallowed, or absorbed through skin. Explosive in solid state.	R26/27/28 R36/37/38			Undertake separate assessment
Diaminobenzidine	Peroxidase staining	20ml @ 0.1%	Toxic	R:22 R36/37/38		GLP. Purchase in tablet form only. Inactivate with 1% hypochlorite before discarding to drains	
Diethyl pyrocarbonate	Preparation of RNase free solutions	25 ml stock. Working conc is 1:1000	Toxic	R23/24/25 R36/37/38		GLP for bench concs & vols. Stock must be handled in fume cupboard	
Dimethyl dichlorosilane	Coating glass to increase hydrophobicity	5% in 100ml trichloroethane	Highly flammable. Corrosive. Extremely destructive to tissue of mucous membranes and upper respiratory tract	R11 R36/37/38			Undertake separate assessment
Dimethyl formamide	Solvent	100% working concentration for dissolving & storing reagents	Harmful. May cause harm to the unborn child	R61 R20/21 R36		GLP. Handle stock in fume cupboard	
Dimethyl sulphate	Nucleic acid sequencing		Very toxic. May cause cancer. Extremely destructive to tissue of mucous membranes and upper respiratory tract	R45 R34 R43	MEL = 0.05ppm, 0.26mg/m ³		See separate assessment
Dimethyl sulphoxide	Cell culture, dissolution of reagents	500ml stock	Experimental tumorigen and teratogen. Experimental reproductive effects	R36 R37 R38		GLP	
Dinitrophenol	Uncoupling oxidative phosphorylation	0.1M working concentration	Highly flammable. Toxic	R23/24/25 R36/37/38		GLP	
Dithiothreitol (DTT)	Reducing agent for proteins	10ml @ 1M	Irritant	R36/37/38		GLP	
DNA/RNA polymerases	Molecular biology	2ul @ 10units per ul		None assigned		GLP	
Ethanol	Histology Tissue fixation DNA/RNA purification	50 ml @ 100%	Highly flammable	R1 R36/37/38		GLP. Store as 500ml stock on bench	

Chemical	Techniques where used	Typical bench quantities and concs	Risks	Risk Numbers	Assigned maximum exposure limit (8hr, unless otherwise)	Controls required to work safely at typical bench quantities and concs	Further controls: Local rules / separate CoSHH
Ether (diethyl ether)	Solvent, anaesthetic		Highly flammable. This material is a serious fire and explosion risk. Vapour may travel considerable distances to ignition sources. May form explosive peroxides on storage.	R12 R19 R22 R66 R67	STEL = 500ppm		Undertake separate assessment
Ethidium bromide	Staining of nucleic acids Plasmid preparation	Stock = 10mg/ml, working conc = 0.01mg/ml	Toxic	R46-36/37/38		GLP. Purchase in tablet form or as stock solution. Do not make up from powder.	
Ethylenediamine tetra-acetic acid (EDTA)	General lab reagent	1 litre @ 0.5M	Harmful	R22 R36/37/38		GLP	
Epoxy resins (EPON, Araldite)	EM embedding		Harmful. Corrosive	R22 R36/38 R5 R40			See separate assessment on EM preparation
Ethylene oxide	EM dehydration	1ml	May cause cancer	R40	MEL = 5ppm		See separate assessment on EM preparation
Fasciculin	Cholinesterase inhibitor	ug quantities	Very toxic	None assigned		GLP	See separate assessment for preparing toxin
Formaldehyde	Fixative. Northern (RNA) blotting	≥100ml @ 37%	Very toxic by inhalation, ingestion and through skin absorption. Readily absorbed through skin. Possible cancer hazard. Mutagen.	R10 R26 R27 R28 R34 R40 R41 R43	MEL = 2 ppm		See separate assessments
Formamide	Nucleic acid hybridization. Northern (RNA) blotting	100 ml @ 50% in RNA/DNA hybridization solutions	Teratogen - may cause reproductive abnormalities. Contact with strong oxidizers may cause fire or explosion.	R37/38 R41 R61			See separate assessment
Formic acid	General lab reagent	1 litre stock	Corrosive, causes severe burns. Readily absorbed through skin. Very destructive of mucous membranes and upper respiratory tract, eyes and skin. Inhalation may be fatal.	R35		GLP for bench concs & vols. Always handle stock volumes in FC	See separate assessment for decanting stocks
Glutaraldehyde	EM tissue fixation	Use @ 5%	May be fatal if inhaled. Highly toxic. May act as a sensitizer. Harmful if absorbed through skin. Very destructive of mucous membranes. May cause allergic reaction.	R23 R25 R34 R42 R43 R50	MEL = 0.05ppm, 0.2mg/m ³		See separate assessment
Glycerol		100ml @ 10%	Non-hazardous	None assigned		GLP	

Chemical	Techniques where used	Typical bench quantities and concs	Risks	Risk Numbers	Assigned maximum exposure limit (8hr, unless otherwise)	Controls required to work safely at typical bench quantities and concs	Further controls: Local rules / separate CoSHH
Glycine	Gel electrophoresis buffer system	2 litres @ 0.192 M, working	Non-hazardous	None assigned		GLP	
Guanidine hydrochloride	Nucleic acid purification	1litre @ 6M working concentration	Harmful by ingestion. Skin, eye and respiratory irritant.	R22 R36 R37 R38		GLP	
Guanidinium isothiocyanate	Nucleic acid purification	1litre @ 4M working concentration	Harmful if swallowed or inhaled and in contact with skin.	R20 R21 R22 R32 R36 R37 R38		GLP	
Halothane	Anaesthetic		Harmful. May cause harm to the unborn child	R61 R36 R20 R41 R40			See separate assessment
HEPES	Buffering solution	100ml @ 1M stock	May be harmful	None assigned		GLP	
Hydrochloric acid	Preparing buffer solutions	>50ml @ 1N	Extremely corrosive. Inhalation of vapour can cause serious injury. Ingestion may be fatal. Liquid can cause severe damage to skin and eyes.	R23 R35		GLP for bench concs & vols. Always handle stock volumes in FC	See separate assessment for decanting stocks
Hydrofluoric acid	Protein cleavage		Causes burns. Toxic if absorbed through skin. Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.	R26/27/28 R35			See separate assessment
8-Hydroxyquinoline	Stabilizing phenol solutions	0.1% working concentration	Harmful if swallowed.	R22		GLP	
IPTG (isopropyl β-D-thiogalactopyranoside)	Molecular biology reagent	10ml @ 25mg/ml	Non-hazardous	None assigned		GLP	
Lead acetate	EM fixation		Toxic. May cause harm to the unborn child. Risk of cumulative effects	R61 R33 R50/53 R62			See separate assessment
Lysozyme	Molecular biology reagent	2mg/ml	May be harmful	None assigned		GLP	
Magnesium chloride	Physiological reagent	100ml @ 1M		None assigned		GLP	
Magnesium sulphate	Physiological reagent	100ml @ 1M	Irritant	None assigned		GLP	
Manganese chloride	PCR reagent	10ml @ 1M	Harmful	R22,36/37/38 R40		GLP	

Chemical	Techniques where used	Typical bench quantities and concs	Risks	Risk Numbers	Assigned maximum exposure limit (8hr, unless otherwise)	Controls required to work safely at typical bench quantities and concs	Further controls: Local rules / separate CoSHH
2-Mercaptoethanol	Reducing agent for proteins	25ml stock. 2-5% working concentrations	Toxic by inhalation, ingestion and through skin contact. Severe eye irritant. Readily absorbed through the skin.	R20 R22 R24 R37 R38 R41		GLP for bench concs & vols. Always handle stock volumes in FC	Store @ 4°C
MES (2-(N-Morpholino)ethane sulfonic acid)	Buffering solution	100ml @ 1M	Non-hazardous	None assigned		GLP	
Methanol	General lab reagent	500ml	Highly flammable. Toxic	R11 R23/25		GLP	
Methyl methacrylate	Surgical adhesive	10ml	Highly flammable. Toxic	R11 R23 R25			Undertake separate assessment
MOPS (morpholinopropane-sulphonic acid)	Buffering solution	100ml @ 1M	Irritant	R36/37/38		GLP	
Nitric acid	General lab reagent	>50ml @ 1M	Highly toxic. Corrosive - causes severe burns. Ingestion or inhalation may be fatal.	R8 R35		GLP for bench concs & vols. Always handle stock volumes in FC	See separate assessment for decanting stocks
Nitrogen (liquid)	Cryogenic storage	>1 litre	Causes severe burns in contact with skin esp. eyes. Asphyxiant by displacement of oxygen. Metal @ liquid nitrogen temps will condense oxygen posing explosion risk.	None assigned			Observe local rules for handling liquid nitrogen
Nucleotides (NTPs, dNTPs, ddNTPs)	Molecular biology	1ml @ 100mM	Non-hazardous	None assigned		GLP	
Osmium tetroxide	EM fixation	4% stock, 1ml @ 1% working concentration	Contact with combustible material may cause fire. Very toxic by inhalation, in contact with skin and if	R26/27/28-34			See separate assessment on EM prep
Paraformaldehyde	Fixative. Catecholamine stain	4% in water, can be several litres. As dry powder	Harmful if swallowed or inhaled and in contact with skin. Skin, eye and respiratory irritant.	R20/22 R36/37/38 R40 R43			Undertake separate assessments
Penicillin/Streptomycin	Tissue culture	10U/ml pen 10ug/ml strep	May cause harm to the unborn child	R22 R61		GLP	
Periodic acid	PAS staining	0.6% working concentration	Caustic. Oxidizing agent	R8 R34		GLP for bench concs & vols. Always handle stock volumes in FC	
Phalloidin	Binding to actin		Extremely hazardous	R26/27/28			Undertake separate assessment
Phenol	Purification of nucleic acids	50ml stocks	Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes and skin.	R24/25 R34	MEL = 5 ppm		Observe local rules for handling phenol at all times
Phosphatidylcholine (lysolecithin)	Cell membrane permeabilization		Irritant	R36/37/38		GLP	

Chemical	Techniques where used	Typical bench quantities and concs	Risks	Risk Numbers	Assigned maximum exposure limit (8hr, unless otherwise)	Controls required to work safely at typical bench quantities and concs	Further controls: Local rules / separate CoSHH
Phosphoric acid	De-scaling water still. Bradford protein assay	50% asde-scaling agent. 8.5% in protein assay.	Corrosive. Harmful if swallowed and in contact with skin. Harmful through inhalation.	R34		GLP	See separate assessment for decanting stocks
Phosphorus pentoxide	Dessicating agent in freeze drying		Corrosive - causes severe burns	R35		GLP	
Picric acid (trinitrophenol)	Fixative with paraformaldehyde	4% in water, can be several litres	Highly flammable. Toxic.	R1 R4 R23/24/25			Undertake separate assessment
Picrotoxin	Binds to GABA-linked chloride channels		Very toxic	R26/27/28			Undertake separate assessment
Piperidine	Sequencing reagent		Highly flammable. Very toxic.	R11 R23/24 R34			Undertake separate assessment
Potassium chloride	Physiological reagent	500ml @ 0.5M stock		None assigned		GLP	
Potassium dihydrogen orthophosphate	Physiological reagent	500ml @ 0.5M stock	Irritant	R36		GLP	
Potassium hydroxide	General lab reagent	100ml @ 1M	Very corrosive. Causes severe burns. May cause serious permanent eye damage. Very harmful by ingestion	R35		GLP	
Propylene oxide	Dehydrating agent	10ml	Extremely flammable, low boiling point, low flash point, very wide explosion limits. Probable carcinogen. May alter genetic material. May cause impaired	R12 R20 R21 R22 R36 R37 R38 R45	MEL = 5 ppm, 12mg/m ³		See separate assessment on EM prep
Proteinase K	Lysis buffers	200ug/ml	Irritant, may be harmful	R20 R42/43 R36/37/3		GLP	
Pyridine	Protein chemistry reagent		Highly flammable. Harmful	R11 R20/21/2			Undertake separate assessment
Restriction enzymes	Molecular biology	10ul @ 1 unit per ul		None assigned		GLP	
RNase A	DNA purification	10ml @ 20mg/ml	May be harmful	None assigned		GLP	
Rubidium chloride	Cell transformation	100mM, 200ml stock	May be harmful	None assigned		GLP	
Silver nitrate	Stain	0.8% working concentration	Corrosive, toxic	R34 R50/53		GLP	
Sodium acetate	Molecular biology reagent	100ml @ 3M	May be harmful	None assigned		GLP	

Chemical	Techniques where used	Typical bench quantities and concs	Risks	Risk Numbers	Assigned maximum exposure limit (8hr, unless otherwise)	Controls required to work safely at typical bench quantities and concs	Further controls: Local rules / separate CoSHH
Sodium azide	Preservative	100ml stock 0.1M	Ingestion or inhalation may be fatal. Material is readily absorbed through skin	R28 R32		GLP	
Sodium cacodylate	Perfusion fixative. Buffer	0.2M working concentration	May be fatal if swallowed. Known carcinogen in humans. NB contains arsenic				See separate assessment
Sodium carbonate	Physiological reagent	500ml @ 0.5M stock	Irritant	R36		GLP	
Sodium chloride	Physiological reagent	100ml @ 3M		R36/37/38		GLP	
Sodium citrate	Physiological reagent	100ml @ 1M		None assigned		GLP	
Sodium deoxycholate	Buffer	1% stock. 0.01% working concentration		R22 R37		GLP	
Sodium dihydrogen orthophosphate	Physiological reagent	500ml @ 0.5M stock	Irritant	R36/37/38		GLP	
Sodium dodecyl sulphate	Reducing agent	100ml @ 10%	Irritant	R20/22 R42 R36/37/38 R41		GLP. Weigh in fume cupboard when making stock solution from powder	
Sodium fluoride	Use as physiological toxin	100ml @ 0.1M	Very toxic by ingestion, inhalation and skin contact. May cause burns. Severe eye irritant	R25 R32 R36 R38		GLP	
(di)Sodium hydrogen phosphate	Physiological reagent	500ml @ 0.5M stock	Irritant	R36/37/38		GLP	
Sodium hydroxide	General lab reagent	100ml @ 10N	Very corrosive. Causes severe burns. May cause serious permanent eye damage. Very harmful by ingestion	R35	STEL = 2 mg/m ³	GLP	
Spermidine	Denaturing nucleic acids	1ml @ 100mM	Corrosive	R34		GLP	
Sulphuric acid	General lab reagent	>50ml @ 1M	Extremely corrosive, causes serious burns. Highly toxic. Harmful by inhalation, ingestion and through skin contact. Ingestion may be fatal. Skin contact can lead to extensive and severe burns	R35 R36 R37 R38 R49		GLP for bench concs & vols. Always handle stock volumes in FC	See separate assessment for decanting stocks
TEMED (tetramethylethylenediamine)	Reducing agent	25ml stock. 20-50ul in gels.	Harmful if inhaled or swallowed. Corrosive - causes burns. Irritant.	R11 R20 R22 R34 R36 R37 R38		GLP for bench concs & vols. Always handle stock volumes in FC	

Chemical	Techniques where used	Typical bench quantities and concs	Risks	Risk Numbers	Assigned maximum exposure limit (8hr, unless otherwise)	Controls required to work safely at typical bench quantities and concs	Further controls: Local rules / separate CoSHH
Tetrahydrofuran	Solvent		Highly flammable. Harmful	R11 R19 R36/37			Undertake separate assessment
Tetraisopropyl pyrophosphoramidate (iso-OMPA)	Cholinesterase inhibitor		Extremely hazardous	R26/27/28		GLP for bench concs & vols	See separate assessment for preparing neurotoxin stocks
Tetrodotoxin (TTX)	Used to characterize sodium channels in excitable membranes.		Very toxic by ingestion, inhalation and skin contact.	R26/27/28		GLP for bench concs & vols	See separate assessment for preparing neurotoxin stocks
Trichloroacetic acid	Precipitation of nucleic acids	100ml @ 5%	May be fatal if swallowed. Corrosive causes burns.	R35		GLP	
1,1,1-Trichloroethane	Solvent	100ml	Harmful	R20 R59		GLP. Handle in FC at all times. Wear nitrile gloves only.	
Triethanolamine	Solvent. In situ hybridization	0.1M in situ hyb mix.		None assigned		GLP	
Tris base/HCl	Buffering solution	1 litre @ 1M stock	Irritant	R36/37/38		GLP	
Triton X100	Detergent, permeabilizing agent	1-10% working concentrations	Harmful if swallowed.	R22 R41		GLP. Always wear safety spectacles when handling stock	
Uranyl acetate	EM fixative	2%working concentration	Very toxic	R26/28-33-51/53			See separate assessment on EM prep
Urea	Molecular biology reagent	1 litre @ 1M stock	Harmful	R40 R36/37/38		GLP	
Urethane	Anaesthetic. Electrophysiology	50% for anaesthesia	Carcinogen	R45			Undertake separate assessment
X-gal	Molecular biology reagent	25mg/ml stock, 1mg/ml working		None assigned		GLP	
Xylene cyanol	DNA staining	10ml @ 0.3% in loading	Irritant	R36/37/38		GLP	
Zinc acetate	Protein precipitation	0.1M working concentration	Harmful if swallowed.	R22		GLP	
Xylene	Histology	200ml @ 100%	Possible risk of impaired fertility. May cause harm to the unborn child.	R10 R20/21 R38		GLP. Handle in FC at all times. Wear nitrile gloves only. Replace with Histoclear where possible	