



THE UNIVERSITY  
OF BIRMINGHAM

# Health and Safety Guidance

## Guidance for Risk Assessment in Workshops

**GUIDANCE/10/RAW/98**

This Guidance is issued to assist those who are carrying out risk assessments in workshops. It identifies a wide range of hazards that can be present in a workshop and model controls that may be appropriate to control these hazards. However, this document does not identify all possible hazards. Assessors should ensure that they have identified **all** the hazards that are associated with their particular activities.

The Guidance should be used in conjunction with the University Risk Assessment Guidance GUIDANCE/17/RA/00.

Further information and advice may be obtained from the Health and Safety Unit.

## Contents

	Page
1. Use of Cutting and Rotating Machinery	1
2. Welding, Brazing and Heat Treatment	2
3. Use of Pressing, Stamping and Moulding Machinery	3
4. Assembly of Components	3
5. Fabrication and Maintenance of Electrical Equipment	4
6. Glass Blowing	4
7. Handling and Storage of Materials and Equipment	5
8. The Working Environment	6
9. Emergencies	7

The Legislation, Policies and Guidance referenced were up to date when published this Guidance was issued. Details of revisions can be obtained from the University Health and Safety Unit or by accessing <http://www.hsu.bham.ac.uk/univ/univdocs.htm>

### Abbreviations

COSHH	Control of substances hazardous to health
LEV	Local exhaust ventilation
PPE	Personal protective equipment

# 1. USE OF CUTTING & ROTATING MACHINERY

Hazard	Possible harm	Model Controls
Contact with cutting parts	Cuts Entanglement	Correct guarding in place Authorised users only who are competent having had instruction and training
Contact with other moving parts	Cuts Entanglement Crush	No loose clothing or jewellery Long hair tied back Use of eye protection Key references: Abrasive Wheels HS(G)17
Hit by ejected material/equipment	Cuts, fracture (machine tools) Cuts, bruising (materials) Cuts (waste)	Drilling machines HS(G)44 Turning NIS/10/02 Combination machines NIS/10/13 Sawing NIS/10/12 Guillotines HS(G)42 Bending/rolling NIS/10/07 Guidance on Equipment Provided for Use at Work GUIDANCE/1/EPUW/99
Injury from lifting and handling materials and tools	Back strain etc.	Manual handling assessment/training Key ref: Manual Handling Policy UHSP/6/MHO/95
	Cuts/abrasions/crush	PPE, gloves & boots (remove gloves when machining)
	Toxic/contamination (material, swarf, oils etc.)	COSHH assessment, information, hygiene arrangements Key ref: Assessment, <i>Pro forma</i> and guidance: UHSP/15/HS/00, S 2 Making a Chemical Hazard & Risk Assessment USP/90/CHRA/16 Control Measures, Good Chemical Practice: UHSP/15/HS/00, S 3.1
Exposure to harmful substances	Dermatitis from contact with cutting fluids/lubricants	COSHH assessment, information, hygiene arrangements Key ref: as above
	Exposure to dust/fume	COSHH assessments, controls may include LEV and PPE Key ref: as above
Physical hazards from the machine and the environment	Loss of hearing from noise	Noise assessment, PPE (If you cannot hear clearly what someone is saying in a normal voice 2m away a noise assessment is required.)
	White finger from vibration	Correct design/installation
	Burns from hot machine parts and material	Machine guarding, warning signs, authorised users who are competent
	Cuts, bruising etc. (slips, trips)	Good housekeeping Key ref: Guidance on Equipment Provided for Use at Work GUIDANCE/1/EPUW/99
Poor workstation design including space and working position	Muscle or joint damage, fatigue etc.	Assess work station design Key ref: Workstation Design GUIDANCE/5/WD/98
Exposure to dust from material being machined	Fire/explosion	Authorised users only who are competent, LEV, design, maintenance, good housekeeping Key ref: Guidance on Equipment Provided for Use at Work GUIDANCE/1/EPUW/99

## 2. WELDING, BRAZING & HEAT TREATMENT

Hazard	Possible harm	Model Controls <i>ALL WORK TO BE DONE BY AUTHORISED PERSONS WHO HAVE HAD INSTRUCTION AND TRAINING</i>
Compressed gasses	Fire or explosion Asphyxiation due to oxygen enriched atmosphere or excess quantity of shielding gases Toxic effects	Assess if welding/brazing/heat treatment is necessary All equipment to be maintained in good condition Use of flashback arrestors Good general ventilation COSHH assessment of toxic effects Key guidance: Assessment, <i>Pro forma</i> and guidance: UHSP/15/HS/00, S 2 Making a Chemical Hazard & Risk Assessment USP/90/CHRA/16 Control Measures, Good Chemical Practice: UHSP/15/HS/00, S 3.1
Generation of heat	Burn from contact with flame, hot material or spatter	Correct PPE including overalls, aprons, gloves, boots etc.
	Fire, explosion	Keep flammable/explosive materials away Good housekeeping
Production of fume	Risk to health if inhaled	COSHH assessment, controls will include LEV and may require PPE Key guidance: Assessment, <i>Pro forma</i> and guidance: UHSP/15/HS/00, S 2 Making a Chemical Hazard & Risk Assessment USP/90/CHRA/16 Control Measures, Good Chemical Practice: UHSP/15/HS/00, S 3.1 Control of exposure to fume from welding, brazing and similar processes HSE guidance note EH55, Assessment of exposure to fume from welding and allied processes HSE guidance note EH54
Use of electricity	Shock, burn, fire	Use correct procedures Key ref: Electrical Safety in Arc Welding HS(G)118
Exposure to ultra violet, electromagnetic, infra-red radiation	Harm to eyes and exposed skin of operator and others in vicinity	Correct selection and use of eye protection for operator. Screening to protect others. No one in the vicinity with pacemakers
Exposure to radiation (from using thoriated tungsten welding electrodes)	Effects of radiation	Use alternative type of electrodes if possible Seek advice from the Health and Safety Unit
Use of materials to clean items being worked on	Skin, eye contact or inhalation of hazardous substances	COSHH assessment, controls may require PPE Key guidance: Assessment, <i>Pro forma</i> and guidance: UHSP/15/HS/00, S 2 Making a Chemical Hazard & Risk Assessment USP/90/CHRA/16 Control Measures, Good Chemical Practice: UHSP/15/HS/00, S 3.1

### 3. USE OF PRESSING, STAMPING & MOULDING MACHINERY

Hazard	Possible harm	Model Controls
Contact with crushing parts	Amputation, fracture, bruising	Correct guarding in place Authorised users only who are competent having had instruction and training No loose clothing or jewellery long hair tied back Use of eye protection Key ref: Power press regulations 1965 & 1972
Contact with other moving parts	Cuts Entanglement Crush	
Hit by ejected material/equipment	Cuts, bruising (materials)	
Injury from lifting and handling materials and tools	Back strain etc.	Manual handling assessment/training Key ref: Manual Handling Policy UHSP/6/MHO/95
	Cuts/abrasions/crush	PPE, gloves & boots (remove gloves when machining)
	Toxic/contamination (material, swarf, oils etc.)	COSHH assessment, information, hygiene arrangements Key ref: Assessment, <i>Pro forma</i> and guidance: UHSP/15/HS/00, S 2 Making a Chemical Hazard & Risk Assessment USP/90/CHRA/16 Control Measures, Good Chemical Practice: UHSP/15/HS/00, S 3.1
Physical hazards from the machine environment	Loss of hearing from noise	Noise assessment, PPE (If you cannot hear clearly what someone is saying in a normal voice 2m away a noise assessment is required.)
	Cuts, bruising etc. (slips, trips)	Good housekeeping
Poor workstation design including space and working position	Muscle or joint damage, fatigue etc.	Assess work station design Key ref: Workstation Design GUIDANCE/5/WD/98 Guidance on Equipment Provided for Use at Work GUIDANCE/1/EPUW/99

### 4. ASSEMBLY OF COMPONENTS

Hazard	Possible harm	Model Controls
Use of adhesives	Skin contact, inhalation of fumes	COSHH assessment Key guidance: Assessment, <i>Pro forma</i> and guidance: UHSP/15/HS/00, S 2 Making a Chemical Hazard & Risk Assessment USP/90/CHRA/16 Control Measures, Good Chemical Practice: UHSP/15/HS/00, S 3.1
Finishing work (including cleaning, painting etc.)	Inhalation of dust and fumes	COSHH assessment Key guidance: As above
Poor workstation design including space and working position	Muscle or joint damage, fatigue etc.	Assess work station design Key ref: Guidance on Workstation Design GUIDANCE/5/WD/98
Manual Handling	Strain/sprains, cuts	Manual handling assessment Key ref: Manual handling operations UHSP/6/MHO/96
Use of lifting equipment	Injury due to failure of the equipment etc.	Ensure equipment is not overloaded and is regularly inspected and maintained (Lifting equipment must be inspected every 14 months) Key ref: Guidance on Equipment Provided for Use at Work GUIDANCE/1/EPUW/99
	Injury due to lack of training	Authorised users who are competent and have had instruction and training

## 5. FABRICATION & MAINTENANCE OF ELECTRICAL EQUIPMENT

Hazard	Possible harm	Model Controls
Incorrectly assembled/ faulty components	Shock, burn, fire, explosion	Work carried out by authorised persons only who have had instruction and training Live components insulated Correct fusing Use of Residual Current Devices (RCDs)
Live working	Shock, burn	Work carried out by authorised persons only who have had instruction and training Assessment made to see if live working is necessary Use of isolating transformers Earth free zones Key ref: Electricity at Work Regulations 1989
Static	Shock, explosion	Equipment designed to minimise shock Adequate earthing
Soldering	Burns from hot soldering iron, spatter and spillage from solder bath	Good working practice PPE
	Risk to health from soldering fume	COSHH assessment including the use of LEV Key ref: As above for COSHH assessments
Manufacturing of electrical components	Risk of exposure to chemicals, fume and other hazardous substances	COSHH assessment including the use of LEV, PPE Key ref: As above for COSHH assessments

## 6. GLASS BLOWING

Hazard	Possible harm	Model Controls
Open flames	Burn, fire	Good working practices Clean rubbish free working areas Flammable substances correctly stored Flames extinguished as soon as possible
Hot materials Splatter	Burns	Wear PPE e.g. gloves, aprons, eye protection etc. Keep flammable materials away
Splinter	Cuts	Take care handling and when disposing of waste glass Keep workplace clean Wear PPE including gloves
Manual Handling	Sprain/strain	Carry out manual handling assessments Key ref: Manual handling operations UHSP/6/MHO/96
Poor workstation design including space and working position	Muscle or joint damage, fatigue etc.	Assess work station design Key ref Guidance on Workstation Design GUIDANCE/5/WD/98

## 7. HANDLING & STORAGE OF MATERIALS & EQUIPMENT (including delivery, to and from storage, to and in use and disposal)

Hazard	Possible harm	Model Controls
Delivery vehicles reversing/manoeuvring	Being struck/trapped Inhalation of exhaust fumes	Minimise need to reverse/manoeuvre Keep clear Deliver at non-busy times
Storage/disposal of hazardous substances (fire/explosion/chemical reaction etc.)	Burns etc. Pollution	COSHH assessments, compliance with University policies Key refs: As above for COSHH assessments Identification and Storage, Arrangements for Keeping and Storage of Hazardous Substances: UHSP/15/HS/00, S 5 The Keeping of Liquefied Petroleum Gases (LPG) in Cylinders & Cartridges: USP/88/LPG/10 Waste Disposal, Special Waste UHSP/15/HS/00, S7.1 Discharges of Liquid Waste to University Sewers UHSP/15/HS/00, S7.2
Exposure to harmful substances when handling (chemicals resins, oils etc.)	Contact with skin, eyes or inhalation	COSHH assessment, controls may require PPE Key ref: As above for COSHH assessments
Heavy and awkward loads, difficult travelling routes, awkward unloading and storage positions	Sprains, strains etc. to various parts of body	Carry out manual handling assessments including eliminating, mechanising and minimising manual handling. Suitable steps etc. Key ref: Manual handling operations UHSP/6/MHO/96
Materials with rough surfaces and sharp edges	Cuts mainly to hands	Eliminate/cover rough surfaces if possible Wear suitable PPE including gloves
Unsuitable storage (not strong enough unstable, too high etc.)	Injury due to collapse etc.	Ensure storage arrangements suitable e.g. do not overload, put heavy items at bottom, minimise height etc.
Use of lifting equipment	Injury due to failure of the equipment etc.	Ensure equipment is not overloaded and is regularly inspected and maintained (Lifting equipment must be inspected every 14 months)
	Injury due to lack of training	Authorised users who are competent and have had instruction and training

## 8. THE WORKING ENVIRONMENT

Hazard	Possible harm	Model Controls
Slipping and tripping	Cuts, bruising, fractures etc.	Good layout and sufficient space Dry, non slip floors Tidy access routes and work areas Regular removal of waste and rubbish Key ref: Workplace (Health, Safety & Welfare) Regs 1992 Non slip footwear Key ref: Safety Footwear-Policies & Procedures USP/90/SF/17
Unsuitable lighting e.g.: insufficient, glare, dazzle, strobe effects	Injury from contact with machinery Slipping and tripping Eye strain	Good lighting design and maintenance/cleaning of lights Carry out lighting survey if necessary Key ref: Workplace (Health, Safety & Welfare) Regs 1992, Lighting at work HS(G)38
Extreme cold	Injury when handling or using machinery due to lack of dexterity in fingers	Maintain reasonable temperatures Key ref: Workplace (Health, Safety & Welfare) Regs 1992, (Minimum temp 16°C usually)
Poor general ventilation	Build up of dust/fume, excessive heat	Ensure ventilation system is adequate and is regularly maintained Carry out ventilation survey if necessary Key ref: Workplace (Health, Safety & Welfare) Regs 1992
Lack of/inadequate maintenance of equipment	Shock/burn from electrical equipment	Maintenance system in place and up to date Key ref: Guidance on Equipment Provided for Use at Work GUIDANCE/1/EPUW/99 Equipment (Equipment Rated up to 240v) UHSP/5/CITEE/95
	Cut, bruise or fracture etc. mechanical equipment	Inspection and Testing of Electrical Equipment (Equipment rated over 240v and up to and including 415v) UHSP/12/ITEE/97 Guidance on Equipment Provided for Use at Work GUIDANCE/1/EPUW/99
Use of hand tools	Cut, bruise or fracture etc.	Keep tools in good condition Authorised users only who are competent having had instruction and training
Incorrect use of display screen equipment	Musculoskeletal problems	Assess use of display screen equipment Key ref: Display Screen Equipment Use UHSP/7/DSE/96
Entry, use of equipment by unauthorised persons	Injury from machinery, chemicals, etc.	Only authorised persons allowed entry and to use equipment Key ref: Guidance on Equipment Provided for Use at Work GUIDANCE/1/EPUW/99
Inadequate hygiene arrangements	Contamination of the skin	Good washing facilities available Clean overalls/coats available Key ref: Workplace (Health, Safety & Welfare) Regs 1992
Unsuitable work patterns	Injury due to fatigue, lack of concentration	Suitable work patterns



## 9. EMERGENCIES

Hazard	Possible harm	Model Controls
Accident	Injury	First aiders available Procedures in place and people aware of them
Fire	Injury	Fire training up to date Suitable fire fighting equipment available and in good condition Procedures in place and people aware of them Key ref: Fire Safety UHSP/4/FS/01
Bomb threats	Injury	Procedures in place and people aware of them
Chemical spills	Contamination of skin and eyes Inhalation of vapour or fumes	Procedures in place and people aware of them Remedial equipment available COSHH assessment Key ref: Assessment, <i>Pro forma</i> and guidance: UHSP/15/HS/00, S 2 Making a Chemical Hazard & Risk Assessment USP/90/CHRA/16 Control Measures, Good Chemical Practice: UHSP/15/HS/00, S 3.1
Loan/out of hours working	Being injured but no one being aware that help is required	Assess if work is suitable to be done alone (Machinery, electrical work, welding etc. should not be done alone) Key ref: Safety supervision, out of hours activities and unattended equipment and apparatus UHSP/8/SSOHA/96

g:\laww7text\guidance\10raw.doc  
updated 18 July 2002