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## **INTRODUCTION**

This health and safety guidance is provided to assist teachers and technicians in the provision of safe working conditions for all users of art, design and technology facilities in schools. The guidance should also help teachers and technicians to ensure that they comply with the relevant health and safety legislation.

The general provisions set out in the Health and Safety at Work etc Act 1974 must be met, along with the provisions of the regulations listed below:

- the Control of Substances Hazardous to Health Regulations 1999
- the Health and Safety (Display Screen Equipment) Regulations 1992
- the Lifting Operations and Lifting Equipment Regulations 1998
- the Management of Health and Safety at Work Regulations 1999
- the Manual Handling Operations Regulations 1992
- the Personal Protective Equipment at Work Regulations 1992
- the Pressure Systems and Transportable Gas Containers Regulations 1989
- the Provision and Use of Work Equipment Regulations 1998
- the Workplace (Health, Safety and Welfare) Regulations 1992

## **Further Information**

In addition, further publications which relate more specifically to art, design and technology, are:

- *Safety in Practical Studies*, Safety Series No. 3, DFE, HMSO, 1981
- *Drilling Machines Guarding of Spindles and Attachments*, C65, HMSO, October 1988
- *COSHH Risk Assessment for Technology in Secondary Schools*, Consortium of Local Education Authorities for the Provision of Science Services, 1990
- BS 4163, *Code of Practice for Health and Safety in Workshops of Schools and Similar Establishments*, 2000
- BS 5304, *Code of Practice for Safety of Machinery*, 1984
- BS 5498, *Specification for the Safety of Hand Operated Paper Cutting Machines*, 1977
- BS EN 292, *Safety of Machinery. Basic concepts, general principles for design*. Parts 1 and 2, 1991
- BS EN 292, *Safety of Machinery. Safety distances to prevent danger zones being reached by the upper limbs*
- Electricity at Work Regulations 1989
- Health and Safety (Safety Signs and Signals) Regulations 1996
- Highly Flammable Liquids and Liquefied Petroleum Gas Regulations 1972
- Noise at Work Regulations 1989

In addition, the LEA has established its own code of practice, which must be adhered to by LEA-maintained schools. In the case of LEA-controlled schools the employer is technically the LEA, but under financial arrangements for LMS money for health and safety may have been delegated to individual schools. The Health and Safety at Work etc Act 1974 places a responsibility on all school staff to ensure that they maintain and operate a safe working environment and adopt safe working practices. It is the aim of these guidance notes to help teachers and technicians to ensure safe practice in art, design and technology and to inform school managers so that they can carry out their monitoring and review role.

Further guidance may be obtained from the Design and Technology Association, 16 Wellesbourne House, Walton Road, Wellesbourne, Warwickshire, CV35 9JB or from their website [data.org.uk](http://data.org.uk).

### **RISK ASSESSMENT: ART, DESIGN AND TECHNOLOGY**

This section contains a general risk assessment form, which can be photocopied as many times as necessary to refer to the appropriate information and legislation highlighted in this section, to ensure that a suitable and sufficient assessment of risks is made.

Once the hazards that exist in Art, Design and Technology have been identified, it will be necessary to evaluate and assess risks from the hazards. This can be easily achieved by using a scoring system to ascertain the degree of risk for a given hazard. Procedures can then be devised to reduce risks to health and safety in each area. These procedures will need to be communicated to those whose health and safety may be affected.

The checklist forms should also be used to check that health and safety procedures have been adopted from the risk assessments. This will monitor the effectiveness of those procedures; but where it is shown that they are not working properly, it will mean that the risk assessment needs to be reviewed so that new health and safety procedures can be adopted.

Conducting risk assessments, adopting health and safety procedures, then monitoring the effectiveness of these by using the checklist forms, will help in complying with the Health and Safety Executive's (HSE) Guidance on Successful Health and Safety Management.

### **RISK ASSESSMENT IN PRACTICE**

#### **Using the form:**

The following form will provide the assessor with a 'prompt list' guiding them through the risk assessment. It is important to ensure that it is used as a tool for improving awareness of hazards at work and an appreciation of the necessity for control measures, and **not as a maintenance checklist**. The assessor should:

- Identify specifically what is being assessed, i.e. stating the department or site or work activity such as a primary school, the administrative section etc.
- Identify the hazards present using the various sections of the form, taking into consideration:
- Consider what actually happens, i.e. practice may differ from the written work procedure;
- Analyse non-routine operations, e.g. maintenance etc; and
- Analyse interruptions to the work activity.
- When identifying who is at risk from the identified hazard ensure that all groups of employees and any others who may be affected are considered i.e. night cleaners, maintenance staff, security staff, young, inexperienced, disabled or lone workers.

- Identify the existing arrangements to control risks, i.e. codes of safe working practice, guarding, personal protective equipment, training, monitoring systems etc.

You will need to consider if the systems are working properly and when any further action is needed to ensure they are properly updated and maintained.

- Having identified the hazards, people affected by them and any control measures present, the risk can be classified using the risk assessment scoring system. This will enable a **low, medium or high** rating to be allocated.

When allocating the score for:

- C Consequences** - ensure that you arrive at **the most probable** result of the potential accident being considered, e.g. the most probable result of a pupil falling over on a poorly maintained playground surface, would be a minor ailment (cut/bruise/bumps)(score 1), not a temporary disability necessitating 3 weeks lost time (score 50), which could happen if the pupil broke a leg, but it is not the most probable result. It may be helpful to study historical accident data to help to decide on your score.
  - E Exposure** - ensure that you consider how many times people are exposed to the hazard e.g. an employee in a Special School having to assist disabled pupils may be exposed to handling hazards many times daily (score 10).
  - P Probability** - ensure that you consider the actual likelihood of an accident occurring from the hazard e.g. many people lift and handle objects during their working day but how many would have an associated accident? Using this example, it would be very unlikely that the accident would occur from the hazard present (score 0.5).
- By using the scoring system above the assessor is able to classify the risks present into low/medium/high, and make a judgement as to what further action is required to control the risks identified within an appropriate timescale i.e. an action plan.

### **Timescales for action**

Following risk assessment, the assessor must evaluate the need for action, taking account of the classification. As a general rule the timescales below are suggested.

LOW	Ongoing monitoring required. Any action deemed necessary should be taken within 12 months.
MEDIUM	Action required within the current school term, dependent on the hazards identified.
HIGH	Immediate action may be appropriate. Steps must be taken to reduce the risk within a maximum of 1 month.

**GENERAL RISK ASSESSMENT FORM**

**Risk Assessment Scoring**

**C Consequences** - most probable result of the potential accident

Death		Score 100
Permanent disability	(inc amputation or impairment of any function)	50
Temporary disability	for more than 3 weeks	25
	for 3 days to 3 weeks	5
	for less than 3 days	3
Minor ailment	cuts, bruises, bumps and no lost time	1

**E Exposure** - the frequency of occurrence of the hazard event

Hazard present:	many times daily	Score 10
	once a day	6
	once a week to once a month	3
	once a month to once a year	2
	less often than once a year	1

**P Probability** - likelihood of accident sequence following to completion

Very likely	Score 10
Likely to occur	6
Possible	3
Very unlikely	0.5

A multiplication of the three values will give an overall risk score. This will enable a judgement to be made as to action required.

Risk Score	Judgement	Classification
0 - 100	Risk could be acceptable	LOW
100 - 200	Hazard requires attention	MEDIUM
200 +	Hazard requires urgent attention/action control measures	HIGH

**Timescales for action**

Following risk assessment, the assessor must evaluate the need for action, taking account of the classification. The timescales below are suggested.

- LOW Ongoing monitoring required. Any action deemed necessary should be taken within 12 months.
- MEDIUM Action required within the current school term, dependent on the hazards identified.
- HIGH Immediate action may be appropriate. Steps must be taken to reduce risk within a maximum of 1 month.

### GENERAL RISK ASSESSMENT FORM

Name in BLOCK capitals:
Signature:
Location
Time: <span style="float: right;">Date:</span>

WHAT ARE THE HAZARDS WHICH MAY BE CAUSED	Who/what may be harmed? <small>(give specific groups of people eg staff, visitors, contractors, pupils, cleaners, disabled etc. and estimate numbers; include significant property damage)</small>	What is done now? <small>(ie provision of training, school and education standards complied with, existing codes of safe working practice, protective equipment, guarding, supervision, monitoring systems, specific assessments under health and safety regulations eg COSHH, DSE, noise, manual handling, fire etc).</small>	How bad is the risk? <small>(It may help to use the risk assessment scoring system, C x P x E to evaluate the risk as LOW, MEDIUM or HIGH.</small>	What needs to be done? <small>(What action should be taken or needs to be considered in order that the risks identified are effectively controlled.)</small>	By when? <small>(What is the target date for completion?)</small>
<b>Slips/trips and falls?</b> (ie wet/slippery/poorly maintained floors, poor storage, trailing cables, work at heights).  <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> </ul>					
<b>Manual handling injuries?</b> (ie handling stationery/equipment/other people, excessive stretching/reaching; handling inconvenient shapes/abrasiveness/sharpness).  <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul>					

<p><b>Contact/Impact with objects, equipment and substances?</b> (ie being struck by falling/flying particles/objects, trapping fingers, use of hand tools, substances causing burns/scalds).</p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> </ul>					
<p><b>Fire or Explosion?</b> (ie poor storage/waste management of fire systems, arson/terrorist activities, building works, smoking).</p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> </ul>					
<p><b>Injury from assaults?</b> (ie working alone, special needs supervision).</p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> </ul>					
<p><b>Other consequences or hazards not otherwise listed?</b> (ie Use this space for continuation if necessary)</p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> </ul>					
<p><b>Other risk assessments relevant to this document include:</b></p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> </ul>					

<p><b>Injury from use/contact with machinery?</b> (ie use of wood/metalwork/printing/catering/laundry/lifting equipment, conflict with traffic and use of DSE)</p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul>					
<p><b>Electric Shock?</b> (ie work/maintenance on electrical systems, static shock, tampering, careless use of electricity, insufficient sockets)</p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul>					
<p><b>Exposure to Hazardous Substances/ Environments?</b> (ie use of chemicals/cleaning fluids, presence of dusts/fumes/ Noise/hot liquids and surfaces, thermal environment and exposure to infectious diseases/materials)</p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul>					

Activities/Hazards	Who/what may be harmed?	What is done now?	How bad is the risk?	What needs to be done?	By when?

## **ART, DESIGN AND TECHNOLOGY WORKSHOPS**

### **Objective**

To ensure that a safe working environment is maintained in each art, design and technology area. Some sections of the checklist are concerned with the installation of equipment and services; others are concerned with the general maintenance of workshops. The checklist is available on the next few pages.

### **Key Points**

Workshops vary in size and a key issue is to establish the maximum number of pupils who can work safely in each room. There is no specific legislation on class size (except in Scotland where all practical classes are restricted to 20 pupils) but since the Education Act 1918 the accepted maximum class size in workshops has been 20 pupils per teacher. No new regulations have been issued.

A number of factors need to be considered when determining the size of any class and it is the responsibility of the Head, in consultation with teachers, to decide on what constitutes a safe number of pupils using any particular room.

The principal factors governing any decision are:

- (a) the degree of supervision required for an activity, eg: the use of machines, chemicals, and heat treatment
- (b) the age and experience of pupils
- (c) any behavioural problems associated with any of the pupils in the group
- (d) the number of pupils with special needs
- (e) the expertise of the teacher
- (f) the provision of a working space, which includes a vice, for every pupil in the group
- (g) the extent of technician support.

Many of the checks relating to workshops should be carried out every time a room is used, while a formal audit should be carried out once a year.

### Floor Space

All gangways, spaces between benches and machines should be free from obstruction. Store all stools safely when they are not in use.

Floor surface should be non-slip.

### Lighting

All room lights should work. Flickering fluorescent lights should be replaced immediately. Lights should be free from dust and fitted with a protective diffuser or wire mesh.

Supplementary lighting to machines should be low voltage and all cables and fittings should be in good condition. Activities, which require sharp tools, may also need supplementary lighting.

### Heating and Ventilation

If blown air heating is used, the filters should be clean. The heating system should heat the room to the required temperature (see *Workplace (Health, Safety and Welfare) Regulations 1992* in section 1).

Normal ventilation requirements should apply in art, design and technology areas except in:

- (a) ceramics areas and kiln rooms
- (b) darkrooms
- (c) spray booths
- (d) casting and welding areas.

Expert advice should be sought from the LEA or the manufacturers of the ventilation equipment. Advice on kilns may also be sought from the Institute of Ceramics. Further information on spray booths can be found in *Safety in Practical Studies* (Safety Series No 3, DES, HMSO, 1981).

Dust extraction should be fitted to circular saws, planers, band saws and sanders. Dust extraction units should be marked "Wood Dust Only" or "Metal Only". Softwood dust, which includes MDF, was assigned a Maximum Exposure Limit (MEL) in January 1997. This means that exposure must be reduced to the lowest level reasonably practicable, and in any event must not exceed the MEL, which is 5Mg/M3.

### Acids

A competent person should only make up acid solutions. Use gloves, protective clothing and chemical grade eye and/or face protection. Eye protection should comply with BS2092C (the "C" indicates it is chemical grade) or the new European Standard BS EN 1663.

Brass and/or plastic tongs should be available for placing work in and removing it from an acid bath.

### Electrical Installation

All electrical installations should comply with the current edition of the Institution of Electrical Engineers' *Regulations for Electrical Installations*.

All cupboards, which contain main electrical intake switchgear, should be free from all other items. They should not be used as additional storage space.

Each workshop or machine room should have a readily accessible, clearly labelled main circuit breaker, which is operated by a key. All isolators should be labelled clearly with the name of the machine, which is operated by the isolator. The handles to all isolators should move freely.

There should also be an independent stop button system in each room. This should comprise at least three easily accessible emergency stop buttons which are located at least 1.5m from the floor. All the machines, which are connected through the emergency stop button, should have controlled electric circuits. They should also be fitted with a no volt overload (NVOL) switch, ie: if the machine is switched on and the emergency stop button is pressed, the machine should stop and remain stopped, when power is returned to the circuit. Do not override interlocks.

Key switches should be fitted to all machines, which have restrictions on who can operate them, eg: circular saws, band saws (all models), planers/thicknessers and spindle-moulding machines.

The design and technology department should have a written policy on a safe code of practice for the use of key switches.

A residual current device (RCD) should protect all 13-amp sockets. All sockets should be in good condition and should be situated at a safe distance from any water supplies.

### Gas Supplies and Gas-Burning Appliances

The gas tap which controls the gas supply to the room should be marked with a sign meeting the requirements of the Health and Safety (Safety Signs and Signals) Regulations 1996 and should be sited near the door, 1.5m from the floor. The handle of the gas tap should turn easily.

The manufacturer should approve all connections from the gas supply to any equipment. Gas appliances should be positioned so that pupils cannot accidentally lean over them when working.

### Gas Kilns

Only members of staff who have received specialist training in firing procedures should operate gas kilns. These members of staff should be aware of the "lock-out" procedure and of how to prevent the risk of explosion by blow-back during lighting.

If kilns which are fuelled by bottled gas are used (they should only be used with the approval of the LEA or the governing body, whichever is the employer), the manufacturer's instructions for the safe siting and operation of kilns should be observed. All liquid petroleum gas (LPG) bottles should be stored in well-ventilated secure areas in accordance with the requirements of the Highly Flammable Liquids and Liquefied Petroleum Gases Regulations 1972.

### Water Supply and Drainage

Blocked or dirty sinks present a risk to health. Bottle traps should be fitted to sinks to prevent plaster, clay and other deposits causing blockages. They should be emptied and cleaned regularly. Usually this is likely to be done by the caretaker, but may be carried out by a competent teacher or technician.

Draining boards should be used for drainage purposes and not as storage space.

### Cleaning

It is suggested that work surfaces be wiped down three times after the use of clay and materials such as plaster. This should be done in order to prevent the accumulation of residues and clay dust. It is also suggested that when these materials are used work surfaces should be covered with newspaper or some other disposable material.

Floors should also be washed down and vacuumed using an industrial wet or dry vacuum cleaner. All equipment and tools, which have been used during the session, should be washed, as should glaze and slip buckets.

The cleaning contractor (or cleaning staff if employed by the school) should be informed about the hazard associated with pottery dust, which contains silica, and told that it must be cleaned either using a moist method or an industrial vacuum cleaner with a hazardous-dust filter.

### Control of Substances Hazardous to Health Regulations 1999

#### *Implications for design and technology departments in secondary schools*

The Control of Substances Hazardous to Health Regulations 1999 replace the Control of Substances Hazardous to Health Regulations 1994. One of the changes is to remove Maximum Exposure Limits (MEL) from the Regulations themselves in order to make updating more straightforward.

A number of additional substances have been allocated MELs and one of these is rosin-based solder flux fume. In the past it had an Occupational Exposure Standard (OES). A MEL is a much stricter standard. To comply with the regulations, it is usually necessary to undertake a programme of monitoring in order to demonstrate that the MEL is not normally exceeded (although a programme of monitoring need not be undertaken if the assessment shows that the level of exposure is most unlikely ever to exceed MEL).

Under COSHH there is a duty to prevent exposure or, where that is not possible, to control exposure. Therefore the first consideration now that rosin-based solder fume has been allocated a MEL should be whether or not exposure can be prevented. Rosin-free cored solder is available and therefore should be considered.

#### **Further Information**

Useful guidance on the provision of heating, lighting and ventilation is contained in DES Design Note 17, *Guidelines on Environmental Design and Fuel Conservation in Educational Buildings* (HMSO, 1981).

The British Gas publication *Guidance Notes on Gas Safety in Educational Establishments (IM 25)* provides further useful information on gas supplies and gas-burning appliances.

Information on fire equipment can be found in section 3.1, while details relating to first aid can be found in section 3.4.

**ART, DESIGN AND TECHNOLOGY WORKSHOPS**

Name in BLOCK capitals:	
Signature:	
Location:	
Time:	Date:

Item	Satisfactory		Fault	Action Required	Carried	Date
	Yes	No			Out By	Completed
Bottle traps						
Cleanliness						
Electrical installation						
Fire equipment						
First aid						
Floor space						
Gas supply						
Heating						
Lighting						
Storage						
<b>Ventilation</b>						
Water supply						
Other school specific						

## STORAGE OF ART, DESIGN AND TECHNOLOGY EQUIPMENT

### Objective

The objective of this form is to provide a checklist for use during an inspection of the storage facilities in art, design and technology areas. It also allows the results of any such inspection to be recorded. Refer to the next few pages for the relevant checklist.

### Key Points

#### Storerooms

Storage of equipment, materials and work in progress can create hazards if it is not organised. Circulation areas should not be used for storing items, even temporarily. Untidy, inaccessible and over-full storerooms also present obstacles to safe movement and create a potential fire risk

Storerooms should be large enough to meet the needs of the area they serve. When storage space is being planned, account should be taken of the range and type of activity, which it serves. For example, workshops where a lot of three-dimensional work is carried out require sufficient storage space for bulky materials and work-in-progress. If sufficient storage space for such activities is not provided, the result may be a potentially dangerous accumulation of materials and work-in-progress.

Appropriate measures should be taken to ensure that both stock and work-in-progress are stored tidily and that they are easily accessible.

Appropriate storage should also be provided for personal protective equipment and pupils' own clothing, which they remove before participating in art, design and technology lessons.

#### Specialist Storage

Special consideration should be given to the storage of:

- (a) Ceramics materials and work-in-progress - no combustible material should be stored in the kiln room.
- (b) Compressed gases, eg: propane, acetylene and liquefied petroleum gases (LPG), and flammable liquids - under the Highly Flammable Liquids and Liquefied Petroleum Gases Regulations 1972 up to 50 litres of highly flammable liquids may be kept in workrooms if stored in special, suitably marked and lockable metal storage bins or cupboards, which are designed and approved for the purpose.
- (c) Petroleum spirit and mixtures - these are subject to the Petroleum (Consolidation) Act 1928 as modified by the Petroleum (Regulation) Acts 1928 and 1936 and the Petroleum (Repeals and Modifications) Regulations 1974 and may be kept with other highly flammable liquids in a flammables cupboard or bin in quantities of less than 13.5 litres. Petroleum for use in motor vehicles (e.g. in school motor vehicle workshops) is subject to the Petroleum Spirit (Motor Vehicles etc) Regulations 1929, which stipulate that no more than two-gallon metal containers may be stored without a licence. If plastic containers are used, they must comply with the Petroleum Spirit (Plastic Containers) Regulations 1982. The legislation on petroleum is under review by the Health and Safety Commission (Consultative Document CD1 20 *Proposals for new petrol legislation* September 1997).

- (d) Corrosives - these should be stored in a low-sited, ventilated and lockable cupboard, which is lined with acid-resistant material, such as ceramic tiles, lead, stainless steel or stone.
- (e) Solvent-based adhesives - these should be kept in a locked cupboard.

### Racks and Storage Units

Racks and storage units should be positioned for ease of access and should not reduce or obstruct circulation space. High-level storage units should not be used for heavy equipment or materials. They may be used for other items if this cannot be avoided and if a safe means of access is provided.

Metals, plastics and wood should be stored tidily in racks, the ends of which should be protected. Items, which stick out from the ends of racks, present a hazard to any person walking by.

**STORAGE OF ART, DESIGN AND TECHNOLOGY EQUIPMENT**

Name in BLOCK capitals:	
Signature:	
Location:	
Time:	Date:

Item	Satisfactory		Fault	Action Required	Carried Out By	Date Completed
	Yes	No				
Ceramic areas						
Compressed gases						
Corrosives						
Flammable liquids						
Highly flammable liquids						
Personal protective equipment						
Petroleum spirit and mixtures						
Racks and storage units						
Storage spaces						
Other school specific						

## ART, DESIGN AND TECHNOLOGY TRAINING

### Objective

In art, design and technology areas the use of some machines is restricted to staff who have passed an approved training course or who have a certificate of competency for the use of the particular piece of equipment. The objective of this form is to provide a record of which staff have received training in the safe use of such equipment. The record should be updated each time a member of staff passes a training course. The training checklist is also provided in the next few pages.

### Key Points

Machines or processes for which schools should maintain a register of staff who have passed an approved training course and who hold a certificate of competence include:

- circular saws
- planing machines
- band-saws (all sizes and models)
- spindle moulding machines
- changing abrasive wheel
- welding - oxyacetylene welding, arc welding, MIG (metal inert gas) welding
- gas-fired kilns
- molten metal casting
- drilling machines
- wood-turning lathe
- machine sanders
- mortising machines
- centre lathes
- shaping machines
- electric arc welding
- oxyacetylene welding.

If staff do not have a certificate of competency for a particular piece of equipment, then they should not use it.

When a member of staff passes a training course both the staff member and the tutor should sign the form in the space indicated.

### Further Information

The Woodworking Machines Regulations 1974 and the Abrasive Wheels Regulations 1970 have both been completely revoked by the Provision and Use of Work Equipment Regulations 1998.

There is now an Approved Code of Practice made under the Provision and Use of Work Equipment Regulations 1998, *Safe Use Machinery*, which lays down the standards for the use of woodworking machines.

The standards are largely the same as those previously in the Woodworking Machines Regulations 1974, but there have been some changes which will have implications for schools.

Regulation 15 of the Provision and Use of Work Equipment Regulations 1998 introduced a new requirement to fit braking devices to reduce the rundown time of cutting tools on woodworking machines where the risk assessment shows that this is necessary. The Approved Code of Practice and guidance from the HSE indicates that such braking devices are considered necessary for the following machines used in schools: circular saw benches; narrow band saws; thicknessing machines and planing/thicknessing machines. The Approved Code of Practice indicates the date by which the braking devices must be fitted to the various machines. These vary from five to seven years.

**ART, DESIGN AND TECHNOLOGY TRAINING**

Type of training	Circular Saw		Planing Machines		Band-Saw		Spindle Moulding Machine	
Training Provided By								
Date								
Trainee Name	Staff	Tutor	Staff	Tutor	Staff	Tutor	Staff	Tutor

Type of training	Abrasive Wheels		Welding (Oxy, Arc, MIG)		Molten Metal Casting		Gas Fired Kilns	
Training Provided By								
Date								
Trainee Name	Staff	Tutor	Staff	Tutor	Staff	Tutor	Staff	Tutor

## **LIST OF AUTHORISED PEOPLE**

### **Objective**

The head of the art, design and technology department may find it helpful to fix a list of the names of the staff who are permitted to use each machine to the front of the machine. The objective of this form is to allow the relevant information about those staff who are permitted to use each machine to be recorded. See checklist on the next page.

### **Key Points**

The head of the department should always fill in the form.

Members of staff should provide evidence in the form of a certificate of competence or qualification before they are authorised to use a particular machine.



## PERSONAL PROTECTIVE EQUIPMENT FOR ART, DESIGN AND TECHNOLOGY

### Objective

The objective of this form is to help to ensure that the personal protective equipment identified by a risk assessment, as required by the Personal Protective Equipment at Work Regulations 1992 and the Control of Substances Hazardous to Health Regulations 1994 is available and is suitable for use. Although these Regulations do not apply to pupils, good practice dictates that the same standards should be applied to the provision of personal protective equipment for pupils as are applied to that which is provided for members of staff.

### Key Points

Aprons play an important part in protecting pupils' clothing and should be worn when pupils are involved in practical work. A flameproof bib-top type is recommended. Aprons should be cleaned regularly and stored in a well-ventilated area. Old laboratory coats without buttons or old shirts should not be worn as protective clothing for art, design and technology.

Loose clothing, such as ties and unbuttoned cuffs, are a potential source of danger, as is long hair. Sleeves should be rolled up, ties should be removed and long hair should be tied back.

Any person who is wearing rings, gloves, loose sleeves or bandages should operate no machine.

Pupils should be encouraged to wear appropriate footwear. Teachers should bring it to pupils' attention that soft shoes and open-toe sandals offer little protection to objects falling on their feet or to sharp swarf which may be on the floor,

The condition of protective clothing should be checked at least once a term. Provision should also be monitored during periods when use is more extensive than normal.

### Eye Protection

Appropriate eye protection, which is suitable for intended use, should be available when certain procedures are to be carried out. The protection should be maintained in good condition and stored correctly.

Under the Personal Protective Equipment at Work Regulations 1992 new personal protective equipment is required to comply with European Standards (EN) and bear the EN mark. There is, however, no need to replace existing equipment if it already meets British Standards. The following table indicates the different types of protection.

<u>EN Standard</u>	<u>BS Standard</u>	<u>Protection</u>
EN166 S	BS 2092	General Purpose
EN166 B	BS 2092-1	Impact Grade 1
EN166 F	BS 2092-2	Impact Grade 2
-3	C	Chemical
-4	D	Dust
-9	M	Molten Metal
349	CDM	Chemical, Dust and Molten Metal

The procedures necessitating appropriate protection include:

- striking masonry nails
- removing paint or scale rust
- using abrasive wheels
- using corrosive substances
- breaking or bending metals with a hammer
- using compressed air to remove swarf
- gas welding or cutting (see BS 1542/BS 679 under *Welding or Brazing* below)
- fettling of metal casting
- cutting wood on a circular saw or band-saw
- using a disc or belt sander
- using a drilling machine
- cutting metal by machine.

Eye protection should be cleaned regularly and its condition should be checked every time it is used.

Consideration should be given to placing the appropriate eye protection by the machine or process for which it is required.

Optical spectacles alone do not provide adequate protection for eyes. Visors or special goggles, which fit over spectacles, are necessary.

Facilities should be provided for the irrigation of eyes, which have been affected by acid. At least one tap in each workshop should be fitted with a length of rubber tubing, as this is the easiest way to rinse eyes. Acid burns to the eyes should be referred to the local eye clinic for further treatment as soon as possible.

#### Molten Metal Casting

Eye protection, leather aprons, leather gaiters and gauntlets should be available for use when molten metal casting is being carried out.

#### Welding or brazing

Leather aprons, leather gloves and suitable eye protection should be used. The following indicates the requirements for eye protection.

The filters must comply with BS 679 or BS EN 169. In order to give adequate protection, the correct grade of filter must be used for the type of work being carried out. Welding filters are graded as follows.

Gas welding without flux	GW
Gas welding with flux	GWF
Electric welding	EW

There is also a scale corresponding to shade requirements, eg: 4-7 for gas welding and brazing of steel.

In addition the filter should be marked "R" for robust or "non-R" for non-robust. (If "non-R" it requires a backing lens marked "R" or with the appropriate impact grade.)

The frames of goggles and other forms of eye protection for welding should conform to BS 1542.

### Forging

As well as eye protection to BS 2092, *Specification for Eye-Protectors for Industrial and Non-industrial Uses*, or BS EN 166, leather aprons and leather gloves should be used.

**PERSONAL PROTECTIVE EQUIPMENT FOR ART, DESIGN AND TECHNOLOGY**

Name in BLOCK capitals:	
Signature:	
Location:	
Time:	Date:

Item	Satisfactory		Fault	Action Required	Carried	Date
	Yes	No			Out By	Completed
Aprons						
Bibs						
Eye protection						
Face protection						
Gaiters						
Gauntlets						
Gloves						
Laboratory coats						
Masks and respirators						
<b>Other</b>						

## **EQUIPMENT AND FIXED MACHINERY**

### **Objective**

The objective of this form is to provide a check-list which can be used to facilitate the recording of the results of regular safety inspections of all equipment and machines in art, design and technology areas. Refer to checklist on the next few pages.

### **Key Points**

The location of fixed machinery and equipment must meet the requirements of all safety regulations and expert advice should be sought before fixing positions.

It is recommended that these checks be carried out at least once per academic year while some items, such as the condition of transparent guards and the sharpness of cutters, should be checked every time the machine is used.

All machines, which are connected to an isolator and wired through the stop button system, should be tested for electrical safety at least once a year. A competent person who is trained to do this work must carry out all electrical testing. Some LEAs may have their own specification for the electrical installation of fixed equipment. If a machine fails any of the electrical tests then it should not be used until it is repaired or upgraded. A qualified electrician should repair it.

All machines and equipment should be individually numbered and all records should be cross-referenced to the machine number.

Staff must only operate equipment, which they are competent to use. Competence is a combination of both experience and training. Staff should normally hold a recognised certificate of competence, e.g. from the National Association of Advisers and Inspectors in Design and Technology (NAAIDT), before using circular saws, band saws, planers, thicknessers, disc sanders, abrasive wheels, etc. LEAs and colleges of higher education run training courses in the use of these machines.

Machines which are restricted to staff use, such as circular saws, band saws, planers, etc, should be fitted with a key switch. Schools may also decide to fit key switches to other machines to ensure that pupils with the permission of the teacher only use them.

### Electrical Safety Check

BS 4163, *Code of Practice for Health and Safety in Workshops of Schools and Similar Establishments*, states that where electrical equipment is installed it should be possible to isolate all electrical circuits which supply fixed equipment and socket outlets by means of a single switch disconnecter. In addition, an emergency stop system should be installed around the work area.

All machines, which are connected to an isolator and wired through the stop button system, should be tested for electrical safety at least once a year.

Areas, which should be checked, include whether:

- the machine passes the earth continuity test
- the machine passes the insulation test

- the on/off switch works - it should be a NVOL switch
- the key switch works
- micro-switches to door covers, etc work
- the foot stop switch works
- the low-volt light unit works
- the isolator works and the handle moves easily
- the flexible conduit from the machine to the isolator is in good condition.

Portable equipment, which is wired through a 13-amp plug, should be checked to ensure that:

- the electrical cable is in good condition
- the cable grip is secure
- the 13 amp plug is in good condition
- the machine has passed the portable electrical appliance inspection (see section 3.3)
- the on/off switch works.

### Dust Extraction

Under the Control of Substances Hazardous to Health Regulations 1999 both softwood and hardwood dusts have been assigned a maximum exposure limit (MEL). Consequently exposure to softwood and hardwood dust must be controlled to as low as is reasonably practicable and in any event below 5mg/m<sup>3</sup>. It is therefore necessary for dust extraction systems to be fitted to circular saws, band saws, planers, thicknessers and sanders unless the equipment is used for very limited periods. Dust extraction systems must be thoroughly examined and tested by a competent person at least once every fourteen months (schools would normally carry it out annually). It is also recommended that each time the machine is used the operator checks the electrical cable is in good condition and that the on/off switch works. The 13-amp plug should also be in good condition.

### Air Brushes

The inspection should include checks to ensure that:

- a spray extraction booth is used when solvent or spirit-based inks or paints are being used.
- if the air-brush uses a compressor with an air receiver, the air receiver and all associated pipework is tested annually - usually by the insurance company. (See *Safety of Pressure Systems: Pressure Systems and Portable Gas Containers Regulations 1989*, COP 37, Health and Safety Executive, 1989. *Compressors and Air Vessels*, for further information regarding small vessels.)
- water in the air receiver filter trap is drained on a regular basis
- a safety valve and a primary pressure gauge are fitted to the compressor.

### Arc Welding

Someone who has passed an approved training course should only use arc-welding equipment.

Protective clothing and eye protection should be available (see *Checklist: Personal Protective Equipment for Art, Design and Technology* earlier in this section).

Any inspection of arc welding equipment should include checks to ensure that:

- fume extraction is adequate
- screens around the welding area are effective and in good condition
- the metal welding bench is earthed by connection to the welding set earth terminal
- the arc welding set has an open circuit voltage of less than 50 volts
- all equipment complies with BS 638, *Arc Welding Power Sources, Equipment and Accessories*.

### Band-Saws

Any inspection of band saws should include checks to ensure that:

- the machine is securely bolted to the floor or bench
- the drive belt tension is correct
- the blade is clean and sharp
- the blade is tracking correctly
- the blade guides are in good condition and are correctly adjusted
- the bottom wheel brush is correctly adjusted
- all guards are in good condition and that they are correctly adjusted
- the brake works
- there is a good quality push stick by the machine.

The machine and dust extractor should be test run. It should be noted that all new band saws must be fitted with a braking device, which operates when the machine stop button is operated. For band saws already in use on 5 December 1998 a braking device must be fitted by 5 December 2005.

### Bench-Mounted Disc Sanders

Any inspection of bench-mounted disc sanders should include checks to ensure that:

- the machine is securely fixed to the bench
- the abrasive disc is secure
- the sanding table is adjusted as close as possible to the abrasive disc
- the abrasive disc is in good condition
- the abrasive disc is properly guarded - only the down-running quadrant should be exposed.

The machine and dust extractor should be test run.

### Bench-Mounted Shears

Any inspection of bench-mounted shears should include checks to ensure that:

- the shears are bolted down securely
- the handle restraint is in good condition (lock fitted)
- the blades are sharp
- the shearing action is properly adjusted.

### Bench or Floor-Mounted Belt Sanders

Any inspection of bench or floor-mounted belt sanders should include checks to ensure that:

- the machine is securely fixed to the bench
- the belt is tracking correctly
- the sanding table (if fitted) is adjusted as close as possible to the abrasive belt
- the abrasive belt is in good condition
- the abrasive belt is properly guarded - only the usable surface should be exposed.

The machine and dust extractor should be test run.

### Bubble Etch Tanks

All bubble etch tanks should be made by a reputable manufacturer.

Chemical grade eye and face protections, all persons who use bubble etch tanks should wear gloves and protective clothing.

Any inspection of bubble etch tanks should include checks to ensure that:

- the bubble etch tank is permanently installed to prevent it being knocked over accidentally
- plastic tongs are available for placing work in and removing work from the bubble etch tank.

Further details can be found in HSE Guidance Note CS 21, *The Storage and Handling of Organic Peroxides* (Health and Safety Executive).

### Buffing Machines

Wire brushes should never be used on grinding or buffing machines, or in place of a mop.

Any inspection of buffing machines should include checks to ensure that:

- the machine is securely bolted to the floor or bench
- the drive belt tension is correct
- the drive belt is fully guarded
- the guards to polishing mops are correctly adjusted
- The spindle ends are guarded
- the spindle speed of the machine in revolutions per minute (rpm) has been checked and is marked on the machine.

The machine should be test run.

### Circular Saws

Any inspection of circular saws should include checks to ensure that:

- the saw is bolted to the floor securely
- the drive belt tension is correct

- the riving knife is thicker than the plate of the blade (about 10%), is adjusted so that the distance from the teeth does not exceed 8mm at the level of the table, and the top is not more than 25mm from the top of the blade
- the top guard must be robust and capable of easy adjustment, extend below the roots of the saw teeth on each side, and extend from the top of the riving knife to a point as low as practicable at the cutting edge of the saw. When cutting squared stock the clearance should not exceed 12mm
- the finger-plate is in good condition and level with the top of the table
- pulley drives and the underside of the table are guarded fully
- the minimum saw-blade diameter is displayed on the saw bench
- the table fence and rise and fall mechanisms move easily
- the take-off table is the correct height and length (at least 1200mm from the up running side of the saw blade to the end of the table) and that it is rigid
- the saw fence is not too long (as a guide it should extend no more than 12mm and 30mm beyond the cutting edge)
- the push sticks are in good condition and to hand by the machine. The machine and dust-extraction system should be test run.
- All new circular saws must be fitted with a braking device, which operates when the stop button operates. For circular saws already in use on 5 December 1998 a braking device must be fitted by 5 December 2003.
- Limited cutter projection tools must be used where they are available. Where such tools are not available they must be introduced when replacements are purchased or by 5 December 2003, whichever is sooner.

### Compressors and Air Vessels

The Pressure Systems and Transportable Gas Containers Regulations 1989 apply to pressure systems, which contain a relevant fluid exerting a pressure of 0.5 bar above atmospheric pressure. Pressure systems used in school Design and Technology departments will come under the regulations. The regulations require that such pressure systems have a written scheme of examination and that examinations take place in accordance with the written scheme. However, it should be noted that certain small vessels are exempt from some of the regulations including the requirements with regard to written schemes of examination and the examination itself. Small vessels are those where the product of the pressure (in bars above atmospheric) in the pressure vessel or, in the case of a system having more than one vessel, the vessel with the largest internal volume and the internal volume (in litres) is less than 250, ie: if:  $P$  (in bars)  $\times V$  (in litres)  $< 250$ .

Nevertheless it should be noted that even for small systems some regulations still apply including Regulation 12 which requires that pressure systems are "properly maintained in good repair, so as to prevent danger". This implies that regular checks are necessary to ensure the plant remains in a safe condition.

These inspections should check, for example, lubricating fluids and coolants which often need to be regularly topped up or changed; particularly vulnerable areas such as expansion loops, bends and low points; and, where protective devices are liable to be rendered ineffective by accumulations of deposits or waste material. Also checks should be made to ensure protective devices are in efficient working order and are being maintained. Usually manufacturers/suppliers instructions will indicate what routine inspection or maintenance is necessary.

Inspections should also check that:

- water in the air receiver filter trap is drained on a regular basis
- a safety valve and primary pressure gauge is fitted to the compressor.

### Cranes, Hydraulic Jacks and Lifting Gear

The Lifting Operations and Lifting Equipment Regulations 1998 lay down the requirements with regard to the strength and stability of the lifting equipment, the way the equipment is positioned and installed, the organisation of lifting operations, the thorough examination and inspection of lifting equipment, the making of reports of thorough examinations and records of inspection and the keeping of information in the reports and records. Machinery and accessories for lifting loads must be clearly marked to indicate safe working loads. Lifting equipment in Design and Technology departments must be thoroughly examined at least every 12 months or in accordance with an examination scheme and each time exceptional circumstances liable to jeopardise the safety of the lifting equipment have occurred. A competent person must inspect equipment at suitable intervals between thorough examinations.

Any inspection of cranes, hydraulic jacks and lifting gear should include checks to ensure that:

- these pieces of equipment are tested annually by the insurance company
- all slings are in good condition.

### Drilling Machines

Any inspection of drilling machines should include checks to ensure that:

- the machine is securely bolted to the floor or bench
- the drive belt tension is correct
- the drive belts are fully guarded
- the rack and pinion return-spring works
- the chuck guard is clean, undamaged and correctly adjusted
- the plastic knobs to the ends of all handles are in place
- the headstock collar is secure
- the table stop collar is secure
- the machine vice is in good condition.
- The machine should be test run.

### Electrically Fired Kilns

Any inspection of electrically fired kilns should include checks to ensure that:

- the mains supply of electricity is turned off before the door can be opened
- bright warning lights indicate that the mains supply is on

- procedures exist for the supervision of pupils when kilns are loaded and unpacked
- kilns are situated in a working area which is protected by a cage
- kilns have an interlock system on the door complying with BS 5304.

#### Enamelling

Any inspection should include checks to ensure that:

- the kiln which is used for enamelling is of an approved type with totally enclosed elements
- only lead-free enamels are used.

#### Fly Presses

Any inspection of fly presses should include checks to ensure that:

- the fly press is securely bolted down
- the operating handle is locked when not in use
- the machine is lubricated and that all moving parts move easily
- the trapping area is guarded.

#### Gabro Guillotines

Any inspection of gabro guillotines should include checks to ensure that:

- the top and bottom dies are correctly adjusted
- the blade is sharp
- all return springs to handles and guides are in good condition
- guards to blades are undamaged
- the handle is locked when not in use.

#### Gas Brazing Hearths

*Any work to the gas supply must be carried out by a qualified gas fitter.*

Any inspection of gas brazing hearths should include checks to ensure that:

- the handle of the gas tap which controls the gas supply to the brazing hearth turns easily
- when the gas tap is closed the gas supply is cut off
- there is a non-return valve fitted to the gas supply
- the flexible hoses are in good condition
- the pilot light works
- the brazing hearth is securely bolted to the floor
- the heat-proof insulation is in good condition
- the torch controls move freely and shut off the gas supply
- the fume extraction works efficiently
- the ducts and pipework are free from damage and obstruction
- the electrical installation to the fume extractor passes the portable electrical appliance test (*see Checklist: Inspection of Portable Electrical Appliances* in section 3.2).

The machine and fume extraction system should be test run.

### Gas Forges

Any work to the gas supply must be carried out by a qualified gas fitter.

Any inspection of gas forges should include checks to ensure that:

- the handle of the gas tap which controls the gas supply to the forge turns easily
- when the gas tap is closed the gas supply is cut off
- there is a non-return valve fitted to the gas supply
- the flexible hoses are in good condition
- the pilot light works
- the forge is securely bolted to the floor
- the ceramic chips (if used) are in good condition
- the torch controls (if fitted) move freely and shut off the gas supply
- the fume extraction works efficiently
- the ducts and pipework are free from damage and obstruction
- the electrical installation to the fume extractor passes the portable electrical appliance test (see *Check-List. Inspection of Potable Electrical Appliances* in section 3.2).

The machine and fume extraction system should be test run.

### Guillotine Treadles

Any inspection of guillotine treadles should include checks to ensure that:

- the blades are sharp and in good condition
- the guards to the blade are in good condition and are set close to the blade
- the shearing action is properly adjusted
- the treadle is locked when not in use
- all the moving parts are lubricated and that they move easily.

### Hollow Chisel Mortise Machines

Any inspection of hollow chisel mortise machines should include checks to ensure that:

- the mortiser is securely bolted to the floor
- all moving parts work easily
- the chisel return mechanism works
- the hollow chisel is in good condition
- the machine vice holds the work securely.

The machine should be test run.

### Horizontal Grindstones

Staff who have undertaken and passed an appropriate training course may only change abrasive wheels. Any inspection of horizontal grindstones should include checks to ensure that:

- the horizontal grindstone is securely bolted to the floor or bench
- the drive belt tension is adjusted correctly
- the abrasive wheel is dressed correctly
- the abrasive wheel is in good condition
- the tool posts are secure

- the oil pump works efficiently
- the peripheral wheel speed in rpm has been checked and marked on the machine.

The machine should be test run.

### Hot Glue Guns

Any inspection of hot glue guns should include checks to ensure that:

- when it is not in use the glue gun is kept in a holder that stops the tip being touched
- the electric cable is in good condition
- the trigger glue stick feed (if fitted) works.

### Jigsaws or Scroll Saws

Any inspection of jigsaws or scroll saws should include checks to ensure that:

- the jigsaw is securely bolted down
- all guards are in place and in good condition
- the motor drive linkage is lubricated
- the hold-down arm (Hegner) is lubricated and easy to adjust
- the bellows (if fitted) are working.

The machine should be test run.

### Metal-Cutting Hacksaws

Any inspection of metal-cutting hacksaws should include checks to ensure that:

- the hacksaw is securely bolted to the floor
- the drive belt is adjusted to the correct tension
- the drive belt mechanism is fully guarded
- the hydraulic dash-pot control is effective
- all moving parts are lubricated
- the vice securely holds the work
- the blade is in good condition.

The machine should be test run.

### Metal-Turning Lathes

Any inspection of metal-turning lathes should include checks to ensure that:

- the lathe is securely bolted to the floor
- all drive belts and gears are completely guarded
- the drive belts are adjusted to the correct tension
- all moving parts are clean, lubricated and correctly adjusted
- the chuck guard is clean and that the micro-switch operates effectively
- the spindle or mandrel is guarded on the outer side of the headstock
- the coolant pump works satisfactorily.

The machine should be test run.

### MIG Welding

Someone who has passed an approved training course should only use MIG welding equipment.

Protective clothing and eye protection should be available (see *Checklist: Personal Protective Equipment for Art, Design and Technology* earlier in this section).

Any inspection of MIG welding equipment should include checks to ensure that:

- fume extraction is adequate
- the gas bottle gauge is in good condition
- the wire feed is working effectively
- the screens to the welding area are in good condition and effective
- the metal welding bench is earthed by connection to the welding set earth terminal
- all equipment complies with BS 638, *Arc Welding Power Sources, Equipment and Accessories*.

### Mitre Trimmers

Any inspection of mitre trimmers should include checks to ensure that:

- the blades are sharp
- the handle is locked when not in use
- the shearing action is properly adjusted
- all moving parts are lubricated and that they move easily.

### Molten-Metal Casting

Someone who has passed an approved training course should only use molten-metal casting equipment.

Protective clothing and eye protection should be available (see *Checklist: Personal Protective Equipment for Art, Design and Technology* earlier in this section).

Any inspection of molten-metal casting equipment should include checks to ensure that:

- low-level fume extraction is available
- oil-bonded sand is used, or if green sand is used water content is carefully monitored
- a pyrometer is available
- a sand tray is used under the mould or crucible
- only new LM4 aluminium is used.

### Off-Hand Grinding Machines

Staff who have undertaken and passed an appropriate training course may only change abrasive wheels. Any inspection of off-hand grinding machines should include checks to ensure that:

- the machine is securely bolted to the floor or bench
- the drive belt tension is correct
- the drive belt is fully guarded
- the guards to abrasive wheels are correctly adjusted
- transparent screens are clean, unscratched and to the correct British Standard

- the tool posts are adjusted close to the abrasive wheels
- the abrasive wheels are in good condition
- the peripheral wheel speed in rpm has been checked and marked on the machine.

The machine should be test run.

#### Oxyacetylene Welding (see section 3(2):13)

Someone who has passed an approved training course should only use oxyacetylene welding equipment.

Protective clothing and eye protection should be available (see *Checklist: Personal Protective Equipment for Art, Design and Technology* earlier in this section).

Any inspection of oxyacetylene welding equipment should include checks to ensure that:

- the cylinders are chained to a suitable trolley or that they are kept in a separate, well-ventilated cylinder store
- the electric lighting in the cylinder store is of an approved flame-proof type
- cylinders and gauges are kept away from all sources of lubricants and oils
- cylinder gauges are in good condition
- the key is left in the cylinder when the valves are open
- the hoses and hose connections are in good condition
- non-return valves are fitted to the hoses
- flash-back arresters are fitted
- there is a rest or holder for the torch
- low-level fume extraction is fitted to the welding bench.

#### Planer Surfacer, Planer Thicknessers and Planer Surfacer/Thicknessers

The inspection of all planers should include checks to ensure that:

- the planer is securely bolted to the floor
- all drive belts and chains are completely guarded
- the drive belts and chains are adjusted to the correct tension
- all moving parts are clean, lubricated and properly adjusted
- the blades are sharp and in good condition
- all the blade guards are in good condition and that they are easy to adjust
- the fence is easy to adjust.

In addition, planer surfacers and planer surfacer/thicknessers should be checked to ensure that the back table is adjusted to the correct height.

Planer thicknessers and planer surfacer/thicknessers should be checked to ensure that:

- the thicknessing table is clean and that the in-feed and out-feed rollers are adjusted correctly
- the table height adjusting screw is lubricated
- the kickback fingers move freely.

All machines and dust extractors should be test run. All new machines must be fitted with a braking device, which operates when the stop button is operated. Machines already in use on 5 December 1998 must be fitted with a braking device by 5 December 2005.

### Shaping Machines

Any inspection of shaping machines should include checks to ensure that:

- the shaping machine is securely bolted to the floor
- all drive belts and gears are completely guarded
- the ram at the back of the machine is guarded
- the drive belts are adjusted to the correct tension
- the slides are lubricated and correctly adjusted
- the clapper box moves freely
- the machine vice is effective.

The machine should be test run.

### Soldering Irons

Any inspection of soldering irons should include checks to ensure that:

- the soldering iron is kept in a stand fitted with a sponge
- silicone heat-proof cable is fitted to the soldering iron
- fume extraction at source is available
- the tip of the soldering iron is in good condition.

Where reasonably practicable, rosin-free solder should be used.

### Tool Cutters and Surface Grinding Machines

Staff who have undertaken and passed an appropriate training course may only change abrasive wheels.

Any inspection of tool cutters and surface grinding machines should include checks to ensure that:

- the machine is securely bolted to the floor or bench
- the drive belts and gears are fully guarded
- the guards to the abrasive wheels are correctly adjusted.
- transparent screens are clean, unscratched and to the correct British Standard
- the abrasive wheels are in good condition
- the peripheral wheel speed in rpm has been checked and marked on the machine
- the vices and magnetic tables are secure and in good condition
- the coolant pump works effectively.

The machine should be test run.

### Vertical or Horizontal Milling Machines

Any inspection of vertical or horizontal milling machines should include checks to ensure that:

- the milling machine is securely bolted to the floor
- all drive belts and gears are completely guarded
- the drive belts are adjusted to the correct tension
- all moving parts are clean, lubricated and properly adjusted
- the table guard is clean, free from scratches and properly adjusted
- the coolant pump works satisfactorily

- all the cutters are sharp
- the machine vice is effective.

In addition, the spindle or mandrel on vertical milling machines should be guarded and the cutter on horizontal milling machines should be guarded.  
Both types of machine should be test run.

### Vices

The inspection of both metalwork and woodwork vices should include checks to ensure that:

- each vice is securely bolted to the bench
- all tommy-bars are secure
- the quick-release mechanism works freely
- the vice jaws are in good condition
- all springs and spindle pins are in good condition
- all moving parts are lubricated.

### Wood Lathes

Any inspection of wood lathes should include checks to ensure that:

- the wood lathe is securely bolted to the floor
- all drive belts are completely guarded
- the bed, tail stock and tool rest are lubricated and secure
- the end of the spindle is guarded.

The machine should be test run.

### Wood Lathes with Disc Sanders

Any inspection of wood lathes with disc sanders should include checks to ensure that:

- the wood lathe is securely bolted to the floor
- all drive belts are completely guarded
- the bed, tail stock and tool rest are lubricated and secure
- the end of the spindle is guarded
- the abrasive disc is secure
- the abrasive disc is in good condition
- the sanding table is adjusted as close as possible to the abrasive disc
- the abrasive disc is properly guarded - only the down-running quadrant should be exposed.

The machine and dust extractor should be test run.

### **Further Information**

Detailed advice on electrical safety can be obtained from DES Building Bulletin 76, *Maintenance of Electrical Services* (DFE, HMSO), the Electricity at Work Regulations 1989, and Guidance Note GS 23, *Electrical Safety in Schools* (Health and Safety Executive).

British Standard Code of Practice *Health and Safety in Workshops of Schools and Similar Establishments*, BS4163 provides detailed advice on the use of machinery in school Design and Technology departments.

**EQUIPMENT AND FIXED MACHINERY**

Name in BLOCK capitals:	
Signature:	
Location:	
Time:	Date:

ITEM	Ref No	Satisfactory		Fault	Action Required	Carried Out By	Date Completed
		Yes	No				
Electrical safety							
Dust extraction							
Air brush							
Arc welding							
Band-saw							
Bench-mounted disc sander							
Bench-mounted shears							
Bench or floor mounted belt sander							
Brazing hearth							
Bubble etch tank							
Buffing machine							
Circular saw							
Compressors and air vessels							
Cranes, hydraulic jacks and lifting gear							
Drilling machine							
Electrically fired kilns							
Enamelling							
Fly press							
Gabro guillotine							
Gas forge							
Guillotine treadle							
Hollow chisel mortise machine							

**EQUIPMENT AND FIXED MACHINERY**

ITEM	Ref No	Satisfactory		Fault	Action Required	Carried Out By	Date Completed
		Yes	No				
Horizontal grindstone							
Hot glue guns							
Jigsaw or scroll saw							
Metal cutting hacksaw							
Metal turning lathe							
Metalwork vices							
MIG welding							
Mitre trimmers							
Molten metal casting							
Off-hand grinding machine							
Oxyacetylene welding							
Planer surfacer							
Planer thicknesser							
Planer surfacer/thicknesser							
Shaping machine							
Soldering irons							
Tool cutter or surface cutting machines							
Vertical or horizontal milling machine							
Wood lathe							
Wood lathe with disc sander							
Woodwork vices							
<b>Other school specific</b>							

## **PORTABLE POWER TOOLS**

### **Objective**

The objective of this form is to help to ensure that only those electric powered hand tools which comply with BS 2769, *Hand-Held Electric Motor-Operated Tools*, are used in school art, design and technology rooms and that these tools are used safely, refer to the checklist over the page.

### **Key Points**

Electric powered hand tools must be of a single purpose type and not accessories to an electric drill.

Instructions must be given to every pupil who uses a portable powered tool before the work commences.

The tool must always be unplugged from the mains before adjusting fences and cutters.

Pupils must be taught never to put an electric powered hand tool down before it has stopped revolving.

Pupils in a school should not use portable circular saws, planers and routers. Power routers must never be mounted in a frame.

Power tools should be visually checked every time they are used and must be subject to a portable appliance test once a year (see *Checklist: Inspection of Portable Electrical Appliances in Section 3.2*).



## **HAND TOOLS**

### **Objective**

The objective of this form is to provide a checklist, which can be used as the basis for an inspection to ensure that hand tools, are stored, maintained and used safely. The checklist is on the next page.

### **Key Points**

The care and safe storage of tools is a prerequisite for a safe workshop. All hand tools should be stored in suitably designed racks, cupboards, stores, and bench ends or wall units. The racking should permit easy removal and replacement of individual tools and facilitate easy checking of their return at the end of each session. Care in siting tool storage avoids unnecessary movement about the workshop.

Wood chisels, plane irons, spoke shaves, scribes, bradawls, screwdrivers, wood saws and knives should all be stored in such a way that their cutting edges cannot be touched.

Each art, design and technology area should have an established procedure for the sharpening and maintenance of hand tools. A competent person should always carry this out. Depending on their usage, chisels and planes require regular sharpening. All other hand tools should be checked at least once a term to ensure that they are in good condition.

Files and rasps must be fitted with secure handles. Handles to all tools should be secure and free from splits.

The head of a cold chisel must not be allowed to become ragged.

Hammerheads must be securely wedged on their shaft.

Worn spanners should be replaced.

The wooden faces of woodwork vices should be secure, in good condition and free from nails, cracks, etc.

**HAND TOOLS**

Name in BLOCK capitals:	
Signature:	
Location:	
Time:	Date:

ITEM	Satisfactory		Fault	Action Required	Carried Out By	Date Completed
	Yes	No				
Wood chisels						
Plane irons						
Spoke shaves						
Scribers						
Bradawls						
Screwdrivers						
Wood saws						
Knives						
Files and rasps						
Hammers						
Spanners						
<b>Other school specific</b>						

## PLASTICS

### Objective

The objective of this form is to provide a checklist, which can be used during an inspection, which is designed to ensure that plastic materials are used and stored safely (see the following checklist).

### Key Points

There are a number of hazards associated with work involving plastics, for example, hazardous adhesives, dust and fumes. The following information will assist with an assessment of the risks. The prosecution of a LEA following an incident in a school workshop when using acrylic cement highlighted the importance of properly controlling the risks. The prosecution was for failure to carry out a risk assessment, inadequate control measures and not providing adequate training.

#### Adhesives

*Acrylic Cement.* This consists of methyl methacrylate in a solvent, usually dichloromethane or trichloroethylene. It may be hazardous by inhalation or swallowing, is irritating to the skin and respiratory tract and extremely irritating and damaging to the eyes. Acrylic cement must be used in well-ventilated area (an open window is normally necessary). The number of containers open at any one time should be restricted and they should only be open whilst in use.

*Cyanoacrylate Adhesive (eg: super glue).* The main risk is sticking of the skin (eg: eyelids). Pupils should not normally use or have access to it. Eye protection should be worn and care should be taken to keep it off the skin (barrier cream may help).

*Epoxy and Polyester Resins.* These substances can cause sensitisation of the skin and eyes. No special control measures are required provided it is used in small quantities and skin contact is avoided.

#### Glass Reinforced Plastic

During mixing and curing styrene gas is liberated. The catalyst is corrosive especially to the eyes. Glass fibre dust can be irritating to the skin, nose and throat. In order to adequately control styrene fumes, the amount of material being cured at any one time should be kept to a minimum and there should be good natural ventilation (in a workshop with the windows open; restrict the amount being cured to 1m<sup>2</sup> or 0.2Kg of resin). Larger quantities will require stricter control measures (eg: mechanical extraction or it could be carried out in the open air). The catalyst should be dispensed from a proper calibrated dispenser to avoid the risk of splashing. A member of staff wearing eye protection and gloves should carry out dispensing.

The resin is highly flammable and should be stored in a metal cupboard or bin. The catalyst is an oxidising agent and should be stored in a separate metal container away from flammable material.

### Dip Coating

This is the process where preheated metal is coated with thermoplastic powder. If the metal is overheated hazardous fumes are produced. Nylon and polyethylene present a low risk but PVC can produce toxic fumes. When coating with PVC the metal must be kept below 1500°C (in a thermostatically controlled oven) and local exhaust ventilation should be used. Powders should be handled with care to avoid creating dust. Eye protection and gloves should be worn and hands should be washed after handling the powder.

### Machining plastics

Great care needs to be taken when sanding plastics, particularly glass reinforced plastics. Respiratory protection should be worn when dust extraction is not available.

When machining plastics care needs to be taken to prevent overheating. For drilling, slow speeds should be used; for cutting with a band saw, a blade with fine teeth should be used and material should be fed slowly.

### Hot Wire Cutting

Styrene fumes are produced when polystyrene is cut. However, levels have been shown to be significantly below the maximum exposure limit for styrene provided there is normal ventilation.

Polyurethane foam must not be cut with a hot wire.

### Polyurethane Foam

The making of polyurethane from a two-part mix should not be permitted in a school as it gives off highly toxic fumes.

**PLASTICS**

Name in BLOCK capitals:	
Signature:	
Location:	
Time:	Date:

ITEM	Satisfactory		Fault	Action Required	Carried Out By	Date Completed
	Yes	No				
<b>Ventilation/Fume Extraction</b>						
Acrylic solvents or adhesives						
When using GRP						
When cutting expanded polystyrene						
<b>GRP</b>						
Availability of disposable gloves						
Availability of barrier cream						
Availability of protective clothing						
<b>Precautions</b>						
Extraction of plastic dust						
Disposal of waste GRP resins						
Provision of heat-proof gloves						
<b>Storage</b>						
Plastic chemicals						
Adhesives						
Checking of use-by dates						
<b>Other school specific</b>						

## **CERAMICS**

### **Objective**

The objective of this form is to provide a checklist, which can be used during an inspection of the ceramics, area and the facilities within it. The form provides a means of recording the results of any inspection. Attached in this section is the checklist for ceramics.

### **Key Points**

Any inspection of ceramics areas should check the following.

#### Blungers and Pug-Mills

Blungers are used for mixing clay with water. Pug mills are used for preparing pug (loam or clay which is mixed and prepared for making bricks, pottery, etc). Both machines should only be used by authorised staff or should be strictly supervised by competent persons.

Any inspection of a blunger or pug mill should include checks to ensure that:

- some form of emergency switchgear is fitted
- a throat guard is fitted or there is an interlock complying with BS 5304 which prevents access to the auger when the power is on
- a hand-lever-feeding device is fitted.

Hands should never be placed in blunger tubs or tanks when units are working.

On no account should pug mills be used with the barrel open or if the outlet or drive guards have been removed.

#### Compressors

Under the Pressure Systems and Transportable Gas Containers Regulations 1989 air receivers must be regularly inspected by a competent person for the purposes of insurance (see also Compressors and Air Vessels earlier in this section). Items, which should be checked regularly, include:

- air filters
- blow-off valves
- oil levels.

Pupils should be made aware of the dangers of putting compressed air into any of the body's orifices.

#### Kilns

Qualified personnel should carry out regular maintenance of kilns. Competent members of staff should also carry out regular (at least twice a year) cleaning.

Any inspection of kilns should check that:

- there is adequate space around and above the kiln
- the kiln is caged if it is in a working area

- there is adequate ventilation in the kiln room
- blue or smoked glass is used to protect the eyes when inspecting temperature, colour or flame action.

Any inspection of outdoor kilns should check that:

- the kiln is adequately guarded
- fuel is stored away from heat sources
- smoke and fumes are not blown into surrounding buildings.

If pupils are allowed to load kilns, they should be carefully supervised. They should also be taught correct procedures for loading and unloading. This is especially important when lifting heavy articles, in order to avoid back strain (see *Manual Handling of Loads Regulations 1992* in section 1).

Ground flint should not be used for dusting kiln furniture or for making batwash (a wash to stop glazes sticking to kiln shelves during firing). Flint which is used for other purposes should be kept in paste or slop form.

Detailed advice on kilns is available from the Institute of Ceramics.

### Lathes

Any inspection of lathes should check that belt-driven lathes are well guarded. Lathes should be isolated from the power source before the ratios are changed. They should be turned off before any loose material is brushed away.

### Pot-Mills

Hands should not be placed near the open roller drive, which rotates the pot. The motion because there is a risk that they could be traps this.

### Pottery Wheels, Jiggers and Batting Machines

Any inspection of pottery wheels should check that:

- moving parts are guarded - manufacturers' guards should be in place while the machine is in use
- that the space surrounding the wheel is adequate to allow it to be operated safely
- electric wheels are properly earthed
- Sealed-unit switches are fitted.

### Spray Booths

Any inspection of exhaust booths should check:

- for leakage
- that filters are cleaned regularly.

However, spray booths should preferably be of the water-backed variety. Booths should not be installed if they cannot be vented to the exterior.

### Personal Hygiene

In order to reduce the risks from ceramics materials, the following personal hygiene measures should be carried out.

- After using ceramics materials and chemicals, hands should be washed and nails should be scrubbed.
- Protective overalls and aprons should be washed regularly.
- Cuts, burns and abrasions should be treated immediately in the correct manner.
- Food should not be consumed in working areas.

### Other issues

It is important to ensure that the following guidelines are followed.

- Plaster and clay should be used in separate areas. If bits of plaster are introduced into clay, they can cause damaging explosions during the firing process.
- Lime plaster must not be used as it has a heat reaction, which can be hazardous.
- Glass containers should not be used in art rooms. Broken glass may accidentally be introduced into clay.
- Fettling (trimming or cleaning the rough edge of pottery before firing) should not be carried out when clay is dry.
- Clay storage bins should be clearly marked and should be kept well away from waste bins so that the two cannot be confused. Areas for clay reconstitution should also be kept free from other materials.
- Asbestos products should not be used.

**CERAMICS**

Name in BLOCK capitals:	
Signature:	
Location:	
Time:	Date:

ITEM	Satisfactory		Fault	Action Required	Carried Out By	Date Completed
	Yes	No				
Blungers						
Compressors						
Jiggers and batting machines						
Kilns						
Lathes						
Off-hand grinders						
Pot-mills						
Pottery wheels						
Pug-mills						
Spray booths						
Personal hygiene						
<b>Other school specific</b>						

## **CUTTING TOOLS**

### **Objective**

The objective of this form is to provide a check-list which can be used to help ensure that the cutting tools which are provided within the art, design and technology department are safe and that they are cared for properly. The checklist is on the next page.

### **Key Points**

Sharp knives and tools are required for a variety of works within art, design and technology areas. It is important that pupils are taught proper care and use of tools as part of their education within these areas.

Any inspection of cutting tools and their use should check that:

- tools are sharp - sharp tools present less of a hazard than blunt tools where the user has to exert excessive pressure.
- guillotines are properly guarded
- bench shears (for cutting metal) are locked when not in use
- holding devices are used for the carving of wood and other resistant materials
- bench keys or G-clamps are used when cutting or engraving wood, linoleum or hardboard for printmaking.

One member of staff should have responsibility for the maintenance and storage of tools, which are used by a number of teachers. If no one person has this responsibility, it is less likely that anyone will notice if tools go missing.

**CUTTING TOOLS**

Name in BLOCK capitals:	
Signature:	
Location:	
Time:	Date:

ITEM	Satisfactory		Fault	Action Required	Carried Out By	Date Completed
	Yes	No				
<b>Holding devices</b>						
Bench keys						
G-clamps						
Bench shears						
Guillotine guards						
Sharpness of tools						
Storage of tools						
<b>Other school specific</b>						

## **PRINTMAKING AND PRINTING**

### **Objective**

The objective of this form is to provide a checklist for use when an inspection of printmaking equipment is carried out. It also allows the results of any inspection to be recorded. Refer to the checklist over the page.

### **Key Points**

Under the Provision and Use of Work Equipment Regulations 1998 and the Electricity at Work Regulations 1989, all such equipment should be regularly maintained. Annual inspections are recommended.

Any inspection of printmaking and printing equipment should check that:

- there is sufficient space around machines to allow them to be operated safely
- all presses are adequately guarded
- Authorised persons can only use hand-operated machines.

Many substances used are "hazardous substances" so the Control of Substances Hazardous to Health Regulations 1999 will apply. Health and safety should be an important consideration when selecting materials and the least hazardous substance selected, eg: using water-based rather than solvent-based substances.

### Acid-Based Activities

Acid solutions for etching must be made up by the teacher or technician. When making solutions, acid must be added to water not water to acid. This is because if water is added to acid there is a violent reaction, which increases the risk of acid burns.

Acid baths should either be situated in lockable ventilated cupboards or they should have a lid, which can be locked.

Acid etching and polishing with hydrofluoric acid should not be carried out in schools, as it is a particularly hazardous operation.

Acids should be stored in accordance with the appropriate regulations (see *Checklist: Storage of Art, Design and Technology Equipment* earlier in this section).

### Spillage

If acid is spilt, it should be neutralised with sodium carbonate powder and wiped up with a cloth or paper. The cloth or paper should be disposed of carefully so that it does not cause further damage.

### Screen Printing

Toxin-free water-based inks should be used for screen-printing. Products, which consist of a mixture of acrylic paint and a screen-printing paste, have been specifically designed for schools.

### Ultraviolet Light Boxes

The manufacturer's instructions and other regulations must be strictly observed when ultraviolet light boxes are being used. Any precautions relating to the protection of eyes, which are specified by the manufacturer, should be taken.

### **Further Information**

Further details on etching and other acid-based activities can be found in DES Safety Series No 2, *Safety in Science Laboratories* (HMSO, 1978).



## PHOTOGRAPHY

### Objective

The objective of this form is to provide a checklist for use in an inspection of the materials and equipment, which are used for photography, and to allow the results of any such inspection to be recorded. The appropriate checklist is on the next page.

### Key Points

Any inspection of darkrooms should check that:

- there is a "wet area" for all dish and tank processes
- the wet area is constructed of chemical-proof material
- the wet area is provided with a means of washing down chemically contaminated surfaces after use
- electrical fittings and sockets are sited away from the wet area - in darkrooms the use of pull-cord type switches is preferable to surface switches
- all electrical apparatus is properly earthed
- there is a separate "dry bench" for printing, enlarging and handling dry photosensitive materials
- ventilation is adequate.

Hand rinsing and drying facilities should be provided and pupils should be taught the importance of drying hands thoroughly before touching electrical equipment.

Several substances used in photography are "hazardous substances" and the Control of Substances Hazardous to Health Regulations 1994 will apply.

Rubber gloves should be available to protect pupils and staff from possible allergic reactions to the developers, which are used for processing colour photographs - and to a lesser extent those used for processing black and white emulsions. Manufacturers' instructions for the use of chemicals contain warnings to this effect, together with recommendations for the avoidance of dermatitis.

Thermometers must not be used as stirring rods. Details concerning what to do in the event of a spillage of mercury can be found under *Record: Chemical Spillage and Fumes Log* in this manual.

**PHOTOGRAPHY**

Name in BLOCK capitals:	
Signature:	
Location:	
Time:	Date:

ITEM	Satisfactory		Fault	Action Required	Carried Out By	Date Completed
	Yes	No				
<b>Darkroom</b>						
Dry bench						
Electrical fittings and sockets						
Rubber gloves						
Ventilation						
Warning signs						
Wet areas						
<b>Other school specific</b>						

## TEXTILE TECHNOLOGY

### Objective

The objective of this form is to provide a checklist for use during an inspection of materials and equipment for use when working with textiles. The form also allows the results of any such inspection to be recorded. The checklist for textiles is on the next page.

### Key Points

General safety precautions are normally sufficient for work with textiles. However, potential hazards exist in the use of some dyes, mordants and other chemicals. For example:

- (a) some dyes are water or oil emulsions and have to be fixed by placing the fabric in a warm oven - the fabric must be completely dry when it is placed in the oven, otherwise the vapour from the dyes might ignite
- (b) solvents such as methylated spirits carry a fire risk and can be dangerous, especially to the eyes and if swallowed
- (c) dyes which require the addition of boiling water create a hazard because of the risk of being scalded by boiling water
- (d) the use of hot wax for processes such as batik can be a serious fire hazard - wax should be heated slowly in a specially designed pan which is suspended over a larger one which has been partially filled with water.

Working surfaces should be firm and free from obstructions.

### Storage

Dyes, acids and solvents should be stored in accordance with the manufacturers instructions (see *Checklist. Storage of Art, Design and Technology Equipment* earlier in this section for further details on storage). Dyes, which need to be fixed by placing the fabric in a warm oven, should be stored in a cool place so that they do not produce flammable vapour.

### Protective Equipment

Protective masks should be available when dye powder is being used. Other means of avoiding the inhalation of dye powder include opening the packet under water or using a glove box.

Protective gloves should be worn when dyes, mordants and other chemicals are being used.



## TEXTILES (NEEDLEWORK)

### Objective

The objective of this form is to allow the hazards identified by regular inspections of all areas and procedures used in textiles lessons to be recorded in order to help an effective risk assessment to be carried out by a competent person. See the checklist for the needlework on the next page.

### Key Points

Pupils should be taught how to use thimbles and other such devices in order to reduce the risk of injuries, such as cuts and punctures, caused by needles. They should also receive adequate training in the safe use scissors. Pupils should also be made aware of the risk of being cut by threads.

Knitting and sewing machines should be inspected regularly for electrical safety (see section 3.2 and *Electricity at Work Regulations 1989* in section 1). Belt and pulley drives should be guarded. If they are not, machines should not be used.

Other hazards which pupils should be made aware of include:

- (a) the needle sewing point
- (b) the possibility of clothing and body parts, including hair, becoming entangled in equipment.

It is important that pupils have neat cuffs. Ties should be removed as these can easily become trapped in equipment. Long hair should be tied back and no jewellery should be worn.

The floor around machines and workstations should be free from obstructions in order to prevent tripping and slipping.

During textiles lessons pupils may need to use irons and there are several hazards which pupils should be aware of before they carry out any ironing.

1. Irons can scald (steam or hot water) or burn (direct contact with the hot plate).
2. Water and electricity is a lethal combination and it is important that pupils know this. Regular electrical testing is vital (see section 1 and section 3.2). A residual current device should protect all electrical circuits.
3. Trailing flexes are a hazard. Safe systems of work and safe positioning of equipment are necessary.

Pupils should be taught the importance of taking care both while they are using an iron and when they have finished using it. There should be a set procedure for the storage of irons in the period immediately after they have been used.

This form should be retained for one year after completion.

**NEEDLEWORK**

Name in BLOCK capitals:	
Signature:	
Location:	
Time:	Date:

ITEM	Satisfactory		Fault	Action Required	Carried Out By	Date Completed
	Yes	No				
Lighting						
Floors						
Storage						
Availability of thimbles						
Knitting machines						
Sewing machines						
Guards						
Scissors						
Irons						
Ironing boards						
<b>Other school specific</b>						

## **FOOD TECHNOLOGY**

### **Objective**

The objective of this form is to allow the hazards identified by regular inspections of all areas and procedures used in food technology lessons to be recorded in order to allow an effective risk assessment to be carried out by a competent person. Refer to the checklist over the page.

### **Key Points**

The Food Safety Act 1990 and the Food Safety (General Food Hygiene) Regulations 1995 do not apply to food technology unless food is being prepared for profit, fundraising or as refreshments at meetings. However, the basic principles of good hygiene practice and identifying and controlling food safety risks should be followed whenever food is handled and such standards instilled in the pupils at all levels.

The key points, which follow, are not covered by specific legislation in relation to schools. However, all hazards are covered by the general duty of care which school staff have to pupils.

It is recommended that this form be retained for one year after completion.

#### Slipping on Floors

Spills must be cleaned up immediately and warning signs must be available to indicate wet floors.

#### Use of Knives

No pupil should be allowed to use a knife unless he or she has been properly trained. The degree of supervision, which is required when pupils are using knives, depends on the age of the particular pupils and the tasks for which knives are being used.

Knives must be kept sharp and, when they are not in use, they must be properly secured in a central storage cupboard.

Where possible, the use of knives should be avoided, eg: by the provision of vegetable peelers, scissors, etc.

#### Electrical Equipment

Pupils should not be allowed to use electrical equipment, such as slicers, mixers, chippers, mincers and dough breaks, unless they have been taught how to use it safely and are under constant supervision.

Such equipment should be stored securely and a responsible member of staff should hold the keys to this storage.

All equipment should be electrically tested on a regular basis (see section on *Electricity at Work Regulations 1989* in section 1) and checked to ensure that guards are in place. There should be clear warning signs relating to the dangers of such electrical equipment.

### Burns and Scalding

Oven doors, pans, hot liquids, bains-marie (double boilers) and steam from hot equipment can all cause serious injury if pupils are not careful. Good signs and adequate supervision, together with initial training briefs, should ensure that the risks are reduced.

Under no circumstances should hot pans of liquid be carried around the food technology area. Adequate insulating gloves and cloths should be available to allow hot trays to be taken out of ovens. Pupils should be taught that hot food could also burn, eg: bread from ovens.

Cold burns are also possible from freezers or frozen food and again insulated gloves should be provided and freezers should place warning signs. It should be remembered that signs are not a substitute for teaching pupils safe working practices. However, they do act as a reminder to those pupils who might forget what they have been taught.

### Waste Containers and Breakage

Adequate receptacles for waste containers including cans, boxes and glass items are necessary. Special receptacles should be available for broken glass. These should be clearly marked and instructions should be given on their use.

### Manual Handling

Trolleys should always be used for carrying equipment and foodstuffs.

If possible the use of high shelving should be avoided. However, in some schools high shelving may be required due to lack of space. If this is the case, there should be set procedures for its use and these should be communicated to all staff and pupils. These procedures should include the provision of suitable and adequately maintained steps and footstools.

If possible, food, such as sugar and flour, should be purchased in smaller containers despite the cost savings possible from bulk containers.

### Deep Fat Frying

If deep fat frying is carried out it should normally only be by Year 10 and above. Small electrically powered thermostatically controlled deep fat fryers are preferable. The following precautions should be remembered: fryers should not be over-filled, electric leads should be kept as short as possible and positioned safely, fryers should not be left unattended, do not allow water to come into contact with hot oil or fat (dry food before deep frying), position handle safely, cool fat before straining or pouring into plastic containers.

### Microwave Ovens

Always follow manufacturer's instructions. Keep the oven clean, including ensuring that air vents are not blocked or obstructed and keep the oven clean. Check for food debris around the door seal, which could lead to leaks. Do not use the oven if the door does not properly close or if the door interlock switch does not work properly. Do not switch the oven on when empty.

Burns and scalds can be avoided by using oven gloves, removing lids or microwave film away from the face and checking the temperature of food and drink. It is important to ensure food is thoroughly cooked throughout by stirring and turning the food during cooking. Microwave film should not be in direct contact with food during cooking and defrosting.

Food should not be cooked in sealed containers; pierce the film covering containers (unless there are specific manufacturer instructions to the contrary). Only use containers and films, which are known to be suitable for, use in a microwave oven.

**FOOD TECHNOLOGY**

Name in BLOCK capitals:	
Signature:	
Location:	
Time:	Date:

Item	Satisfactory		Fault	Action Required	Carried Out By	Date Completed
	Yes	No				
Floors						
Lighting						
Knives						
Vegetable peelers						
Scissors						
Slicers						
Mixers						
Chippers						
Mincers						
Dough breaks						
Signs						
Storage						
Guards						
Access to shelving						
Insulating gloves						
Waste receptacles						
Trolleys						
Training						
<b>Other school specific</b>						

## **PRESSURE COOKERS**

### **Objective**

The objective of this form is to provide a check-list for use during annual inspections of pressure cookers as required by the Pressure Systems and Transport of all Gas Container Regulations 1989.

### **Key Points**

The Pressure Systems and Transport of all Gas Containers Regulations 1989 require regular inspections to be made. These should be in accordance with a written scheme of examination. What constitutes “regular” depends on use, but at least once a year is recommended and more often if use is heavy or if damage is suspected. The inspection should be carried out by a person deemed competent by the employer. This could be a teacher or technician who has been adequately trained. In some cases employers use inspectors from insurance companies in order to comply with policy demands.

The competent person should check for signs of damage or deterioration in structure or effective working of:

- (a) all visible parts, including “pitting” of internal metal surfaces
- (b) rubber seals, gaskets or other parts
- (c) all joints, taps and connections
- (d) weights, safety valves, pressure gauges.

The name of the inspector and details of the inspection should be recorded. Each item which is to be tested should be identified with a specific code and its location should be entered on the form. A test result should be recorded as satisfactory or unsatisfactory and any defects should be noted in the appropriate column. Follow-up action should be noted accordingly. The completed form should be retained in the department office for three years.

A model written scheme of examination is available from the Consortium of Local Education Authorities for the Provision of Science Services, CLEAPSS, for use by its members.

**PRESSURE COOKERS**

Name in BLOCK capitals:	
Signature:	
Location:	
Time:	Date:

ITEM	Code	Location	Satisfactory		Fault	Action Required	Carried Out By	Date Completed
			Yes	No				
Pressure cooker								
Pressure cooker								
Pressure cooker								
Pressure cooker								
Pressure cooker								
<b>Other school specific</b>								

<b>Document Control Information</b>	
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