



Working with Computers

NUT HEALTH & SAFETY BRIEFING



This briefing gives guidance on health and safety precautions for teachers and pupils working with information & communications technology equipment, including computers, keyboards, display screens or visual display units, laptops and printers.

The Legal Framework

This briefing sets out the legal duties and requirements for health and safety which employers must follow regarding the use of ICT equipment; and sets out recommendations on good practice which will ensure that these legal duties and requirements are met.

Some of the legal requirements on employers set out below do not apply automatically to all categories of employees. The NUT, however, regards these requirements as "good practice" for all ICT users and believes that the recommendations in this guidance should be followed for and by all teachers, non-teaching staff, school pupils and college students, whether they are using this equipment in schools or at home.

The duties of employers in relation to ICT equipment generally are laid out chiefly in the following four key pieces of legislation:

- the Health & Safety at Work etc Act 1974;
- the Management of Health & Safety at Work Regulations 1999 ("Management Regulations");
- the Workplace (Health, Safety and Welfare) Regulations 1992 ("Workplace Regulations"); and
- the Health and Safety (Display Screen Equipment) Regulations 1992 ("DSE Regulations").

Full details of the requirements of the first three pieces of legislation are set out in separate health and safety guidance documents available from the Union. This document concentrates upon the provisions of the DSE regulations which apply specifically to use of ICT equipment.

a. Health and Safety At Work etc Act 1974

The 1974 Act imposes duties of care on employers both towards employees (under section 2) and towards others including, in the care schools, pupils (under section 3). Employers must take steps to ensure the health, safety and welfare of employees and not to expose non-employees, such as pupils in schools, to risks to their health and safety.

The 1974 Act also requires employers to prepare a health and safety policy statement which includes, inter alia, the procedures for safeguarding health and safety with which it expects employees to comply. Procedures for the safe use of ICT equipment should now be an important element of the employer's health and safety policy statement.

LEAs are bound by these duties and requirements as employers. The governing bodies of

foundation and voluntary aided schools are similarly bound as they are the employers of staff in those schools. Governing bodies of other LEA-maintained schools are not employers. They also have duties of care to school staff and pupils, however, under section 4 of the Act due to their control of the premises.

As well as complying with the general duties and requirements placed on them by the 1974 Act, employers must comply with the more specific requirements of the Management, Workplace and DSE Regulations.

b. Management of Health and Safety at Work Regulations 1999

The Management Regulations complement the general duty upon employers under the 1974 Act to ensure the health, safety and welfare of employees by placing a legal requirement upon employers to assess and reduce risks to health and safety in the workplace. Under the "risk assessment" process, employers must:

- identify hazards arising out of work equipment, work processes and activities undertaken on the premises;
- assess whether they are putting the health and safety of workers and others at risk and to what extent; and
- implement measures needed to prevent or control the risks identified.

Risk assessments must be revised regularly in order to keep them up-to-date. The presence of computers in schools means that a further range of risks must be assessed and any appropriate additional precautions taken. The risk assessments will need to be kept up to date and revised whenever the level of use or types of use change or new equipment is acquired.

c. Workplace (Health, Safety and Welfare) Regulations 1992

The Workplace Regulations also expand upon the general duty of care under the 1974 Act. The Regulations set general requirements in four broad areas: the working environment, safety standards, welfare facilities and good housekeeping arrangements. Their requirements are less specific to use of ICT equipment than those under the DSE Regulations.

d. Health and Safety (Display Screen Equipment) Regulations 1992

The provisions of the DSE Regulations apply specifically to the design and use of ICT equipment and workstations. The DSE Regulations are accompanied by the HSC's ACoP and Guidance Notes which give further details of the precautions needed to ensure that the requirements of the Regulations are met. This document draws extensively on the provisions of the DSE Regulations and the HSC's ACoP and Guidance Notes.

The DSE Regulations apply automatically only to employees who fall within the Regulations' legal definition of "users" i.e. who habitually use screens as a significant part of their normal work. They do not apply to employees who work only occasionally on ICT equipment and are not therefore legally defined as "users"; and they do not apply to pupils since they are not employees. Employers are, however, still legally bound by their duties under other health and safety at work legislation to take measures to protect occasional users. Such duties include the general risk assessment requirements of the Management Regulations and the provisions of the PUWER and PPE Regulations (see the separate NUT briefing on Work Equipment).

The NUT's advice is that education employers, in considering and putting into place the health and safety precautions required to protect teachers and pupils using ICT equipment, should follow the good practice set out in the DSE Regulations at all times. There should be no arguments about who is specifically covered by the Regulations and who may not be.

Employers' Duties under the DSE and other Regulations

As noted above, the general duty of care on employers means that all education employers have to take certain steps to ensure the health and safety of employees and pupils, even where they do not come within the specific requirements of the DSE Regulations.

Areas covered by the DSE Regulations include the ICT equipment itself, the working environment, the organisation of work and the health and safety information and training provided for employees. The DSE regulations place five key duties upon employers which are outlined in the following sections together with the requirements which they must follow to discharge these duties.

a. Conduct a Risk Assessment of Workstations

The DSE Regulations place a specific legal duty upon employers to carry out a risk assessment of workstations for "users". They must assess the risks to health presented by any display screen work that such employees undertake.

Even if workers or others using ICT equipment are not classified as "users" under the DSE Regulations, employers will still have to carry out an assessment of the risks to health presented by such work under the general risk assessment obligations imposed by the Management Regulations.

The HSC's ACoP and Guidance Notes make clear that safety representatives should play a full part in the risk assessment process. They should be consulted by the employer and the information provided by them and by the workers involved should be taken into account in determining the safety precautions to be implemented.

Health and safety representatives may carry out informal assessments of risks involved in use of ICT equipment during their safety inspections or otherwise under their rights as a safety representative. These should not be confused with, and do not replace, the employer's risk assessment.

The main risks to health associated with ICT work are RSI upper limb pain and discomfort; eye and eyesight defects; fatigue and stress; epilepsy; facial dermatitis; electromagnetic radiation; and effects on pregnant women. These health concerns are addressed in more detail later in the guidance.

b. Ensure workstations meet minimum requirements

The definition of "workstation" includes the furniture used in connection with the ICT equipment as well as the equipment itself. It therefore covers the keyboard and other input device such as a mouse or trackball, software, disk drive, telephone, modem, printer, document holder, work chair, work desk, work surface and so on. In addition, aspects of the immediate work environment such as noise, light, temperature, humidity and space are included.

Workstation design and layout should be planned before any equipment (i.e. computer trolleys, tables, chairs etc as well as hardware) is purchased. Schools will need to consider issues such as the suitability of mobile or static workstations in terms of both access and safety.

The positioning of equipment is very important. Workstation design should enable users to reach all necessary equipment without stretching and should be clear of obstruction.

The following sections set out a summary of the points which the HSC's ACoP and Guidance Notes advise should be examined.

> **Equipment**

Display Screen - Clearly-defined characters of adequate size; stable screen image without flicker; easily adjustable brightness and contrast; easily tilting and swivelling screen; separate base for the screen or an adjustable table; glare and reflection-free screen.

Keyboard - Tilting keyboard, separate from the screen; sufficient space in front of keyboard to rest hands or arms; matt surface to avoid reflective glare; easy-to-use; adequately contrasted and legible symbols on keys.

Work Chair - Stable, allowing easy freedom of movement and comfortable position; adjustable height (seat); adjustable height and tilt (seat back); a footrest should be made available, if appropriate.

Work Desk/Surface - Sufficiently large, with low-reflecting surface; allow a flexible arrangement of screen, keyboard, documents and related equipment; document holders, may be necessary and, if used, must be stable, adjustable and positioned so as to minimise the need for uncomfortable head and eye movements; adequate space for a comfortable working position.

> **Environment**

Space Requirements - Sufficient clearance for postural changes i.e. thighs, knees, lower legs and feet and should allow a comfortable position for the arms and wrist. Stray leads and flexes should be re-routed, secured and covered.

Lighting - Should be appropriate for all the tasks performed at the workstation; contrast between screen and background; prevention of glare through positioning of artificial lighting.

Reflections - Positioning of workstations must prevent sources of light, such as windows, from causing glare and reflections on the screen; windows should be fitted with blinds or other means of preventing daylight shining on the workstation.

Noise - Noise emitted by equipment should be kept to levels which do not distract attention, impair concentration or prevent normal conversation.

Radiation - All electromagnetic radiation emission (except visible light) should be reduced to negligible levels.

Heat - Equipment belonging to any workstation should not produce excess heat which could cause discomfort to operators or users.

Humidity - Ventilation and humidity should be maintained at levels which prevent discomfort and problems of sore eyes.

> **Temperatures**

Minimum temperatures - For workplaces generally, the Workplace (Health, Safety and Welfare) Regulations specify 16°C. For classrooms and other workrooms in schools, however, the Education (School Premises) Regulations 1999 set a higher minimum standard of 18°C.

Maximum temperatures - Although there is no maximum temperature specified in either set of regulations, all employers have a duty under the Workplace Regulations to take all reasonable steps to achieve a reasonably comfortable temperature in the workplace. In such cases, where windows or other openings not provide sufficient ventilation employers must provide supplementary ventilation systems such as provision of fans. The TUC recommends that humidity should be maintained at a comfortable level of between 40% and 50%.

> **Software Systems**

Software must be suitable for the task, easy to use and adaptable to the level of user's knowledge; no checking facility should be used without the knowledge of the worker.

> **Employees with Disabilities**

The HSC advises that wheelchair users may have special requirements for both their chair and work surface (e.g. height). In practice some wheelchair users may need a purpose-built workstation but others may prefer to use existing work surfaces. The HSC's advice states that, clearly, the needs of the individual here should have priority over rigid compliance with the details given in the Schedule to the Regulations as regards seating and work surfaces. The Disability Discrimination Act will also now apply here in requiring reasonable adjustments to be made by employers to normal arrangements to cater for the needs of disabled employees.

c. Plan work so there are breaks or changes of activity

Jobs should be designed well, both in terms of the physical work environment, eg the location and siting of equipment, the sitting positions for the work, and the job content. Overwork in poor ergonomic conditions leads to stress, tiredness, and can give rise to other health and safety hazards such as eye strain and headaches and RSI. This can be prevented by good working practice, including maintaining a regular flow of work, interrupted by regular breaks; working with furniture and equipment that is comfortable and convenient; and being relaxed, since RSI can be caused by tension and working under stress, which tenses the muscles and restricts circulation.

The HSC advises that where work cannot be organised so as to contain natural breaks, then deliberate breaks or pauses must be introduced. The HSC stresses that such breaks should be included in working time. It advises taking short breaks of 5-10 minutes every 50-60 minutes as opposed to longer but less frequent breaks. The RSI Association, however, recommends a break of five minutes in each half hour from keyboard work. In schools, normal timetabling will probably restrict the time at which pupils and teachers work on ICT equipment but these limits should be observed for such work both during and out of school hours.

d. On request arrange eye tests, and provide spectacles if special ones are needed

Eyestrain is the most common health problem reported by workers using display screens. The DSE Regulations set out minimum requirements as above for screens, including requirements concerning the characters on the screen, image, brightness, contrast and freedom from reflections and glare.

The DSE Regulations also give "users" the legal right to eye tests on request when they commence screen work, at regular intervals thereafter, and if they experience visual difficulties. These tests are to be paid for by the employer and provided by a registered ophthalmic optician or a registered medical practitioner with suitable qualifications. Employers may offer a "vision screening test" but must still pay for a full eye test if requested. If a test shows that the worker needs corrective spectacles, then the employer should meet reasonable costs. The NUT believes that any employee required to work with a display screen, whether a "user" or a more occasional operator, should be entitled to a regular eye test paid for by the employer.

e. Provide health and safety training and information

The health and safety risks of excessive ICT work, particularly keyboard use, are well known. Given that pupils may also spend long periods on computers at home, schools must make sure that they are trained in computer use and health and safety.

The NUT advises that, in schools, clear health and safety guidance for both pupils and teachers should be drawn up and preferably circulated as well as displayed. It should include advice on:

- the risks of RSI from excessive keyboard use;
- the length of time to be spent at a computer screen and the need for regular breaks;
- the importance of proper posture and seating relative to the keyboard and screen; and
- safety precautions when using the equipment, including adjusting the workstation and furniture, switching machines on and off, not eating or drinking at workstations, and not interfering with power connection or moving computer equipment without seeking assistance.

Health Hazards

These range from eye strain and headaches to repetitive strain injury (RSI) (also called work-related upper limb disorder or WRULD), backache and stress.

Pregnancy and Display Screen Work

Many women are apprehensive about work at a display screen while pregnant. Although debate continues on whether screen use poses any real risk of problems in pregnancy, the NUT advises that it is sensible to err on the side of caution, particularly since stress is seen as a factor which can adversely affect pregnancy. The NUT therefore believes that women who are pregnant or considering pregnancy should have the option of not working with display screens. Women who continue to use screens during pregnancy should be able to take breaks when desired and their workstations should be adapted to accommodate their specific needs.

Repetitive Strain Injury (RSI)

One of the major problems arising from ICT work is RSI, which describes a range of conditions characterised by pain, numbness or discomfort in the muscles, tendons, nerves and joints of the hand, wrist, forearm, elbow and upper arm, and sometimes the shoulders and neck.

The HSC ACoP and Guidance Notes include a range of advice which seeks to minimise the risk of RSI. This includes its guidance on the layout of workstations (furniture and equipment) and on work processes. As noted above, the HSC advises taking breaks from keyboard work of between five and ten minutes every 50-60 minutes, while the RSI Association recommends a break of five minutes in each half hour. The HSC also emphasises the importance of being relaxed, since RSI can be caused by tension and working under stress which tenses the muscles and restricts circulation.

RSI due to Mouse Use

Using a mouse may give rise to greater risks than using a keyboard because use of a mouse concentrates activity on one hand and on one or two fingers, which makes aches and pain in the fingers, hands, wrists, arms or shoulders more likely.

Electromagnetic Emissions

Concern about electromagnetic emissions, particularly about the possible effects they may have on pregnancy, has led computer manufacturers to make "low emission" screens. Equipment should state whether it meets the voluntary "MRP2". It is now also possible to "spot check" electromagnetic radiation emission levels of computers with relatively inexpensive, easily used meters.

Epilepsy

Display screen use cannot cause epilepsy and is unlikely to cause problems to sufferers of most forms of epilepsy. Photosensitive epilepsy, however, is a rare form of epilepsy which puts the sufferer at an increased risk of experiencing an attack through display screen work. It is unlikely that this form of epilepsy would become apparent for the first time through working with display screens but, as a precaution, enquiries should be made of parents where children are known to be suffering from epilepsy or are in an epilepsy risk category.

Skin Rashes

Skin rashes are sometimes reported amongst display screen workers. In many cases environmental factors contribute to this problem but static-electric fields building up around screens, low level X-ray emissions and ultraviolet radiation given off by screens may be linked to skin rashes. Again, further research is needed into this association.

Stress

Stress has been identified as a problem amongst ICT workers. Again, factors contributing to this have included hot and noisy environments, poor workplace design, machine failures and social isolation. The best means of combating stress is by observing the need for regular breaks from continuous screen work.

Risks due to use of Laptop Computers

Laptop computers have to be compact enough to be easy to carry, resulting in design compromises like smaller keyboards and screens. Laptop work is therefore less comfortable than work at standard sized equipment during prolonged use. Specific training and information should be given for laptop users on minimising risks, including sitting comfortably, angling the screen to minimise reflections and, wherever possible, placing the laptop on a firm surface at the right height for keying.

Teachers' Duties and Responsibilities

Teachers, like all employees, are required by law to take reasonable care for the health and safety of themselves and others, including pupils, and to co-operate with the employer by following the rules and procedures laid down for health and safety.

Teachers supervising lessons using IT equipment must therefore follow safety guidelines for correct use of equipment and also ensure that they are followed by pupils. It is extremely unlikely that teachers could be held to be legally responsible for any injury arising from misuse of ICT equipment provided that they had sought to ensure that proper procedures are followed. In any event, even where a teacher has failed to fulfil the duty of care, it is the employer who bears "vicarious liability".

Further Information

- HSC Guidance: "Display Screen Equipment Work: Guidance on the DSE Regulations" (L26, ISBN 0717604101, £5.75); "VDUs: An Easy Guide to the Regulations" (HSG90, ISBN 0717607356, £5.00); and "Working with VDUs" (INDG36(rev1), single copies free of charge); available from HSE Books, Tel: 01787 881165; and
- BECTa Guidance (British Educational Communications and Technology Agency): "Health and Safety with ICT", www.becta.org.uk/technology/infosheets/pdf/HandS.pdf, plus a range of other advice and guidance on ICT issues in schools.

Action Points for Safety Reps

Make sure that:

- you secure your right to be involved in consultation on the introduction of ICT equipment in individual schools; and
- you use the guidance set out above and the attached NUT checklist to ensure that proper consultation takes place and proper safety precautions are implemented and maintained.



ICT Equipment in Schools: Checklist for NUT Safety Representatives

The following checklist will be useful for NUT health and safety representatives when the installation of IT equipment is planned.

Pre-installation

- > Where are the computers coming from?
 - if donated, are they legitimate?
 - if purchased, has the purchase been properly investigated?
 - have they been electrically checked?
- > Has a siting plan been drawn up for layout?
 - is any structural work required?
- > Where are the computers to be installed?
 - has the power source been determined as adequate?
 - will ventilation be adequate?
 - will lighting be adequate?
 - will the workstation be adequate?
- > Has installation plan been agreed?
 - who will install?
 - will any change/closure to work be needed?
- > Have plans for computer usage been drawn up?
 - do we know what they will be used for?
 - do we know who will use the computers?
 - has relevant software been obtained?
- > What security precautions will be applied?
- > What fire precautions will be applied?
- > Has the school set an appropriate budget for maintaining its computers?

During use

- > Is the siting being monitored?
 - lighting, ventilation, seating, workstation;
 - are trailing cables being checked?
- > Is each computer being properly maintained?
 - Who is maintaining it?
 - Are ventilation, filters, ink, chemicals being checked?
- > Are chemicals etc stored properly?
- > Are the computers insured?
- > Have all users been trained?
 - Has the training properly covered screen time, health and safety etc?
- > Are they observing safety precautions, screen time, rules for use?
- > Are they being offered eye tests etc?
- > Are proper fire precautions being observed?