The EU Directive 90/270 on VDU-Work: a European State-of-the-Art Overview

Report over the situation in

United Kingdom

The EU Directive 90/270/EEC on the Minimum Health and Safety Requirements for Work with Display Screen Equipment

edited by

Matthias Rauterberg and Helmut Krueger

IPO report no. 1236

Technical University Eindhoven

The EU Directive on VDU-Work: a European State-of-the-Art Overview over the situation in United Kingdom

"The EU Directive on the Minimum Health and Safety Requirements for Work with Display Screen Equipment in Practice - a European Overview"

Editors:

Rauterberg, M. *IPO, Center for User-System Interaction, TU Eindhoven, The Netherlands*

Krueger, H. *IHA, Institute for Hygiene and Applied Physiology, ETH Zurich, Switzerland*

In Co-operation with:

International Occupational Ergonomics and Safety Assoc.
SANUS Project at University of Stuttgart (Germany)
SIG CHI of Gesellschaft für Informatik (GI)
SIG CHI of Schweizer Informatiker Gesellschaft (SI)
Swiss Federal Institute of Technology (ETH)

Eindhoven: The Netherlands

Content

Foreword

The EU Directive 90/270/EEC on the minimum health and safety requirements for work with display screen equipment gives general guidelines on responsibilities and identifies areas for legislation. It does not provide measurable ergonomic standards. These values are being identified in standards such as ISO 9241 and EN 29241.

The International Standards Organisation (ISO) has announced a set of standards called ISO 9241 which provide specific values on which legislation may be based. It also provides system manufacturers, employers and employees with a scientific basis for planning ergonomic working environments. The standard currently comprises 17 parts: Part 1 General Introduction, Part 2 Task design (the way jobs are designed for people working with display equipment), Parts 3-9 Hardware and physical environment, Parts 10-17 Software and usability.

The European Committee for Standardisation (CEN) has decided to issue its own standard, EN 29241, which will be virtually identical to ISO 9241. In this context EN standards are particularly relevant because CEN member countries, which include both EEC and EFTA, have jointly decided that EN standards will replace national standards (e.g. BS 7179) as soon as they are published. ISO-standards are not always introduced as national standards.

Of course, the Directive outlines minimum standards. Many countries will have existing legislation that already meets or exceeds the proposals.

Each member country will review the Directive and having interpreted it to suit local conditions, they will create new legislation. The new ergonomic laws should be in place as soon as possible. Local legislation will refer to local standards bodies' interpretation of ISO 9241 and EN 29241.

The principles behind ergonomic legislation are simple and founded in common sense. However, far reaching implications for manufacturers and employers ensure that their implementation is complex.

The aims of this book are threefold:

(1) to present the actual state of the national legislation from a theoretical, political and a practical point of view,

(2) to discuss the range of possible evaluation criteria,

(3) to give a state of the art overview of the methods and tools in practice.

The first author will give an overview of the national activities and forthcomings of the legislation process. The second author will introduce and discuss the strength and weaknesses of the presented national approach.

We hope that this report will help to harmonize the implementation and practice of the EU Directive 90/270/EEC in Europe.

Matthias Rauterberg

Helmut Krueger

Matthias Rauterberg & Helmut Krueger (eds.)
The EU Directive 90/270 on VDU-Work:
A European State-of-the-Art Overview

United Kingdom: Implementation of the Display Screen Directive (90/270/EEC)

Tom Stewart
System Concepts
2 Savoy Court, Strand, London, WC2R 0EZ, U.K.
tel. +44 171 240 3388 and fax +44 171 240 5212
e-mail: tom@system-concepts.com

Abstract

The Health and Safety Commission (a tri-partite body including government, employers and trades unions) decided to transpose the Directive as Regulations under the Heath and Safety at Work etc Act 1974 (specifically "under section 15 (Work with Display Units-86), (2), (5)(b) and (9) of, and paragraphs 1(Work with Display Units-86)(a) and (2),7,8(Work with Display Units-86) and 14 of Schedule to" that act). The original Directive contained a number of obligations which, although generally quite straightforward, were formulated in language which was sometimes unclear, having lost something in translation from the original French. Unfortunately, on the advice of the Government Solicitors, the HSC retained much of the original wording of the Directive and included the technical annex as a Schedule to the Regulations.

1 Overview

The Health and Safety (Display Screen Equipment) Regulations 1992 set out six main obligations on employers of those who work with display screen equipment. Employers are required to:

- analyse workstations and reduce health and safety risks
- ensure workstations meet minimum ergonomic requirements
- provide information about risks and measures
- plan daily work routine for users
- offer eyetests and special glasses if necessary
- provide health and safety training

The Regulations only apply where there are 'users' or ‚operators'. Although both these terms are common in the computer industry, the Health and Safety Executive chose to give them specific meanings under the Regulations. A 'user', in terms of the Regulations, is an employee who habitually uses display screen equipment as a significant part of his normal work. Some of the employer's responsibilities extend to users employed by others (eg Temp agency staff) who are working on the employers premises or equipment.

The Regulations also apply to the self-employed. An ‚operator' in terms of the Regulations, is any self-employed person who habitually uses display screen equipment as a significant part of his normal work. As a self employed person, some of the obligations are their own responsibility eg training. However, other responsibilities fall on the employer who has hired them for display screen work.

For each user and operator working in his undertaking, the employer must:

a. assess the risks arising from their use of display screen workstations and take steps to reduce any risks identified to the 'lowest extent reasonably practicable'

b. ensure that new workstations ('first put into service after 1st January 1993') meet minimum ergonomics standards set out in a schedule to the Regulations. Existing workstations have a further four years to meet the minimum requirements, provided that they are not posing a risk to their users.

c. inform users about the results of the assessments, the actions the employer is taking and the users' entitlements under the Regulations

For each user, whether working for him or another employer (but not each operator)

d. plan display screen work to provide regular breaks or changes of activity

In addition, for his own employees who are users,

e. offer eye tests before display screen use, at regular intervals and if they are experiencing visual problems. If the tests show that they are necessary and normal glasses cannot be used, then special glasses must be provided.

f. provide appropriate health and safety training for users before display screen use or whenever the workstation is 'substantially modified'

Table 1. summarising employer's obligations towards display screen users and operators.

Obligation	towards own employee who is a user	towards other employee (eg works for Temp agency) who is a user	towards self employed person who is an operator
Assess risks at display screen workstation	YES	YES	YES
Ensure workstation meets minimum ergonomics requirements	YES	YES	YES
Inform staff about rights and what has been done	YES	YES	YES
Plan work and provide breaks	YES	YES	NO (individual responsibility)
Offer eyetest and special glasses if necessary	YES	NO (main employer is responsible)	NO (individual responsibility)
Provide training in safe use	YES	NO (main employer is responsible)	NO (individual responsibility)

2 The Main Responsibility Lies with the Employer

The Regulations set out obligations under the Health and Safety at Work Act (1974) for employers responsible for display screen users and operators. As with other aspects of health and safety, many of the duties fall to individual managers. However, the users and operators themselves have a responsibility to co-operate with management on appropriate measures and to play their part in avoiding risks by following safe systems of work, reporting faults and using equipment sensibly.

Under the Management of Health and Safety at Work Regulations (which transposed the Framework Directive), employers must consult with staff and their representatives, especially safety representatives if they exist in the organisation, on matters of health and safety.

3 The Regulations are Implemented and Enforced in Great Britain as Part of the Health and Safety at Work etc Act 1974

The Regulations were made under Section 15 of the Health and Safety at Work Act 1974. Thus they have the full force of the law behind them and are part of the statutory duty of employers to their employees. Enforcement is through the Health and Safety Executive's Factory Inspectorate and Local Authority Environmental Health Officers as appropriate.

The Regulations and the Schedule of minimum requirements for workstations contain little that was not already covered by the existing legislation and guidance. However, in

view of the greater level of detail and specification in the Regulations, it is easier for enforcers and others to know exactly what steps should be taken. The full range of penalties associated with the HSAW are available to inspectors including improvement notices, prohibition orders and legal proceedings, in extreme cases.

4 The Regulations Came into Effect on 1st January 1993

The Regulations came into force on 1st January 1993. From that date, employers have been obliged to assess and reduce risk, provide information and training, plan display screen work for users and offer suitable eye and eyesight tests. They are also obliged to ensure that new workstations meet the minimum ergonomics requirements in the Schedule.

Existing workstations must be assessed for risks to the user's or operator‘s health. Where this assessment shows no risk, the workstation does not need to brought into line with the minimum requirements until 1st January 1997. However, if the assessment reveals a risk, then the risk should be reduced to the lowest extent reasonably practicable as soon as possible.

As 1997 approaches, an increasing number of suppliers of computer equipment, furniture and accessories are warning employers about the deadline and urging them to upgrade display screen installations. The Health and Safety Executive has undertaken research into the implementation and the impact of the Regulations in the UK and the results of that research will be published soon.

5 Ergonomics Standards are Recommended

The guidance produced by the HSE makes it clear that the requirements in the Schedule can ‚be met and in most cases exceeded‘ by meeting the relevant ergonomic standards BS 7179 or its replacement, the CEN Standard BS EN 29241 which is under development. The relationship between the Schedule and EN 29241 parts are shown in Table 2.

Table 2. The relationship between the Schedule and BS EN 29241 parts (when published).

1. EQUIPMENT	**BS EN 29241 (parts 1 to 6 will replace BS7179)**
(b) Display Screen	3. Visual display requirements 8. Requirements for displayed colours
(c) Keyboard	4. Keyboard requirements
(d) Work desk or work surface	5. Workstation layout and postural requirements
(e) Work chair	5. Workstation layout and postural requirements
2. ENVIRONMENT	
(a) Space requirements	5. Workstation layout and postural requirements
(b) Lighting	6. Environmental requirements
(c) Reflections and glare	7. Display requirements with reflections
(d) Noise	6. Environmental requirements
(e) Heat	6. Environmental requirements
(g) Humidity	6. Environmental requirements
3. HUMAN-COMPUTER INTERFACE	
(a) suitable for the task	2. Guidance on task requirements 11. Guidance on usability specification and measures
(b) easy to use and adaptable to operator	10. Dialogue principles 11 Guidance on usability specification and measures
(c) feedback	10. Dialogue principles 13. User Guidance
(d) format and pace	12. Presentation of information
(e) principles of software ergonomics	parts 10 to 17

Matthias Rauterberg & Helmut Krueger (eds.)
The EU Directive 90/270 on VDU-Work:
A European State-of-the-Art Overview

United Kingdom: Observations on the Implementation of Directive 90/270/EEC

Brian Pearce

HUSAT Research Institute, Loughborough University

Loughborough, Leicestershire, LE11 1RG, UK

tel. +44 1509 611088

e-mail: b.g.pearce@lboro.ac.uk

1 Introduction

The UK government did not look favourably upon Directive 90/270/EEC [hereafter referred to as the VDU Directive] when the original proposal (CEC, 1988) was presented by the Commission to the Council, in March 1988. A Select Committee of the House of Lords conducted an inquiry into the VDU Directive and, in November 1988, published a report which was debated in the House of Lords in February 1989 (Hansard, 1989). Their Lordships suggested that the scientific evidence that VDUs caused major health hazards was weak and that public concern was not itself a sufficient reason for having a Directive: the Committee concluded that there was inadequate justification for a Directive on VDUs. An editorial in the medical journal *The Lancet*, in June 1991, concluded "Whatever the views ultimately to be enshrined in our laws, prudence seems to counsel that ministers in various EC countries should harmonise their policies. In this way 90/270/EEC might benefit the populace and not prove to be a social albatross around member states' necks" (Anon, 1991). The UK was the only Member State not to vote in favour of the VDU Directive at the Council of Ministers meeting in Brussels in October 1989. The UK abstained.

Despite the UK government's clear lack of enthusiasm for specific legislation on working with VDUs, it was decided to implement the VDU Directive in the UK as new regulations under the Health and Safety at Work etc Act 1974. This was seen by most commentators, at the time, as the simplest and most appropriate way of complying with the VDU Directive. However, the *Proposals for Regulations and guidance* (HSC, 1992a), a consultative document published by the Health and Safety Commission (HSC) in January 1992, raised many concerns particularly amongst employers.

Most frequently voiced were concerns about: the lack of a simple definition of who would be covered by the new regulations; the requirements for eye testing and the "provision of special corrective appliances"; the requirements for risk assessments; what constitute the principles of software ergonomics; and the costs involved in complying with the regulations. In contrast, paragraph 12 of the *Proposals for Regulations and guidance*

noted that "The TUC [Trades Union Congress] consider that the proposed regulations do not fully implement both the letter and the spirit of the Directive. In particular, they consider that Regulation 3 and the associated minimum requirements in the Schedule should apply to all workstations. The TUC believes that the Directive itself was intended to set minimum requirements for all display screen workstations, not just those in use by a "user" as defined in the proposed regulations" (HSC, 1992a).

2 Initial Reactions to the Health and Safety (Display Screen Equipment) Regulations 1992

Following the consultative process, significant changes were made to the draft wording of the regulations. These changes increased the precision with which the requirements were expressed, but overall made the regulations more complex and more difficult to understand. The final wording appeared in Statutory Instrument No. 2792, which was Laid before Parliament on the 16th November 1992. This Statutory Instrument caused the Health and Safety (Display Screen Equipment) Regulations 1992 [hereafter referred to as the DSE Regulations] to come into force on the 1st January 1993. The purpose and content of the DSE Regulations were never debated in the House of Commons by elected Members of Parliament. The method by which "the laws, regulations and administrative provisions" necessary to comply with the VDU Directive were introduced in the UK prompted some to argue that the DSE Regulations were yet another example of unnecessary, European-inspired legislation being imposed 'via the back door'.

Guidance on the DSE Regulations (HSE, 1992a) (HSE, 1992b) was published by the Health and Safety Executive (HSE) in November 1992, i.e. two months before the DSE Regulations came into force. At around the same time, the HSE issued a press release (HSE, 1992c) warning employers about exploitation of the DSE Regulations by unscrupulous suppliers of furniture, equipment and services: "Many of the claims being made about what the legislation says and what firms must do are bogus, aimed at getting businessmen to buy advice and then undertake unnecessary measures, usually involving further services or products". In both the guidance documents (HSE, 1992a) (HSE, 1992b) it is stated that the HSE will be publishing "supplementary practical advice which will be available in 1993". Unfortunately, it was not until July 1994 that the HSE published *VDUs an Easy Guide to the Regulations* (HSE, 1994), which contained a "VDU workstation checklist for risk assessment and complying with the schedule to the regulations".

A *Review of Health and Safety Regulation* published by the HSC in May 1994 highlighted continuing dissatisfaction with the DSE Regulations (HSC, 1994). For example: in paragraph 9, "The Health and Safety (Display Screen Equipment) Regulations 1992 have, thus far, proved controversial"; in paragraph 43, "Many companies feel that these impose excessive requirements, especially in respect of eye tests for employees"; and in paragraph 145, "There is no evidence of any substantial disagreement over the standards which HSE and other enforcers are trying to enforce, with the single major exception of the Health and Safety (Display Screen Equipment) Regulations 1992". In Table 2 of Annex 12 of the review (HSC, 1994), the initial costs of the DSE Regulations are estimated to be £94.9m to £117.2m, with recurring costs of £53m to £64m, set against recurring benefits of £47m to £58m. In other words, the Health and Safety Commission's own estimates suggested that the recurring costs of the DSE Regulations were similar to the recurring benefits. However, these figures should be viewed with caution as the cost benefit analysis from which they are derived made a number of broad assumptions, both with respect to the costs and the benefits.

A government Deregulation Unit published a report, in January 1994, entitled *Deregulation Task Forces Proposals for Reform* (DTI, 1994). With respect to the DSE Regulations this report stated:

> "HSE guidance states that ”medical evidence shows that using display screen equipment is not associated with damage to eyes or eyesight; nor does it make existing defects worse”. The requirement to provide eyesight tests is, therefore, an unjustified burden on business. The Government should review the impact of these regulations as soon as possible with the EC Commission with a view to reducing the burden on business by revoking Regulation 5. If the requirement for eyesight tests remains, bearing in mind HSE’s guidance, they should be funded by the State as allowed for in the Directive".

The Deregulation Unit's report also recommended:

> "Review requirements for replacement of equipment by 1996 unless there is a clear need related to recognised hazards. Review the hazards of (for instance) non-swivelling monitors and non-tilting keyboards in view of the burden which replacement would impose on small businesses. The EC product standard should not impose requirements in excess of the current British Standard. Given the extent to which DSE work dominates the workplace, it is considered almost inconceivable that an "habitual user" would not use DSE on every workday and the term should be redefined accordingly. Make it clear which injuries are known to affect DSE users and those for which the evidence is patchy or non-existent" (DTI, 1994).

Not surprisingly, deregulation is opposed by those representing workers' interests. For example, the main recommendations of a survey, conducted in November 1995, of 267 Safety Representatives, mostly working in the public sector, were that the Health and Safety Commission should press the Government to:

> "extend the Regulations to cover all staff using DSE, regardless of their employment status and the length of time they spend on the equipment (this could be done by simplifying the definitions used in the legislation); stress the importance of screen breaks (and shorter breaks in particular) to ensure that short breaks gain more acceptance from employers and managers; and ensure that employers take the DSE Regulations seriously" (Norton, 1996).

3 Awareness of and Compliance with the Health and Safety (Display Screen Equipment) Regulations 1992

Anecdotal reports (e.g. Lyons, 1995) suggest that those organisations which conscientiously comply with health and safety legislation have expended considerable time and effort to meet what might be termed the administrative requirements of the DSE Regulations. Meeting the minimum ergonomic requirements for workstations has apparently not posed a significant problem for these organisations simply because most already exceeded many of the minimum requirements. However, there is some evidence (again anecdotal) that many health and safety professionals consider that there are far more pressing and dangerous issues to address than the risks posed by working with VDUs. Inevitably, risk assessments of VDU workstations are not high on their agenda.

Research commissioned by the HSE in 1995 (Honey et al, 1997) into the levels of awareness of and compliance with the DSE Regulations concluded that:

> "employers broadly fall into one of three groups with regard to their attitude to display screen equipment and the Regulations. First, there are those who do very little to control the risk in terms of assessment, workplace alterations or provision of eyesight

tests *etc*. They are generally unaware of the Regulations and also unaware of the potential risks to employees' health from the uncontrolled use of VDUs and other display screen equipment in the workplace. Small companies, whether they use a lot of display screen equipment or not, tend to fall into this category.

Secondly, there are employers who conform to the Regulations, some, perhaps, reluctantly. They look to ways of minimising their obligations, perhaps by placing the onus on employees to organise their work and their workplaces appropriately, and to take relevant precautionary actions such as going for eyesight tests.

Finally, there are those employers who well exceed the requirements of the Regulations, usually as part of a general policy on occupational health. These are mainly larger companies. Some may not like some of the detail of the Regulations and may feel that the risks are not as extensive as first thought. However, as a whole, this group takes a long-term approach with the aim of minimising any future liabilities and they seek to maximise the potential benefits from adopting a 'caring' attitude to their staff. They therefore often offer training, assessments and eyesight tests on a wide scale, and look to control the costs through using in-house services and taking account of the Regulations in office refurbishment *etc*.

The key factors inhibiting movement between the first and the next two categories, *ie* from inaction to action, appear to be:

- a lack of awareness of the Regulations, and
- a lack of conviction that they are addressing an important health and safety issue.

There are two points here concerning this lack of conviction. Some employers have doubts as to the extent of the risks from repetitive strain injury or upper limb disorders, or back injuries or eye strain, from working with display screens. This does not appear to be a problem to do with awareness. Employers who were not motivated by the desire to protect employees from the risks of DSE had a better understanding of those risks. The more employers are aware of the risks, the less concerned they appeared to be. Secondly, there is a feeling that if there are risks, they are associated with office work in general, *ie* continually sitting at a desk or reading small print *etc*. rather than exclusively with DSE.

Lack of awareness was not confined to employers. It seems that many employees did not know of their entitlement to eyesight tests, and had not been involved in assessing the risks at their workstation or in training on how to control them. Even where employers were aware of the Regulations and taken appropriate action, they reported problems ensuring employees took appropriate breaks from display screen work, and other preventative actions" (Honey et al, 1997).

The survey, in November 1995, of 267 Safety Representatives, mostly working in the public sector, also concluded that:

"the employers responsible for reacting to the legislation could be characterised as falling easily into three different (but widely separated) categories: ignorant employers who undertake little risk management and are broadly unaware of legal requirements and potential hazards; reactive employers who reluctantly follow guidelines but cut corners wherever possible; and pro-active employers who exceed legal requirements, look to their long term future and attempt to maximise the benefits of compliance.

Non-compliance is therefore best explained by either ignorance of the legislation or the desire to avoid spending time and money on complying with it. The DSE Regulations as they stand are not unworkable, they are merely being applied badly in a significant number of cases" (Norton, 1996).

Thus, despite the HSE's substantial efforts to publicise the DSE Regulations, e.g. with advertisements in the national press, it appears that many employers in the UK, particularly small and medium enterprises (SMEs), have taken little, if any, overt action to comply with the DSE Regulations and some employers remain blissfully unaware of

them. However, what is not examined by the type of surveys quoted above is whether those employers claiming awareness of and compliance with the DSE Regulations actually understand and fully comply with them. It is perhaps worth noting at this point that in the press release (HSE, 1997) announcing the publication of the results of the survey of the DSE Regulations (Honey et al, 1997), the HSE repeated its warning to employers about misleading advice on the legal requirements of the DSE Regulations.

It is readily apparent when more detailed investigations are conducted that, even where there is an awareness of the DSE Regulations and an intent to comply with them, employers often still misunderstand some of the requirements and fail to appreciate the full implications of these novel and complex regulations. Typically, attention is often focused almost solely on the furniture and hardware with little, if any, consideration being given to the software issues or daily work routine. Employers who readily acknowledge the principle of free eye tests and 'special corrective appliances' for VDU "users" sometimes misunderstand the precise nature of the 'entitlement'. Even in the most well-managed, health and safety conscious organisations, examples can usually be found of misunderstandings and inconsistencies in the implementation of the DSE Regulations.

Even some of those responsible for enforcement can apparently be confused by the complex requirements of the DSE Regulations. For example, summarising an inspection which took place in November 1993 of a VDU installation in a SME, a local authority enforcement officer wrote in May 1997: "At the time of my visit a Display Screen Equipment assessment was not required as the VDUs were provided before 1 January 1993. Existing equipment was not subject to assessment until 31 December 1996". It appears that this enforcement officer was still confused, in May 1997, about the requirements of Regulations 2 and 3 of the DSE Regulations. Paragraph 42 of the HSE's guidance (HSE, 1992a) makes clear that, while a workstation first put into service before the 31st December 1992 must meet the minimum requirements laid down in the Schedule by no later than the 31st December 1996 (Regulation 3), no such transitional period applies to the requirement for risk assessments (Regulation 2).

4 Enforcement of the Health and Safety (Display Screen Equipment) Regulations 1992

Employers who do not comply fully with the DSE Regulations, whether due to ignorance, misunderstandings or a lack of conviction that the DSE Regulations address important health and safety issues, potentially expose themselves to criminal prosecution by those responsible for the enforcement of health and safety legislation. However, it can be argued that the extent to which some employers will comply with the DSE Regulations will depend, in part, upon their perceptions of the extent to which the DSE Regulations have been, or will be, enforced.

The enforcement of the DSE Regulations in commercial premises such as offices, shops and hotels, which probably house the majority of display screen equipment "users" in the UK, is the responsibility of local authority enforcement officers. However, no statistics are published, or have even been collected, on the number of employers who have been prosecuted, or on the number of Enforcement Notices issued by local authority enforcement officers, for not complying with the DSE Regulations. There have been a few anecdotal reports (e.g. Lyons, 1995) which suggest that local authority enforcement officers have, on occasions, used their powers to ensure employers comply with the requirements of these novel and complex regulations. However, the overall impression given is that local authority enforcement officers perceive that, with limited resources, they have far more important health risks to address, e.g. food hygiene, than those possibly arising from working with VDUs.

The enforcement of the DSE Regulations in government offices and industrial premises is the responsibility of HSE Inspectors. The available statistics show that, up to the end of March 1996, no employer had been prosecuted for not complying with the DSE Regulations and that HSE Inspectors had only issued six Improvement Notices and no Prohibition Notices with respect to these regulations. In contrast, the most recently published statistics (HSC, 1996) show that in one year alone, the year ending March 1996, the HSE's Field Operations Division Inspectorate issued more than 1,000 Enforcement Notices and successfully prosecuted over 100 employers for not complying with the five other new sets of health and safety regulations arising from what are commonly referred to as the 'six pack' of European Directives.

The HSE's policy with respect to the formal enforcement of new health and safety regulations arising from the 'six pack' of European Directives was outlined in a leaflet entitled *New Health and Safety At Work Regulations* (HSE, 1993):

> "HSE inspectors' approach to employers in the period immediately after the coming into force of the new regulations at the beginning of 1993 is to promote awareness of the regulations and the duties they place on employers. They will point employers in the direction of sources of advice and guidance as necessary.

Consideration of formal enforcement is not likely unless:

(1) the risks to health and safety are evident and immediate; or

(2) what needs to be done is not new (ie existing duties transposed into new legislation); or

(3) employers appear deliberately obdurate and unwilling to recognise their responsibilities to ensure the long term health, safety and welfare of employees and others affected by their activities".

Thus, the HSE's apparent lack of formal enforcement of the DSE Regulations compared with the other new sets of health and safety regulations arising from the 'six pack' of European Directives can be explained, in part, by the fact that, unlike the five other sets of new regulations, the DSE Regulations impose a whole range of new duties on employers. However, it can also be argued that HSE Inspectors encounter relatively few display screen equipment "users" and that the risks to which these "users" are exposed pale into insignificance compared with the risks arising from many of the industrial processes inspected by the HSE's Field Operations Division Inspectorate.

The overall impression which can be drawn from the, admittedly limited, evidence currently available is that, for a variety of reasons, those responsible for the enforcement of health and safety legislation attach a low priority to the DSE Regulations. Thus, it can be argued that non-compliance will probably go largely undetected, except perhaps in organisations which have strong trade union representation or employees who are willing to report their employer to the appropriate enforcement agency (e.g. Anon, 1995).

5 Legal Issues

It can be argued that, despite its clear lack of enthusiasm, the UK government brought into force "the laws, regulations and administrative provisions" necessary to comply with the VDU Directive by December 1992. However, the DSE Regulations raise many legal issues which have yet to be explored in the Courts. To understand the nature of these legal issues it is necessary to explain, briefly, the legal context in the UK.

To incorporate the 'six pack' into UK legislation the government chose to promulgate new regulations under the Health and Safety at Work etc Act 1974. At the risk of gross oversimplification, the Health and Safety at Work etc Act 1974 can be viewed as placing certain duties on employers to protect "so far as is reasonably practicable" the health and safety of employees. These duties are enforced by the state, via the criminal law. An

individual employee cannot take an employer to Court for failing to comply with some statutory duty laid down in the Health and Safety at Work etc Act 1974, it is up to the HSE or local authority enforcement officers to bring the prosecution.

An individual employee can take an employer to Court to claim damages for, say, pain and suffering and loss of earnings, following an accident, but these are civil proceedings. In civil proceedings an employee has to prove, on the balance of probabilities, that the employer's negligence or a breach of some statutory duty caused or materially contributed to a work-related injury. Until the DSE Regulations came into force there were no statutory duties specifically relating to the use of VDUs.

While the Health and Safety at Work etc Act 1974 and Regulation 15 of the Management of Health and Safety at Work Regulations 1992 (HSC, 1992) specifically exclude civil liability, historically, regulations made under the Health and Safety at Work etc Act 1974 do not. Thus, the direct incorporation of the VDU Directive into UK legislation not only imposes a range of new statutory duties upon employers which, if breached, could lead to criminal prosecution, but also permits these statutory duties to be used to assist an employee bringing civil proceedings against an employer for an 'injury' arising from VDU use. This should not and would not be a problem, if, and it is a big if, the 'injuries' arising from VDU use were well-defined and if, and it is an even bigger if, it was clear how these statutory duties and in particular the minimum ergonomic requirements prevented these 'injuries'. As the law stands in the UK, it appears likely that these statutory duties will be used to assist employees bringing civil proceedings against their employers for a range of ill-defined 'injuries' allegedly arising from VDU use.

As yet, there appears to be no record of an employee using the DSE Regulations to assist in bringing successful civil proceedings against an employer for an 'injury' arising from VDU use. However, this appears to be more a function of the long delays for such civil proceedings to reach Court rather than a lack of enthusiasm to exploit the opportunities offered by the DSE Regulations. Whether such civil proceedings will be successful will depend greatly upon how the Courts interpret the DSE Regulations. The wording of The Schedule to the DSE Regulations is very similar to that in the Annex to the VDU Directive. The Annex (and thus The Schedule) are a bizarre mixture of significant and trivial ergonomic issues, expressed very badly. For example, what constitute the 'principles of software ergonomics' and precisely what is meant by 'the arrangement of the keyboard and the characteristics of the keys shall be such as to facilitate the use of the keyboard'? As it is currently worded, meeting the requirements in The Schedule and, therefore, meeting statutory duty is a potential minefield. Will legal interpretation make ergonomic sense?

In general, the wording of the DSE Regulations follows closely the original wording of the VDU Directive. Thus, before any consideration of the more obscure ergonomic requirements, UK Courts will have to decide whether the DSE Regulations actually applied in particular circumstances. How long could an employer reasonably be expected to take to assimilate these novel and complex regulations and to put into place the administrative provisions necessary to comply with them, particularly given the delay in the publication of the HSE's supplementary practical advice? Was the employee a "user" within the meaning of the regulations? The HSE offer some guidance (HSE, 1992a) on who is a display screen equipment "user", but it is ultimately for the Courts to decide what is meant by "an employee who habitually uses display screen equipment as a significant part of his normal work".

Similarly, the Courts will have to decide, in particular circumstances, what constitutes a "suitable and sufficient analysis" of a workstation and what constitutes "a significant change" to a workstation sufficient to warrant a review of the risk assessment. The HSE's guidance on this topic (HSE, 1992a) suggests that the relevant parts of the risk assessment should be reviewed where there has been a major change to, among other things, the screen or keyboard or software used. However, given the evidence on the levels of awareness and compliance and the perceived risks, it seems a remote possibility that many employers will have reviewed their risk assessments following, say,

the introduction of Windows 95™. Whether this is 'reasonable' is for the UK Courts to decide.

There are also a number of features of the DSE Regulations which could possibly be challenged in the European Court. For example, when incorporating the VDU Directive into UK legislation those responsible for drafting the DSE Regulations omitted any reference to Article 8 of the VDU Directive concerning 'Worker consultation and participation'. This was perhaps not surprising. A Conservative government which had so drastically reduced trade union powers and which has long been opposed to the "social dimension of the internal market", was hardly likely to wish to be perceived as conceding novel (to the UK) consultation and participation rights to workers. However, it can be argued that amendments to existing legislation to implement the Framework Directive, e.g. the Health and Safety (Consultation with Employees) Regulations 1996 (HSE, 1996), have met, in a general way, the requirements of Article 8 of the VDU Directive and therefore there was no need to incorporate Article 8 in the DSE Regulations.

Another feature of the UK's interpretation of the VDU Directive which may find its way into the European Court is the wording of Regulation 2 (3) of the DSE Regulations, which states: "The employer shall reduce the risks identified in consequence of an assessment to the lowest extent reasonably practicable". The addition of the phrase *to the lowest extent reasonably practicable* reflects the fact that in UK legislation employers are only required to protect the health and safety of their employees "so far as is reasonably practicable".

6 Concluding Observations

There continues to be a vociferous minority, some of whom appear to be politically motivated, arguing about the merits of the VDU Directive and how it has been incorporated into UK legislation. There are some who argue that the DSE Regulations do not go far enough, while others remain unconvinced of the need for specific legislation relating to VDU use. Some clearly also hold the (perhaps inaccurate) beliefs that, as with most other European Directives, the UK has assimilated the VDU Directive more faithfully and will enforce it with more rigour than most other Member States.

Under the Conservative government there were strong political pressures in the UK for deregulation. However, there are those who would argue that both the Directive and the new regulations should be left to settle down and that strong criticisms of the VDU Directive itself or its incorporation into UK legislation provide unnecessary ammunition for those who want immediate and sweeping changes. Such changes, it is argued, would be unlikely to correct all the imperfections and could result in unnecessary burdens on business, either from the change process itself or through the nature of any new requirements. The abolition of current requirements or the imposition of further new requirements would, it is argued, be particularly irksome for those employers who have conscientiously taken steps to comply with the requirements of the DSE Regulations. It appears that underlying these arguments is the belief that negotiations were not able to correct all the imperfections of the VDU Directive and that it would be unwise to assume that any future negotiations would fare any better, particularly if the negotiations were provoked by the UK. However, it would appear that Article 10 of the VDU Directive does provide the opportunity, albeit in an unspecified time scale, to correct some of the more serious flaws in the Annex to the Directive.

The fundamental question which surely needs to be addressed is whether the VDU Directive has made any significant reduction to the risks to which VDU users are exposed in Member States. Although it is possibly too early to provide a definitive response, in the UK, the answer is, in general, probably 'no'. This has little to do with the way in which the VDU Directive was incorporated into UK legislation or the rigour with which the DSE Regulations will be enforced. It has much more to do with the perception of what

constitute, and the magnitude of, the risks to which VDU users are exposed, and the overall level of awareness of ergonomic issues and health and safety matters, which pre-date the VDU Directive and its incorporation into UK legislation.

Long before the VDU Directive was even a twinkle in the eye of some Eurocrat, the HSE published a research paper (Mackay, 1980) on the human factors of VDU use and comprehensive guidance (HSE, 1983) on the possible health effects of using VDUs and the ergonomics issues which should be considered when introducing VDUs. In addition, in 1986, the HSE published a leaflet (HSE, 1986) aimed at VDU users, giving answers to the most frequently asked questions about the effects on health of VDU use. These publications dispelled many of the myths and misunderstandings surrounding VDU use and helped put the risks popularly understood to be associated with working with VDUs in perspective. Thus, it can be argued that by the time the DSE Regulations came into force in the UK, the health concerns relating to VDU use, which had apparently prompted the European Commission to propose the VDU Directive, were not a significant issue in the UK, compared with many other health and safety risks.

The HSE's guidance on the DSE Regulations (HSE, 1992a) explicitly acknowledges, in Paragraph 19, that which was implicit in the HSE's earlier guidance (HSE, 1983) (HSE, 1986), namely that the risks to health posed by working with VDUs are low:

> "Possible risks which have been associated with display screen equipment work are summarised at Annex B. The principal risks relate to physical (musculoskeletal) problems, visual fatigue and mental stress. These are not unique to display screen work nor an inevitable consequence of it, and indeed *research shows that the risk to the individual user from typical display screen work is low*. However, in display screen work as in other types of work, ill health can result from poor work organisation, working environment, job design and posture, and from inappropriate working methods. As discussed in Annex B, some types of display screen work have been associated with chronic musculoskeletal disorders. While *surveys indicate that only a very small proportion of display screen workers are likely to be involved*, the number of cases may still be significant as display screen workers are so numerous. All the known health problems that may be associated with display screen work can be prevented altogether by good design of the workplace and the job, and by worker training and consultation" (HSE, 1992a) [*my emphasis*].

The basic problem would appear to be the confusion which exists in the VDU Directive (and therefore in the DSE Regulations) between ergonomic issues and health and safety matters. They are not the same. Part of the preamble to the VDU Directive includes the assertion: "[Whereas] compliance with the minimum requirements for ensuring a better level of safety at workstations with display screens is essential for ensuring the safety and health of workers". Is it essential? Many relatively trivial ergonomic recommendations which were originally intended to reduce discomfort and fatigue have been turned into a motley collection of very badly expressed, minimum ergonomic requirements, which are somehow supposed to ensure the health and safety of VDU users. The validity and utility of many of these ergonomic recommendations are open to question.

It is perhaps worth noting at this point that, unlike the 'Preliminary remark' in the Annex to the VDU Directive, paragraph 1 (b) of The Schedule to the DSE Regulations states that: "An employer shall ensure that a workstation meets the requirements in this Schedule to the extent that those requirements have effect with a view to securing the health, safety and *welfare* of persons at work" [*my emphasis*]. It can be argued that, with the exception of the reference to 'Radiation', all the requirements in the Schedule, indeed the DSE Regulations in general, amount to no more than welfare provisions.

In many ways, the VDU Directive and its incorporation into UK legislation became something of a political football, reflecting both internal politics and the UK's ambivalence to Europe. While the football is still being kicked around in the UK, it seems to have developed a slow puncture and many of the original players appear to have found other

games to play. In years to come, the VDU Directive and its incorporation into the criminal law will probably be referred to, at least in the UK, as a 'storm in a tea cup'. It is with respect to civil proceedings that the VDU Directive might well have its most significant impact in the UK.

Acknowledgements

The author would like to thank Ian MacArthur of the Chartered Institute of Environmental Health, Chris Phillips, Solicitor of the Supreme Court, Colin Mackay and Nigel Watson of the Health and Safety Executive, Christian Du Cann, Barrister at Law and Tom Stewart for their comments on early drafts of this chapter. However, the author is solely responsible for any errors or omissions in this chapter, and the opinions expressed, where not attributed to a particular source, are those of the author.

References

Anon (1991). *A new sprout from Brussels*. The Lancet. Vol. 337, pp. 1317-1318. June 1, 1991.

Anon (1995). *Improvement Notice issued over Sheffield Star display screens*. Safety Management. Vol. 11, No. 4. April 1995.

CEC (1988). *Proposal for a Council Directive concerning the minimum safety and health requirements for work with visual display units. Com(88) 77 final*. Official Journal of the European Communities. No. C113, 29.4.1988, pp. 7-9.

DTI (1994). *Deregulation Task Forces Proposals for Reform*, Deregulation Unit of the Department of Trade and Industry, London, January 1994.

Hansard (1989). *The Parliamentary Debates.* House of Lords Official Report. Fifth Series, Vol. 503. pp. 1054-1159. HMSO, London.

Honey, S., Hillage, J., Frost, D. and La Valle, I. (1997) *Evaluation of the Display Screen Equipment Regulations 1992*. Contract Research Report 130/1997. Health and Safety Executive. January 1997.

HSC (1992a). *Work with Display Screen Equipment Proposals for Regulations and guidance*, *Consultative Document*. Health and Safety Executive, London. January 1992.

HSC (1992b). *Management of Health and Safety at Work, Approved Code of Practice*. *Management of Health and Safety at Work Regulations 1992,* HMSO, London, October 1992.

HSC (1994). *Review of Health and Safety Regulation Main Report*. HSE Books, London. May 1994.

HSC (1996). *Health and Safety Statistics 1995/96*. HSE Books. October 1996.

HSE (1983). *Visual Display Units*. HMSO, London. 4/83.

HSE (1986). *Working with VDUs*. IND(G) 36(L) HSE, London. 4/86.

HSE (1992a). *Display Screen Equipment Work, Health and Safety (Display Screen Equipment) Regulations 1992, Guidance on Regulations L26*. HMSO, London. November 1992.

HSE (1992b). *Working with VDUs*. IND(G) 36(L) HSE, London. 11/92. [Revised version of the 1986 document of the same title which includes a brief summary of the Health and Safety (Display Screen Equipment) Regulations 1992]

HSE (1992c). *Bogus Burdens on Business*. News Release, HSE, London, 16th November 1992.

HSE (1993). *New Health and Safety At Work Regulations*. IND(G)124(L) HSE, London. Revised March 1993.

HSE (1994). *VDUs an Easy Guide to the Regulations*. HS(G)90. HSE Books, London. July 1994.

HSE (1996). *The Health and Safety (Consultation with Employees) Regulations 1996*. S.I. 1996/1513. HMSO, London.

HSE (1997). *HSE Warns of Bogus Advice on VDU Health Risks as it Publishes Evaluation of Display Screen Regulations.* News Release, HSE, London, 7th February 1997.

Lyons, J. (1995). *What Value the DSE Regs*. Health and Safety at Work. November 1995, pp 25-26.

Mackay, C. (1980). *Human factors aspects of visual display unit operation*. Health and Safety Executive Research Paper 10. HMSO, London. November 1980.

Norton, R. (1996). *Making VDU work safer: the case against deregulation. Report of a TUC survey of safety reps on the operation of the Display Screen Equipment Regulations 1992*. Trades Union Congress, London. May 1996.

Appendix

English Version of the EU Directive 90/270/EEC

COUNCIL DIRECTIVE of 29 May 1990 on the minimum safety and health requirements for work with display screen equipment (fifth individual Directive within the meaning of Article 16 (1) of Directive 87/391/EEC).

(90/270/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 118a thereof,

Having regard to the Commission proposal (1) drawn up after consultation with the Advisory Committee on Safety, Hygiene and Health Protection at Work,

In cooperation with the European Parliament(2)

Having regard to the opinion of the Economic and Social Committee(3)

Whereas Article 118a of the Treaty provides that the Council shall adopt, by means of Directives, minimum requirements designed to encourage improvements, especially in the working environment, to ensure a better level of protection of workers' safety and health;

Whereas, under the terms of that Article, those Directives shall avoid imposing administrative , financial and legal constraints, in a way which would h back the creation and development of small and medium-sized undertakings;

Whereas the communication from the Commission on its programme concerning safety, hygiene and health at work (4) provides for the adoption of measures in respect of new technologies; whereas the Council has taken note thereof in resolution of 21 December 1987 on safety, hygiene and health at work (5);

Whereas compliance with the minimum requirements for ensuring a better level of safety at workstations with display screens is essential for ensuring the safety and health of workers;

Whereas this Directive is an individual Directive within the meaning of Article 16 (1) of Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work (6); whereas the provisions of the latter are therefore fully applicable to the use by workers of display screen equipment, without prejudice to more stringent and/or specific provisions contained in the present Directive;

Whereas employers are obliged to keep themselves informed of the latest advances in technology and scientific findings concerning workstation design so that they can make

any changes necessary so as to be able to guarantee a better level of protection of workers' safety and health;

Whereas the ergonomic aspects are of particular importance for a workstation with display screen equipment;

Whereas this Directive is a practical contribution towards creating the social dimension of the internal market;

Whereas, pursuant to Decision 74/325/EEC(7), the Advisory Committee on Safety, Hygiene and Health Protection at Work shall be consulted by the Commission on the drawing-up of proposals in this field,

HAS ADOPTED THIS DIRECTIVE

SECTION I: GENERAL PROVISIONS

ARTICLE 1

SUBJECT

1. This Directive, which is the fifth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC, lays down minimum safety and health requirements for work with display screen equipment as defined in Article 2.
2. The provisions of Directive 89/391/EEC are fully applicable to the whole field referred to in paragraph 1, without prejudice to more stringent and/or specific provisions contained in the present Directive.

This directive shall not apply to:

a) drivers' cabs or control cabs for vehicles or machinery;

b) computer systems on board a means of transport;

c) portable systems not in prolonged use at a workstation;

e) calculators, cash registers and any equipment having a small data or measurement display required for direct use of the equipment;

f) typewriters of traditional design, of the type known as 'typewriter with window'

ARTICLE 2

Definitions

For the purpose of this Directive, the following terms shall have the following meanings;

a) display screen equipment; an alphanumeric or graphic display screen, regardless of the display process employed;

b) workstation; an assembly comprising display screen equipment, which may be provided with a keyboard or input device and/or software determining the operator/machine interface, optional accessories, peripherals including the diskette drive, telephone, modern, printer, document holder, work chair and work desk or work surface, and immediate work environment;

c) worker; any worker as defined in Article 3 (a) of Directive 89/391/EEC who habitually uses display screen equipment as a significant part of his normal work.

SECTION II: EMPLOYERS OBLIGATIONS

ARTICLE 3

Analysis of workstations

1. Employers shall be obliged to perform an analysis of workstations in order to evaluate the safety and health conditions to which they give rise for their workers, particularly as regards possible risks to eyesight, physical problems and problems of mental stress.

2. Employers shall take appropriate measures to remedy the risks found, on the basis of the evaluation referred to in paragraph 1, taking account of the additional and/or combined effects of the risks so found.

ARTICLE 4

Workstations put into service for the first time

Employers must take the appropriate steps to ensure that workstations first put into service after 31 December 1992, meet the minimum requirements laid down in the Annex.

ARTICLE 5

Workstations already put into service

Employers must take the appropriate steps to ensure that workstations already put into service on or before 31 December 1922 adapted to comply with the minimum requirements laid down in the Annex not later than four years after that date.

ARTICLE 6

Information for,and training of, workers

1. Without prejudice to Article 10 of Directive 89/391/33C, workers shall receive information on all aspects of safety and health relating to their workstation s as are implemented under Articles 3, 7 and 9.

In all cases workers or their representatives shall be informed of any health and safety measure taken in compliance with this Directive.

2. Without prejudice to Article 12 of Directive 89/391/EEC, every worker shall also receive training in use of the workstation before commencing this type of work and whenever the organization of the workstation is substantially modified.

ARTICLE 7

Daily work routine

The employer must plan the worker's activities in such a way that daily work on a display screen is periodically interrupted by breaks or changes of activity reducing the workload at the display screen.

ARTICLE 8

Worker consultation and participation

Consultation and participation of workers and/or their representative shall take place in accordance with Article 11 of Directive 89/391/EEC on the matters covered by this Directive, including its Annex.

ARTICLE 9

Protection of workers eyes and eyesight

1. Workers shall be entitled to an appropriate eye and eyesight test carried out by a person with the necessary capabilities:

- before commencing display screen work,

- at regular intervals thereafter, and

- if they experience visual difficulties which may be due to display screen work.

2. Workers shall be entitled to an ophthalmological examination if the result of the test referred to in paragraph 1 show that this is necessary.

3. If the results of the test referred to in paragraph 1 or of the examination referred to in paragraph 2 show that it is necessary and if normal corrective appliances cannot be used, workers must be provided with special corrective appliances appropriate for the work concerned.

4. Measures taken pursuant to this Article may in no circumstances involve workers in additional financial cost.

5. Protection of worker's eyes and eyesight may be provided as part of a national health system.

SECTION III: MISCELLANEOUS PROVISIONS

ARTICLE 10

Adaptations to the Annex

The strictly technical adaptations to the Annex to take account of technical progress, developments in international regulations and specifications and knowledge in the field of display screen equipment shall be adopted in accordance with the procedure laid down in Article 17 of Directive 89/391/EEC.

ARTICLE 11

Final provisions

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 31 December 1992.

They shall forthwith inform the Commission thereof,

2. Member States shall communicate to the Commission the texts of the provisions of national law which they adopt or have already adopted, in the field covered by this Directive.

3. Member States shall report to the Commission every four years on the practical implementation of the provisions of this Directive, indicating the points of view of employers and workers.

The Commission shall inform the European Parliament, the Council, the Economic and Social Committee and the Advisory Committee on Safety, Hygiene and Health Protection at Work.

4. The Commission shall submit a report on the implementation of this Directive at regular intervals to the European Parliament, the Council and the Economic and Social Committee, taking into account paragraphs 1, 2 and 3.

ARTICLE 12

This Directive is addressed to the Member States

Done at Brussels

29 May 1990.

For the Council

The President

B. AHERN

****

Footnotes

(1) OJ No C 113, 29, 4? 1988? P.7 and OJ No C 130, 26.5. 1989, P.5

(2) OJ No C 12, 16.1. 1989, P.92 and OJ No C 113, 7.5 1990

(3) OJ No C 318, 12, 12, 1988, P.32

(4) OJ No C 28, 3.2. 1988, P.3

(5) OJ No C 28, 3.2. 1988, P.1.

(6) OJ No L 183, 29? 6. 1989? P.1

(7) OJ No L 185, 9.7. 1974, P.15.

Annex

MINIMUM REQUIREMENTS

(articles 4 and 5)

Preliminary remark

The obligations laid down in this Annex shall apply in order to achieve the objectives of this Directive and to the extent that, firstly, the components concerned are present at the workstation, and secondly, the inherent requirements or characteristics of the task do not preclude it.

1. EQUIPMENT

a) General comment

The use as such of the equipment must not be a source of risk for workers.

b) Display screen

The characters on the screen shall be well-defined and clearly formed, of adequate spacing between the characters and lines. The image on the screen should be stable, with no flickering or other forms of instability. The brightness and/or contrast between the characters and the background shall be easily adjustable by the operator, and also be easily adjustable to ambient conditions. It shall be possible to use a separate base for the screen or an adjustable table. The screen shall be free of reflective glare and reflections liable to cause discomfort to the user.

c) Keyboard

The keyboard shall be tiltable and separate from the screen so as to allow the worker to find a comfortable working position avoiding fatigue in the arms or hands. The space in front of the keyboard shall be sufficient to provide support for the hands and arms of the operator. The keyboard shall have a matt surface to avoid reflective glare. The arrangement of the keyboard and the characteristics of the keys shall be such as to facilitate the use of the keyboard. The symbols on the keys shall be adequately contrasted and legible from the design working position.

d) Work deals or work surface

The work desk or work surface shall have a sufficiently large, low-reflectance surface and allow a flexible arrangement of the screen, keyboard, documents and related equipment. The document holder shall be stable and adjustable and shall be positioned so as to minimize the need for uncomfortable head and eye movements. There shall be adequate space for workers to find a comfortable position.

e) Work chair

The work chair shall be stable and allow the operator easy freedom of movement and a comfortable position. The seat shall be adjustable in height. The seat back shall be adjustable in both height and tilt. A footrest shall be made available to any one who wishes for one.

2. ENVIRONMENT

a) Space requirements

The workstation shall be dimensioned and designed so as to provide sufficient space for the user to change position and vary movements.

b) Lighting

Room lighting and/or spot lighting (work lamps) shall ensure satisfactory lighting conditions and an appropriate contrast between the screen and the background environment, taking into account the type of work and the user's vision requirements. Possible disturbing glare and reflections on the screen or other equipment shall be

prevented by coordinating workplace and workstation layout with the positioning and technical characteristics of the artificial light sources.

c). Reflections and glare

Workstations shall be so designed the sources of light, such as windows and other openings, transparent or translucid walls, and brightly coloured fixtures or walls cause not direct glare and, as far as possible, no reflections on the screen. Windows shall be fitted with a suitable system of adjustable covering to attenuate the daylight that falls on the workstation.

d) Noise

Noise emitted by equipment belonging to workstation(s) shall be taken into account when a workstation is being equipped, in particular so as not to distract attention or disturb speech.

e) Heat

Equipment belonging to workstation(s) shall not produce excess heat which could cause discomfort to workers.

f) Radiation

All radiation with the exception of the visible part of the electromagnetic spectrum shall be reduced to negligible levels from the point of view of the protection of workers safety and health.

g) Humidity

An adequate level of humidity shall be established and maintained.

3. OPERATOR/COMPUTER

In designing, selecting, commissioning and modifying software, and in designing tasks using display screen equipment, the employer shall take into account the following principles;

a) software must be suitable for the task;

b) software must be easy to use and, where appropriate, adaptable to the operators level of knowledge or experience, no quantitative or qualitative checking facility may be used without the knowledge of the workers;

c) systems must provide feedback to workers on their performance;

d) systems must display information in a format and at a pace which are adapted to operators;

e) the principles of software ergonomics must be applied, in particular to human data processing.