Subcommittee on
Occupational Safety and Health
(Display Screen Equipment) Regulation

Administration's response to
Issues raised by members at the meeting on 26 February 2001

1. To consider spelling out clearly in the Regulation a warning mechanism in relation to the use of display screen equipment (DSE), under which an improvement notice should be served for non-compliance with the guidelines on the use of DSE. Prosecution will only be brought about if the responsible person fails to comply with the improvement notice.

The proposed Regulation adopts a self-regulatory approach, by which we encourage duty holders to take steps to discharge their liabilities on their own initiatives. This could enhance, in general, the occupational safety and health standard in respect of the use of display screen equipment at work (DSE work) and reduce the need to deploy the labour intensive enforcement actions to ensure compliance.

The Administration could not support the enforcement strategy proposed by Members, i.e. to go through a warning mechanism before any prosecution action could be initiated, because of the failure of a similar enforcement strategy previously implemented for statutory requirements under the Factories and Industrial Undertakings Ordinance and the Occupational Safety and Health Ordinance.

For breaches commonly known to pose risks of serious bodily injury, ill health or considerable fire hazards, an improvement notice would be issued under the previous enforcement strategy to require duty holders to rectify the breaches within a specified period, failing which, prosecution would be initiated. Immediate prosecution would be taken out when there was a breach which might lead to imminent risk of death or serious bodily injury.

In Labour Department's experience, the requirement for the issue of improvement notice before prosecution could be initiated for breaches other than those which may lead to imminent risk of death or serious bodily injury had not achieved the purpose of encouraging duty holders to take proactive actions in improving their workplace safety. Reasons identified include -

(a) Knowing well that no legal action would be taken against a breach if immediate action was taken to comply with an improvement notice, duty holders would tend to withhold implementing safety measures until being served with improvement notices during inspections.

(b) Many breaches for which an improvement notice would be issued involved risks that were serious in nature and well recognised to the industries concerned. To serve improvement notice in each and every case before prosecution was not conducive to the promotion of occupational safety and health, for the reason in (a).

In the light of these problems, the Labour Department adopted the present enforcement strategy in 1998, after consultation with the Labour Advisory Board (LAB). Under the present strategy, immediate prosecution will be initiated for breaches that will pose risks of serious bodily injury or ill health and improvement notice will be issued in case of breaches that will pose risks less serious in nature. It is intended that this strategy will apply to the proposed Regulation.

While in the context of the proposed Regulation, breaches that would pose risks of serious bodily injury or ill health would be few, to make it mandatory for warnings to be issued before prosecution can be initiated would deprive the enforcement agency of the authority to take immediate prosecution actions which would be called for in the case of serious non-compliance. The proposed warning mechanism will work at cross purposes with the self-regulatory approach which has already been enshrined in the Occupational Safety and Health Ordinance: as duty holders would have little incentive to comply with the statutory requirements on their own volition, non-compliance would likely increase as a result. When the LAB was consulted after the last Subcommittee meeting, the proposed warning mechanism was not supported.

The Administration is of the view that the duty holders' awareness of their liabilities could be improved by enhanced publicity and public education, including the Health Guide.

2. On the provision of rest breaks -

(a) to consider setting out in the Regulation that employers should allow DSE users to take appropriate rest breaks or alternative duty after prolonged DSE work along the lines of section 4 of the Health and Safety (Display Screen Equipment) Regulation in the United Kingdom, which stipulates that "Every employer shall so plan the activities of users at work in his undertaking that their daily work on display screen equipment is periodically interrupted by such breaks or changes of activity as reduce their workload at that equipment".

The Administration has undertaken to include in the Health Guide that, where no alternative duty could be arranged, appropriate rest breaks be provided to DSE users. Together with the recommendation that a DSE user should perform DSE work and

non-DSE work in alternation, we believe that employers would be aware of the need to arrange appropriate rest breaks or alternative tasks for DSE users for occupational safety and health considerations. Since circumstances in various trades differ from one another, statutory arrangements for rest breaks or alternative tasks may affect the operation of individual trades, in particular the financial services sector. We maintain that rest breaks and alternative tasks provisions should be provided for in the Health Guide, instead of the proposed Regulation. When consulted, the LAB supported the Administration's position and the proposed approach.

(b) in the absence of statutory requirement for providing rest breaks for DSE users, some members consider that no penalty provisions for non-compliance with the guidelines on use of DSE should be laid down in the Regulation.

The Heath Guide is an advisory document which serves to help duty holders understand the legal requirements under the proposed Regulation. There is no need to include penalty provisions under the proposed Regulation for non-compliance with the Health Guide.

3. To clarify whether the duration of using DSE at work is one of the factors in reviewing the risk assessment performed in respect of a workstation.

Our intention is that the risk assessment performed in respect of a workstation should identify the potential hazards arising from the workstation itself, that is the display screen equipment, other items peripheral to the display screen equipment and the immediate working environment. To avoid confusion, we have amended section 4(3)(a) to "identifying the potential hazards arising from the workstation;".

4. To consider adding the definition of "user" in the Health Guide.

The definition of "user" has been given in section 2 of the proposed Regulation and elaborated in paragraph 1.4 of the Health Guide. Taking into account Members' views expressed at the Subcommittee, the Administration has amended the Health Guide to give more indications as to who would be covered by the proposed Regulation.

5. To address members' concern about making non-compliance with the guidelines on use of DSE a strict liability offence having regard to the fact that some of the compliance standards are not clear.

As mentioned in 2(b) above, there is no penalty provision under the proposed Regulation for non-compliance with the Health Guide. The Health Guide to

be published by Labour Department is an advisory document which serves to help duty holders better understand the legal requirements under the proposed Regulation.

In regard to Members' concern about some offences under the proposed Regulation being strict liability offences, it has been covered in our response to issue 5(b) raised at the Subcommittee meeting on 14 December 2000. In gist, legal advice is that a court will likely construe the offences in question as strict liability offences even if the relevant sections are silent on the nature of the offences in accordance with the principles laid down in *Gammon (Hong Kong) Ltd. v A.G. [1985] AC1* ("*Gammon*"). Explicitly providing them as strict liability offences will save considerable resources of the court and the parties involved in establishing whether an offence is a strict liability offence.

The prosecution angle apart, the Administration is also of the view that the creation of strict liability will be effective in promoting the objects of the legislation by encouraging greater vigilance on the part of duty holders to prevent the commission of the prohibited act.

Nevertheless, "strict liability" does not mean that a defendant will have no defence for the offence. According to the cases of *Uniglobe Telecom (Far East) Ltd. v HKSAR (FACC No.5 of 1998) and AG v Fong Chin Yue [1995] 1 HKC 21*, it would be a defence to the offences in question if a defendant could prove on a balance of probabilities that he believes for good and sufficient reason that he has complied with the provision of the Regulation.

The Administration has consulted the LAB, which supported that the relevant offences under the proposed Regulation should be created as strict liability offences. If Members are concerned about whether duty holders are fully aware of how to comply with the statutory requirements, the better approach would seem to lie with practical guidance in the Health Guide and enhanced publicity before and after the proposed Regulation has come into effect. The Administration welcomes the views of Members in this regard.

DRAFT

A Health Guide on Working with Display Screen Equipment

Preface

This booklet is intended to help employers and employees minimize health risks associated with prolonged work with display screen equipment in the office environment.

Part I explains the meaning of 'display screen equipment' (DSE), 'workstation' and 'user' in the context of the Occupational Safety and Health (Display Screen Equipment) Regulation. It also discusses various health issues related to prolonged work with DSE. Part II discusses the importance of risk assessment of workstations and provides easy-to-follow steps for conducting such an assessment. Part III gives practical guidance on the ergonomic requirements of workstations and measures for preventing common ill-health problems.

Occupational Safety and Health Branch
Labour Department
November 2000
(First revision - May 2001)

Part I

What is Display Screen Equipment (DSE)?

1.1 Under the Occupational Safety and Health (Display Screen Equipment) Regulation (the Regulation), 'display screen equipment' means any display screen which shows letters, numbers, characters or graphics, regardless of the display process involved. It covers conventional display screens, whether based on cathode ray tube displays, flat panels or any other display technology, e.g. ordinary computer displays and microfilm viewers.

1.2 However, the following DSE applications that would pose minimal health risks are excluded from regulatory control;

a) DSE that is used mainly to show pictures, television or films;
b) drivers' cabs or control cabs for vehicles or machinery;
c) DSE on board a means of public transport;
d) portable systems not in prolonged use;
e) calculators, cash registers or any equipment having a small data or measurement display required for direct use of the equipment; or
f) window typewriters.

What is a workstation?

1.3 Under the Regulation, 'workstation' means an assembly comprising the DSE, any chair, desk, work surface, printer, document holder or other item peripheral to the DSE, and the immediate working environment around the DSE, e.g. lighting, temperature and humidity, noise and ventilation.

Who and how are employees affected by the use of DSE?

1.4 Employees using DSE only occasionally are unlikely to suffer significant health problems arising from the use of such equipment. However, some employees are normally using DSE as a significant part of their normal work ('user' under the Regulation). These users are usually highly dependent on the use of DSE to do their jobs, and ~~spend long hours more or less daily on DSE work~~ normally use the equipment for continuous spells of an hour or more at a time and more or less daily. Significant

training and/or particular skills may be required in performing the DSE work. Moreover, rapid transfer of information between the user and screen as well as high levels of attention and concentration may be important requirements of the job. Examples of users are word processing operators, data input operators, telecommunication operators, computer graphic designers, financial dealers, etc. As a result of prolonged DSE work, they could suffer discomfort and other short-term health problems like upper limb pains and discomfort, eyestrain, fatigue and stress. Whilst many of these problems are temporary and may go away after work, they can and should be avoided. If the temporary ailments are ignored, such symptoms can deteriorate into chronic health problems requiring long-term treatment which is expensive to both employers and employees, and ultimately to the health care service at large. Further information on DSE-related health issues is at Appendix A.

Part II

As a person responsible for a workplace, how can I ensure that DSE users are not at risk?

2.1 To ensure that the health of DSE users is adequately protected, a person responsible for a workplace should perform a risk assessment of a workstation in the workplace before it is first used by the users. The assessment serves to identify the potential hazards and evaluate their risks so that appropriate measures can be taken to safeguard the health of the users.

2.2 In the assessment, the responsible person should identify the potential hazards arising from ~~work in~~ the workstation, which may be related to the DSE, the peripheral items, the furniture, or the immediate working environment around the DSE. He should also decide who may be at risk and how the person is affected, evaluate the risks arising from the potential hazards and decide whether existing precautions are adequate. He could then draw conclusions from the assessment to help identify and plan any improvement measures that may be required.

2.3 A sample computer workstation assessment checklist is at Appendix B. It helps responsible persons conduct the risk assessment for common computer tasks in the office. Responsible persons may use this checklist to assess the workstations in which DSE users normally use. Based on the results, the responsible person can formulate and implement follow-up actions, if necessary, to reduce the risks. Please note that the sample checklist may not cover every work condition. Responsible persons may need to add more questions or modify them according to the characteristics of their work situations. In complex cases, responsible persons may have to seek expert advice.

2.4 The responsible person should review the risk assessment performed in respect of a workstation whenever there has been a significant change in the workstation or in the conditions of the previous assessment, for example:

a) workstation furniture;
b) hardware devices particularly the screen, keyboard or other input devices;
c) software in use;
d) work pattern or task requirement; and
e) working environment.

2.5 After completing a risk assessment of a workstation, the responsible person should record the findings. If the risk assessment has been reviewed, he should revise the record accordingly. He should also keep and retain that record for a period of at least 2 years after the workstation ceases to be used by any user.

2.6 The responsible person should produce the risk assessment records for inspection by an occupational safety officer upon request. He should, within the specified period, deliver a copy of those records to the occupational safety officer upon the latter's request in writing.

Part III

How to control the risks?

3.1 Under the Regulation, the person responsible for a workplace is required to reduce any risks identified in a risk assessment of a workstation to the lowest extent as is reasonably practicable. For the information of the users concerned, he should inform them the findings of the risk assessment and the actions he has taken to reduce the risks. He should also, so far as reasonably practicable, ensure that workstations normally used by users in the workplace are suitable with regard to the safety, health and welfare of those users. The guidance in the following paragraphs describes the general requirements for setting up such a workstation. The responsible person may need to reduce the risks through modifying the work organization or work practice.

General Requirements for a Display Screen Equipment Workstation

3.2 A DSE workstation is best designed ergonomically such that the safety, health and welfare of the user are secured, apart from fulfilling the inherent requirements of the task.[*] The main features of such a workstation and some suggested precautionary measures are as follows (please also see the diagram):

[*] *In general, the requirements are fully applicable to a typical office environment. However, there are special situations where some of these requirements may not be applicable because of the inherent characteristics of the task or some practical considerations, for example:*

a) when a user needs to rapidly locate and operate emergency controls, a detachable keyboard may not be suitable;

b) a user who is on wheelchair normally could not adjust the seat height of the chair;

c) when the original document is of poor quality, the scanned image on screen may not be clear.

In these special situations, the responsible person may need to make some other arrangements to ensure the safety, health and welfare of the worker when the latter performs DSE work.

Screen

The screen should give a clear, sharp and steady image.

- Replace aging monitors or repair defective ones.
- Clean the screen if necessary.
- Move the computer away from any source of strong electromagnetic fields.
- Choose a LCD monitor to avoid the effects of external electromagnetic fields.
- Turn the display to light characters on a dark background to make the flicker less perceptible.
- Users who are susceptible to the flickering effect should look for other screen models which produce a more stable display.

The characters should be of adequate size, with adequate spacing between the characters and the lines.

- Use a monitor of adequate screen size.
- Adjust the image size and spacing by software control.
- Adopt a viewing distance where the image can be comfortably read.
  A distance of 35 - 60cm would be appropriate for text of normal font size.

The brightness and contrast of the image should be easily adjustable.

- Choose a screen with brightness and contrast controls.
- Always set the brightness and contrast to the optimum level.

The screen should be easily swiveled and titled to suit the needs of the user.

- Choose a screen with swivel and tilt adjustment.
- Adjust the screen to make viewing comfortable.

Keyboard

The keyboard should be tiltable and detachable from the display screen so that the user may adopt a comfortable working posture.

The surfaces of the keyboard and keytops should be non-reflective. The letters and symbols on the key tops should be clear and easily recognizable.

There should be sufficient space in front of the keyboard to provide support for the hands.

- The table edge should be rounded.
- A wrist support pad may be considered if the user finds it more comfortable.

Work Surface

The work surface should be large enough for the screen, keyboard, document and peripheral equipment.

- If the mouse is used intensively, the work surface or the keyboard shelf, if provided, should be large enough to hold the mouse as well. This allows the mouse to be within easy reach.
- If the work surface is limited, try to reorganize the surface layout. Less frequently used items may be taken away.
- Try to use compact equipment.
- Before new DSE is installed, the space allocation for the workstations should be anticipated.

The heights of the work surfaces for the screen and keyboard should be set to suit the needs of the user.

- For screen positioning, the first line of screen display should be at or slightly below the eye level. In addition, the screen should be placed in front of the user.
- The screen height may be adjusted simply by placing the monitor on a stable object, e.g. the computer case. Other options like using height adjustable monitor arms can also be considered.
- The keyboard and the mouse should be positioned at a height that allows the user to adopt a natural hand-arm posture, i.e. the upper arms held vertical and the forearms approximately horizontal.

- So far as reasonably practicable, a height adjustable desk should be used to support the keyboard, the mouse or other input devices so that the natural hand-arm posture can be adopted.
- If a desk of fixed height is used and it is too high, an adjustable keyboard shelf can be installed under the desk to keep the keyboard at the right level. Alternatively, one may raise the chair to suit the height of the table and provide a suitable footrest to compensate for the raised seat height.

There should be adequate legroom below the work surface.

- Ensure that the workstation has sufficient legroom so that the user may stretch his legs or change posture.
- Clear any obstructing materials beneath the work surface.

If document reading is required, a suitable document holder should be provided. It should be stable and adjustable, and be properly positioned to avoid awkward neck posture and movement.

Chair

The chair should be adjustable in height to suit the body size of the user.

- The chair should be so adjusted that the user can sit with thighs in a horizontal position when the lower legs are vertical and the feet are resting firmly on the floor. In general, the seat height should be adjustable in the range of 40-50cm from the floor.
- The seat height control should preferably be operable from the normal sitting position, and excessive force or tools should not be required.

The backrest should be easily adjustable in both height and tilt to provide adequate support to the lower back.

The seat pan should be of appropriate hardness and the front edge should be scrolled.

Armrests, if provided, should not interfere with keyboard operation.

The chair should have a stable base. Smooth castors should be provided at its base to allow easy movement if mobility is required.

- A five-pronged base is generally recommended to prevent the chair from toppling over.
- The type of castor should suit the properties of the floor surface. Castors with low resistance should not be used on a hard floor surface.

Footrest

A stable footrest should be made available to the user if the chair is too high for the feet to rest firmly on the floor.

- The footrest should be stable, should have a non-slip surface and be of sufficient size to allow some freedom of movement. The inclination of the support surface should preferably be adjustable.

Illumination

General lighting or task lighting should be suitably provided in accordance with the nature of the work and the visual demand on the user.

- The wall, ceiling and floor surfaces should be of medium reflectance to avoid gloom or glare.
- When documents are read in conjunction with computer work, it is best to use low lighting for the surrounding and a desk lamp for reading the documents.
- If task lighting is not provided, the illuminance level of the work area should be 300 - 500 lux.

Reflections and Glare

Reflections and glare should be avoided.

- Re-position the screen and/or control the light sources appropriately to prevent glare and reflections.
- The finishes of walls and furniture located near the workstation should not be highly reflective. Walls should be painted in subdued colours.
- The work area should preferably be located away from windows. The screen should be placed at right angle to windows. Sunlight through windows should be screened by blinds.
- Light fixtures should be equipped with diffusers or louvres.
- Avoid placing the screen under rows of light fittings to eliminate light images.
- Turn the screen display to dark characters on a light background to make reflections less perceptible.
- Using a screen glare filter is another way of reducing screen reflections. In general, screen glare filters reduce the brightness of the image. Therefore the user should ensure that the image's brightness can be adjusted to an acceptable level if a filter is to be added. Nowadays the screens of some monitors are anti-reflective and do not need filters at all. Using a screen filter is not a substitute for proper lighting, but a supplementary solution only.

Noise

Noise produced by the workstation or other equipment in the work area should be controlled to avoid disturbance to the user.

- For general computer work, a noise level below 60dB(A) is recommended.

Temperature and humidity

The temperature and humidity at the work area should be controlled at a suitable level to avoid discomfort to the user.

- The temperature should preferably be controlled within 23 - 26℃ in summer and 20 - 24℃ in winter, and the relative humidity within 40 - 70%.
- Please refer to the "Guidelines for Good Occupational Hygiene

Practice in a Workplace" for ~~detailed requirements on temperature and humidity of a workplace~~ further information.

Fresh Air Supply

Adequate fresh air should be provided for the workplace.

- In general, fresh air should be supplied at a rate of 0.3 to 0.5 cubic metres per minute per person. It is, however, worth noting that the rate required depends on the number of occupants and whether smoking is allowed at the workplace.
- Please refer to the "Guidelines for Good Occupational Hygiene Practice in a Workplace" for ~~requirements on the provision of fresh air to a workplace~~ further information.

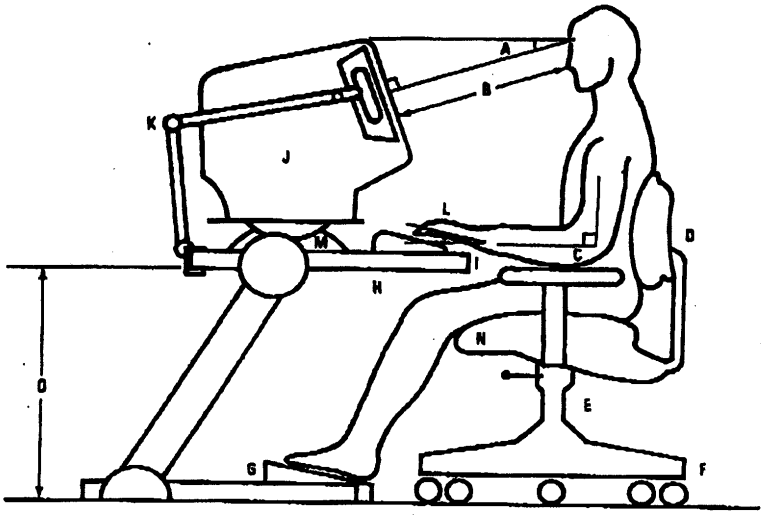

Diagram : The recommended workstation and working posture

A First line on screen at about or just below eye level
B Comfortable viewing distance e.g. 35 - 60 cm for text of normal font size
C Forearm at about right angle to arm
D Backrest adjustable in height and tilt
E Adjustable seat height : allowing the user to sit with thighs approximately horizontal, lower legs vertical and feet resting firmly on the floor
F Stable base, with castors if necessary
G Firm footrest if required
H Adequate leg room
I Support for hands
J Screen at about right angle to line of sight
K Adjustable document holder
L Wrist kept straight or at most slightly inclined
M Screen support adjustable for rotation and tilting
N Rounded or scrolled edge seat pad
O Adjustable table height preferable

How to reduce the risks by improving work organization or work practice?

3.3 Continuous DSE work can be monotonous, while prolonged sitting is tiring. It is advisable that a DSE user performs DSE work and non-DSE work alternatively so that posture can be changed and the fatigue from prolonged DSE work can be relieved. Where non-DSE work cannot be arranged, appropriate rest breaks are recommended, e.g. a 5 - 10 minute break after 1 - 2 hours continuous DSE work depending on the intensity of the work. Moreover, job enrichment can often give an employee more job satisfaction.

3.4 Heavy workloads and tight deadlines can cause work stress, which if not properly managed, may become excessive and affect health. It is advisable that a supervisor effectively plans and organizes the work of his subordinates so that workloads and deadlines are reasonable. In doing so, the supervisor can discuss with the subordinates in setting deadlines and work priorities.

As an employer, do I need to provide safety and health training to DSE users?

3.5 Safety and health training is essential for helping a user avoid risks associated with DSE work. The Regulation requires that an employer provides adequate safety and health training for DSE users employed by him in respect of the use of the workstations normally used by them. The training should enable the users to recognize and understand:

a) the risks of the DSE work;
b) various precautions for avoiding the risks and their importance, for example, a correct working posture, adjusting the equipment and furniture to suit own body features and work comfort, changes of activities at suitable intervals, etc.;
c) how to report problems and symptoms; and
d) how to get assistance from the employer.

3.6 The format of training is not restricted to lectures. Other means like video shows, educational leaflets, seminars can also be considered so long as they are effective in meeting the purpose.

3.7 Whenever the organization of a workstation is substantially modified, an employer should provide the users concerned with adequate

safety and health training in respect of the workstation as modified.

As a DSE user, how can I co-operate with the person responsible for the workplace?

3.8 It is user's responsibility under the Regulation to avoid risks by following a system of work and work practices that the person responsible for the workplace has established for the safety and health of users at the workplace. A user should co-operate with the responsible person in conducting risk assessments and in the implementation of preventive and remedial measures to reduce identified risks. In case of serious problems relating to the DSE work, a user should immediately notify the responsible person of the matter.

Appendix A

Health Aspects of Using Display Screen Equipment

Prolonged use of display screen equipment may cause short-term health problems like upper limb pains and discomfort, eyestrain, bodily fatigue and stress.

Upper limb pains and discomfort

The problems of discomfort at hands, arms, shoulders and the neck are common among DSE users. These may range from temporary fatigue or soreness to chronic soft tissue disorders.

Prolonged static posture of the neck, awkward positioning of the hands and wrists, heavy DSE workload combined with tight deadlines are some of the possible causes. These problems are largely preventable by the application of ergonomic principles to the design of workstations and to the organization of work.

Eyestrain

It refers to complaints of eye fatigue and headache. Causes may include poor visual display quality of the screen, poor lighting conditions and heavy workload. However, it is unlikely that DSE work would cause any permanent effect to the eyes or eyesight.

Fatigue and stress

Fatigue and stress can be more common among DSE users as the organization of certain types of DSE work may lead to a higher prevalence of common stress-related factors such as lack of sufficient control of the work by the user, high-speed repetitive work and reduced variety of postures.

Appendix B

Computer Workstation Risk Assessment Checklist

Department of the organization: _____

Workstation number/location: _____

Description of computer tasks: _____

Part A: Assessment

Display screen equipment and peripherals	Yes	No
1. Can the position of the screen, and the brightness and contrast of the image be adjusted easily to suit the working situation?	☐	☐
2. Is the keyboard tiltable and detachable?	☐	☐
Work desk and chair		
3. Is the work desk providing adequate leg clearance and the chair adjustable (height within 40 - 50cm from the floor and tiltable backrest) to allow proper work postures?	☐	☐
Environment		
4. Are glare and reflections being avoided?	☐	☐
5. Is the lighting level adequate (300 - 500 lux), and the environment free of noise disturbance (below 60 dB(A))?	☐	☐

Other workstation problems that may need attention:

_____

_____

Part B: Conclusions and Follow-up

(a "No" answer for any of the above questions or the reporting of workstation problems may indicate the presence of safety and health risks requiring follow-up actions)

_____

_____

_____

Assessor: _____ Date:_____