



HEALTH SURVEILLANCE

We have identified the following as necessitating health surveillance:

VIBRATION / WHITE FINGER

EXPOSURE CALCULATED TO NOISE

LEPTOSOROSIS

BACK PAIN

DERMATITIS

ASTHMA

DUST AND LEAD

EYE STRAIN

All employees are to read this document which will be referred to in 6 monthly health surveillance interviews and documentation.

PREVENTION OF VIBRATION WHITE FINGER

Vibration white finger (VWF) is a problem that can affect workers using vibrating tools and equipment for even short periods of time each day. Symptoms vary from slight numbness and tingling in the fingers to very severe loss of grip strength and dexterity that in extreme cases can leave sufferers unable to drive or do up buttons.

Low vibration tools greatly reduce the risk of VWF, but purchasers of power tools often face a lack of reliable data on the actual vibration levels produced by various tools in use. Many manufacturers' data relates only to the vibration produced when the tool is free running, and vibration levels can increase dramatically under load.

In an effort to sort the claims from reality we carried out a series of vibration analyses on a number of models from our range of low-vibration nut runners. The tests were completed in 1999 in Norbar's research centre to measure the vibration produced by the tools when

operated with their 72mm and 108mm diameter air motors and 48V DC electric motor. The tests were carried out in accordance with ISO 8662-7 1997: Hand-held portable power tools – measurement of vibrations at the handle. This standard requires an output speed of 6 to 12 rpm and the tests were performed with the tools under slight load at 9 rpm. An accelerometer was attached to the handle of each tool by means of a tri-axial mounting block, which once the block was clamped to the handle allowed measurement of vibration in three axes.

The highest recorded readings were seen when the tools was used with the electric motor, which gave an arithmetic mean vibration level of 0.96m/s^2 . Average vibration levels for all three power sources were much lower than this level, with more typical readings between 0.4m/s^2 and 0.7m/s^2 when using the tool with the air motor.

There is yet no UK legislation covering maximum levels of exposure to vibration, though discussions are taking place in the European Commission on a proposed Directive requiring employers to carry out a risk assessment and take specific measures when action levels are exceeded.

The Health & Safety Executive (HSE) has however set a recommended safe limit of 2.8m/s^2 as the mean acceleration to which hands are subjected for an eight hour period, and while there is no universal agreement on a ‘safe’ level of vibration studies in Germany, Japan and the UK have indicated that exposures to vibration levels of less than 1m/s^2 are unlikely to cause injury.

“Our Pneutorque torque tools are almost free from measurable vibration, and are increasingly specified throughout the world to replace other fastener assembly tools which do exhibit vibration, be it above or below 2.8m/s^2 ,” says Norbar managing director Neill Brodey.

Peter Wilson, a director of noise and vibration prevention consultancy Industrial Noise and Vibration Centre (INVC), says a big problem facing employers is that when selecting tools they often rely on manufacturer’ data because it has been assessed under laboratory conditions.

“Manufacturers could supply realistic data from workplace trials but the problem is that these vary a lot.” He says.

Wilson says that while some tool manufacturers have made genuine efforts to reduce vibration they have a difficult job getting the message out to purchasers.

“Everyone is making claims for their equipment” he says. “We have seen one chipping hammer that claimed to produce less than 2.5m/s^2 but in field trials produced eight times that level.”

Wilson says VWF is a greatly under-reported problem, despite HSE research indicating that over 1.2 million workers are exposed to vibration levels at which the HSE recommends that employers should be taking action. Employers are now however beginning to sit up and take notice as claims for damages resulting from VWF are now exceeding £100,000 for the worst affected individuals.

“Hundreds of new cases of VWF are assessed each year by the Department of Social Security under the Industrial Injuries Disablement Benefits Scheme” says the HSE in its leaflet Health Risks from Hand-Arm Vibration. “VWF is one of the most common reasons for

occupational ill health claims made against employers.”

While ignorance of the risks among employers is still a major issue even those firms who recognise their workers may be at risk of VWF do not have any easy task. Even short exposures to severe hand-arm vibration can trigger VWF, and it is difficult for employers to determine with any certainty if workers’ exposure to vibration is excessive.

The HSE says that as a rule of thumb anyone using hammer action equipment for more than half an hour a day, or rotary or other action equipment for more than two hours a day, is potentially at risk from hand-arm vibration.

The use of “anti-vibration gloves” as a measure to reduce the risks of VWF is dismissed by Wilson, who says at best they don’t work and at worst can increase the dangers.

The HSE recommends regular health checks of the workforce for early symptoms of VWF to prevent problems developing and Wilson says that one of the best methods of detection can lie in the workers’ own hands.

“If it feels high risk then it probably is” he says. “If your fingers start to tingle or feel numb then the risk is probably very high”.

For further information:

HSE publications are available from HSE Books on 01787 881165. Guidance is also available on HSE’s InfoLine on 0541 545500.

The Industrial Noise and Vibration Centre can be contacted on 01753 530414

Vibration Exposure Limits

Exposure limits are calculated as a combination of the vibration level (magnitude) of the tool and the Daily Exposure Time (Trigger Time). E.g. A product with 5m/s² vibration can be used up to 2 hours/day to reach the EAV and up to 8 hours/day to reach the ELV.

Exposure Action Value (EAV) - Daily vibration exposure $A(8) = 2.5\text{m/s}^2$

Where daily vibration exposure $A(8)$ is below 2.5m/s² the risk is relatively low and no action need be taken

Exposure Limit Value (ELV) - Daily Vibration Exposure $A(8) = 5.0\text{m/s}^2$

If several tools are use the exposure values must be combined:

Total exposure is then the combined value of the activities

Actions you should take

Actions for Workers

- Report any signs of HAV – pins and needles, pain, numbness of the fingertips, pain in the wrists, reduced sensitivity in the touch
- Use the correct tools for the job
- Consider alternatives for completing the job or rotate with someone else where possible
- Use gloves

Actions for Employers

- Provide training and information
- Advise employees on safe working practices
- Eliminate or reduce vibration risks
- Regularly assess any vibration risks
- Supply suitable safety equipment
- Provide the right tools for the job
- Seek Health & Safety advice

Noise at Work

Control of Noise at Work Regulations 2005



The Control of Noise at Work Regulations came into force for most of industry on 6 April 2006. There has been a transitional period for music and entertainment sectors which is now coming to an end and it is expected that these premises will be compliant by 6th April 2008.

These Regulations requires employers to prevent or reduce risks to health and safety of their employees from exposure to noise at work. Employees also have duties under the Regulations to co-operate with reasonable requests from their employer in the pursuit of complying with these regulations. The Regulations do not apply to members of the public exposed to noise from their non-work activities, or making an informed choice to go to noisy places.

The following web links are to sites that contain useful information to assist employers comply with their duties imposed by the Control of Noise at Work Regulations 2005.

Health and Safety Executive - Noise at work

Health and Safety Executive - Noise Leaflets (pdf)

Don't lose the music

The Regulations set specific “exposure action values” and “exposure limit values” please see table 1 below. These Regulations require employers to: -

- Assess the risks to employees from noise at work. The purpose of the Noise Regulations 2005 is to make sure that employees do not suffer damage to their hearing - so controlling noise risks and noise exposure should be where efforts are concentrated.
- Take action to reduce the noise exposure that produces those risks. Wherever there is noise at work an employer should be looking for alternative processes, equipment and/or working methods which would make the work quieter or alternatively reduce the time an employee spends in a high noise environment. Employers should be aware of good practice or the standard for noise control within the industry.
- Employers should provide employees with hearing protection if noise exposure within the workplace cannot be reduced sufficiently by using other methods and if noise levels exceed the upper exposure action values.
- Make sure the legal limits on noise exposure are not exceeded. If exposure is below the lower exposure action values, risks are low and so an employer would be expected to take actions which are relatively inexpensive and simple to carry out. Where an assessment shows that employees are likely to be exposed at or above the upper exposure action values, a planned programme of noise control must be in place. Where there are things that can be done to reduce risks from noise, that are reasonably practicable, they should be implemented.
- Provide employees with information, instruction and training.
- Carry out health surveillance where there is a risk to health, where upper exposure action values are exceeded.

Table 1

Exposure action values and exposure limit values

**Daily or weekly
personal
average noise
exposure**

Lower Exposure
Action Values

**Peak
sound level** **Peak
sound level**
80dB (A-
weighted) 135dB (C-
weighted)

Actions

- Undertake risk assessment. If any employees are identified as being particularly susceptible to noise, health surveillance should be implemented
- Make hearing protection available

Exposure action values and exposure limit values

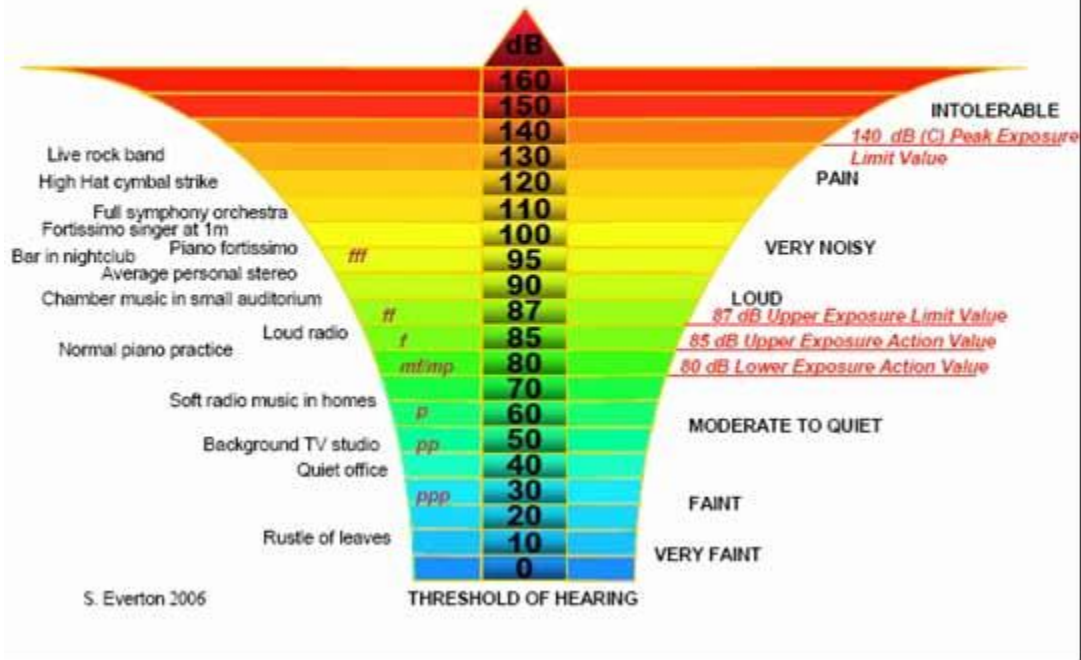
Upper Exposure Action Values	85dB (A- weighted)	137dB (C- weighted)	<ul style="list-style-type: none"> • Establish a maintenance programme for equipment supplied to reduce noise risk such as noise limiters and hearing protection • Provide training
Exposure limit values	87dB (A- weighted)	140dB (C- weighted)	<ul style="list-style-type: none"> • Establish and implement a program of control measures • If these measures are not sufficient to reduce exposure below 85dB (A) then:- <ul style="list-style-type: none"> • Suitable hearing protection must be worn and • Health surveillance program implemented • Reduce to below Limit Values (Allowed to take hearing protection into account)


Noise is measured in decibels (dB). An “A-weighting” written as “dB(A)”, is used to measure average noise levels, and a “C-weighting” of “dB(C)”, to measure peak, impact or explosive noises. Where the exposure of an employee to noise varies markedly from day to day, an employer may use weekly personal noise exposure in place of daily personal noise exposure for the purpose of compliance with the Noise Regulations.

Examples of how loud some sounds are in relation to level of decibels and the impact that the Control of Noise at Work Regulations have is depicted in table 2 below: -

1 Representative Noise Levels in dB

Some approximate examples of noise levels.



 <p>You can enter data in the white cells only</p>	Exposure Calculator		Exposure points (job/task)
	Noise Level (L _{Aeq} dB)	Exposure duration (hours)	
Job / task 1	30	2	
Job / task 2	20	0	
Job / task 3	50	1	
Job / task 4	20	0	
Job / task 5	40	0	
Job / task 6	85	1	
Job / task 7	20	0	
Job / task 8	10	0	
Total duration		4	

Daily noise exposure ($L_{EP,d}$)

Instructions for exposure calculator

Enter the L_{Aeq} (in dB) and select the daily exposure duration (in hours) in the white areas for up to eight jobs or tasks carried out throughout the day. Rounding noise levels to the nearest decibel and durations to the nearest 15 minutes (0.25 hours) is sufficiently precise. Exposure points will appear for each entry and the overall daily personal noise exposure ($L_{EP,d}$) will be displayed.

The Lower Exposure Action Value (an $L_{EP,d}$ of 80 dB) is represented by 32 exposure points, the Upper Exposure Action Value (100 dB)

Reference: Control of Noise at Work Regulations 2005, Schedule 1 Part 1



Weil's Disease? (Leptospirosis)



Weil's disease is an infection carried in rats urine which contaminates water and banks of lakes, ponds and rivers. The disease which is notifiable is serious and requires hospital treatment. Symptoms start 3 to 19 days after exposure to contaminated water. Early symptoms are similar to 'Flu'. So go see a doctor and say you have been near contaminated water that may have weils disease and ask the doctor for a blood test to be carried out

A few sensible precautions

DO cover with waterproof plasters or gloves all scratches, cuts, sores and breaks in the skin. Disinfect any wounds as soon as possible if they occur whilst at the waterside.

ALWAYS wash your hands or cover food with a wrapper before you eat.

NEVER put your hand to your mouth after immersion in river water and never place bait or fishing line in the mouth.

DON'T touch any dead animal especially rats.

SYMPTOMS

- An attack of Weil's Disease resembles a cold or flu in the initial stages. The incubation period is from 3 to 19 days
- Early Symptoms are: Fever, Muscular aches and pains, lost of appetite, nausea when lying down.
- Later Symptoms may include: Bruising of the skin, Sore eyes, Nose bleeds, Jaundice.
- The fever lasts for approximately five days, then a significant deterioration follows.

If untreated, Weil's Disease can be serious and or become FATAL

If you become ill, and you have any of the above symptoms, it is extremely important to contact your doctor as soon as possible. You must tell your doctor that you suspect Weil's Disease, as many of them do not associate it with influenza symptoms without a helpful hint.

Treatment with antibiotics is only effective if started rapidly after symptoms develop. A blood test is conducted to determine the presence of Weil's Disease, the Public Health Laboratory receiving the test should perform an ELISA test for Leptospirosis. If in the United Kingdom, and the local PHL cannot perform and ELISA test, the sample should be sent to: The Leptospirosis Reference Unit, Public Health Laboratory, County Hospital, Hereford HR1 2ER. Telephone 0432 277707. This contact is for UK use only, by the doctor or PHL staff only.

Weil's Disease is a notifiable illness in the UK and it is essential to disclose a confirmed case to the local Public Health office, who will need to know where you believe it was caught

Causes of pain

Back pain can be caused by many work situations. The exact cause is often unclear, but back pain is more common in roles that involve:

- heavy manual labour, and handling tasks in heavy industry;
 - manual handling in awkward places, like delivery work;
 - repetitive tasks, such as manual packing of goods;
 - sitting at a workstation for a long period of time if the workstation is not correctly arranged or adjusted to fit the person, eg working with computers;
 - driving long distances or driving over rough ground, particularly if the seat is not, or cannot be, properly adjusted or adequately sprung.
 - operating heavy equipment, such as an excavator,
 - stooping, bending over or crouching (poor posture);
-
- pushing, pulling or dragging loads that require excessive force;
 - working beyond normal abilities and limits, and when physically overtired;
 - stretching, twisting and reaching;

Consult your workers

- You have a legal duty to consult with all your employees or their elected representatives.
- Talking to your staff is good because they know what they find difficult and often have good ideas about how to improve things. Involving workers and safety representatives in discussions about how to improve health and safety will also make it easier to agree changes and workers will be more likely to follow procedures that they have helped to design.
- Some people are more susceptible to back pain than others, so it is important to consult employees in the risk assessment process.

Dermatitis

What is dermatitis?

Dermatitis is a skin condition caused by contact with something that irritates the skin or causes an allergic reaction. It usually occurs where the irritant touches the skin, but not always.

What does it look like?

If you look at [pictures^{\[1\]}](#) of skin that has dermatitis, you could see one or all of these signs:

- Redness
- Scaling/flaking
- Blistering
- Weeping
- Cracking
- Swelling

What does it feel like?

Someone who has dermatitis may experience symptoms of itching and pain. The signs and symptoms of this condition can be so bad that the sufferer is unable to carry on at work. We have provided some [case studies](#)^[2] to give you the chance to see and hear real-life examples of dermatitis and how they were managed.

What causes irritant contact dermatitis?

It can occur quickly after contact with a strong irritant, or over a longer period from repeated contact with weaker irritants. Irritants can be chemical, biological, mechanical or physical. Repeated and prolonged contact with water (eg more than 20 hand washes or **having wet hands for more than 2 hours per shift**) can also cause irritant dermatitis.

What causes allergic contact dermatitis?

This can occur when the sufferer develops an allergy to a substance. Once someone is 'sensitised', it is likely to be permanent and any skin contact with that substance will cause allergic contact dermatitis. Often skin sensitisers are also irritants.

These are some of the more common causes of irritant and allergic contact dermatitis:

Irritant contact dermatitis

- Wet work
- Soaps, shampoos and detergents
- Solvents
- Some food (eg onions)
- Oils and greases
- Dusts
- Acids and alkalis

Asthma

What is asthma?



Make sure you use the right technique when you take your asthma medication. Poor technique is the most common reason for ineffective treatment.

Asthma is a chronic disease in which sufferers have repeated attacks of difficulty in breathing and coughing. There seems to be an increase in the amount of asthma all over the world, especially in children. To understand what happens in asthmatic attacks it is helpful to visualise the basic structure of the airway tubes of the lung.

The main airway (windpipe, trachea) of the body is about 2-3cm across. It divides into its main branches (bronchi), which lead to the right and left lung, which divide further, like the branches of a tree, to supply air to all parts of the lungs.

The smallest tubes (bronchioles) are only millimetres wide and they are made up of ring-shaped muscles that are capable of contracting or relaxing. Anything that makes them contract will narrow the passages, which makes it more difficult for the air to pass through and also gives rise to the characteristic wheezy noise.

Asthmatics tend to be sensitive to various types of irritants in the atmosphere that can trigger this contraction response from the bronchial muscles.

The bronchi also have an inner lining that becomes inflamed in asthma, which makes the lining swell and produce an excess amount of the mucus (phlegm) it normally makes.

All of these processes contribute to the airway narrowing and the treatment for asthma is aimed at reversing them as much as possible.

People of all ages get asthma but 50 per cent of sufferers are [children](#), mostly boys, under 10. Among adults, women are more likely to develop asthma than men. Over 5 million people in the UK are currently receiving treatment for asthma, with it costing the NHS £1,000 million per year (stats from [Asthma UK](#))

How do you get asthma?

Asthma can be triggered by external agents, such as irritants in the atmosphere which are breathed in, or by internal reactions within the body that have been caused by an external influence. The kinds of provoking factors can be divided into two groups:

- non-specific factors: all asthma patients are affected by a number of things that are referred to as irritants. They include exertion, cold, smoke, scents and pollution.
- specific factors: these are irritants or [allergens](#) in the form of pollen, dust, animal fur, mould and some kinds of food. A [virus or bacteria](#), chemical fumes or other substances at the workplace and certain medicines, eg aspirin and other [non-steroidal anti-inflammatory drugs \(NSAIDs\)](#), may also cause asthma.

To acquire asthma, people seem to need to have been born with a predisposition to the disease. It may not reveal itself until they have been exposed to some asthma irritants.

[Smoking](#) mothers, low birth weight, a lack of exposure to infection in early life and traffic fumes have all been associated with the increase in asthma. Less draughty houses resulting in a higher concentration of house dust mites and cooking gases may also be part of the problem.

Currently, a great deal of research looking for the genes that allow asthma to develop is being carried out. But until we can prevent asthma, we have to suppress the symptoms and try to avoid the triggers where possible.

What might trigger acute asthma attacks?

- Exertion.
- Cold.
- Smoke.
- Air pollution including exposure to certain chemicals. An example is isocyanates which are used in some painting and plastics industries.
- Airway infection.
- Allergies, eg to pollens, house dust mites, domestic animals (especially cats), aspirin and non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen.

What does asthma feel like?

- It is difficult to breathe and there is shortness of breath.
- Wheezing when breathing out.
- Coughing, especially at night and with a little mucus.

What are the warning signals of worsening attacks?

- Inhaled medicines appears less effective than usual.
- Symptoms of cough or wheeze on exertion.
- Night-time wakening with wheeze or cough.
- Fall in the [peak flow meter](#) reading (a peak flow meter is a simple device that measures the maximum speed at which a person can breathe out).

When it appears that your asthma is becoming less well controlled, you should consult your doctor for advice on what to do.

What are the danger signals of severe attacks requiring immediate medical attention?

- Bluish skin colour and gasping breath.
- Exhaustion so severe that speech is difficult or impossible.
- Confusion and restlessness.

What can you do to help yourself?

- Avoid the substances you are allergic to, if possible. It can be difficult to know which specific factors may give you trouble, but general irritants like tobacco smoke should be avoided.
- It is important to take your prescribed preventive medicines, even if you feel well.
- If you get a serious attack, contact your doctor or the emergency services.
- [Discuss your treatment with your doctor](#) or practice nurse. You should know what to do if, for example, you get a bit worse during a cold. This will usually involve a temporary increase in the dosage of your treatment.
- Be familiar with the [use of a peak flow meter](#), which can help you judge your asthma during spells when it is worse.
- Make sure you [use your inhaler device](#) correctly. If you are unsure your practice nurse, doctor or pharmacist will be able to help and advise you.

How does the doctor make the diagnosis?

The diagnosis is made on the basis of the patient's history of symptoms and on simple tests of the lungs' function but it is not always easy to come to a diagnosis of asthma if the symptoms are mild and intermittent.

For those people whose asthma is associated with [eczema](#) and [hay fever](#) it can be helpful to take blood samples and skin tests to look for hypersensitivity towards specific substances.

What should I do?

Be active. If you get attacks during intense activity it may be a good idea to take 'reliever' medicine before you begin to exercise. These medicines, properly known as [bronchodilators](#), have a relaxing effect on the muscle surrounding the bronchioles. Swimming is probably the best form of exercise for asthma patients but the most important thing is to stay active.

What are the prospects for asthma sufferers?

- Although asthma cannot be cured it can usually be well treated so that the symptoms give little trouble.
- Half of the children who get asthma 'grow out of it'.
- It is vital to stop smoking to avoid developing long-term lung damage ([chronic bronchitis](#), 'smoker's lung'), which will reduce the lung function drastically.
- Severe attacks of asthma can be fatal but only if they are treated inadequately or not soon enough.

Medicine

Medicines for asthma are generally thought of in two main groups.

- **Relievers** ([bronchodilators](#)): these are quick-acting medicines that relax the muscles of the airways. This opens the airways and makes it easier to breathe. They are used to relieve symptoms.
- **Preventers** ([anti-inflammatories](#)): these act over a longer time and work by reducing the inflammation within the airways. They should be used regularly for maximum benefit. When the dosage and type of preventive medicine is correct, there will be little need for reliever medicines.

Relievers

There are three groups of these.

Beta-2 agonists

Beta-2 agonists act on molecule-sized receptors on the muscle of the bronchioles. The medicine fits the receptor like a key fits a lock and causes the muscle to relax. Examples of those which act for a short time (three or four hours following a single dose) are [salbutamol](#) (eg [Ventolin](#)) and [terbutaline](#) (eg [Bricanyl](#)). These start to work very quickly after inhalation and are used when required to relieve shortness of breath. They can also be used to open the airways before exercise.

Longer-acting beta-2 agonists include [salmeterol \(Serevent\)](#) and formoterol (eg [Foradil, Oxis](#)). Their action lasts over 12 hours, making them suitable for twice-daily dosage to keep the airways open throughout the day.

Formoterol works rapidly to open the airways like the short-acting beta-2 agonists. A combination inhaler called [Symbicort](#), which contains formoterol together with the corticosteroid budesonide, is licensed to be used regularly as a preventer and when needed as a reliever to relieve shortness of breath. Symbicort is only licensed for use as both preventer and reliever in adults over 18 years of age.

Beta-2 agonists are inhaled from a variety of delivery devices, the most familiar being the pressurised metered-dose inhaler (MDI). Other devices include breath-actuated inhalers such as autohalers and dry powder inhalers such as turbohalers.

Anticholinergics

One of the ways in which the size of the airways is naturally controlled is through nerves that connect to the muscles. The nerve impulses cause the muscles to contract, thus narrowing the airway. Anticholinergic medicines block this effect, allowing the airways to open. The size of this effect is fairly small, so it is most noticeable if the airways have already been narrowed by other conditions, such as [chronic bronchitis](#). An example of an anticholinergic is [ipratropium bromide \(eg Atrovent\)](#). It has a maximum effect 30 to 60 minutes after inhalation, which lasts for three to six hours.

Theophyllines

[Theophylline \(eg Slo-phyllin\)](#) and [aminophylline \(eg Phyllocontin continus\)](#) are given by mouth and are less commonly used in Britain because they are more likely to produce side effects than inhaled treatment. They are still in very wide use throughout the world.

All three types of reliever can be combined if necessary.

Preventers

There are three main groups of these.

Corticosteroids

Corticosteroids (or 'steroids') such as [beclometasone \(eg Beclazone\)](#), [budesonide \(eg Pulmicort\)](#) and [fluticasone \(eg Flixotide\)](#) have made an enormous difference to the management of asthma. They work to reduce the amount of inflammation within the airways, reducing their tendency to contract and have allowed many patients with previously troublesome asthma to lead almost symptom-free lives.

They are usually given as inhaled treatment, although sometimes oral steroid tablets ([prednisolone](#), eg [Deltacortril](#)) may be required for severe attacks.

Although steroids are powerful medicines with many potential side effects, their safety in asthma has been well established. It is also important to balance the problems that arise from poorly treated asthma against the improvement in health which occurs when the condition is well treated.

Cromones

There are two medicines in the cromone group: [sodium cromoglicate](#) (eg [Intal](#)) and [nedocromil sodium](#) ([Tilade](#)). They also act to reduce inflammation of the airways. They tend to be best for mild asthma and are more effective in children than adults. The medicines are given by inhalation and are usually very well tolerated.

Leukotriene receptor antagonists

Leukotrienes are released from the lungs in people with asthma, causing inflammation and increased mucus production in the airways. They also cause the muscles lining the airways to contract, which narrows the airways. All of this makes it difficult for air to get in and out of the lungs.

Leukotriene receptor antagonists block leukotriene receptors in the lungs and, as a result, block the action of the leukotrienes. This prevents the excess mucus production, inflammation and narrowing of the airways and so prevents asthma attacks. It's also useful for preventing asthma triggered by exercise.

By blocking this effect with these antagonist medicines the constriction is reversed. There are two leukotriene receptor antagonists currently available: [montelukast](#) ([Singulair](#)) and [zafirlukast](#) ([Accolate](#)), both of which are taken as tablets.

Combination inhalers

Combination inhalers have been the mainstay of asthma treatment for a number of years.

In the 1990s longer-acting combinations of bronchodilators and/or corticosteroids in one apparatus were developed. There are currently a number of these regularly used in the UK, such as [Seretide](#) ([salmeterol](#), [fluticasone](#)), [Symbicort](#) ([budesonide](#), [formoterol](#)) and [Combivent UDVs](#) ([salbutamol](#), [ipratropium](#)).

Many patients feel their asthma is much better controlled on these combination inhalers and compliance is much better as they only need to use one inhaler rather than two.

Easy to use, they can also be useful in visually impaired patients and those who find using two or even three inhalers difficult to remember. Some trials have found that morning peak flow rates are better using combination inhalers rather than single inhaler alone.

Work involving lead and lead compounds

What is the risk?

Young people aged 16 years and above are not at any greater risk from exposure to lead and its compounds than anyone else. You can only identify the specific risk through a risk assessment of the particular circumstances under which there is exposure to lead or its compounds in your workplace. You should bear in mind that young people may not appreciate the dangers to their health and that they may not understand or follow instructions properly because of their immaturity.

Lead and its inorganic compounds are known to produce various biological effects in humans, depending on the exposure level. These range from:

- minor biochemical changes in the blood, which are unlikely to have adverse health consequences; to
- severe irreversible or life-threatening disruption of body processes, in particular the nervous system, the blood-forming system and the kidneys.

There are also concerns about the effects of lead on the quality of semen and on the unborn child.

The toxic effects of lead alkyls give rise to symptoms including agitation, insomnia, dizziness, tremors and delirium, which can progress to mania, coma and death. These symptoms are accompanied by nausea, vomiting and abdominal pain.

How to avoid the risk

You must pay special attention to the requirements of the Control of Lead at Work Regulations 2002 (CLAW) for providing young people with:

- information, instruction and training;
- Proper supervision within a safe system of work.

You must not employ young people for work in certain lead processes :

Lead smelting and refining processes

- work involving the handling, treatment, sintering, smelting or refining of ores or materials containing not less than 5% lead; and

Lead-acid battery manufacturing processes

- the manipulation of lead oxides;
- mixing or pasting in connection with the manufacture or repair of lead-acid batteries;
- the melting or casting of lead;
- the trimming, abrading or cutting of pasted plates in connection with the manufacture or repair of lead-acid batteries.

You cannot employ young people to clean any place where any of the above processes are carried out.

The Regulations require you to ensure that the exposure of young people to lead and its compounds is adequately controlled. For example, where the exposure to lead is significant, you must ensure that employees under the age of 18 years are under medical surveillance, and that their blood is monitored every three months for levels of lead.

If the action level is reached or exceeded, but is below the suspension level (40 µg/dl for young men or 25 µg/dl for young women), you must investigate why this has happened and take steps to reduce their exposure so that their blood lead falls below the action level.

If the level reaches 50 µg/dl for young men or 30 µg/dl for young women (the suspension level), you must remove them from any work which exposes them to lead until their blood level drops below 50 µg/dl/30 µg/dl respectively. (The lower suspension level for female employees is aimed at protecting any fetus which might be developing. Pregnant women are not always aware of their pregnancy in the early stages

Health Surveillance: Lung Function tests

According to the HSE, 'COPD is a major cause of disability and death. It is the 4th leading cause of death throughout the world'. COPD is defined as Chronic Obstructive Pulmonary Disease. Although smoking accounts for a fair percentage of this long term illness the HSE recognise that '15% of COPD may be caused or made worse by work'. These statistics highlight the importance of having proper control measures in the form of health surveillance, in workplaces particularly at risk from COPD as well as occupational asthma. Health surveillance is the practice of monitoring individuals for the purpose of identifying changes in health status that may be due to occupational exposure to a hazard. A system of health surveillance is required to be set up if employees are exposed to respiratory sensitisers (substances that may cause occupational asthma) unless employers are confident their COSHH assessment shows that there is unlikely to be a risk to health.



Spirometric testing could be a suitable way of assessing impact on lung function as a part of a wider health surveillance program, including assessment of the results by a suitably qualified occupational health person. It should be considered if the following common respiratory sensitisers are found in your workplace:

Isocyanates (paint spraying, polyurethane foam, hardeners, etc), Flour/grain/hay, Glutaraldehyde (disinfectant and biocide), Wood Dust, Soldering flux, Latex (powder in gloves), Laboratory animals, Some hard metals (some cobalt, nickel compounds), Some glues/resins/reactive dyes, enzymes. A full list is available on HSE website under asthma.

If there is a risk then employers have a 'duty of care' in law in adopting an early detection mechanism of regular screening through spirometry testing and investigation. Spirometric testing is particularly effective when a series of tests are done over a period of time as part of each employee's health surveillance file. A decline in performance of lung function can usually be detected before the employee starts to actually feel ill. Therefore, monitoring of this type may serve as an early warning system of any ill health effects that may be caused by deficiencies in existing workplace control measures.

Early rectification of the problem may help to reduce the costs to your company of the high expense of employee absenteeism, potential recruitment and retraining and time spent to remedy any problems. These screening records can also be used as evidence to show company commitment to protect the employee and this in turn can reduce liabilities in respect of industrial claims for compensation.

Early detection of lung related problems such as Chronic Obstructive Pulmonary Disease (COPD) and occupational asthma could lead to rapid medical treatment before chronic effects and long term absenteeism develops. Spirometry can detect two classes of lung related problems (obstructive and restrictive). An obstructive problem is a result of a narrowing of the airways and could be due to Chronic Obstructive Pulmonary Disease or Asthma, both of which can be brought on by occupational exposure to certain substances. Restrictive problems are a result of reduced lung capacity caused by damage of the actual lung tissue itself. This could be due to Fibrosis (scarring of the lung), which for example could be caused by exposure to metal dust or hay. Best practice in Occupational Health can reduce the risk of lung disease at the workplace and enhance retention of staff and also lower the risk of being open to liability. Spirometric testing is a form of health surveillance that aims to assess an individual's lung function and provides objective and technically acceptable results that are carried out by Envirocare to the British Thoracic Society Guidelines.

Case Study

Envirocare recently undertook a comprehensive program of spirometric health surveillance for a large furniture manufacturing company based in Yorkshire. The employees were exposed to wood dust, which was in the form of airborne particles created during the manufacture and processing of the product. The COSHH assessment and dust survey carried out highlighted the risk of exposure to wood dust. The lung function test was carried out on site and to avoid impact on production, our consultant tested around the production schedule. We provided each employee with confidential detailed and confidential results regarding their lung function. A report was made categorising employee lung function and based on the area they worked in, using an anonymous format to ensure confidentiality. This could then be used by management to assist in determining whether existing control measures are adequate in various factory areas.

Eyes and vision

Of all the hazards associated with VDU work, visual problems are the most widespread. During the last twenty years in which VDUs have been in general use there have been several hundred studies which have confirmed the link between VDU work and the visual problems reported by users.

Numerous surveys and epidemiological studies (studies of the causes of ill-health in large groups of people) have shown that at least a quarter of all users experience visual problems as a result of their work. The percentage of workers suffering visual problems increases in proportion to the number of hours worked at the VDU. Surveys of those working more than six hours a days at the VDU have found up to 91 per cent experience visual problems.

Visual problems are higher among those doing repetitive keyboard and screen work such as data entry, than among VDU workers doing less intensive work where VDUs are used intermittently. Work involving the use of VDUs produces considerably more eyestrain than almost all other types of non-VDU work. A recent study found that the occurrence of abnormal eye function was nearly 16 times higher in VDU workers than in non-VDU workers (Ishikawa 1990).

The range of problems reported include the following:

the sensation commonly described as 'eyestrain' burning or tender eyes reddened, watering eyes blurred vision or difficulty in focusing double vision grittiness, dryness or aching of the eyes worsening of pre-existing visual problems the need to get prescriptions for glasses or lenses changed more often changes in colour perception (eg. seeing coloured after-images after using the screen such as floating red or orange blobs, or seeing everything white tinged with pink) a feeling of heaviness in the eyes headaches just above the eyes

The extent to which individual VDU workers are likely to suffer from eye trouble will depend on a number of factors including the state of their eyes, the design of the equipment, the design of the workstation and the workplace, the nature of the work and the frequency of breaks.

How VDU work affects eyes and vision

The eye consists of specialized parts which combine to provide information which is translated by the brain into visual perception or seeing. Anything upsetting this delicate balance, such as prolonged visually demanding tasks, may cause difficulties.

VDU-eye interaction makes heavy demands on the visual system in the following ways:

Scanning the display screen requires both right to left as well as up and down movement of the eyes, compared to reading hard copy text, which requires mainly right to left movement. Studies have shown that both poor lighting and badly designed typography can lessen the efficiency of these types of movement in reading. Given the poor standard of lighting in many offices and the crudity of most VDU typefaces compared with those used in print, it is likely that these are additional causes of strain for most VDU operators.

Each time a VDU operator looks from printed text to the display screen, or around the office, the eyes are refocused by the ciliary muscles. Each time the focusing distance is changed the ciliary muscles must modify the shape of the lens to ensure a clear image.

Where the operator has to keep the eyes focused on the screen for extended periods, the muscles in the eyes can easily become overloaded.

A prolonged focusing effort can also cause eye irritation, eye strain, watering and reddening. Eyestrain is a very common cause of headaches occurring during or after completing visually demanding tasks.

Changing from looking at a dimly lit screen to a brightly lit office requires a change of pupil size by the radial and circular muscles of the iris. Because it forces them alternately to tighten and relax very rapidly, it is these muscles which are affected by flicker. At high speeds the eye does not register the flicker of a bright light, but if it flickers at less than 60 times a second (ie. has a 'refresh rate of less than 60Hz), slow enough for the eye to register it and attempt to respond, acute discomfort can be experienced. Flickering becomes a greater problem with old VDUs.

*The image of the screen should be stable, with no flickering or other forms of instability. **Schedule 2 (b)***

The muscles controlling pupil size are particularly likely to become stressed if there are reflected images on a screen and the operator's eyes are forced continually to focus and refocus on the reflected images and on the characters on the display.

Some reports suggest that viewing a VDU screen for repeated prolonged periods can cause short-sightedness (myopia). A recent optometrists' guide states that intensive close work such as that performed by VDU operators is frequently associated with the worsening of myopia (Grundy, Rosenthal and Seymour 1991).

Blinking is the eye's natural windscreen wiper. It stimulates tear production and washes out contaminants. Some studies have found that the blink rate goes down among VDU operators, leading to greater dryness and irritation of the eye. If the contaminants are not removed effectively by the blinking reflex then infections can result.

Workstation and workplace factors affecting vision

The workstation

The watchword for workstations is adjustability. As many features as possible should be under the direct control of the operator who should also have the opportunity to make frequent changes of posture. Where workstations are to be used by more than one person, this adjustability becomes even more crucial - it must not just cater for all the varieties of movement which one operator may wish to adopt, but must also allow for those of other workers who will be of different shapes, sizes, ages and abilities. For instance, what suits a 20-year-old, 6-foot, shortsighted man at 5pm in the winter will be very different from the adjustments appropriate for a 40-year-old 5-foot woman with long sight on a sunny morning.

Detailed recommendations on workstation design are given in Chapter 9 but key requirements are:

the screen and keyboard should be fully adjustable separately the chair and table height should be adjustable there should be sufficient desk space for laying out of work to suit the operator desk and equipment surfaces should be made of materials which do not produce glare or contrast brightness with input documents the VDU screen should be positioned at eye level and the distance between the hard copy and the screen should not be too large. The Association of Optometrists' advice is that the source documents and other work materials should not necessarily be at the same distance as the screen as the size of hard copy text is usually smaller than the characters on the screen. The shorter the working distance, the greater the risk of developing shortsightedness (Grundy, Rosenthal and Seymour 1991). Again the critical factor is adjustability to suit the individual operator all VDU operators should be able, without moving from their workstation or twisting uncomfortably, to look periodically into a distance of at least 20 feet to rest tensed eye muscles adjustable document holders should be available

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 minimise the need for uncomfortable head and eye movements.

There shall be adequate space for operators or users to find a comfortable position. Schedule 2 (d)

The workstation shall be dimensioned and designed so as to provide sufficient space for the operator or user to change position and vary movements. Schedule 3 (a)

The symbols on the keys shall be adequately contrasted and legible from the design working position. Schedule 2 (c)

The screen

In Chapter 7 we look at screen technology and recent developments in some detail. Some key factors which affect character and symbol legibility and which in turn impact on vision include:

character size the dot matrix density (the number of dots per inch making up the characters) brightness contrast resolution stability design colour and polarity (whether there are dark characters on a light background (negative polarity) or light characters on a dark background (positive polarity) viewing angle.

Legibility may also be affected by the age of the VDU and the effectiveness of maintenance including cleaning. A 1989 study found that blood pressure and stress levels of VDU users were increased when viewing small characters (of 4.8 x 2.6 mm) compared to viewing larger characters (5.6 x 4.8 mm) and this effect increased with the age of the user (Tanaka et al 1989). Another study found that poor screen legibility caused increased rates of eye discomfort (Collins et al 1990).

The characters on the screen shall be well-defined and clearly formed, of adequate size and with adequate spacing between the characters and lines.
Schedule 2 (b)

Lighting

A great deal of often highly technical writing has been produced about the most appropriate lighting for VDU work. It is a complex subject partly because individual lighting requirements vary enormously.

Furthermore, VDU work is rarely the only visual activity going on in any particular area. Most VDU workers must also refer to documents, use the telephone, check print-outs and carry out a variety of other tasks, all of which require different types and levels of lighting. Most solutions are therefore likely to be a compromise of some sort.

The two key principles to remember here are that lighting should be as individually adjustable as possible *without* interfering with the lighting of neighbouring workers.

Many VDUs, especially older ones, produce low levels of character brightness, forcing the user to reduce the background lighting level in order to see the screen characters. Also, to avoid the discomfort caused by moving the eyes continuously between areas of very different brightness, the difference in brightness between the screen characters and the screen background should be kept low.

This may mean reducing the overall level of background lighting. A low level of background lighting may make the screen easier to read, but makes it harder to read printed material - so a level of lighting must be chosen which least affects the reading of screen characters and the reading of hard copy source documents. The current, most commonly cited recommendation to achieve this is for a background lighting level of 300-500 lux - although some workers may find this too low.

*The brightness and the contrast between the characters and the background shall be easily adjustable by the operator or user, and also be easily adjustable to ambient conditions **Schedule 2 (b)***

The objective when selecting lighting for office environments where VDUs are in use is to provide adequate levels of background illumination and contrast with the screen, while at the same time avoiding glare and reflection on the screen.

*Any room lighting or task lighting provided 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 vision requirements of the operator or user. **Schedule 3 (b)***

Downlighters or direct lighting should always be fitted with diffusers to control the light distribution and to provide even brightness. As fluorescent lights (without diffusers) have large exposed areas they may dazzle your eyes and affect your capacity to see clearly - so it is particularly important that they are fitted with adequate, preferably opaque, diffusers (London Hazards Centre 1987).

*Possible disturbing glare and reflections on the screen or other equipment shall be prevented by co-ordinating workplace and workstation layout with the positioning and technical characteristics of the artificial light sources. - **Schedule 3 (b)***

Well planned up lighting is particularly suitable for VDU work as it provides indirect lighting reflected back from the ceiling which minimizes reflections on the screen. However, use of uplighters is not recommended if the floor to ceiling height is less than 2.5 metres (Grundy, Rosenthal and Seymour 1991).

Glare

Glare can be caused by direct light or reflections and may lead to eyestrain, headaches and tiredness. As well as glare from artificial lighting, light from windows is a frequent cause of glare. The following can help to reduce glare:

fitting adjustable shades or blinds to windows arranging VDUs so that neither operators nor screens are facing an unscreened window where fluorescent lights are used, make sure that the tubes are viewed end on when operators are sitting at their workstation covering direct light sources with a diffuser Use low reflecting furnishing and decorating materials

Workstations shall be so designed that sources of light, such as windows and other openings, transparent or translucent walls, and brightly colored fixtures or walls cause no direct glare and no distracting reflections on the screen.

Windows shall be fitted with a suitable system of adjustable covering to attenuate the daylight that falls on the workstation.

Schedule 3 (c)

The keyboard shall have a matt surface to avoid reflective glare.

Schedule 2 (c)

Job design factors affecting vision

The structure, duration, demands, pace, breaks and task variation of the job all influence visual stress. Frequently, the introduction of VDUs to a workplace can create a high demand, low control situation for the workers required to use them.

A consistent finding of studies of VDU users is that vision-related problems are higher among operators doing repetitive keyboard and screen work than among those doing more creative question and answer work suggesting that the intensity and repetitiveness of the work are important factors. Full-time workers suffer noticeably more than part-timers. Studies have also shown that eyestrain becomes worse in direct proportion to the amount of time spent each day at a VDU.

Work which requires operators to stay in the same position working on a repetitive task for long periods without rest invariably causes visual strain and tiredness.

REGULAR REST BREAKS AWAY FROM THE SCREEN ARE ESSENTIAL

Wherever possible the frequency, timing and duration of rest breaks away from the screen should be under the control of the individual worker. Studies have shown that to be effective, rest breaks should be taken *before* the onset of fatigue. The Association of Optometrists recommends that *in addition to hourly breaks of several minutes*, every 15 minutes or so the eyes should be relaxed by looking away from the screen to objects at a greater distance.

The Hazards Centre advises workers wherever possible to negotiate for job design that includes several different types of work and to avoid job agreements requiring workers to work for most or all of their day at a VDU.

Research commissioned by the HSE from the University of Nottingham supports this advice - they found that to be effective in reducing fatigue and stress, breaks should be taken away from the VDU, and should not involve transfer to an equally repetitive task (Cox, cited in *NALGO Safety Representative* June 1991).

During the drafting of the EC's directive on VDU work - implemented in the UK as the *Health and Safety (Display Screen Equipment) Regulations 1992* - many unions and hazards campaigning organisations attempted to have daily time limits for VDU work included (London Hazards Centre 1992). However, resistance by the HSE and the CBI has meant that the DSE Regulations do not specify time limits and the most that is required is periodical interruptions of work at the screen.

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.

Regulation 4

Key points from the guidance to the regulations include the following:

Whenever possible, jobs at display screen should be designed to consist of a mix of screen-based and non-screen-based work to prevent fatigue and to vary visual and mental demands. Where the job unavoidably contains spells of intensive display screen work these should be broken up by periods of non-intensive, non-display screen work. Where work cannot be so organised, eg in jobs requiring only data or text entry requiring sustained attention and concentration, deliberate breaks or pauses must be introduced.

Regulation 4 Guidance note 43

Breaks should be taken before the onset of fatigue, not in order to recuperate.

Regulation 4 Guidance note 45 (a)

Breaks or changes of activity should be included in working time. They should reduce the workload at the screen, ie should not result in a higher pace or intensity of work on account of their introduction.

Regulation 4 Guidance note 45 (b)

Short, frequent breaks are more satisfactory than occasional, longer breaks: eg, a 5-10 minute break after 50-60 minutes continuous screen and/or keyboard work is likely to be better than a 15 minute break every two hours.

Regulation 4 Guidance note 45 (c)

Wherever practicable, users should be allowed some discretion as to how they carry out tasks; individual control over the nature and pace of work allows optimal distribution of effort over the working day.

Regulation 4 Guidance note 45 (f)

Eye and eyesight testing

It is estimated that as many as one in three of the workforce has uncorrected or insufficiently corrected vision defects. Many of those with vision defects will only become aware of them once they start to do visually demanding work such as VDU work.

To ensure that VDU workers do not suffer from the pain, headaches and blurred vision which may result from working at a VDU with an uncorrected vision defect, all workers should, if they wish, have free eye and eyesight testing.

UK trade unions have campaigned for many years for eye testing for VDU workers and now, despite resistance from industry and the statutory authorities, the new DSE Regulations, which include specific requirements for testing, have come into force. The Regulations cover both *eye examinations* and *sight tests*.

The regulations state that employers of both existing VDU users and new users:

shall ensure that he (sic) is provided at his request with an appropriate eye and eyesight test, any such test to be carried out by a competent person.

Regulation 5 (1)

Health and safety campaigners have long been wary of any form of employment or pre-employment screening which is used to exclude or discriminate against particular groups of workers. However, in this case, the regulations make clear that the purpose of the tests is to identify vision defects in order to correct or remedy them and *not* to exclude workers on the grounds of those vision defects.

When should the tests be carried out?

The regulations state that for existing users the test should be

Carried out as soon as practicable after being requested by the user concerned

Regulation 5 (2) (a)

and for new users, or employees about to become users the test should be

carried out before the employee concerned becomes a user

Regulation 5 (2) (b)

What type of tests?

The regulations are intended to implement the European Directive *Minimum safety and health requirements for work with display screen equipment*, which makes specific the right to eye and eyesight tests.

Although the DSE Regulations also specify this right, in its guidance to the regulations, the Health and Safety Executive suggests a convenient watering down of the provision for employers - that in the first instance, vision screening tests, (which are far more superficial than full sight tests) may be offered as a means of identifying those who need a full sight test (although those users who request a full sight test will be entitled to one).

Since it is unlikely that the majority of VDU users will have in-depth knowledge of the distinction between eye examinations, vision screening and full sight tests, this 'guidance' may lead to many VDU workers being deprived of their rights.

[pic: bolle advert with caption: This advert for vision testing equipment illustrates the importance of taking up your rights to eyesight testing by independent, qualified practitioners - the purchase by employers of a piece of electronic equipment to do the job to 'save them time and money' does not fulfill the requirements of the regulations.]

How often should the test be carried out?

In its original Consultative document on the Directive, the HSE proposed restricting the right to repeat tests to once every ten years. Fortunately the outcry that this provoked led to a reinstatement, as intended in the original directive, of the right to re-testing at regular intervals.

The regulations now specify:

At regular intervals after an employee has been provided with an eye and eyesight test his employer shall, subject to paragraph (6), ensure that he is provided with a further eye and eyesight test of an appropriate nature, any such test to be carried out by a competent person.

Regulation 5 (3)

Where a user experiences visual difficulties which may reasonably be considered to be caused by work on display screen equipment, his employer shall ensure that he is provided at his request with an appropriate eye and eyesight test, any such test to be carried out by a competent person as soon as practicable after being requested.

Regulation 5 (4)

Nothing in paragraph (3) shall require an employer to provide any employee with an eye and eyesight test against that employee's will

Regulation 5 (6)

The British College of Optometrists' *Statement of Good Practice for work with Display Screen Equipment* advises that reports on eye examinations and sight tests should include recommendations on the frequency of re-examination.

The report should also state whether or not corrective appliances (ie glasses or contact lenses) are needed for VDU work and as well as making the report to the employer, the optometrist should provide the employee with a copy. Details of the *prescription* should only be included in the employer's report if the employee gives permission.

The *Statement of Good Practice* goes on to remind practitioners:

Confidentiality of clinical information about the employee must be maintained at all times and clinical information should only be divulged to an employer if it is relevant to the employee's work at the VDU and **only with the patient's consent (British College of Optometrists 1992)**.

Who is a 'competent' person?

The guidance to the regulations makes it quite clear that employers must offer employees testing by registered ophthalmic opticians (optometrists) or registered medical practitioners with suitable ophthalmic qualifications.

Unfortunately, this guidance is somewhat undermined by the section on vision screening tests (see also page 00) which suggests that those conducting these tests need only have a basic knowledge of the eye and be competent in the operation of the instrument or test. This is the type of eye testing offered by many companies with occupational health facilities. However the Association of Optometrists recommends that eye and eyesight testing should be done by the employee's own optometrist, thereby ensuring that eye care is provided by the practitioner of the employee's choice.

The Association goes on to point out that this arrangement:

offers the employee a professional opinion independent of the management or any management nominee and has proved valuable in increasing employee confidence. [sic] (Grundy, Rosenthal and Seymour 1991).

Our advice is that workers should take up their entitlement to a full eye and sight test and not to be fobbed off with on-site vision screening by unqualified persons.

Corrective appliances

If the eye and sight tests show that an employee needs glasses (corrective appliances) specifically to correct vision defects at the viewing distance of the VDU then the employer must provide them (Regulation 5 (5)).

Unfortunately, the regulations limit the employer's responsibility to providing glasses only when:

normal corrective appliances cannot be used

Regulation 5 (5) (a)

The British College of Optometrists interprets the Regulation to mean that free glasses should only be provided to those with special needs related to their use of a VDU as part of their employment.

Clearly, there is scope in the regulations for different interpretations of what vision defects will affect employee's ability to do VDU work, and therefore qualify for 'special corrective appliances'. This is likely to lead to inconsistent provision to those who really need glasses to do the work, and who otherwise would not have had to buy them, and the meanness of the regulations in this respect is one of their major flaws.

Who pays for eye tests and glasses?

The guidance to the regulations is clear about the employer's responsibility for paying for eye tests and special glasses:

*The provision of eye and eyesight tests and of special corrective appliances under the Regulations is at the expense of the user's employer. **Guidance to Regulation 5 (60)***

Where special glasses for VDU work have been prescribed, the employer only has to pay for the basic cost ie. lenses and frames which adequately do the job of correcting the vision defect which affects VDU work. If the employee wants special frames or glasses which perform other functions, then the employer must still pay the basic cost, but the employee would have to make up the difference.

Long-term eye damage, epilepsy and cataracts

Current statutory advice emphasises that eye and other health problems associated with VDUs are not caused by the VDUs themselves, but from the way in which they are used. (HSE 1992).

Whilst there are undoubtedly many factors about the way in which VDUs are used that affect workers' health, there remain some concerns about the technology itself, which may be responsible for some ill-health linked to VDU work, and which is discussed in more detail in chapter 7. In particular, there have been some studies which have suggested that:

work with VDUs may increase the risk of seizure in those suffering from photosensitive epilepsy
there may be an increased risk of developing cataracts
work with VDUs may cause permanent deterioration of eyesight

Official guidance assures us that extensive research has shown that VDUs will not cause disease or permanent damage to eyes. However, the guidance fails to explain the findings of several experts that some VDU workers may be at risk of more serious long-term damage than eyestrain which can be corrected by appropriate workstation and workplace design.

For example, a clinical professor of optometry at the University of California found in a recent study of 150 VDU operators who used VDUs for an average of six hours a day over four years that two thirds of them had difficulty focusing their eyes (Sheedy, cited in Brodeur 1989). Professor Sheedy reported that it was possible that VDUs might be causing some breakdown in the eye focusing mechanism.

Japanese scientists have investigated the possibility that visual disorders associated with VDU use are caused by an effect on the central nervous system. In a study published in 1991, they found that VDU work was associated with impairment of the visual nervous system function, and that this finding was increased the greater the number of years the operator had been working with VDUs (Murata et al 1991).

Dr Ann Silk, a contact lens practitioner, reported to the first UK conference on electro-medicine in May 1990 that she had observed several chronic changes (including changes in the lens which can produce a significant reduction in vision - similar to that produced by cataracts) in the eyes of VDU workers and had also found that exposure to VDU electromagnetic fields had changed the surfaces of gas permeable contact lenses (*Electromagnetics News* May/June 1990). It is clear that as long as health and safety legislation is based on standards that will not impose excessive 'burdens' on industry, rather than on prevention of occupational ill-health, VDUs, as with other workplace equipment and materials, will be given the benefit of the test.

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