

## Occupational Health and Safety in Construction Industry (Continued)

### Prevention of drowning

There is a risk of drowning when people work beside or above water or have to pass near or across it on their way to or from their workplace. People can also drown in other liquids such as slurries in lagoons, foodstuffs in open vats in food processing works and solutions of chemicals in factories.

If people have to work over or in the vicinity of water, there must be a safe system of work, and they must be properly trained. Equally important is the provision of proper equipment and suitable emergency procedures, together with the information and training necessary to use the equipment and respond effectively in an emergency.

The most immediate danger following a fall into water is drowning. Causes or contributory factors include:

- shock of sudden immersion in cold water;
- weight of waterlogged clothing;
- incapacity following injury caused by striking an object during the fall or while in the water;
- fatigue or hypothermia where rescue is not immediate.

The measures given in paragraphs below should be taken to significantly reduce these risks.

### Preventing a fall into water

Erect barriers to stop people from falling into the water or other liquid. In most cases guard rails and toe boards or a similar barrier will be needed at open edges to ensure people cannot fall. In factories, farms and some other locations it may be possible to cover the surface of the container or to drain it.

A safe system of work also includes other considerations, e.g. diverting or reducing rates of flow in channels where possible by closing sluice gates and the arrangements for training and supervision of employees etc.

### Raising the alarm

When working over or near to water there should be means to raise the alarm if anyone has fallen into the water. It may be advisable to provide whistles and lights to help locate people in the water.

### Keeping afloat

Provide life jackets to those at risk. Life jackets should ideally be auto-inflating and should always be worn. They are designed to support an unconscious person in the water and turn them face upwards. It is essential that anyone who needs to wear a life jacket is trained in its use.

Buoyancy aids are intended to provide a conscious person with enough extra buoyancy to stay afloat and achieve a reasonably good floatation position, but they may not turn an unconscious person over from a face-down position.

### **Grab and throw lines**

A grab line can be tensioned across the river downstream of the work site to act as a safety feature. This line should be tensioned across the river so that it runs at 45 degrees to the flow, with the most downstream end to the bank from which easiest access can be made. This allows the swimmer to be washed to the downstream end as they hit the line. Do not tension the line at 90 degrees to the flow.

A throw line should not be tied to anything. For use in moving water it needs to be 8-12 mm diameter for ease of handling, brightly coloured and able to float to avoid entanglement on the river bed. If the force is too much to hold, the rescuer should walk down the bank recovering or releasing the line to avoid the possibility of the rescuer being pulled into the river. A tied or snagged line may have the effect of submerging the person in the water if the current is fast.

### **Rescue boats**

Suitable rescue boat or boats with a competent operator may be needed. This is particularly important when people may fall into the sea or flowing rivers. The boat should be designed so that it is easy to pull a casualty from the water into the boat. The type of rescue boat depends on the circumstances of the work and type of water and any currents. In fast-flowing water, two people may be necessary to carry out a rescue, one to manoeuvre the boat and the other to pull the casualty from the water.

To be effective, these precautions need to be maintained. People need to know what to do in an emergency and how to raise the alarm.

People are also at risk of drowning when they must travel by boat to reach their workplace, e.g. for certain work at docks, in rivers, at dams and on islands. Any boat used to convey people by water to or from a place of work should:

- be of suitable construction
- be properly maintained;
- be under the control of a competent person; and
- not be overcrowded or overloaded.

### **Protective equipment**

Some advice about general personal protective equipment (PPE), which may be required to protect against injury.

#### **Hard hats**

On almost all sites there is a risk of injury from falling materials. Minimize these risks by providing suitable barriers and toe boards at the edge of work platforms to prevent materials from falling. Deal with the remaining risks by providing suitable head protection.

Hard hats (helmets) are required where anybody might be struck by falling materials or where people might hit their heads.

These are just some of the hazards to consider:

- loose material being kicked into an excavation;
- material falling from a scaffold platform;
- material falling off a load being lifted by a crane or goods hoist or carried on a site dumper or truck;
- a scaffolder dropping a fitting while erecting or dismantling a scaffold.

Decide on which areas of the site hats have to be worn. Tell everyone in the area, if necessary make site rules.

Provide employees with hard hats. Make sure hats are worn and worn correctly. There are many types of hat available; let employees try a few and decide which is most suitable for the job and for them. Some hats have extra features including a sweatband for the forehead and a soft (or webbing) harness. Although these hats are slightly more expensive, they are much more comfortable and therefore more likely to be worn.

### **Footwear**

Is there a risk of injury from either:

- materials being dropped on workers' feet; or
- nails, or other sharp objects, penetrating the sole?

If so, boots with steel toecaps and mid-soles may be needed. Foot protection comes in many types and styles and manufacturers offer advice on the most suitable footwear for specific types of hazard.

Wellington boots are essential in preventing burns from wet cement or concrete as the cement content, when mixed with water, becomes highly corrosive and can cause severe burns to the skin.

### **Goggles and safety spectacles**

These are required to protect against:

- flying objects, e.g. when using a nail gun. To provide adequate protection goggles should be shatter-proof – check the manufacturer's specification;
- sparks, e.g. when disc-cutting;
- ultraviolet radiation from welding – specialist goggles or shields are required;
- chemical splashes.

Eye protection should be readily available in sufficient numbers so that any that are lost, destroyed or become defective can be replaced. If protection against corrosive splashes is needed, visors can protect the whole face.

### **Outdoor clothing**

Where employees regularly work outdoors and they cannot be sheltered from the weather, wind and waterproof clothing will be needed. There should be facilities for storing clothing not worn on site and protective clothing as well as for drying wet clothing.

A major hazard to the skin is exposure to ultraviolet rays from the sun. The effects can vary from sunburn (blistering and peeling of the skin) to permanent damage and increased risk of skin cancer. Construction workers who are outdoors for long periods of time are at the greatest risk and should take steps to protect their skin by:

- wearing a long-sleeved top and covering their legs;
- regularly applying high-protection sun cream to exposed skin; and
- carrying out periodic checks for any visible changes in skin, such as changed or newly formed moles or any skin discolouration.

### **High-visibility clothing**

Many accidents happen when people in hazardous positions cannot be seen. It is important to plan work to avoid placing people in these positions. Where this is not possible, provide high-visibility clothing.

It is essential that this clothing be kept clean if it is to be effective. Badly soiled garments should be replaced.

High-visibility clothing will be needed wherever workers:

- could be run down by vehicles, e.g. signallers assisting with vehicles being manoeuvred and anyone engaged in roadworks;
- need to be seen by others to allow them to work safely, e.g. signallers assisting in lifting operations need to be clearly visible to the crane driver.

### **Gloves**

Suitable gloves can protect against dusts (such as cement), wet concrete and solvents, which can cause dermatitis. They can also protect against cuts and splinters when handling bricks, steel and wood. A range of different gloves should be available to suit different jobs and different workers.

### **Work affecting the public**

It is not only workers who are at risk from construction work. Members of the public are killed and seriously injured each year. The dead and injured include children.

Accidents often happen when people are walking near a building being built, refurbished or demolished, or walking near work in the street. Remember, when working in public areas, the work needs to be planned and executed to take account of the needs of children, the elderly and those with disabilities.

### **Keeping the public out**

The best way to protect members of the public is to keep them out of the area where you are working. This is generally achieved by erecting a 2 m high perimeter fence or hoarding. If alterations are needed or some of the fencing needs to be taken down temporarily, make sure it is put back before leaving the site for meal breaks and at the end of the day. Lock the site gates and any other doors and windows at night.

If work is being done in occupied premises, clear responsibilities for maintaining the fencing and keeping those not involved in the work away need to be agreed with the building occupier.

If the site is near a school, or on or near a housing estate, it may be helpful to contact the head master or residents' association etc. to seek their help to discourage children from trespassing.

Many children see construction sites as adventure playgrounds. Even though they may be entering the site without authority or may be trespassing, they should still be protected from site dangers; many will be too young to appreciate the risks they are running.

Take the following steps to reduce the chance of children injuring themselves if they do get onto the site. At the end of the working day:

- barrier off or cover over excavations, pits etc;
- isolate and immobilize vehicles and plant; if possible lock them in a compound;
- store building materials (such as pipes, manhole rings, cement bags etc.) so that they cannot topple or roll over;
- remove access ladders from excavations and scaffolds; and
- lock away hazardous substances.

Security measures may also be needed. These can often strengthen safety measures.

### **Falling materials**

Protect passers-by with toe boards, brick guards and/or netting on scaffolding, but remember, most netting will only retain light material. Fans and/or covered walkways may also be needed where the risk is particularly high. Use plastic sheeting on scaffolds to retain dust, drips and splashes which may occur when cleaning building façades. Make sure the sheets do not make the scaffold unstable.

Tie down loose materials and remove debris from scaffold platforms. Do not stack material on scaffolds unless it is needed, and then not above the level of the toe board unless brick guards or another way of retaining material has been provided. Tie down scaffold boards if high winds are possible.

When using gin wheels or power-driven hoists, select a safe place where members of the public are not at risk.

Use debris chutes when removing debris into a skip. Cover over the skip to stop flying debris and cut down dust.

### **Work in the roadway or footway**

When working on the footpath or roadway, there could be a hazard to pedestrians and traffic. Road traffic may also present a hazard to the people on site.

When planning work in the roadway or footpath consider:

- signs for traffic and pedestrians to warn people about the work and the diversions they are expected to follow;
- temporary traffic controls and their maintenance;
- cones, and barriers to mark the safety zone within which the work can be carried out safely;
- barriers and tapping boards to protect the public. Barriers around street works perform two functions. Firstly, they alert the public to the presence of such work and direct them to where they want to be via a protected area. Secondly, if members of the public do approach the site, the barriers should be of sufficient strength and stability to prevent them from being injured if they fall;
- suitable temporary walking surfaces (including ramps if required) that are free of tripping hazards, paying particular attention to the needs of the elderly, those with prams, wheelchair users and visually impaired people;
- temporary lighting, which might be needed at night if there is insufficient street lighting;
- materials storage, e.g. do not leave paving slabs propped on edge, or pipes loosely stacked in areas where they might be disturbed. Do not store materials in the path of pedestrians and watch out for trailing cables;
- the movement of vehicles and plant into and out of the work area;
- providing high-visibility clothing for those working on or next to the roadway;
- other hazards, e.g. buried cables and support for the sides of excavations.

On some occasions, the pavement will have to be closed to protect the public, e.g. during pavement work, demolition work, façade cleaning, raising hot asphalt, scaffold erection or dismantling. The area may need to be barriered off and a safe alternative route provided for pedestrians. Get in touch with the Roads Authority for advice.

### **Scaffolding**

Ensure that scaffolding does not present a danger to members of the public after it has been erected. Ensure that there are no protruding components that can injure people as they walk past. If a covered walkway is provided, make sure it is properly demarcated. Be aware of the

needs of people with disabilities, e.g. visually impaired people may require tapping boards at low level to ensure they follow the protected route. Take steps to stop people gaining access to the scaffold when you are not on site by removing ladders at ground level. During refurbishment or repair work, think about additional places where access to the scaffold can be gained, e.g. from inside the building through a higher-level window, and take steps to avoid it.

### **Dusty and hot work**

Fence off hot work, such as welding or the use of disc cutters, to contain dust and sparks. Fence off bitumen and similar boilers which have to be sited in a public space.

### **Site visitors**

Make sure site visitors report to the person in charge of the site and know where to go – notices may be required at the site entrance. A waiting area may be needed. Visitors should not be allowed to wander around the site alone. A booking-in system may be needed on larger sites. A procedure of providing instructions to visitors may be required.

When housing estates are being built or properties are being refurbished, people not involved in the work who are unfamiliar with construction site hazards may well want to look around the site. Make sure they are accompanied at all times and given any necessary protective equipment such as helmets or boots. Programme operations so that work is not in progress on the parts of the site the public visit regularly. Arrange and sign access routes across the site to keep visitors away from site hazards.

### **Monitoring and reviewing**

With any business activity, checks need to be made to make sure that what should be happening is actually being carried out in practice and that people are fulfilling their duties. Checking health and safety precautions are being taken is as important as checking progress and quality. Site supervisors need to see that their company considers the fulfilment of their corporate health and safety responsibilities as an essential part of the construction work.

Who is responsible for monitoring health and safety on site and are they trained and competent to carry out this role? How often should this monitoring be carried out and what system do you have in place to check that it is?

Who is responsible for managing and monitoring any contractors while they are on site to check they are working safely and to their method statement as agreed? Are contractors expected to sign in and report to a named site contact so that their presence on site is always known? What is your method of dealing with contracting firms or individual employees who fail to work safely?

If a safety adviser is employed to visit sites and review safety, do they report problems to the site manager and to the employer? Are matters put right and how will you receive confirmation of this? Do the same problems keep recurring? If there are problems, find out why.

Act before there is an accident or someone's health is damaged. Keeping a record of accidents, illnesses and treatments given by first aiders will help to identify trends. If an accident happens, find out what happened and why. Minor accidents and 'near misses' can give an early warning of more serious problems. Consider whether the accident would have happened if the work had been better planned or managed or employees had been better trained. Could site or company rules have been clearer or could plant and equipment have been better maintained? Don't just

put the blame on human error or other people without thinking **why** the error was made.

Appendix 1 (at the end of this article) contains a basic checklist that identifies some of the hazards most commonly found on construction sites. It is not an exhaustive list but is intended to help you decide whether your site is a safe and healthy place to work.

### **Health and safety management and the law**

All work activities are covered by health and safety law. The law which is most relevant to construction health and safety is set out here.

### **The Health and Safety at Work etc Act 197443**

This Act applies to all work activities. It requires employers to ensure, so far as reasonably practicable, the health and safety of their employees, other people at work and members of the public who may be affected by their work.

Employers should have a health and safety policy. If they employ five or more people, the policy should be in writing. Use the advice in this book to draw up a policy. Keep the policy clear and simple. Make sure everybody in the firm knows about and understands the health and safety systems which have been developed and that these systems directly relate to the operations of the company. The safety policy should cover three distinct aspects:

- a general statement of the company's health and safety policy. This announces the company's intent to have high standards of health and safety, what it intends to achieve and how it intends to achieve it;
- the organization for carrying out the policy, including reference to the management systems and safety representatives. It should include who is responsible for what and when and how they will achieve it; and
- the specific arrangements that the company operates for managing health and safety during its normal work activities. It should cover, where relevant, the activities addressed in Section 3 and how the considerations addressed in Section 2 (such as emergency procedures, provision of welfare facilities, accident reporting, site induction etc) will be managed.

The self-employed should ensure, so far as reasonably practicable, their own health and safety and make sure that their work does not put other workers or members of the public at risk.

Employees have to co-operate with their employer on health and safety matters and not do anything that puts themselves or others at risk (see paragraphs 663-667). Employees should be trained and clearly instructed in their duties.

### **The Management of Health and Safety at Work Regulations 199944**

The Management of Health and Safety at Work Regulations 1999 (MHSWR) apply to everyone at work, regardless of what that work is. They require employers to plan, control, organise, monitor and review their work.

To do this they should:

- assess the risks associated with work to identify the control measures necessary to reduce



these risks;

- have access to competent health and safety advice;
- provide health and safety information and training to employees;
- have arrangements to deal with serious and imminent danger; and
- co-operate in health and safety matters with others who share the workplace.

### **Risk assessment**

Employers and the self-employed must identify the hazards involved with their work, assess the likelihood of any harm arising and decide on adequate precautions. This process is called risk assessment and is central to all planning for health and safety.

Risk assessment can be carried out in the five stages listed below. It is recommended that employers and the self-employed carry out their own risk assessments as they know their own industry, their own company and the risks that their employees face. What is important is that those carrying out risk assessments understand the requirements of the Regulations and possess the knowledge and judgement to ensure the most suitable precautionary measures are put into practice.

The risk assessment can either be carried out on a single specific task, or on the job as a whole, providing it is not too big. The assessment may highlight the need for specific assessments (such as manual handling, COSHH or noise) to be undertaken.

### **How is a risk assessment carried out?**

#### **Step 1: Look for the hazards**

Consider the job, how it will be done, where will it be done and what equipment, materials and chemicals will be used.

What are the hazards that could cause harm? Here are some examples that are regular causes of serious and fatal accidents or ill health:

- falling from an open edge or through a fragile surface;
- being struck by site vehicles;
- collapse of an excavation or part of a structure;
- use of a vibrating hand tool;
- work with materials (eg lead, asbestos or solvents) that could be a health problem;
- dust from cutting, grinding or drilling.

The most common construction hazards are identified in Section 3.

## Step 2: Decide who might be harmed and how

Think about employees, the self-employed, employees of other companies working on the job, site visitors and members of the public who may be in the area or outside the site.

Safe working often depends on co-operation between firms. Consider how they need to be taken into account in the assessment. Identify problems the work may cause for others at the site, or problems they may cause for those doing the work and agree necessary precautions. Tell the principal contractor or whoever is controlling the site what has been agreed.

## Step 3: Evaluate the risks and decide on action

Where there is a risk that someone could be harmed consider:

- **First:** Can the hazard be removed completely? Could the job be done in another way or by using a different, less hazardous, material? If it can, change the job or process to eliminate the risk.
- **Second:** If the risk cannot be eliminated, can it be controlled? Applying the advice and guidance given in Section 3 will help here. For example, while it may be necessary to apply a solvent-based material, the exposure of workers to hazardous vapours may be reduced by applying it by brush or roller rather than by spraying. If the precautions described in Section 3 have not been taken, is there an equivalent or better standard of protection? If not, more needs to be done.
- **Third:** Can measures be taken which will protect the whole workforce? For example, to prevent falls, guard rails at edges provide safety for everyone in the area.
- **Fourth:** Can the number of people at risk be reduced? For example, by reducing the size of the site workforce while cranes are in use for erecting structural frames etc, or by undertaking higher-risk tasks outside normal site working hours when only essential personnel will be present.

## Step 4: Record the findings

Employers with five or more employees should record the significant findings of their assessment as an aid to controlling hazards and risks. No specific form is required providing that the information is recoverable.

Employers should pass on information about significant risks and the steps they have taken to control the risks, even when they employ less than five people.

## Step 5: Review the findings

Reviews are important. They take account of unusual conditions on some sites and changes in the way the job is done. Reviews allow lessons learned from experience to be taken into account. A new assessment is not always needed for every job, but if there are major changes, a new assessment will be needed. In other cases only the principal contractor will be in a position to do a full assessment. For example, it may be the potential interaction of two or more contractors that leads to increased risk; in such cases the principal contractor should take the lead.

## Method statements

Method statements are not required by law, but they have proved to be an effective and practical management tool. They can take account of risks identified by the risk assessment and communicate the safe system of work to those undertaking it, especially for higher-risk complex or unusual work (eg steel and formwork erection, demolition or the use of hazardous substances). A method statement draws together the information compiled about the various hazards and the ways in which they are to be controlled for any particular job from the conclusions of the risk assessments.

A method statement also takes account of the company's health and safety organisation and training procedures and may include arrangements to deal with serious or imminent danger.

The method statement describes in a logical sequence exactly how a job is to be carried out in a safe manner and without risks to health, and includes all the control measures. This will allow the job to be properly planned and resourced with the appropriate health and safety resources needed for it. It can also provide information for other contractors working at the site about any effects the work will have on them and help the principal contractor to develop an overall health and safety plan for the construction phase of a project (see paragraphs 616-618).

If a similar operation is repeated, the statement will be similar from job to job. However, if circumstances change markedly, eg with demolition, the statement will need to be revised for each job.

The method statement is an effective way of providing information to employees about how they expect the work to be carried out and the precautions that should be taken. The most effective health and safety method statements often have a number of diagrams to make it clear how work should be carried out. Checking that the working methods set out in the statement are actually put into practice on site can also be a useful monitoring tool.

When reviewing the risk assessments, use the information from monitoring previous jobs and accident records and investigations. It will help to decide if adequate precautions are being applied.

## Health and safety training and advice

Employers are responsible for ensuring health and safety and must ensure that they have a competent source of advice. The person providing this advice may need extra training in health and safety to meet this responsibility properly. Sometimes it may be necessary to use external advisors.

As with all training, whether for managers or site workers, there is a need to identify:

- what they know already;
- what they need to know and what skills they need;
- how best to provide the extra knowledge and skills they need.

Employers can then decide whether to provide the training in-house, use an external training course or a consultant.

If there isn't adequate expertise in the company, further advice may be obtained from:

- the Construction Industry Training Board (CITB);
- employers' and trade organizations such as the Building Employers' Confederation (BEC), the Federation of Master Builders (FMB) and the Construction Federation;
- training and enterprise councils and local enterprise companies;
- local health and safety groups;
- insurance companies;
- suppliers – they must provide instructions on using machines, tools, chemicals etc and product data sheets. Also, containers often have helpful labels;
- safety magazines – they have useful articles and advertise safety products and services;
- the British Safety Council (BSC), the Royal Society for the Prevention of Accidents (RoSPA), the Institution of Occupational Safety and Health (IOSH) and many other independent companies and consultants run training courses – look in the telephone directory;
- HSC publishes a newsletter about new HSE publications, changes in the law and similar items of interest, and there is also a twice-yearly newsletter for the construction industry entitled *Site Safe News*;
- the HSE website: [www.hse.gov.uk/construction](http://www.hse.gov.uk/construction).

Workers must be trained in safe working practices. Employees cannot be relied upon to pick up safety training on the job from their workmates – they might simply be learning someone else's bad habits. Employers need to be sure of their employees' abilities before setting them to work and need to provide necessary training where it is required.

Foremen and supervisors play an important role in ensuring work is done correctly. They control the way in which work is carried out on site. This means they can and should ensure that work is safe. They also have an important role in passing on training and information to workers on site, such as with toolbox talks. However, they cannot do this properly unless they are trained in safe and healthy working practices.

As workers come to the United Kingdom from other countries, the possible lack of understanding of the English language presents significant communication problems. Effective steps must be taken so that workers who cannot speak English can work safely and without risks to their own health and safety or the health and safety of others who may be affected. Employers have a duty to provide employees with information and instructions that are comprehensive and relevant, and in a language they understand. This may mean engaging a bilingual supervisor who can give instructions, training and supervision in the appropriate language.

### **The Construction (Design and Management) Regulations 1994**

The Construction (Design and Management) Regulations 1994 (CDM) require that health and safety is taken into account and managed throughout all stages of a project, from conception,

design and planning through to site work and subsequent maintenance and repair of the structure.

### Who does CDM affect?

CDM affects everyone who takes part in the construction process: the client, the designers and contractors. Where they apply, the Regulations require two additional roles to be fulfilled: the planning supervisor and the principal contractor. The Regulations also require the health and safety plan and the health and safety file to be produced.

### What does CDM require?

CDM requires that everyone who can contribute to improving site health and safety plays their part. What each duty holder can do will vary from project to project. The efforts everyone makes should be proportional to the health and safety risks associated with the work and the difficulty of managing those risks. This means that if the project is complex and the risks are high, more effort is needed than if the project is relatively small or has lower risks.

### When does CDM apply?

The Regulations apply to most common building, civil engineering and engineering construction work (see Figure 54). They do not apply to construction work where the local authority is the enforcing authority for health and safety purposes. This means that where work is not notifiable (see Figure 1) **and** is either:

- carried out inside offices, shops and similar premises where the construction work is done without interrupting the normal activities in the premises and without separating the construction activities from the other activities; or
- the maintenance or removal of insulation on pipes, boilers or other parts of heating or water systems; then it is not subject to the CDM Regulations.

Apart from this exception, the CDM Regulations apply to all design work carried out for construction purposes (including demolition and dismantling). If any site work requires design work, even for temporary works, the Regulations will apply to the design aspect even if the Regulations do not require the appointment of a planning supervisor or a principal contractor.

The CDM Regulations apply to **all demolition and dismantling work**, regardless of the length of time the work will take or the number of people undertaking it.

The Regulations also apply to other construction work unless:

- the work will last 30 days or less and involve less than five people on site at any one time; or
- the work is being done for a domestic client (that is someone who lives or will live in the premises where the work is being done). In this case only the duties to notify HSE and those placed on designers apply (see paragraphs 34-37 and 623-629). However, in some instances domestic clients may enter into an arrangement with a developer who carries on a trade, business or other activity. For example, a developer may sell domestic premises before the project is complete. The domestic client then owns the incomplete property, but the developer still arranges for the construction work to be carried out. In this case the CDM requirements apply to the developer.

## What is the health and safety plan?

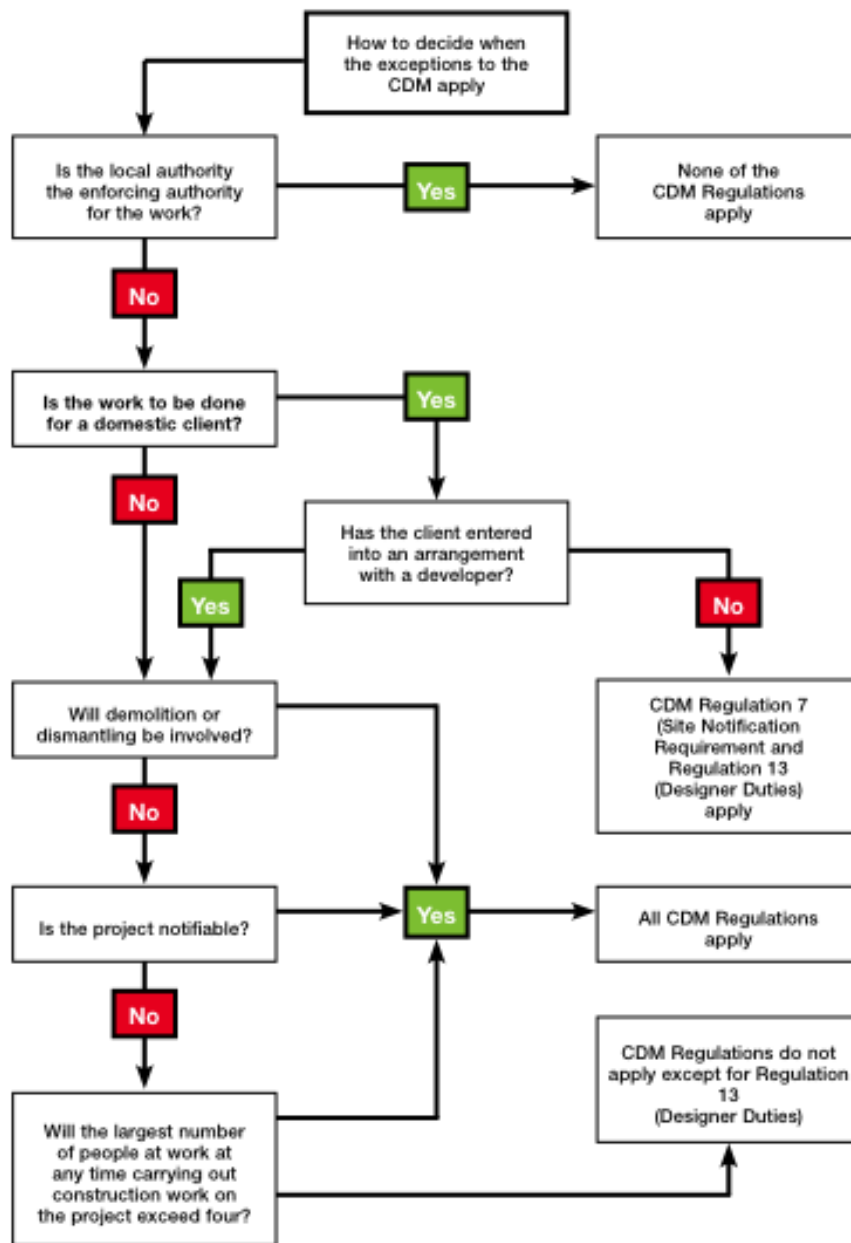
The health and safety plan develops with the project and has at least two distinct phases (the first is associated with design and planning of the project before tendering or contractor selection, the second is associated with the construction phase). The planning supervisor is responsible for seeing that the plan is started. The purpose of the plan is to ensure information relevant to health and safety is passed on to those who need it.

The **pre-construction-stage** health and safety plan may include:

- a general description of the work and details of project timescales;
- details of health and safety risks as far as they are known, including information that clients are required to provide about site-specific risks (eg asbestos or contaminated land etc), and designers about particular project risks they were unable to eliminate and the assumptions in broad terms they have made about precautions that will be taken;
- information required by possible principal contractors to allow them to identify the health and safety competences and resources they will need for the project;
- information on which to base a construction-phase health and safety plan.

The pre-construction-stage health and safety plan needs to be available to possible principal contractors at the start of selection or tendering procedures. It informs them of the health, safety and welfare matters they need to take into account when planning for site work. Often the necessary information will already be contained within existing documents (eg preliminary documents and design drawings). In these cases the plan can simply be an index to where the necessary information can be found within the other documents. Where this is not the case, a separate plan will be required containing the additional material.

The plan only needs to contain information that is specific to the project and is necessary to assist the development of safe systems of work. The plan does not need to repeat information that a competent contractor would already know. Including unnecessary or irrelevant material can make essential information more difficult to identify and reduce the effectiveness of the plan as a way of passing on information.



### CDM decision tool

For the **construction phase**, the principal contractor develops the health and safety plan so that it addresses issues that are relevant to health, safety and welfare matters key to the project. Issues which need to be considered for inclusion in the plan include:

- how health and safety will be managed during the construction phase, including details of how information and instructions will be passed to contractors and how their activities will be co-ordinated;
- contractors' risk assessments and health and safety method statements for high-risk activities;

- information about welfare arrangements sufficient to allow contractors on the project to understand how they can comply with welfare requirements;
- common arrangements (eg on welfare, site hoardings and emergency procedures);
- how contractors, material suppliers and plant and equipment supplied for common use will be selected;
- how the views of workers and their representatives on health and safety issues associated with the project will be co-ordinated;
- information on necessary levels of health and safety training for those working on the project and arrangements for project-specific awareness training and refresher training such as toolbox talks;
- arrangements for monitoring compliance with health and safety law;
- site health and safety rules and relevant health and safety standards where appropriate, particularly where standards above the minimum statutory requirement are requested by the client;
- procedures for delivering information for the health and safety file.

The extent to which particular items need to be addressed within the plan will depend on the degree of risk associated with the project and how much coverage has been given to issues in other documents (eg contract preliminaries and contractor health and safety policies). Where the risk is low and issues are covered in the principal contractor's health and safety policy, a simple reference to the safety policy arrangements may be sufficient.

The plan should be developed as far as possible before construction work starts, and then reviewed as necessary to account for changing project circumstances. On many larger projects design may not be complete. In these cases the construction-phase plan will need to address:

- the general management arrangements (eg who will be responsible for management, how many supervisors will be needed at different stages, how information will be passed to contractors, how method statements will be agreed etc);
- welfare arrangements and how they will be provided and maintained;
- procedures for site security;
- details of work early in the project for which information is available, explaining how it will be managed and controlled; and
- how new design information will be handled and incorporated into the plan.

### **What is the health and safety file?**

This is a record of information for the client or end user. The planning supervisor ensures it is produced at the end of the project and is then passed to the client. It gives details of health and safety risks that will have to be managed during maintenance, repair, renovation or demolition. Contractors should pass information on these matters that becomes available during the



construction phase to the planning supervisor for inclusion within the file. The client should make the file available to those who will work on any future design, construction, maintenance or demolition of the structure.

Details of how information for the file should be presented is best agreed with the client at an early stage. This will ensure that the information for the file can be gathered in a consistent manner and the file assembled and presented to the client in a way which will make it easy for the client to use. Files may also be electronically produced and stored; a paper copy is not required by law.

### **What do the CDM Regulations require?**

#### **The client**

The principal duties that are placed upon the client are to:

- appoint a planning supervisor and principal contractor for each project;
- take reasonable steps to satisfy themselves that the planning supervisor, principal contractor, project designers and any contractors they appoint directly are competent and adequately resourced to deal with health and safety problems associated with the project;
- obtain and pass on relevant information available to them about health and safety matters which relate to the project to those who are planning the project. If there is a health and safety file already available, relevant sections of this should be provided;
- ensure that construction work does not start unless a suitable health and safety plan has been prepared.

Clients may appoint agents to act on their behalf, but before doing so they should make reasonable enquiries to satisfy themselves that the agent is competent to fulfil the client's duties. This can be effected by sending a declaration to HSE.

#### ***The designer***

The term 'designer' includes everyone preparing drawings and specifications for the project. Designers include architects, structural engineers and surveyors. Before preparing any design, the designer should ensure that the client has been made aware of their own duties under the CDM Regulations.

Designers should ensure that when they design for construction work, they consider foreseeable health and safety risks during construction and eventual maintenance and cleaning of the structure in the balance with other design considerations, such as aesthetics and cost. They should apply the hierarchy of risk control. This means designers need to identify the hazards inherent in carrying out the construction work and where possible alter the design to avoid them. If the hazards cannot be removed by design changes, the designer should minimise the risks and provide information about the risks that remain.

The design should describe any matters that require particular attention by a contractor. Enough information should be provided to alert contractors and others to matters which they could not

be reasonably expected to know about.

The designer should also consider in the same way how the structure can be maintained and repaired safely once built. Designers should do this when they develop almost any design, including design work for projects where the appointment of a planning supervisor or principal contractor is not required by the CDM Regulations.

Examples of what designers can do to improve health and safety might include:

- designing for non-fragile roofing assemblies instead of fragile ones (falls through fragile surfaces are a major cause of fatal and serious injuries);
- avoiding the need for chasing for cable runs (a job which inevitably exposes workers to high dust and noise levels) by embedding conduit within the wall finish;
- when designing foundations in contaminated land, specifying a driven-pile foundation (which does not bring contaminated material to the surface) instead of bored piles;
- avoiding concrete blocks weighing more than 20 kg (these are difficult to lift and are likely to lead to long-term back injury to block layers).

Designers should co-operate with the planning supervisor and other designers on health and safety matters and supply relevant information. Where CDM applies, information can be passed via the planning supervisor; where CDM does not apply, it should be supplied as part of the design information provided to the contractors. The information should include:

- the principles of the design relevant to the health and safety of those working on the project (eg erection sequences which must be followed to ensure stability);
- descriptions of special requirements for safe working (eg temporary propping of unstable structures);
- any special assumptions the designer has made about working practices (eg the site will have been levelled before structural erection begins to allow the safe use of MEWPs for access for erectors).

If a company or an individual provides any sort of design service to the client or others, or designs temporary works, regulation 13 will apply.

### ***The planning supervisor***

The planning supervisor is appointed by the client. The role of planning supervisor may be taken on by a company or an individual. The function can be discharged within the client's organization, within the design or construction team. Alternatively, it can be done by some other independent person, partnership or organization. The role is to:

- co-ordinate health and safety during the design and planning phase of the project;
- ensure that the pre-construction-stage health and safety plan for the project is produced in time for it to be provided to bidding contractors as part of the selection process;
- give advice about health and safety competence and resources needed for the project;

- ensure that written notice of the project is given to HSE;
- collect information for inclusion in the health and safety file, which they ensure is prepared before passing it to the client on completion of the contract.

CDM does not require planning supervisors to visit the site or to assess the performance of the principal contractor once construction work has begun.

### ***The principal contractor***

The principal contractor is appointed by the client to plan, manage and control health and safety during the construction phase of the project.

Site work should not start until the principal contractor has developed a construction-phase health and safety plan based upon information provided in the pre-construction health and safety plan. The plan may need to be developed during the construction phase to take account of changing conditions on site as work progresses or the design changes.

When planning the job, the principal contractor will need to identify the hazards and assess the risks of the job. To do this properly, information (including method statements and risk assessments) may be needed from other contractors who will be working at the site.

When risks arise because of potential interactions between contractors (eg site transport matters) or a number of contractors are exposed to a common risk (eg from the site electrical distribution system), the principal contractor should take a positive role in ensuring the general principles of risk prevention and control are applied.

The principal contractor's health and safety plan should take account of the general issues in Section 2, the specific hazards and risk control measures in Section 3 and the general principles of risk assessment in this section (paragraphs 580-591).

### ***Contractors***

These are the firms or self-employed people working at the site. They should help the principal contractor to achieve safe and healthy site conditions by following their instructions. They should co-operate with other contractors working on the site and provide health and safety information (including risk assessments – see paragraphs 580-591) to the principal contractor.

For those contractors who work on larger sites where CDM applies, asking about the project health and safety plan before starting work will be valuable. Employees need to be told what it says that affects them. Proposed working methods should fit in with the plan and with site rules. If they do not, tell the principal contractor.

### ***Health and safety competence***

Everyone letting or subletting contracts is expected to take steps to satisfy themselves that the people who will do the work are competent. This can be done by asking questions such as:

- whether the contractor employs a safety advisor or uses the services of a safety consultant, and how often the safety advisor will visit the job;
- whether the contractor has done this type of work previously;

- what the contractor's safety statistics are in respect of injuries, near misses and dangerous occurrences;
- whether they have been issued with any improvement or prohibition notices or been prosecuted (this information is available on the HSE website for limited companies, partnerships and sole traders); and
- whether it is their intention to use subcontractors and if so, for what elements of the job and how will the subcontractor be selected and managed.

CDM requires that anyone letting or subletting contracts must also satisfy themselves that those who are to do the work are:

- competent in relevant health and safety issues; and
- intend to allocate adequate resources, including time, equipment and properly trained workers to do the job safely and without risks to health.

Ask the planning supervisor for their advice and input during the selection process.

The pre-construction-stage health and safety plan should act as a guide to the significant health and safety issues associated with the project. When tendering for work, being able to answer questions on these subjects will help designers and contractors to demonstrate competence and their suitability for the job.

If a client is letting work, or a builder or contractor is subletting work, considering the issues in this Section and Sections 2 and 3 will help them to decide on relevant questions to ask when assessing competence. Decide in advance what competences will be needed to do the work safely and without risk to health and how these can be demonstrated.

## **The Construction (Health, Safety and Welfare) Regulations 199645**

### ***Who has duties under the Regulations?***

The main duty holders under these Regulations are employers, the self-employed and those who control the way in which construction work is carried out. Employees also have duties to carry out their own work in a safe way. Also, anyone doing construction work has a duty to report any health or safety defects to those in control and to co-operate with others on matters of health and safety.

### ***What do the Regulations cover?***

The Regulations cover a wide range of health and safety issues, including:

- welfare requirements such as toilets, washing facilities and rest areas;
- the support and inspection of excavations;
- transport routes and pedestrian segregation;
- provisions for higher-risk trades such as demolition; and

- emergency and fire procedures.

Much of the advice in Sections 2 and 3 of this book is relevant to these Regulations.

### **The Work at Height Regulations 20051**

These Regulations place duties on employers, the self-employed, employees and those who control the way in which work at height is carried out. They cover all circumstances where a person is working at height (both above and below ground) or gaining access to/egress from a place of work and could fall any distance liable to cause personal injury.

The key provisions of the Regulations are that duty holders should:

- **avoid** work at height where they can;
- use work equipment to **prevent** falls where work at height cannot be avoided;
- where the risk of a fall cannot be eliminated, use work equipment to **minimize** the distance and consequences of a fall should one occur;
- always use measures which afford protection to everyone at risk (eg nets) before using personal protective measures (eg harnesses);
- ensure that the work is risk-assessment based and that the most suitable item of work equipment is selected and used;
- ensure those involved in work at height, including its planning and organisation, are competent to the level required to carry out their duties safely;
- inspect working platforms and work equipment at defined intervals and record the results (see Appendix 1);
- control risks from work involving fragile surfaces.

Section 3 covers the requirements of these Regulations in more detail.

### **The Construction (Head Protection) Regulations 198940**

These Regulations specify when head protection should be worn. Further information can be found in paragraphs 531-535.

### **The Lifting Operations and Lifting Equipment Regulations 199810**

These Regulations cover the operation of all lifting equipment including those that lift people. General advice on compliance can be found in the section entitled *Moving, lifting and handling loads*. Information on the Regulations can be found in *Safe use of lifting equipment. Lifting Operations and Lifting Equipment Regulations 1998: Approved code of practice and guidance*.<sup>12</sup>

## The Provision and Use of Work Equipment Regulations 199846

These Regulations cover all types of work equipment and deal with such issues as dangerous parts of machinery, roll over protections, visibility, and inspection. For further information read *Safe use of work equipment. Provision and Use of Work Equipment Regulations 1998. Approved Code of Practice and guidance.*<sup>47</sup>

## The Control of Substances Hazardous to Health Regulations 200216 (COSHH)

COSHH requires employers to control exposure to hazardous substances to prevent ill health. They must protect both employees and others who may be affected. COSHH is a useful tool of good management that sets eight basic measures (listed below) that employers and sometimes employees must take. It requires a step-by-step approach during which you are required to assess risks and implement any measures needed to control exposure and establish good working practices.

What COSHH requires:

- Step 1: **Assess the risks** to health arising from hazardous substances used or created by your workplace activities.
- Step 2: **Decide what precautions are needed.** You must not carry out work which could expose your employees to hazardous substances without first considering the risks and the necessary precautions and what else you need to do to comply with COSHH.
- Step 3: **Prevent or adequately control exposure.** You must prevent your employees being exposed to hazardous substances. Where preventing exposure is not reasonably practicable, then you must adequately control it.
- Step 4: **Ensure that control measures are used and maintained** properly and that safety procedures are followed.
- Step 5: **Monitor the exposure** of employees to hazardous substances if necessary.
- Step 6: **Carry out appropriate health surveillance** where your assessment has shown this is necessary or where COSHH sets specific requirements.
- Step 7: **Prepare plans and procedures** to deal with accidents, incidents and emergencies involving hazardous substances where necessary.
- Step 8: **Ensure employees are properly informed, trained and supervised.**

Further information can be found in the COSHH *Approved Code of Practice and guidance.*<sup>19</sup>

## The Manual Handling Operations Regulations 199211

These Regulations apply to a wide range of manual handling activities involving the transporting or supporting of a load. This includes lifting, lowering, pushing, pulling, carrying or moving. They require employers to avoid the need for hazardous manual handling but where this need cannot be avoided, employers must assess the risk of injury and take measures to reduce it. Employees also have duties to follow appropriate systems of work, make proper use of the

equipment provided for their safety and to inform their employer if they identify any hazardous handling activities.

For further information read *Manual handling. Manual Handling Operations Regulations 1992 (as amended). Guidance on Regulations*.48

### **The Control of Noise at Work Regulations 200529**

The Noise Regulations require employers to assess the risks to employees from noise at work and take action to prevent or reduce the noise exposure that produces those risks. If the noise exposure cannot be reduced sufficiently using other methods, hearing protection must be provided. Employers must provide employees with information, instruction and training and carry out health surveillance where necessary.

These Regulations require employers to take specific action at certain action values. The action values relate to:

- the levels of your employees' exposure to noise averaged over a working day or week (lower action value 80 dB, upper action value 85 dB); and
- the maximum noise (peak sound pressure) to which employees are exposed in a working day (lower action value 135 dB, upper action value 137 dB).

The actions you are required to take and further guidance can be found in *Controlling noise at work. The Control of Noise at Work Regulations 2005. Guidance on Regulations*.49

### **The Control of Vibration at Work Regulations 200531**

The Control of Vibration at Work Regulations require employers to:

- assess the vibration risk to their employees;
- decide if they are likely to be exposed above the daily exposure action value (EAV) and if they are, introduce a programme of controls to eliminate risk or reduce exposure to as low a level as is reasonably practicable;
- decide if they are likely to be exposed above the daily exposure limit value (ELV) and take immediate action to reduce their exposure below it;
- provide information and training to employees on health risks and the actions you are taking to control those risks;
- keep a record of the risk assessment and update it regularly;
- keep health records for employees under health surveillance.

The actions you are required to take and further guidance can be found in *Hand-arm vibration. The Control of Vibration at Work Regulations 2005. Guidance on Regulations*.33

### **Employees' duties**

Employees also have health and safety duties. They should:

- follow instructions given to them by their supervisors;
- co-operate with their employer on health and safety matters;
- follow the health and safety rules that apply to their particular job and to the site in general;
- use the health and safety equipment provided;
- report defects in equipment to their supervisor;
- take care of their own health and safety as well as that of their workmates and others who might be affected by their work.

Employees should be trained to know what to do and the work should be supervised and monitored to make sure that information provided as training is relevant to the work situation and is applied effectively.

Deciding whether somebody is an employee or is self-employed can be complex in the construction industry. It may be important to be sure of the employment status of people working on a site. It may affect who has responsibility for some aspects of health and safety and the provision of safety equipment such as boots and hats.

Remember, just because someone pays their own tax and insurance it does not necessarily mean that they are self-employed under health and safety law. Deciding who is an employee depends on a range of issues. A person is more likely to be an employee when the following apply:

- they work continuously or regularly for the same person or company;
- they are paid an hourly rate;
- they are not allowed to subcontract work;
- they can be told by another (their employer) when, how and where they are to work;
- tools and materials are provided for them;
- the person has not entered into a contract for a fixed sum for a package of work.

However, these tests are not always certain and legal advice may be needed to be sure of the situation. Where anyone is employed, cover will be needed under the Employers' Liability (Compulsory Insurance) Act 1969.50 The current certificate should also be displayed by the employer.

### **Reporting accidents and work-related diseases**

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1997 (RIDDOR) require that certain types of accidents, specific cases of occupational ill health and some dangerous occurrences have to be reported to the:

HSE Incident Contact Centre Caerphilly Business Park Caerphilly CF83 3GG Website: [www.riddor.gov.uk](http://www.riddor.gov.uk) Telephone: 0845 300 9923 Fax: 0845 300 9924 e-mail: [riddor@natbrit.com](mailto:riddor@natbrit.com)



Employers must report accidents to their employees. Whoever is in control of the site must also report accidents involving a self-employed worker or member of the public. Any of the following types of accident which happen on site have to be reported:

- serious and fatal accidents must be notified without delay to HSE, normally by telephone;
- this must be followed up with a completed accident report form (F2508) within ten days;
- for less serious injuries, where the injured person is unfit (or unable) to do their normal job for more than three consecutive days, a completed accident report form F2508 must be sent to HSE within ten days;
- if a dangerous occurrence happens on site, eg a building, scaffold or falsework collapse, failure of a crane or lifting device or contact with overhead lines, it must be reported immediately, normally by telephone, to the nearest HSE office. The details must be confirmed within ten days on a completed accident report form (F2508);
- if a worker suffers from a specified disease associated with their current job, eg hand-arm vibration syndrome and some forms of dermatitis, it must be reported to HSE on a completed disease report form (F2508A).

The forms referred to are available at [www.hse.gov.uk](http://www.hse.gov.uk), or from your local HSE office.

If a principal contractor has been appointed, contractors should promptly provide them with details of accidents, diseases or dangerous occurrences that are reportable or notifiable under RIDDOR.

### Keeping records

A record must be kept of any reportable injury, disease or dangerous occurrence. This must include the date and method of reporting, the date, time and place of the event, personal details of those involved and a brief description of the nature of the event or disease. The record can be kept in any form preferred, eg keep copies of completed report forms in a file.

Further details on how to report accidents and what types of accident must be reported can be found in *RIDDOR explained*.<sup>51</sup>

### Inspectors and the law

Health and safety laws that apply to construction companies are usually enforced by an inspector from HSE. However, some smaller jobs inside offices, shops and similar premises are the responsibility of inspectors from the local authority.

One of the jobs of health and safety inspectors is to see how well site hazards are being dealt with, especially the more serious ones that could lead to injuries or ill health. They may wish to investigate an accident or a complaint.

Inspectors do visit workplaces without notice but everyone is entitled to see their identification before letting them look around. Don't forget that they are there to give help and advice, particularly to smaller firms that may not have a lot of knowledge. When they do find problems they will try to deal with the firm in a reasonable and fair way. If anyone is not satisfied with the

way they have been treated, they can take the matter up with the inspector's manager, whose name is on all letters from HSE. Any complaint about HSE inspectors will be investigated, and firms will be told what is to be done to put things right if a fault is found.

Inspectors do have wide powers, which include the right of entry to premises, the right to talk to employees and safety representatives and to take photographs and samples. They are entitled to workers' co-operation and answers to questions. They have the right to take written statements from anyone who can help them with their investigation.

If there is a problem, they have the right to issue a notice requiring improvements to be made or (where a risk of serious personal injury exists) one which stops a process or the use of dangerous equipment. If a business receives an improvement or prohibition notice, it has the right to appeal to an industrial tribunal. If the business appeals against an improvement notice, the action required by the notice is suspended until the appeal is finished. The action required by a prohibition notice is not suspended pending an appeal because that could allow a serious risk to persist.

Inspectors do have the power to prosecute a business or an individual for breaking health and safety law, but they will take their attitude and safety record into account.

If an inspector:

- tells you to do something, you have a right, if you ask, to be given a letter explaining what needs to be done, when and why;
- intends to take immediate action (eg by issuing a prohibition notice), you have a right to a written explanation as soon as practicable of why this is necessary. Prohibition notices include such explanation;
- intends to issue an improvement notice, you have a right to a written explanation of what is wrong, an outline of what needs to be done, and by when.

When a notice is issued, you will be told about your right of appeal to an industrial tribunal. A form will be sent to you which explains:

- how to appeal;
- where and within what period an appeal may be brought;
- that an appeal may be brought on any grounds; and
- that action required by an improvement notice is suspended while an appeal is pending.

**To be continued in next issue.**

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1. Safety Info
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