



# Maintenance

## Introduction

This information sheet gives employers and employees practical advice on managing maintenance activities and the main hazards associated with the maintenance work. Maintenance is a very common activity which affects all workplaces, in every sector, and it concerns everyone at all levels (not just employees with 'maintenance' in their job description).

Buildings and structures that are not maintained regularly eventually become unsafe not only for the people who work in them, but also for those who enter them and even pass by them.

Machinery that is poorly maintained or not maintained regularly can make working conditions unsafe for operators and create risks for other employees, and may even cause business losses.

While maintenance is absolutely essential to ensure safe and healthy working conditions, the maintenance work itself can pose serious health and safety risks if not properly managed.

Maintenance work may cause additional hazards, e.g. fire, machine guards removed, slips trips

and falls, which need to be assessed to eliminate or reduce the risk of injury or ill health.

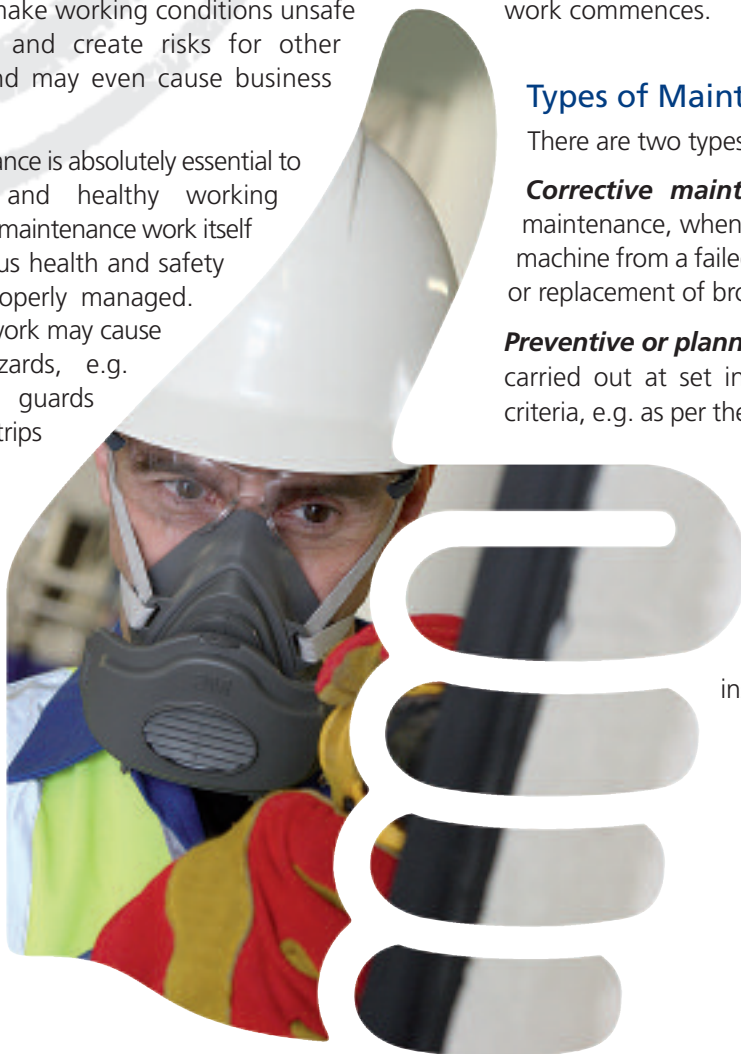
As an employer or manager, you must risk assess the hazards; therefore maintenance work needs to be planned and the hazards must be identified before the work commences.

## Types of Maintenance

There are two types of maintenance:

**Corrective maintenance**, also known as reactive maintenance, when work is done to restore a system or machine from a failed state to a working state (e.g. repair or replacement of broken components).

**Preventive or planned maintenance**, when actions are carried out at set intervals or according to prescribed criteria, e.g. as per the manufacturer's manual, is intended to reduce the probability of failure or the deterioration of an item. In this case, actions are scheduled, proactive and intended to control the deterioration process leading to failure of a system (e.g. replacement, lubrication, cleaning or inspection).



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Careful planning of maintenance activities is a crucial element to minimise the risks for the maintenance employees themselves and for others, including sometimes the public.

## Hazards

Because maintenance is carried out in all sectors and workplaces and involves a wide range of tasks, it is associated with a great variety of hazards. It often involves unusual work, non-routine tasks and is often performed in exceptional conditions, such as working in confined spaces. During maintenance activity employees often need to be in close contact with processes and moving machinery. Working under time pressure is also typical for maintenance operations, especially when shutdowns or high-priority repairs are involved. There are four items that merit particular attention because of the severity of the harm that could be involved, and because they are commonly encountered during plant and building maintenance.

### 1. Falls from height:

Maintenance work often involves using access equipment to reach roofs, gutters, building services, and raised sections of plant and machinery. It can be all too easy to fall from these positions, or to drop things onto people beneath.

### 2. "Live" plant and equipment:

Isolation and lock off arrangements, and in some cases permits to work, are essential to enable maintenance work to be conducted safely as these cut power to the plant and equipment and prevent start up until maintenance work is complete.

### 3. Disturbing asbestos:

The health consequences of disturbing asbestos when drilling holes into the building fabric or replacing panels can be severe, as can the clean up costs involved.

### 4. Falls of heavy items:

Heavy items sometimes have to be moved, or get disturbed, during maintenance work. If one of these falls, the results can be fatal. There may well be cranes, fork lift trucks or props available for use, but maintenance tasks can sometimes involve one-off situations and the handling of heavy loads isn't always properly planned.

Some other hazards associated with maintenance work include chemical hazards such as:

- Glass fibres
- Vapours, fumes, dusts (e.g. asphalt fumes, diesel exhaust, crystalline silica)
- Solvents

#### Biological hazards such as:

- Bacteria (e.g. legionella, salmonella)
- Mould and fungi

#### Physical hazards such as:

- Noise, vibration
- Excessive heat and cold
- Radiation (ultraviolet radiation, x-rays, electromagnetic fields)
- High physical workload
- Ergonomic-related risks, e.g. difficult to reach items to be maintained, strenuous movements (bending, kneeling, reaching, pushing and pulling, working in confined spaces)



## Risk Assessment of Maintenance Tasks

Before starting any maintenance work, a risk assessment should be carried out. Employees should be involved in the initial risk assessment. Assessment of risk for maintenance operations can sometimes be difficult because of various uncertainties, such as not knowing the actual condition of plant until it has been opened up or not being able to decide on remedial measures until an initial survey has been completed.

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Risk assessments and safe work procedures must be clearly communicated and understood. Procedures need to be in place for unexpected events. These procedures might, for example, prescribe the need for a new risk assessment before work restarts, or consulting with another employee or a supervisor. Part of the safe system of work should be to stop work when faced with an unforeseen problem or a problem exceeding one's own competence.

### Selecting Contractors

You may do some or most of your maintenance in-house, but there will always be tasks that are too big or specialised and require contractors. External maintenance employees must liaise with management or other designated person when arriving at your premises to carry out maintenance work. To enable both in-house and contracted staff to work in safety, you will need to properly brief them on the hazards associated with your workplace, they must brief you on the hazards associated with the work they are going to be doing in your workplace, and you will need them to follow safe working practices.

### Communication

All relevant information related to the maintenance work which is necessary to perform a task safely and correctly should be shared between all parties concerned. This includes not only the employees and contractors directly involved in the maintenance task, but also those likely to be affected by it or who may be working in the immediate vicinity. Important information includes the results of the risk assessment, safe work procedures, details of any necessary protective equipment, how to report problems, and how to report completion of the task(s).

### Training

Contractors and maintenance employees must possess the appropriate knowledge and skills to carry out the work safely, e.g. maintenance employees do not carry out repairs on electrical circuits unless competent to do so.

Maintenance employees must receive safety training including relevant information as set out in the safety statement, risk assessments and applicable information regarding safe working procedures. They must also be trained in the use of fire extinguishers where hot work is undertaken and must be made aware of all external gas, water and electricity cut off points.

### Control Measures

Control measures can be identified and implemented based on the results of the risk assessment. When hazards cannot be completely eliminated, risks should be minimised by other measures. Due to the variety of maintenance work and therefore hazards it is not possible to detail all potential controls but these may include engineering controls, such as enclosing the process, local exhaust ventilation and safety guards, and safe systems of work including lock-out procedures and work-permits. Some examples overleaf:



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Hazard	Controls
Falls from height	<ul style="list-style-type: none"> <li>• Avoid work at height where possible. If not possible ensure all work at height is planned and supervised, and employees are adequately trained</li> <li>• Ensure that, where appropriate, an edge protection system is in place, e.g. double handrail or parapet</li> <li>• Make sure that employees climbing and working at height are secured and protected against falls where necessary</li> <li>• If possible use a mechanical lifting device to eliminate the need to climb, such as a "cherry picker" or an elevating work platform</li> <li>• Make employees aware of the danger and make sure they understand the importance of the protective equipment they have to wear, that they know how to use it properly and that it is inspected, maintained and replaced as required</li> </ul>
"Live" plant and equipment	<ul style="list-style-type: none"> <li>• Make sure that machines are properly isolated from electric, hydraulic and pneumatic supplies before maintenance work is commenced</li> </ul>
Unexpected start-up of machines	<ul style="list-style-type: none"> <li>• If adjustments are required to machines when parts are moving and pose a risk, these should only be carried out when machines are at slow speed and/or under "hold to run" control</li> <li>• Guards are only removed to the extent work requires and replaced as soon as maintenance is complete</li> <li>• Develop and apply safe systems of work including permits to work, lock-off and tagging procedures</li> <li>• Make sure that safe systems of work are communicated and understood by the employees when maintenance work is being done</li> </ul>
Disturbing asbestos	<ul style="list-style-type: none"> <li>• Where maintenance work may involve disturbing asbestos make sure all possible types and locations of asbestos have been identified by a competent person</li> <li>• Make sure employees performing maintenance tasks are aware of the risks and know how to protect themselves and others</li> <li>• Asbestos removal and disposal is to be carried out by trained, competent persons in accordance with the relevant legislation</li> <li>• Make sure you obtain a clearance certificate from a competent person after asbestos removal is complete and before any other work starts</li> </ul>
Lifting / moving equipment or materials	<ul style="list-style-type: none"> <li>• Plan the lift from start to finish before task commences</li> <li>• Use mechanical equipment where possible to lift/move heavy loads</li> </ul>
Falls of heavy items	<ul style="list-style-type: none"> <li>• All lifting equipment and accessories must be certified by a competent person and the operator of lifting equipment must be trained</li> <li>• Keep unnecessary personnel out of the lifting area</li> <li>• Prevent equipment or materials falling from a work area at height or while being lifted</li> </ul>