



## Safe maintenance — Safe workers

### Definition

Maintenance of equipment, plant, buildings or means of transport includes technical, administrative and managerial actions intended to keep it in, or restore it to, a state in which it can perform the required function<sup>1</sup>, protecting it from failure or decline. Maintenance activities include:

- inspection
- testing
- measurement
- replacement
- adjustment
- repair
- fault detection
- replacement of parts
- servicing

### A very common activity exposing workers to various hazards

Maintenance is carried out in every workplace and in all industry sectors. It is included in the everyday duties of most workers, not just maintenance technicians and engineers. Workers involved in maintenance activities may be at risk of developing:

- musculoskeletal disorders (MSDs), when performing tasks involving bending and awkward postures, occasionally in difficult environmental conditions (e.g. cold);
- respiratory problems related to exposure to asbestos — while maintaining old buildings or industrial installations;
- skin and respiratory diseases due to contact with dangerous substances — greases, solvents, corrosives and dusts, including carcinogenic wood dusts;
- asphyxiation in confined spaces;
- diseases resulting from exposure to biological hazards — hepatitis A, legionella.

They also face accident risks of many types, including falls and being hit by a piece of machinery.

Maintenance activities range from very minor, such as replacement of a light bulb or the toner in a printer, to major, such as periodic inspection of a power plant.

<sup>(1)</sup> Association Française de Normalisation. Terminologie de la maintenance. Norme NF-EN 13306. X 60-319, AFNOR, Saint-Denis La Plaine, Juin 2001.

### OSH outcomes of maintenance

Whether the task is small or big, it can have a serious impact on the safety and health, not only of the workers performing it, but also on others, as shown in the following examples:

- An accident/injury may occur during the maintenance process — workers performing maintenance on a machine can be injured if the machine is accidentally switched on, they may be exposed to radiation or dangerous substances, be hit by a moving part of the machine or be at risk of developing an MSD.
- Poor quality maintenance can cause safety problems — using the wrong parts for replacement or repair may result in serious accidents and injuries to workers as well as damage the equipment.
- Lack of maintenance may not only shorten the lifespan of equipment or buildings, but also cause accidents — for example, unrepaired damage to the floor of a warehouse may cause a forklift accident, injuring the driver, those around and also damaging the goods being moved.



### Five basic rules for safe maintenance

Maintenance is a process that starts before the task itself begins, and finishes when the work has been checked, signed off and the task documentation has been completed. Participation of workers and/or their representatives in all stages and aspects of this process increases not only the safety of the process, but also the quality of work.

The five steps to safe maintenance are further explained hereunder.

## Planning of maintenance

The employer must conduct a risk assessment for the activity, and involve workers in this process. The following points have to be considered:

- The scope of the task: what needs to be done, how much time is needed for the task, how other workers and activities will be affected at the workplace;
- The identification of the hazards: for example electricity, exposure to dangerous substances, presence of dust/ asbestos in the air, confined space, moving parts of machinery, falling from or through something, heavy objects to be moved, parts difficult to reach or to access;
- What is needed for the activity: skills and number of workers doing the job, who will be involved, what the roles of individual persons are (responsibilities for contacts with the workers of the contractor or host employer, managing the tasks, who to report possible problems to), tools that have to be used, personal protective equipment (PPE) and other measures to protect workers (e.g. scaffolding, monitoring equipment) that may be needed;
- Safe access to the work zone, and means of (quick) escape;
- The training/information that has to be provided for workers involved in the task, as well as those working around them, about the task (to ensure competence of workers and their safety), the 'chain of command' and any procedures that will be used during the activity, including the reporting of problems. This is especially important if the maintenance is done by subcontractors.

Workers should be involved in the planning stage — they can identify hazards and the most efficient ways of dealing with them. The risk assessment findings and outcomes of the planning stage should be communicated to the workers participating in the maintenance task and also to others who may be affected. Involving the workers, including subcontractors, in the training and familiarising them with the established procedures are very important elements in ensuring their safety.

## Working in a safe environment

The procedures developed at the planning stage in risk assessment have to be put into action. For example, the power supply to the equipment worked on should be switched off and the agreed on lock-off system used. The warning card — with the date and time of lock-off as well as the name of the person authorised to remove the lock — should be attached. This way, the safety of the worker performing maintenance on the machine will not be jeopardised by anyone inadvertently starting up the machine, who could also be affected, if, for instance, the machine is not in safe operating condition (e.g. if the safeguards have been removed). Workers should check that there is a safe way to enter and leave the work zone, in accordance with the work plan.

## Use the appropriate equipment

Workers performing maintenance tasks should have the appropriate tools and equipment, which may be different from those normally used. They may be working in areas that are not normal workstations and be exposed to many hazards. Therefore, they must also have appropriate PPE. For example, workers cleaning or replacing filters on extraction ventilation may be exposed to concentrations of dust much higher than normal for that workplace. Access to these filters, frequently located in the roof area, has to be made safe as well. The tools needed for the job and PPE identified in the planning and in risk assessment have to be available (together with instructions on how to use them, if required) and used.

## Safe work practices developed in the planning stage have to be followed

The work plan should be followed even when there is time pressure: shortcuts could be very costly and may lead to accidents, injuries, or damage to property. It may be necessary to notify supervisors and/or consult with other specialists should anything unexpected happen. It is very important to remember that exceeding the scope of one's own skills and competence may result in a very serious accident.

## The work has to be checked

To ensure that the task has been completed, the item maintained is in a safe condition, and all waste material generated has been cleaned away. When all is checked and declared safe, then the task can be signed off, the locks can be removed, supervisors and other workers notified. The final step is to complete a report for the management, describing the work done, including comments on difficulties encountered and recommendations for improvement. Ideally, this should also be discussed at a staff meeting where the workers involved in the process, as well as those working around them, can comment on the activity and come up with suitable suggestions to improve the process.

## Maintenance activities can put workers at risk, but not carrying out maintenance may put more workers at risk.

**Please remember: when you are performing maintenance — your health and safety as well as your colleagues' depend on the quality of your work.**

## Further information

This factsheet has been produced to support the European 2010/11 Campaign on Safe Maintenance. Other factsheets in the series and further information on this topic is available at <http://osha.europa.eu/en/topics/maintenance>  
This resource is being continually developed and updated.

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