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FIRE SAFETY & EMPLOYERS

Guidelines
for the
assessment
of risks



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Introduction

| | |
|--|----|
| Regulatory framework..... | 5 |
| Fire Risk Assessment..... | 20 |
| How can I reduce the risk of fire?..... | 34 |
| Controls on fire protection measures..... | 47 |
| Training, information and refresher courses..... | 52 |
| The Emergency Plan..... | 62 |

Introduction

The involvement of employees in the process of identifying risks in the workplace and how to counter them, implemented with the transposition of European Directives relating to safety, has led to workers assuming a vital role in the prevention of risks and the choosing countermeasures specific for different types of work.

The ongoing safety awareness generated by the increased legislation and, above all, by the information and training campaigns conducted by the Government and trade associations, has led to a gradual decrease in the number of injuries and deaths at work, which were 8.89% and 8.78% lower, respectively, in 2012 compared to the previous year, a decrease of 23% and 27% compared to 2008.

Statistics in recent years, however, show a large percentage of immigrant workers to be the main victims of accidents, due to less preparation on the subject and the different work habits in their countries of origin, and this has prompted the Fire Brigade, Public Rescue and Civil Defence Department to develop projects to promote the safety culture among this category of workers.

The next step, and the goal of this brochure, is that of making this information available to non-EU employers, in order to provide them proper guidance with Italian laws and enable them to take the necessary measures for workplace safety in their own enterprises, which is key to achieving better productivity through the use of health and prevention procedures that also have social and humanitarian value.

*The Chief of the Fire Brigade
Public Rescue and Civil Defence Department
Alberto di Pace*

1. Regulatory framework

1.1 The regulatory framework of Legislative Decree 81/2008

An overview of the legislation currently in force regarding health and safety in the workplace, could be broken down into two major areas:

- one of a more general nature and scope (Constitution, Civil Code, Criminal Code);
- one more technical in nature relating to specific work situations.

The Italian Constitution

- ...guarantees the protection of health as a fundamental right of the individual and common interest... (Art. 32);
- ...states that private economic initiative is free and may not be exercised contrary to the public good or in a manner that could cause damage to human security, liberty and dignity... (Art. 41).

The Criminal Code also contains several articles aimed at protecting safety and health in the workplace:

- Art. 40: "...not preventing an event, which one has a legal duty to prevent, is tantamount to causing it".

- Art. 437: Removal or willful omission of precautions against accidents in the workplace;
- Art. 451: Negligent omissions of precautions or protection against disasters or accidents in the workplace;
- Art. 589: Involuntary manslaughter;
- Art. 590: Personal injury through negligence.

Finally, the Italian Civil Code, with its “famous” Art. 2087, widely regarded as a catch-all rule, which is written in such a way that no measure relating to the protection of health and safety can be seen as falling outside of the three precepts it contains:

- Art. 2087: “...the entrepreneur shall adopt measures for the operation of the enterprise which, according to the particularity of the work, experience and technique are necessary to protect the physical and moral integrity of employees... ”.
- Art. 2050: “Anyone performing a dangerous activity is required to take all types of precautions necessary to prevent harm to others”.

Detailed explanation

The term “**particularity of the work**,” refers to the specific knowledge that the entrepreneur must either have, or seek to possess by means of technical specialists, relating to the work undertaken when preparing the work environment, purchasing equipment and selecting employees in the most appropriate manner to optimize production, and as relates to the protection of workers and anyone that might be harmed by the operation of the enterprise.

The term “**experience**” refers to the attention of the entrepreneur and his/her employees to the events which occur during the performance of work activities and within the market sector, particularly as relates to accidents, injuries and occupational illnesses.

The term “**technical**” means that the employer and his/her assistants, in addition to first putting in place all precautions aimed at ensuring the safety of workers, exercise prudence, diligence and competence to monitor scientific and technical advances in the sector in order to ensure safety.

Case law has established that technical and scientific updating means the most technologically possible: not the latest invention, but the technology that is now commonly used in proportion to the type and severity of the company's operational risks. Violation of the three principles of Art. 2087 may, just as with the violation of specific safety regulations, also produce the aggravating circumstance described in Articles 589 and 590 paragraph p (involuntary manslaughter - negligent personal injury) relating to the wrongful conduct of the party engaging in the offense.

As for the more technical aspects, reference is made particularly to the body of technical standards dating back to the 1950s (Presidential Decree 547/55, Presidential Decree 303/56, Presidential Decree 164/56, etc.), that gave rise to the so-called "technical standard approach", essentially based on compliance with technical standards, whereby workers were considered almost a part of the machinery, and subjects that needed to be trained to perform repetitive operations.

By the end of the 1970s a series of European social directives had been issued, and subsequently transposed into the Italian regulatory system, that progressively introduced a new approach to safety management, which saw its full development with the adoption of Directive 89/391/EEC of 12 June 1989 "Improvements in the safety and health of workers at work", implemented in Italy with the "famous" legislative decree 1994, no. 626.



Legislative Decree 626 represented a significant leap in quality, shifting the focus from mere prevention techniques to a larger legal framework that places man at the centre of the system of prevention; it deals with the organization, training, information, awareness and participation of workers. This was the first instance of a legal obligation to organize company safety policies, and to manage them according to the provisions of Legislative Decree 626/94.

On 30 April 2008, Legislative Decree no. 81 "Implementation of Art. 1 of the Law of 3 August 2007, no. 123, concerning the protection of health and safety in the workplace" (the so-called "Consolidated Act") was issued. The new Decree coordinated, rearranged and reformed the existing rules and the main cornerstones of the legislation on health and safety in the workplace and replaced them with a sort of "reference code". The new Legislative Decree on safety in the workplace has a wider scope than that provided

Before the entry into force
of EC standard...



for by Legislative Decree 626/94. It better defines the beneficiaries of the safety requirements and the mechanisms of delegating responsibilities, and establishes more stringent rules for keeping records relating to the worker safety. The text of the Decree consists of 306 articles divided into 13 titles and a full 51 annexes. It is no longer possible, as it was in 1994, to speak of this as a new "Copernican revolution" within the subject, but, rather more simply, as regulatory advances largely determined by the Community directives which have shaped the new Decree that has been implemented in the niche marked out by Legislative Decree 626/94.

Clearly, in view of the wide scope of Legislative Decree 81/08, the organization of policies directed at protecting workplace safety, must be "tailored" to each situation and take into account the operational guidelines provided by the legislature, particularly in Title I of the Decree.

...after the entry into force.



The Employer

Art. 2, paragraph 1, letter b) - Legislative Decree 81/08 "the party in control of the employment relationship with the worker or, in any case, the party which, according to the type and structure of the organization where the worker performs his/her activities, is vested with authority over said organization or production unit, and exercises decision-making and expenditure powers. Within public administrations, as set forth in Article 1, paragraph 2, of the Legislative Decree of 30 March 2001, no. 165, the Employer is defined as the director having managerial authority, or an official without directional authority in the sole instances where he/she is placed in charge of an office with managerial autonomy that has been granted by the controlling body of the individual administration, taking into account the position and function of the offices where the activities are performed, and equipped with autonomous decision-making and expenditure powers. For individual cases that are not mentioned in or do not meet the above criteria, the employer is defined as the controlling body".

The Manager

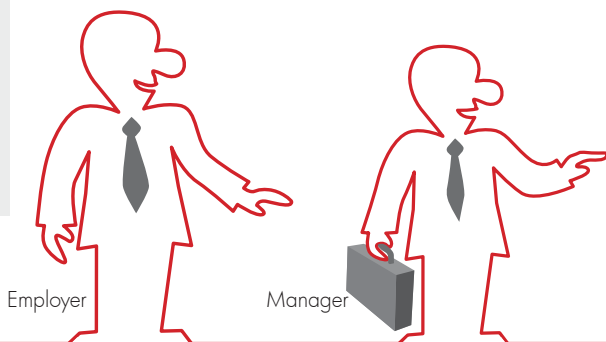
Article 2, paragraph 1, letter d) - Legislative Decree 81/08: "a person who, by reason of professional skills and the hierarchical and functional powers conferred to him/her by

1.2 Parties involved: duties and functions

The parties below are identified by Legislative Decree no. 81/08 as key players for the implementation of the current regulatory requirements for safety and health in the workplace. They are presented here along with a description of their role within the company. It should be noted that the distribution of responsibilities (criminally sanctioned) is modelled on roles within the organizational hierarchy: safety obligations are ascribed in descending order to the Employer, the Manager, Supervisor and, finally to the Worker.

Employer

The first indication presented in the Legislative Decree from the EC is that of the central role of the employer. This is not a new



concept given that even before Legislative Decree 626/94 the employer was in first place in the hierarchy of parties required to apply the regulations and in this sense the position has remained unchanged. The central role of the employer in Decrees 626/94 and 81/08 is a more developed legal concept, in the sense that the employer is no longer called upon to indiscriminately implement individual prevention measures, but rather to make use of a mandatory organizational and managerial network or face criminal sanctions.

The employer may not delegate the following tasks (Art. 17):

- the assessment of all risks and subsequent preparation of the document called for in Article 28 (see Chapter 2);
- the designation of the prevention and protection service manager.

the nature of the appointment, implements the directives of the employer organizing and supervising the relative work”.

The Supervisor

Art. 2, paragraph 1, letter e) - Legislative Decree 81/08:

“the person who, by reason of professional skills and within the limits of the hierarchical and functional powers conferred to him/her by the nature of the appointment, supervises the work and ensures implementation of given directives, checking the proper performance of workers and exerting operational initiative authority”.

Prevention and Protective Service Manager

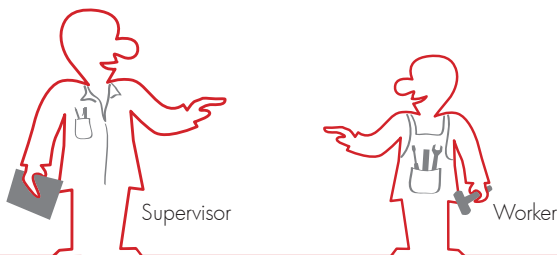
Article 2, paragraph 1, letter f) - Legislative Decree 81/08:

“the person possessing the professional skills and qualifications pursuant to Article 32 designated by the employer, to whom he/she is responsible, to coordinate the risk prevention and protection service”.

Prevention and Protection Service Operator

Art. 2, paragraph 1, letter g) - Legislative Decree 81/08:

“a person possessing the professional skills and qualifications pursuant to Article 32, employed in the service mentioned in letter l)”.



The Occupational physician

Art. 2, paragraph 1, letter h) - Legislative Decree 81/08: "a doctor possessing one of the titles and the training and professional requirements pursuant to Article 38, who collaborates (in accordance with the provisions of Article 29, paragraph 1), with the employer to assess risks and is appointed by the employer to monitor health and all other tasks pursuant to this Decree".

The Worker

Art. 2, paragraph 1, letter a) - Legislative Decree 81/08: "a person who, independent of the type of employment agreement, performs work activities within the organization of a public or private employer, with or without receiving pay, even for the sole purpose of learning a trade, art or a profession, excluding household and personal care workers. Equivalent to this definition of worker are: members of cooperatives or companies, including de facto companies, who perform tasks on behalf of said companies or entities; shareholders pursuant to Article 2549 and following of the Civil Code; parties taking part in work training and placement programmes pursuant to Article 18 of the Law of 24 June 1997, no. 196, and pursuant to specific provisions of regional laws designed to foster alternation between work and study or to facilitate career choices through

The employer's obligations set forth in Legislative Decree 81/08 are the same as those which, in the event of delegation of tasks, may be applicable to managers, with the exception of dealings with the prevention and protection service and the occupational physician.

It is important to point out that delegating tasks never exempts the Employer from his/her duty to supervise and ensure proper compliance. The Employer's legal obligations are set out in Art. 18 of Legislative Decree 81/08.

The Manager

The managerial position is characterized by the granting of a sufficient degree of representative and decision-making power that can influence the performance and activities of the enterprise or part of it. A Manager may in fact take operational decisions and, in compliance with the Employer's general and programme directives, direct the activities of the branch of the



enterprise entrusted to him. The term “manager” as it relates to safety matters does not indicate a formal title, but rather a role. Legislative Decree 81/08, in fact, requires the employer to make the best use of company resources, in order to organize the system of prevention, while encouraging the development of professional knowledge among the various parties involved.

The Supervisor

The supervisor is tasked with monitoring and controlling the work of a group of employees under him (functionally), and has the power to give them orders and, is in turn subject to orders and directives from superiors (e.g. chief clerk, foreman, department head, office manager, etc.).

The supervisor's duty is to ensure that the work, in addition to being carried out according to plan, is performed in conditions of safety, according to the measures and provisions put in place by his superiors and in compliance with the rules of common prudence, diligence and competence, and to ensure that workers comply with the various rules and use

direct knowledge of the working world; students of educational institutions and universities and those participating in professional training courses that make use of laboratories, general work equipment, chemical, physical and biological agents, including equipment with display screens limited to periods of time when the student is actually making use of the equipment or the laboratories in question; volunteer members of the National firefighters and civil protection service; workers referred to in the Legislative Decree of 1 December 1997, no. 468, and subsequent amendments”.

Fire safety personnel

Article 6 of the new decree stipulates that the Employer “upon completing the assessment of fire risks and on the basis of the emergency plan, the employer shall designate the workers responsible for the implementation of fire prevention measures, fire fighting and emergency management, hereinafter referred to as “fire safety personnel”, in accordance with Article 18, paragraph 1 letter b of Legislative Decree no. 81/2008, or himself/herself, in the cases provided for in Article 34 of the aforementioned Decree”.

personal protective equipment, if provided, checking that it is functioning properly. The role of the supervisor may thus be automatically identified by referring to the duties specifically exercised in accordance with the internal division of powers (the so-called *de facto* supervisor), as a technically capable person. The supervisor's legal obligations are set out in Art. 19 of Legislative Decree 81/08.

The Prevention and Protective Service Manager (PPSM) and the prevention and protective service (PPS)

The “appropriate attitudes and skills” that the PPSM should possess have been specified, making him/her a figure with a well-defined body of certified knowledge, which should be received from specific training programmes with mandatory refresher courses every five years.

Designation of the PPSM, as mentioned above, is among the obligations incumbent solely on the Employer.

The PPSM may be internal or external - except for some special cases - and is in fact a specialist consultant to the Employer, making him/her a trusted figure. In addition to the skills and professional requirements established by Art. 32, the PPSM should be a person with a thorough understanding of the workplace, demonstrates interpersonal skills and who is respected by workers (Art. 50, paragraph 1, letter c).

The prevention and protection service (PPS), defined as all the people, systems and internal means of the company aimed at the prevention of and protection from occupational hazards for workers, by virtue of the foregoing information, is essentially thought of as an individual unit capable of assisting various Employers. The PPS's legal obligations are set out in Art. 33 of Legislative Decree 81/08.



The Occupational physician

The occupational physician should be appointed only in cases where health monitoring is mandatory pursuant to Article 41 of Legislative Decree 81/08, relating to parties exposed to a specific risk and, if present, in general, activities with ongoing and recurring risks. It is the responsibility of the Occupational Physician to monitor and update the list of exposed personnel, as well as to keep first aid kits in good condition and identify the risks (within the limits of his/her competence) associated with each specific business activity. The Occupational Physician's legal obligations are set out in Art. 25 of Legislative Decree 81/08.



The Workers' Safety Representative (WSR)

Since the enactment of Legislative Decree no. 626/94, the introduction of the figure of the WSR, has been one of the key points of the new concept of the safety management system based on all workers sharing the objectives and the means to achieve compliance with the standards of safety health protection in the workplace.

Legislative Decree 81/08 has effectively reinforced this figure, with regard to the prerogatives that he/she is able to exercise. The WSR is the means through which the needs of workers relating to safety and health in the workplace may be collected, so that they may be represented in the appropriate forums, established by the legislation, including the important regular meeting.

The powers delegated by the legislation to the WSR can be found in Art. 50 of Legislative Decree 81/08.

The Worker

The worker is the main voice of the parties responsible for implementing the safety measures identified by law and, as a fundamental innovation, is no longer considered a passive entity to be protected, but rather one that is actively engaged in safeguarding his/her own health and that of others.



The Employer and the manager, therefore, have a duty to provide the worker with information, training and, through their elected or appointed representatives, consultation in cases in which it is provided for by law. The Employer must also provide the worker with the means necessary and appropriate to protect his/her and others' safety. Each worker must be responsible for his/her own safety and health, as well as that of other people in the workplace, which may be affected

by their acts or omissions.

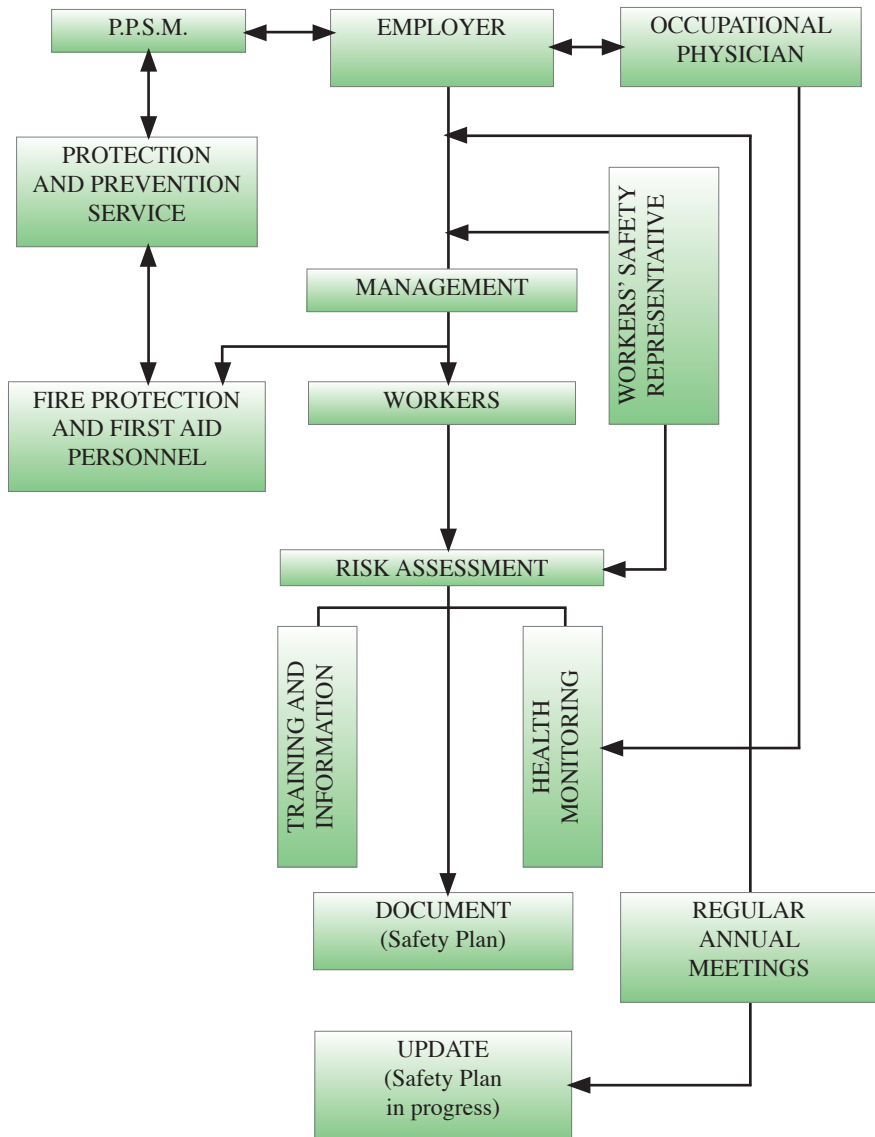
On the other hand, the worker is also under the obligation to comply with strict rules, too, as set forth in Art. 20 of Legislative Decree 81/08 relating to the obligations of workers, to which reference is made.

Fire safety personnel

Fire safety personnel are usually employees who, after attending the training courses and refresher courses set forth in Art. 7 of the new decree, monitor fire protection and provide the first emergency response while waiting for rescue teams. Unlike the other parties listed so far, the fire safety



Company Safety System



personnel must always be present during the work activities, especially when hazardous conditions exist for workers and any other people present.

1.3 Penalties

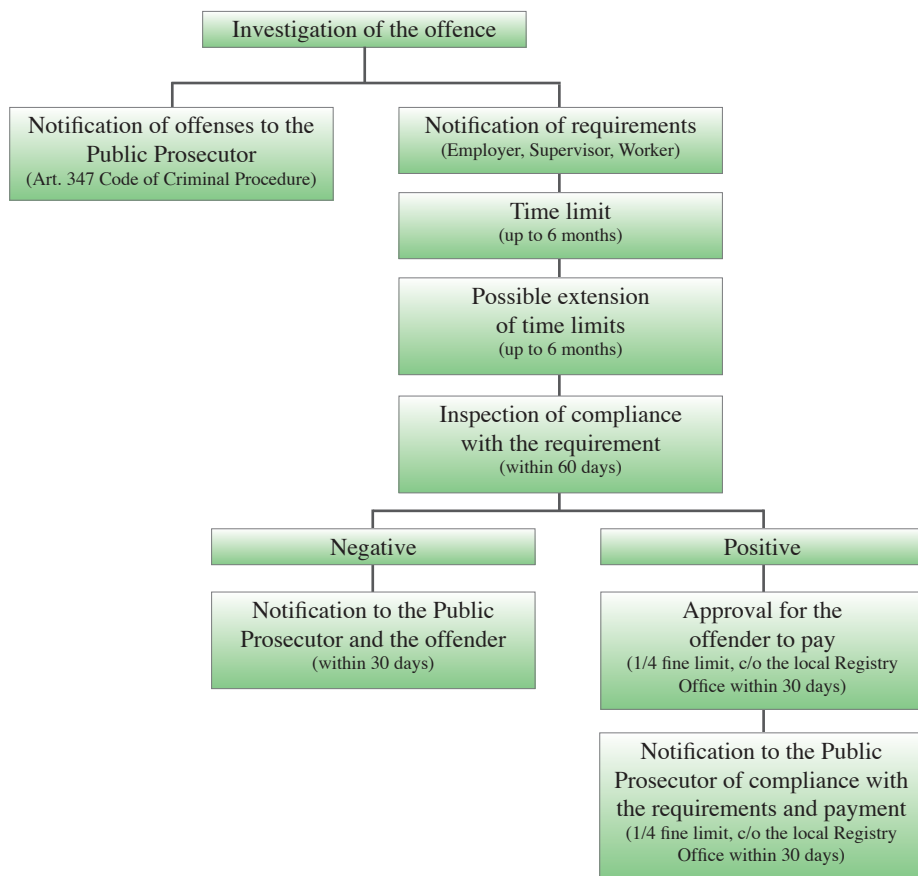
When violations are detected relating to health and safety in the workplace (e.g. lack of fire prevention safety signs) supervisory bodies (e.g. the Fire Brigade) issue instructions to remedy the violations found and also notify Legal Authorities of the offence. However, if the business owner complies with the requirements within the time provided to do so, the offence is annulled. Indeed, in this case, legislation (Legislative Decree 758/94) permits the offence to be annulled and allows the business owner to pay a fine which is reduced to a quarter of the maximum legal amount. The issue is also found in Legislative Decree 81/08.

1.4 Article 301 - Applicability of the provisions referred to in Article 20 and following of the Legislative Decree of 19 December 1994, no. 758

"The provisions relating to the issuing of instructions and annulment of offences referred to in Article 20 and following of the Legislative Decree of 19 December 1994 no. 758 apply to the violations relating to hygiene, health and safety in the workplace set forth in this Decree, as well as to other provisions having the force of law, for which the alternatives of arrest or fine, or the sole penalty of a fine, exist ".

The flow chart below summarizes the process for annulling violations relating to matters of hygiene and safety in the workplace.

Violation annulment process



Criminal offences relating to the violation of the standards set forth in Legislative Decree no. 81/08 are not subject to the annulment process:

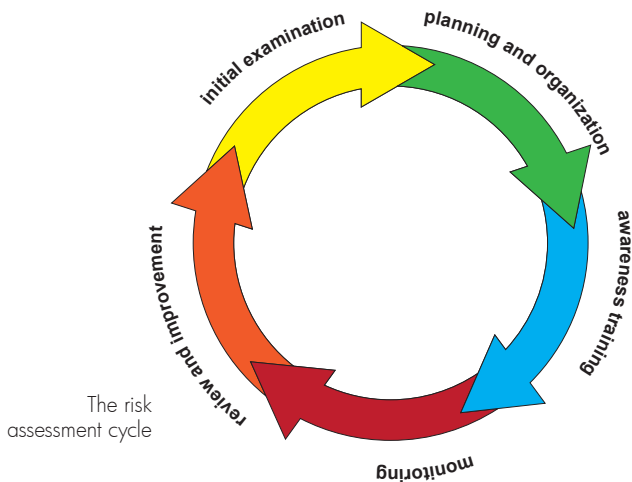
- Involuntary manslaughter (Art. 589, paragraph p.)
- Personal injury through negligence (Art. 590, paragraph p.)

2. Fire Risk Assessment

Among the various requirements for employers, one of the most important involves the mandatory preparation of a risk assessment document on safety in the workplace and then using it to develop measures to decrease risk.

2.1 What is it?

Fire risk assessment is a process that includes planning, implementation, monitoring and review of the fire hazards present.

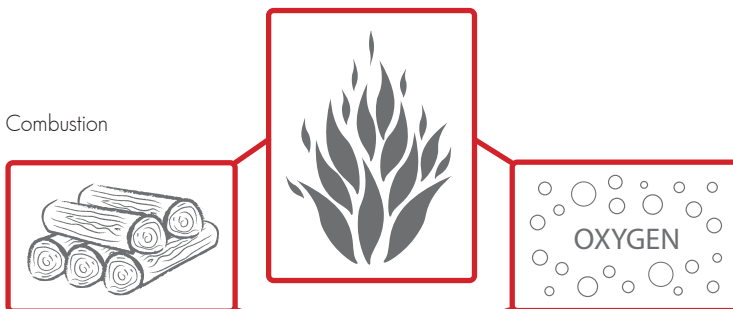


This process allows the employer to take the measures that are needed to protect the safety of workers and other people in the workplace, including:

- preventing the risk of fire;
- providing information to workers and other people present;
- training workers;
- developing the technical and organizational means to put the necessary measures in place.

The fire risk assessment is closely linked to the type of activities performed and the materials which are stored and handled, but also to the equipment and furnishings, the construction features of the workplace and the materials used for coating. It is therefore clear that in order to assess the risk of fire, it is first necessary to analyse the factors involved in the combustion process. Combustion is a complex phenomenon which can involve different types of combustible materials and various environmental conditions.

When the combustion process begins and accidentally spreads, it can be considered a fire. Fire is, therefore, an unintended and uncontrolled combustion that can occur when, there are one or more combustible substances (able to burn), a combusive agent that contributes to the combustion (e.g. the oxygen in the air) and, finally, one or more primers (energy sources that activate the combustion process) all present at the same place, at the same time.



Any place that has possesses these features presents a potential **fire hazard**. Generally speaking, materials, equipment and work activities in the workplace provide the elements necessary for combustion (fuel and ignition), which, when added to the combustive agent in the air, generate the conditions necessary for a fire to start. But in order to understand the likelihood of this critical event happening in a specific workplace (e.g. a hotel, restaurant, factory, etc.), the damage it could cause, and how to prevent and cope with it, a **fire risk** assessment for that particular workplace is needed.

Detailed explanation

Combustion and its products

Combustion is a chemical oxidation reaction in which a fuel, which is an oxidizable substance, reacts with a combustive agent which, vice versa is the oxidizing substance releasing energy, almost always in the form of heat. The reaction begins when energy is supplied to the potential fire system. The molecules of the reagents begin to collide with each other, as atoms of the fuel and combustive agent react until the collisions produce an effect. Combustion reactions are exothermic because they release heat; in fact, the reagents have more energy than the products of the reaction. The energy difference between the reactants and products is



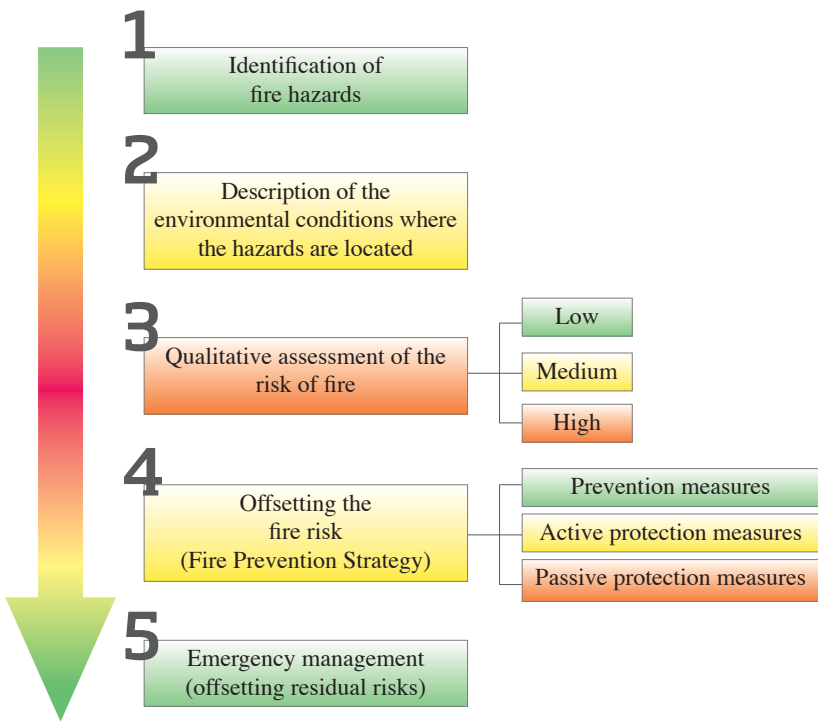
the amount of heat that is emitted by the reaction. During combustion products develop that create hazards and damage to people and property. The heat which develops causes the temperature of the materials involved in the reaction to rise until they radiate energy. When this happens, the reaction zones glow and flames appear. The flames are formed by the emission of light resulting from the combustion of gases that develop within a fire. Combustion is almost always accompanied by the formation of smoke; normally produced in quantities that impairs visibility and hampers the work of rescue workers and the evacuation of people. The smoke is made up of extremely small solid particles (aerosols), and liquid (condensed vapour or mist) dispersed into the gases produced during combustion. The solid particles of the smoke consist of unburnt substances, such as tar and ashes, which in fact give smoke its dark colour. The liquid particles, however, are formed by water vapour from the moisture contained in the fuels, but especially from the combustion of hydrogen. At less than 100° C (212° F) smoke cools as the water vapour condenses and turns white. Combustion gases are combustion products that remain in a gaseous state even when they cool to room temperature (15° C / 59° F). Gas production depends on the type of fuel, the amount of oxygen present, and the temperature reached in the fire.



2.2. How is it prepared?

A fire **risk assessment** determines the level of exposure to this risk in each area of a workplace. In particular, the level expresses the probability of this event happening and the possible harmful consequences for people and property. Determining the level of exposure to the risk of fire permits actions and measures to be identified that can reduce the causes of ignition and the spread of a fire.

The risk assessment involves different stages of looking at the best fire prevention strategy to adopt for the workplace in question.



Fire risk assessment phases

2.3. Classification

The identification of fire hazards must be carried out by identifying all flammable and combustible materials in every part of the workplace. It should be pointed out that fuels may be classified as solid, liquid and gaseous fuels according to the physical state in which they are at room temperature and pressure.

The fire risk assessment must determine what materials can facilitate a fire starting quickly such as, for example, large quantities of paper, packaging materials, plastics, wood, flammable paints and solvents, flammable gases, etc. At the same time, the environmental conditions present in the workplace in question must be studied in relation to fire hazards present. Sources of ignition and heat that could potentially start a fire and assist in its spreading may be present in the workplace.

Such sources, in some cases, may be easy to identify whereas, in other cases, mechanical or electrical defects may be the cause. The risk assessment also serves to identify heat sources that may cause ignition of combustible materials (e.g. the use of open flames, friction, machines and equipment that are not installed or used properly, or work processes which involve the presence of flames or sparks (cutting, grinding, welding)).

Finally, the risk assessment should indicate the workers and other persons present in relation to the fire risks encountered. In situations where no one is particularly exposed (for example, in small workplaces), only the general criteria aimed at ensuring adequate fire safety needs to be followed. Though specific cases should not be overlooked where people may be unable to react quickly in case of fire because they are unfamiliar with the surroundings, in places they only visit occasionally (like an audience attending a show), or because they are engaged in activities that reduce their perception of the event (e.g. rest periods in accommodation facilities),

or, finally, because of lower perceptive abilities (children and the disabled).

At the end of the study a qualitative assessment of the elements noted should be made in order to classify every part and area of the workplace according to the fire risk level: low, medium, or high.

Detailed explanation

Types of fuels

Solid fuels are widely used and as such are frequently present in the most common workplaces. One of the most extensively widespread natural solid fuels including its derivatives, is wood. The ignition temperature of wood is rather low, approximately 250° C (482° F), making wood a material that, when ignited, burns easily and spreads fire. Another factor that affects the growth of a fire is the fragmentation of the fuel (both solid and liquid) into small particles, allowing it to mix easier with the air (combustive agent), increasing the speed of combustion (thus, a block of wood burns more slowly than the same amount of wood reduced to sawdust).

When assessing the risks related to solid fuels, it is therefore necessary to consider the size of the materials, as it is important for determining the fire risk level.



Liquid fuels may be artificial or natural. Among the latter are derivatives of petroleum (gasoline, alcohol, oils, etc.), which are far more used than artificial liquid fuels. Combustion of these materials occurs only when a fuel, a combustive agent and activation energy (flammability temperature) are all present at the same moment. The fuel in liquids is comprised of vapours that need to mix with the oxygen in the air at concentrations in the flammable range. This range is expressed as the mixture ratio between the fuel and combustive agent, which, if triggered, burns. The flammable range extends to upper and lower explosive limits which vary for each substance. The parameters for assessing the hazards of flammable liquids thus relate to the flammability temperature and range. Lower flammability temperatures indicate a greater hazard for the fuel:



- temperatures below 20° C (68° F) indicate explosive substances (such as gasoline and alcohol);
- temperatures between 21° C and 65° C (69.8° and 149° F) indicate substances that only explode when heated;
- temperatures above 65° C (149° F) indicate normal fuels (diesel, fuel oil and lubricants).



Among natural **gaseous fuels**, the most common are gaseous hydrocarbons: methane, ethane, propane and butane (the first is the common gas stored in kitchen or outside tanks, which contain propane and butane that mix to form LPG). Gas fuels are generally very pure, and mix with the air (and thus with oxygen) burn without creating unburnt substances or smoke.

The fire prevention and fire protection measures best suited to offset the risks identified can be determined according to the level of risk (see Chapters 3 and 4). This will reduce the risk present to an acceptable level for the workplace in question. But even using the best fire prevention strategy is not enough to eliminate the risk; there will always be a residual risk which must be offset by the control measures to be taken during an emergency (see Chapter 6).

It should be noted that, as mentioned in Chapter 1, the risk assessment and the subsequent preparation of the document are part of the mandatory requirements the employer is solely responsible for and may not delegate to others.

Detailed explanation

Workplaces at low risk of fire: workplace or parts thereof, in which substances with low flammability are present and the room and operating conditions are such that the probability of a fire starting and, in case of a fire, the likelihood of its spreading are deemed to be limited.

Workplaces at medium risk of fire: workplaces or parts thereof, in which flammable substances and/or room and/or operating conditions are present that could generate a fire, but, in case of fire, the likelihood of its spreading is deemed to be limited.

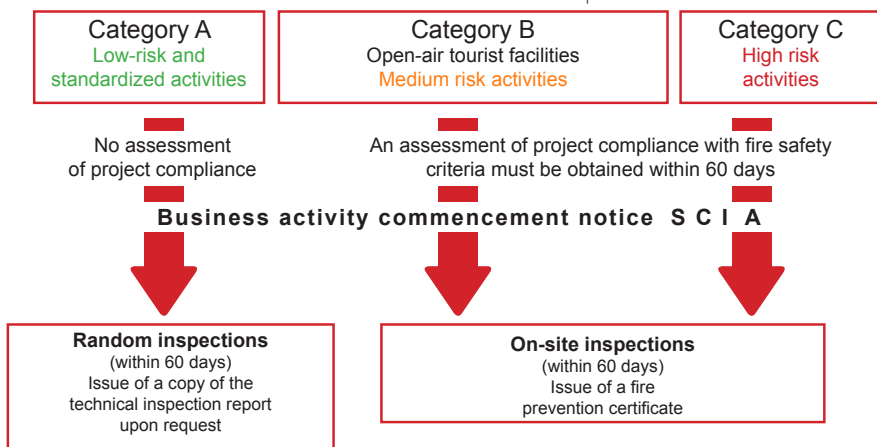
Workplaces at high risk of fire: workplaces or parts thereof, in which - due to the presence of highly flammable substances and/or room and/or operating conditions there is a good probability of a fire starting with a strong likelihood of the fire spreading in the early stages - places which cannot be classified as low or medium risk areas.

2.4 Fire prevention activities and requirements

The construction of facilities for use in a variety of activities (hotels, theatres, department stores, sports centres, clubs, etc.) requires, among other permits, those issued for the purposes of fire safety. Such jurisdiction is granted to the Fire Brigade by the institutional standards governing the inspection of plans and projects for compliance with fire prevention regulations.

In 2011, Presidential Decree 151 defined a list of activities subject to fire prevention measures. The classification is divided into three categories (A, B, and C), which are subject to fire prevention measures calibrated according to the risk based mainly on the size of the company, sector of activity (civil buildings, garages, factories, public entertainment facilities, etc.), the existence of technical requirements, and the need to protect public safety.

Fire prevention activities and measures



- A.** Activities that fall within standard “fire prevention technical regulations”, characterized by a low level of complexity, based on the size of the activity, traffic and quantities of material present;
- B.** Activities that fall into category A by type, but which are characterized by a higher level of complexity; activities which lack a specific technical regulation framework, yet have a lower level of complexity than that of the ‘higher’ category parameter;
- C.** Includes activities with a high level of complexity, regardless of the presence or absence of “technical regulations”.

Table 1 at the end of this chapter shows several civil business activities that are widespread in Italy as they relate to categories A, B, and C along with their corresponding annex number.

Prior to undertaking any type of business activity (A, B and C), a Business Activity Commencement Notice (Segnalazione Certificata di Inizio Attività, S.C.I.A.) must be submitted to the Provincial Command Station of the Fire Brigade, accompanied by the required documentation (may be downloaded at www.vigilfuoco.it).

For activities in Category A and B, the Command Station will perform inspections within sixty days of receipt of the application, to ensure compliance with the requirements set forth in fire prevention standards, and compliance with the requirements of fire safety.

Institutions and individuals conducting activities that fall into categories B and C are required to request the local provincial Fire Brigade Command Station to evaluate construction plans for new systems or facilities or plans for modifications to existing ones, (which have an impact on existing safety conditions). The Command Station will examine the proposals and may require additional documentation to be provided within 30 days. Within sixty days from the date of the submission of the complete documentation, the Command Station will issue

its decision regarding the project's compliance with fire prevention regulations and technical criteria. Upon receipt of notice of compliance, the work may begin. Upon completion of the work, the business activity commencement notice (SCIA) must be submitted. For activities in Category C, the Command Station will perform inspections within sixty days, to ensure compliance with the requirements set forth in fire prevention standards, and compliance with the requirements of fire safety.

Within the same timeframe, in case of proven failure to meet the requirements and conditions for the operation of the business activity required by fire prevention standards, the Command Station will take measures to prohibit the continuation of the business activity and dispose of any harmful materials. Within fifteen days from the date of the technical inspections carried out on the activities, if the inspections have been successfully passed, the Command Station will issue a fire prevention certificate (certificato di prevenzione incendi, CPI). Institutions and individuals conducting activities in categories A, B and C are required to send the Command Station a request for regular renewal of fire prevention compliance every five years by means a declaration indicating the lack of any changes in fire safety conditions.

Detailed explanation

The business activity commencement notice (SCIA) must contain:
the details and address of the applicant or, in the case of a corporation or company, its legal representative;
specification of the main business activity and any secondary activities to be undertaken in relation to the notice;
statement of commitment to comply with the current legislative requirements associated with the operation of the business. The notice must be submitted together with: a) an affidavit, signed by a properly licensed engineer, attesting to the compliance with fire prevention and fire safety requirements, along with the certifications and statements required by the regulations (Ministerial Decree of 7 August 2012).

Examples of civil activities subject to fire prevention measures (Abstract taken from Annex 1 to Presidential Decree 151/11)

| Classification of activities for fire prevention purposes (Presidential Decree of 1 August 2011, no. 151) | N. | CATEGORY | | |
|---|----|----------------------------|--|--------------------------------|
| | | A | B | C |
| Units for the production of auxiliary electricity with endothermic engines and cogeneration plants with total power exceeding 25 kW. | 49 | up to 350 kW | more than 350 kW and up to 700 kW | more than 700 kW |
| Theatres and entertainment venues in general, sports centres and facilities, public and private gyms with a capacity greater than 100 people, or with a gross enclosed floor area in the plan dimensions of more than 200 m ² . | 65 | | up to 200 people | more than 200 people |
| Hotels, boarding houses, motels, resorts, tourist residences - hotels, dormitories, resorts, agritourism accommodations, youth hostels, mountain refuges, bed & breakfasts, dorm rooms, holiday homes, with more than 25 beds. | 66 | up to 50 beds | Outdoor tourist facilities (camp grounds, tourist resorts, etc.) | more than 100 beds |
| Schools of every size, degree and type, colleges, academies with over 100 people present; Child care centres with over 30 people present. | 67 | up to 150 people | more than 150 and up to 300 people; child care centres | more than 300 people |
| Premises used for display and/or wholesale or retail sales, trade fairs and exhibition centres, with a gross floor area greater than 400 m ² including the bathrooms and storerooms. Excludes temporary events, of any kind, which may be conducted on premises or in places open to the public. | 69 | up to 600 m ² | more than 600 and up to 1,500 m ² | more than 1.500 m ² |
| Premises used as storerooms with a gross floor area over 1000 m ² with quantities of goods and combustible materials exceeding a total of 5,000 kg. | 70 | | up to 3,000 m ² | more than 3.000 m ² |
| Companies and offices with more than 300 people present | 71 | up to 500 people | more than 500 and up to 800 people | more than 800 people |
| Facilities for the production of heat using solid, liquid or gas fuels with power greater than 116 kW. | 74 | up to 350 kW | more than 350 kW and up to 700 kW | more than 700 kW |
| Public and private garages, multi-level and mechanized car parks with a total covered floor area exceeding 300 m ² | 75 | up to 1,000 m ² | more than 1,000 m ² and up to 3,000 m ² | more than 3,000 m ² |
| Buildings for civil use with fire resistance heights greater than 24 m | 77 | up to 32 m | more than 32 m up to 54 m | more than 54 m |

NOTES

Fire hazard: intrinsic property or ability of certain materials or equipment, or work methods and practices or the use of the workplace, which has the potential to cause a fire.

Fire risk: likelihood that the potential for a fire to happen exists with consequences of the fire for persons present.

Fire risk assessment: the procedure of assessing the fire risks present within the organization in which employees perform activities, aimed at identifying appropriate fire prevention and protection measures and developing a programme to improve the level of safety over time.

Ignition temperature: the lowest temperature at which a solid substance begins to burn without any additional heat.

Flammability temperature: the lowest temperature at which a liquid fuel emits enough vapours to form a mixture with the air which, if triggered, burns.

Flammable range: area delimited by the lower and the upper flammability limits expressed as the volume percent of the fuel in the air-fuel mixture. The lower flammability limit is the minimum concentration of fuel in the air-fuel mixture that allows the latter, if triggered, to react, giving rise to a flame that can spread to the whole mixture.

The upper flammability limit is the greatest concentration of fuel for which the combustive agent, or air, is insufficient to give rise to a flame that can spread to the whole mixture.

3. How can I reduce the risk of fire?

3.1 Preventive and protective measures

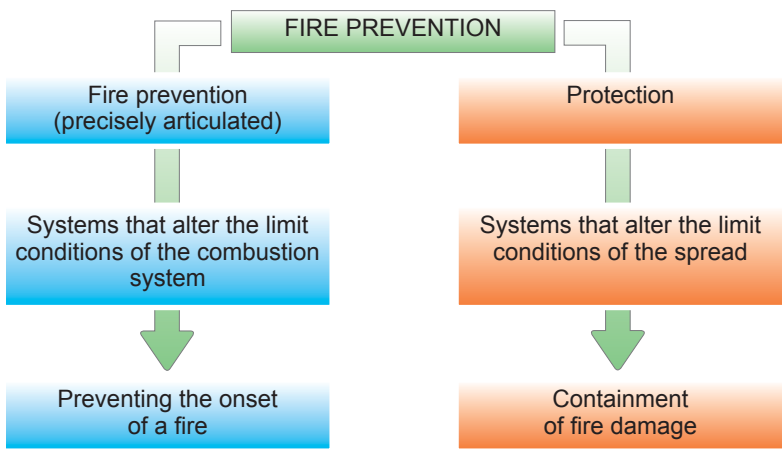
After conducting a fire risk assessment and identifying unacceptable risk situations, the employer needs to put safety measures in place to offset the risks identified.

A basic element to keep in mind when engaging in this assessment process is that the risk can never be equal to zero. There will always be a residual risk which should be brought to a level that may be considered acceptable.



Risk situation: things are placed in a disorderly fashion. Electrical cords are blocking the walkways. There are no 'No Smoking' signs posted and the devices do not have CE markings.

The risk of fire can be reduced by implementing preventive measures, aimed at lowering the likelihood of fires occurring and protective measures, aimed at mitigating the effects of a fire.



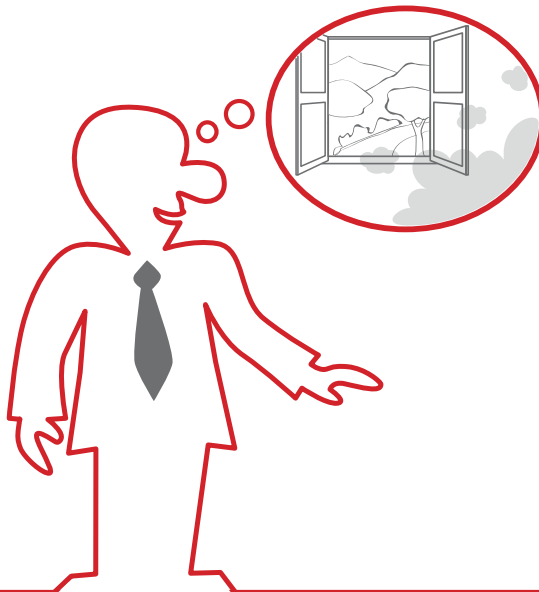
Best situation:
everything is neat
and orderly. Cords
are out of the way
and there is no clutter
on the floor. The
'No Smoking' sign is
clearly visible and the
devices have the CE
marking.



3.2 Measures aimed at reducing the likelihood of fires occurring

The likelihood of a fire occurring can be reduced according to the criteria identified in Annex 2 of the new decree. This is done by putting in place measures of a technical nature, such as:

- building facilities that comply with standards;
- earthing metallic systems, structures and masses, in order to prevent electrostatic charges from forming;
- constructing systems to protect against lightning that comply with standards;
- providing ventilation for vapours, gases or flammable powders;
- using safety devices to prevent fire or explosion;
- putting in place organizational/control measures;
- keeping areas clean and orderly;
- establishing internal regulations for inspecting compliance with safety measures;
- informing and training workers about the risks involved in their activities.



Obviously, in order to adopt appropriate fire safety measures, it is necessary to be familiar with the most common causes and hazards that can lead to the onset of a fire and its spread, and to which particular attention should be given, such as:

- a) storing flammable or highly combustible substances in unsuitable places or handling them without due caution;
- b) allowing waste, paper or other combustible materials that can be ignited accidentally or deliberately to accumulate;
- c) negligence when using open flames and heat generating devices;
- d) inadequate cleaning of work areas and failure to remove waste products;
- e) the use of faulty or insufficiently protected electrical systems;
- f) repairs or modifications to electrical systems made by unqualified personnel;



- g) the presence of live electrical equipment even when not in use (unless designed to be permanently in operation);
- h) the improper use of portable heating devices;
- i) the obstruction of the vents of heating equipment, machinery, electrical and office equipment;
- j) the presence of open flames in areas where they are prohibited, including no-smoking areas and non-use of ashtrays;
- k) the negligence of contractors or maintenance staff;
- l) the inadequate training of staff on the use of hazardous materials or fire safety equipment;
- m) poor equipment maintenance.



Storage and use of flammable and easily combustible materials

Where possible, the amount of flammable or easily combustible materials, or materials that could lead to the formation of explosive atmospheres, should be limited to what is strictly necessary for the normal conduct of business activities and kept away from exit routes. When feasible, flammable substances should be replaced by less dangerous one. Flammable materials should be stored in insulated spaces or in separate facilities that have adequate fire resistance features.



Workers who handle hazardous chemicals or flammable substances should be adequately informed, educated and trained on safety measures to be observed. Workers should also be aware of the properties of substances and circumstances that may increase the risk of fire.

Combustible cleaning materials should be kept in suitable cabinets or in special closets. After cleaning, materials should be taken outside of the workplace and placed in appropriate spaces and containers.

Electrical systems and equipment

Systems, equipment and components must be constructed according to technical specifications that comply with standards. Workers should receive instructions on the proper use of electrical systems and equipment. In the event an electrical device must be powered in a temporary manner, the power cord should be the absolute minimum length required and should be positioned so as to prevent possible damage. Electrical repairs should be performed out by qualified and competent personnel.

Easily combustible or flammable materials, or materials that could lead to the formation of explosive atmospheres, should not be located near lighting or electrical devices, particularly where liquid exchanges take places.

Using heat sources

Heat generators should be used according to the manufacturer's instructions. Places in which welding or flame cutting are performed or open flames are used should be kept free of combustible materials, and it is necessary to control sparks. These tasks should be performed in properly ventilated areas, and the risk of interference from other processes (e.g. painting, handling of flammable substances) should be assessed.

The intake vents of cookers, ovens, saws, and grinders, should be kept clean to prevent the accumulation of grease or dust. When present, emergency fuel shut-off valves should be placed in an easily accessible and marked location, and be regularly inspected and maintained.

Stand-alone or portable heating devices



The most common causes of fire with stand-alone or portable heaters are usually due to failure to take precautionary measures, such as:

- a) non-compliance with safety instructions when using or when replacing the LPG containers;
- b) storing combustible materials above the heating device;
- c) placing portable heaters near combustible materials;
- d) negligence when refuelling kerosene powered devices.

Heating devices should comply with good technical standards and should be used according to the manufacturer's instructions.

Smokers

Areas where smoking may pose a fire hazard should be identified and 'No Smoking' signs duly posted. Areas where smoking is permitted should have ashtrays which are regularly emptied. Ashtrays should not be emptied into containers made of flammable materials, nor should their

contents be collected with other waste. Such areas should be marked with the necessary security measures to prevent fire. Smoking should not be allowed in storerooms or in areas where combustible or flammable materials, or materials that could lead to the formation of explosive atmospheres, are stored.



Maintenance and renovation work

Some issues to consider relating to maintenance and renovation work are:

- a) the accumulation of combustible materials;
- b) the obstruction of exit routes;
- c) locking fire resistant doors in the open position;
- d) making openings in fire resistant flooring or walls.

NB: At the beginning of the work day, workplace exits should be checked. At the end of the work day, an inspection should be made to ensure that fire precautions have been put in place and that the work equipment, flammable and combustible substances, are secured and that no conditions exist which might start a fire. All areas where hot work was performed should be inspected after the completion of the work to make sure that there are no materials on fire or embers, even after completion of works (e.g. laying of bitumen sheets). In workplaces equipped with automatic fire detection systems, appropriate precautions should be taken to prevent false alarms during maintenance and renovation work. The detection and alarm system should be tested at the end of the work. Special precautions are necessary during the maintenance and resetting of electrical and gas fuel supply systems.

Combustible waste and scrap materials

Waste should not be stored, even temporarily, along the exit routes (hallways, stairs, or corridors), or where it can come into contact with

ignition sources. Accumulation of waste products should be avoided and all scrap or waste material should be removed daily and stored in a suitable area, preferably outside the building.

Rarely accessed areas

Areas of the workplace that are not normally accessed by employees (basements, storage rooms), and any area where a fire could start without being quickly identified, should be kept free of non-essential combustible materials and precautions should be taken to protect such areas from access by unauthorized personnel.



3.3 Measures aimed at limiting the effects of fire

In order to reduce and limit the damaging effects caused by a fire, the employer can use system and structural measures as a sort of guideline:

- the creation of compartments and exit routes to ensure the safe exit of people in the event of fire;
- implementation of measures for rapid signaling to ensure activation of the fire alarm systems and intervention procedures;
- the creation and provision of equipment and systems necessary to extinguish a fire.

3.3.1 Measures relating to compartments and exit routes in case of fire

The system of exit routes should ensure that people can safely follow a clearly recognizable path to a secure place without external assistance. In order to determine whether the system of exit routes is satisfactory, it is necessary to assess:

- the number of people present, their familiarity with the workplace, their ability to move without assistance;
- where people may be when a fire occurs;
- the fire hazards present in the workplace;
- the number of alternate exit routes available.

To limit the spread of fire in the exit routes, the following aspects should also be assessed:

- **presence of openings in walls and/or floors:** openings in/or the crossing of floors, walls and ceilings by ducts or pipes can contribute to the rapid spread of smoke, flames and heat, preventing the safe use of exit routes;
- **coating materials:** the speed of a fire spreading depends on the nature of the materials coating walls and ceilings and affects the ability of people to exit.

Detailed explanation

At the beginning of the working day, the employer or person in charge should ensure that exit doors on the floor level and those to be used along exit routes are not locked or, in the event protected entry systems are in use, that these can be easily and readily opened from the inside without the use of keys.

- **underground stairwells:** stairs leading to underground areas should be designed so as to prevent the entry of smoke and heat.

- **external stairways:** places with external stairways should ensure that fire, smoke and heat are not able to come out of openings in the outer wall on which the stairway is located in the event of fire, preventing their use as an exit route.

Equipment that may pose potential fire hazards or block exit routes should not be installed along exit routes.

If fire resistant doors installed along exit routes are equipped with self-closing devices that pose difficulty for movement, the doors may be kept in the open position by means of electromagnetic devices that allow the following:

- activation of smoke detectors located near the doors;
- activation of a fire alarm system;
- detecting the lack of power to the fire alarm system;
- manual control.

3.3.2 Measures for detection and alarm in case of fire

The aim of measures for fire detection and alarm is to detect a fire before it threatens the safety of people in the workplace. The alarm should initiate the procedure for the evacuation of the workplace and the activation of intervention procedures. The alarm shall be clearly audible throughout the entire workplace, even in those parts where workers or people are seldom found. Special precautions must be taken for people with disabilities.

In most workplaces a manually operated fire alarm system may be sufficient, however, there are some circumstances in which automatic detection of a fire is deemed to be essential for

employee safety. The purpose of automatic fire detection is to provide people with sufficient time to leave the area affected by the fire until the situation is still relatively safe.

An automatic detection system may, for example, be placed in rarely used areas.

3.3.3 Equipment and systems for extinguishing fires

Fires are classified according to the nature of the fuel that produces them, facilitating the choice of the most appropriate extinguishing agent:

- **Class A:** fires involving solid materials, which are usually organic in nature and lead to the formation of embers;
- **Class B:** fires involving liquids or liquefied solids such as petrol, paraffin, paints, mineral fats and oils, etc.;
- **Class C:** gas fires;
- **Class D:** fires involving metallic substances;
- **Class F:** fire involving animal or vegetable oils and fats (e.g. in cooking appliances).

The most commonly used extinguishing substances for each type of fire is identified below:

- **Class A fires:** water, foam and powder extinguishing agents are the most commonly used;
- **Class B fires:** foam, powder and carbon dioxide;
- **Class C fires:** powder and carbon dioxide. With these fires, the remedial action to be taken is that of interrupting the flow of gas by closing the shutoff valve or sealing the leak. If a gas fire is instead extinguished before the flow of the gas has been stopped, there is a risk of explosion;
- **Class D fires:** none of the extinguishing agents normally used for class A and B fires is suitable for fires involving burning metallic substances (aluminium, magnesium, potassium, sodium). These types of fires require the use of special powders and the intervention of specially trained personnel;

Detailed explanation

Portable fire extinguishers should preferably be located along exit routes, near exits, and fixed to the wall and adequately visible in hazardous areas. Hydrants and fire hose reels should be located in visible and accessible points along exit routes. Their placement should be such as to allow any point on the floor to be reached by the extinguishing agent. Manual shut-offs should be marked with appropriate signs.

- **Class F fires:** extinguishing agents for class F fires mainly operate by chemical means acting on the intermediate products of vegetable or animal oil combustion (negative catalysis).

The most commonly used equipment to put out fires include:

- handheld and wheeled fire extinguishers;
- fixed manual and automatic extinguishing devices.

The choice of handheld and wheeled fire extinguishers should be based on the class of fire and the risk level of the workplace. The

number and extinguishing ability of portable fire extinguishers should be identified on the basis of:

- number of floors (no less than one extinguisher per floor);
- floor area;
- specific fire hazard (class of fire);
- distance that a person has to travel to use a fire extinguisher (no more than 30 m.).

On the basis of the risk assessment, fixed manual or automatic fire extinguishing systems can be installed in addition to fire extinguishers.

4. Controls on fire protection measures

4.1 Monitoring, inspection, maintenance, and testing

The purpose of monitoring, inspection and maintenance activities is to detect and remove any cause, deficiency, damage or obstruction that could affect the proper operation and use of fire safety devices. Art. 4 of the new decree (Controls and maintenance of fire safety systems and equipment) states that *"Maintenance and inspections on the systems, devices, equipment and other fire safety measures taken, shall be made in compliance with laws and regulations in force, according to the technical standards issued by National or European standardization bodies or, in the absence of such technical standards, the instructions provided by the manufacturer and the installer or both"*.

The employer must monitor, inspect, and maintain fire safety protection equipment and systems in accordance with the provisions of the aforementioned legislation, possibly through the use of an organizational or managerial model as per Art. 30 of Legislative Decree no. 81/08. It is important to emphasize that the inspection and maintenance of the fire safety systems and equipment must be reported in the risk assessment document.

4.2 What is meant by monitoring, regular inspection and maintenance?

Monitoring is a preventive measure that involves a visual inspection to verify that the fire safety systems and equipment are in proper operating condition, easily accessible and intact according to the visual inspection. Monitoring may also be carried out by the fire safety personnel normally found in the protected areas, after having received appropriate training. It is performed more frequently than the regular inspection and permits the timely identification of any shortcomings, failures or irregularities. Moreover, the fire safety personnel benefit from greater awareness of the importance of their role in the company's prevention system. Any irregularities found should be reported immediately.

The **regular inspection** is a measure of prevention usually performed every six months, to verify the complete and proper



functionality of equipment and systems by performing the necessary checks. The regular inspection and maintenance should be performed by qualified and competent personnel; any irregularities found should be immediately remedied.

Maintenance is the operation or intervention aimed at maintaining equipment and systems in good condition. It is divided into routine maintenance and repair work. Routine maintenance is carried out on site using commonly available tools. It is limited to minor repairs, and involves the use of consumables or the replacement of specific parts.

Repair work is instead an intervention that cannot be performed on site or that, though being performed on site, requires the use of particularly important or special equipment or instrumentation or involves replacement of entire system parts or the complete revision or replacement of equipment the repair of which is not possible or practical.



4.3 Monitoring of exit routes

Many accidents, including serious ones, have been contributed to by the obstruction of exit routes. It is extremely improper behaviour as well as a criminal offense, and should be prevented at all costs. All parts of the workplace used as exit routes, such as walkways, corridors, and stairwells, should thus be regularly monitored to ensure they are free of obstructions and hazards that may affect their safe use in the event of the need to exit.

Doors on exit routes should be regularly checked to ensure that they open easily. Particular attention should be paid to the fittings of the doors. All fire resistant doors should be regularly checked to ensure that they are not damaged and that they close properly. Doors fitted with automatic closing devices should be checked periodically to ensure that the devices are working and that the doors close properly. Directional and exit signs should be monitored to ensure visibility in the event of an emergency. All fire safety measures



designed to improve the safety of the exit routes, such as smoke exhaust systems, should be inspected for compliance with technical standards and serviced by properly qualified and competent personnel.

4.4 Fire protection equipment and systems

Some examples of monitoring operations that safety personnel should perform regularly:

- ensuring that all fire resistant doors are closed, when appropriate;
- checking that fire extinguishers are properly in place, marked, clearly visible, easily accessible, and have not been tampered with.

If the fire extinguisher is portable, it should be checked to ensure that:

- it is full;
- the maintenance tag has been duly filled in;
- the support structures are intact;
- there are no irregularities such as clogged openings, leaks, corrosion, bumps, cracks in hoses.



5.Training, information and refresher courses

5.1 Identification of fire safety personnel

Fire risk prevention and protection measures are not, by themselves, enough to ensure an effective response in case of an emergency. In fact, many fires can be prevented by calling the attention of employees to the most common causes and dangers of fire, and this can only be achieved through proper training, information and refresher courses. Articles 36 and 37 of Legislative Decree no. 81/08, include an obligation for the employer to provide workers with adequate information and training relating to:

- a) risks related to the company's general and specific work activities;
- b) the fire prevention and protection measures in place in the company, with particular reference to:
 - the location of fire safety devices;
 - the location of exit routes;
 - how to open the exit doors;
 - the proper behaviour in the event of fire, such as: keeping fire resistant doors shut;

- not to use lifts for evacuation in the event of fire;

c) steps to take in the event of a fire (including first aid, fire-fighting, evacuation of the workplace) and in particular:

- actions to take when a fire is detected;
- how to sound an alarm;
- action to take when an alarm is heard;
- evacuation procedures to the assembly point in a safe place;
- how to call the fire brigade.

Based on the results of the fire risk assessment and of what is provided for in the emergency plan, the employer will identify and designate the workers responsible for implementing fire prevention, fire-fighting and emergency management measures, who are referred to as "fire safety personnel",



or himself, in appropriate cases. Workers designated as fire safety personnel must:

- attend training courses and refresher courses in accordance with the Decree;
- obtain a technical qualification certificate issued by the Fire Brigade, after passing a test (referred to in Article 3 of the Law of 28 November 1996, no. 609) if they are employed in workplaces where activities identified in Annex 10 to the Decree are performed.

The fire prevention service must always be present during work activities, especially when hazardous conditions exist for workers and any other people present, unless it has been demonstrated by means of a specific assessment that the measure does not expose workers or persons present to any risk of fire.

NB

Inspections and maintenance of fire safety systems and equipment (Article 6, paragraph 1, letter e, of Legislative Decree no. 81/08), as well as information, instruction, and training of personnel and emergency drills, must be included in the Risk Assessment Document (DVR).

5.2 Training and levels of fire risk

The minimum content of training required for fire safety personnel in the event of fire, should correspond to the type of business activity and the level of fire risk associated with it, as well as to the specific tasks assigned to employees.

Considering the above information, below is an example list of activities classified according to high, medium and low levels of risk and the corresponding minimum content and duration of the training and refresher courses associated with them:

COURSE A: course for fire safety personnel engaged in low fire risk activities (minimum duration 4 hours)

COURSE B: course for fire safety personnel engaged in medium fire risk activities (minimum duration 8 hours)

COURSE C: course for fire safety personnel engaged in high fire risk activities (minimum duration 16 hours)

The contents identified may need to be properly supplemented for specific risk situations.

COURSE A:

1) Fire and fire prevention (1 hour)

- Principles of combustion;
- Combustion products;
- Extinguishing agents for different types of fires;
- The effects of fire on humans;
- Prohibitions and service limitations;
- Behavioural measures.

2) Fire protection and procedures to take in the event of fire (1 hour)

- Main fire protection measures;
- Evacuation in case of fire;
- Calling emergency response.

Example of activities deemed to be a medium fire risk:

a) Workplaces that fall into categories A and B of Annex 1 to the Presidential Decree of 1 August 2011, no. 151;

b) Temporary and mobile worksites, where flammable substances are stored and used, and use is made of open flames, other than in outdoor spaces.

Activities that cannot be classified in the medium and high risk categories, and where, in general, poorly flammable substances are in use, and where the operating conditions offer little possibility for fires to start and little likelihood of a fire spreading, fall into the low fire risk category.

3) Practical training

(2 hours)

- Examination and explanation of portable fire extinguishers;
- Instructions on the use of portable fire extinguishers through practical demonstration.

COURSE B:

1) Fire and fire prevention

(2 hours)

- Principles of combustion and fires;
- Extinguishing agents;
- Combustion triangle;
- Main causes of fire;
- Risks to persons in the event of fire;
- Main precautions and measures for preventing fires.

2) Fire protection and procedures in the event of fire

(3 hours)

- Main fire protection measures;
- Exit routes;
- Steps to take when a fire is detected or in case of alarm;
- Evacuation procedures;
- Relations with the Fire Brigade;
- Extinguishing equipment and systems;
- Alarm systems;
- Safety signs;
- Emergency lighting.

3) Practical training (3 hours)

- Examination and explanation of the most common extinguishing means;
- Examination and explanation of personal protective equipment;
- Exercises on the use of portable fire extinguishers and how to use fire hoses and hydrants.

COURSE C:

1) Fire and fire prevention

(4 hours)

- Principles of combustion;
- Main causes of fire for specific work environments;
- Extinguishing agents;
- Risks to people and the environment;
- Specific fire prevention measures;
- behavioural precautions to prevent fires;
- The importance of inspections in the workplace;
- The importance of the maintenance and testing of fire safety devices.

2) Fire protection (4 hours)

- Passive protection measures;
- Exit routes, compartments, and clearances;
- Extinguishing equipment and systems;
- Alarm systems;
- Safety signs;
- Electrical safety systems;
- Safety lighting.

Example of activities deemed to be a high fire risk:

- a) Industries and warehouses referred to in Articles 6 and 8 of the Legislative Decree of 17 August 1999, no. 334 and its subsequent amendments and additions;
- b) Workplaces that fall into category C of Annex 1 to the Presidential Decree of 1 August 2011, no. 151;
- c) Temporary or mobile underground worksites for the construction, maintenance and repair of tunnels, caves, wells and similar works with a length exceeding 50 m;
- d) Temporary or mobile worksites where explosives are used.

3) Steps to take in the event of fire (4 hours)

- Steps to take when a fire is detected;
- Steps to take in case of an alarm;
- Evacuation procedures;
- How to call emergency response services;
- Collaboration with the fire brigade when they arrive;
- Example of an emergency situation and procedural - operational methods.

4) Practical training (4 hours)

- Examination and explanation of the main extinguishing equipment and systems;
- Examination of personal protective equipment (masks, breathing apparatuses, suits, etc.);
- Exercises in the use of extinguishing and individual protection equipment.

Fire safety personnel must attend specific refresher training courses at least once every three years/five years according to the programme and duration on the basis of the high, medium and low risk level:

COURSE A: refresher course for fire safety personnel for low fire risk activities (2 hours)

COURSE B: refresher course for fire safety personnel for medium fire risk activities (5 hours)

COURSE C: refresher course for fire safety personnel for high fire risk activities (8 hours)

REFRESHER COURSE A:

1) Fire and fire prevention (2 hours)

- Examination of the monitoring measures set out in Annex 6 of this Decree and explanation on the use of portable

- fire extinguishers;
- Instructions on the use of portable fire extinguishers through practical demonstration;
- Final examination.

REFRESHER COURSE B:

1) Fire and fire prevention (1 hour)

- Principles of combustion;
- Combustion products;
- Extinguishing agents for different types of fires;
- Effects of fire on humans;
- Prohibitions and service limitations;
- Behavioural measures.

2) Fire protection and steps to take in the event of fire (1 hour)

- Main fire protection measures;
- Evacuation in case of fire;
- Calling emergency response.

3) Practical training (3 hours)

- Examination of monitoring measures and explanation on the use of portable fire extinguishers;
- Exercises on the use of portable fire extinguishers and how to use fire hoses and hydrants.

REFRESHER COURSE C:

1) Fire and fire prevention (2 hours)

- Principles of combustion and fires;
- Extinguishing agents;
- Combustion triangle;
- Main causes of fire;
- Risks to persons in the event of fire;
- Main precautions and measures for preventing fires.

2) Fire protection and steps to take in the event of fire (3 hours)

- Main fire protection measures;
- Exit routes;
- Steps to take when a fire is detected or in case of alarm;
- Evacuation procedures;
- Relations with the Fire Brigade;
- Extinguishing equipment and systems;
- Alarm systems;
- Safety signs;
- Emergency lighting.

3) Practical training (3 hours)

- Examination and explanation of the most common extinguishing means;
- Examination and explanation of personal protective equipment;
- Exercises on the use of portable fire extinguishers and how to use fire hoses and hydrants.

NB

The use of e-learning is limited to the theoretical part of the training activities for low fire risk courses and refresher courses, in accordance with the rules set forth in Annex 1 of the agreement between the Government, Regions and the Autonomous Provinces of Trento and Bolzano of 21 Dec. 2011.

5.3 Trainers

The training courses and refresher courses identified in the preceding paragraphs should be performed by trainers who meet specific requirements. Trainers should match the minimum content of the training courses and refresher courses for fire safety personnel according to:

- type of activity;
- level of fire risk;
- specific tasks assigned to employees.

Upon passing the final examination the trainer will issue a certificate of attendance.

Trainers must keep records to submit to the supervisory authorities for each training course and refresher course attended that include: the date(s) of the course, the personal data of candidates attending course, course sheets signed by students and teachers, tests, and the place where the practical exercises took place.



6 The Emergency Plan

As we have seen (Chapter 2) the risk assessment identifies the prevention and protection measures necessary to meet the established fire safety standards.

The risk of fire can be reduced but not entirely eliminated. All possible fire events should thus be considered along with the control measures to be implemented to address each of them.



This organized system of events that may occur in the workplace and the planning of response actions is, in short, the emergency plan.

6.1 Objectives

The main objective of the emergency plan is to minimize the damage caused by a fire that might occur as a result of the residual exposure risk that could not be remedied by the implementation of prevention and protection measures.

In order to achieve its goal, the plan must be able to illustrate possible fire scenarios and organize a system of response actions for each that workers and external emergency response teams put into action to deal with the event taking place. The effectiveness of the plan will be examined by means of emergency simulations that are as realistic as possible. The simulation phase permits testing of what was planned, in terms of alarm procedures, exit times, and tasks performed by emergency management personnel, to see if they are an effective response to emergency situations and the event of a fire and effectively diminish the amount of damage that would result.



Main steps of the emergency plan for small business activities:

use exit routes, identify any fire resistant doors, identify the location of alarm devices, identify fire safety equipment, notify the Fire Brigade of any alarms.

Detailed explanation

Business activities that take place in workplaces(*) are required to prepare emergency plan. These include enterprises open to the public with traffic of more than 50 people. An exception is made for businesses open to the public with traffic of more the 50 people, where the Employer is required to prepare a simplified emergency plan as per point 8.4 of Annex 8, as well as the companies referred to in Article 3, paragraph 2, of this Decree. For workplaces where less than 10 workers are employed, the employer is not required to prepare an emergency plan, though he/she must implement the necessary organizational and control measures to use in the event of fire; such measures must, however, be included in the risk assessment document.

* Article 62 of the Legislative Decree of 9 April 2008, no. 81, defines workplaces as “places designed to accommodate employees within the company or production unit, as well as any other place related to the company or production unit that is accessible to employee as part of their job.”

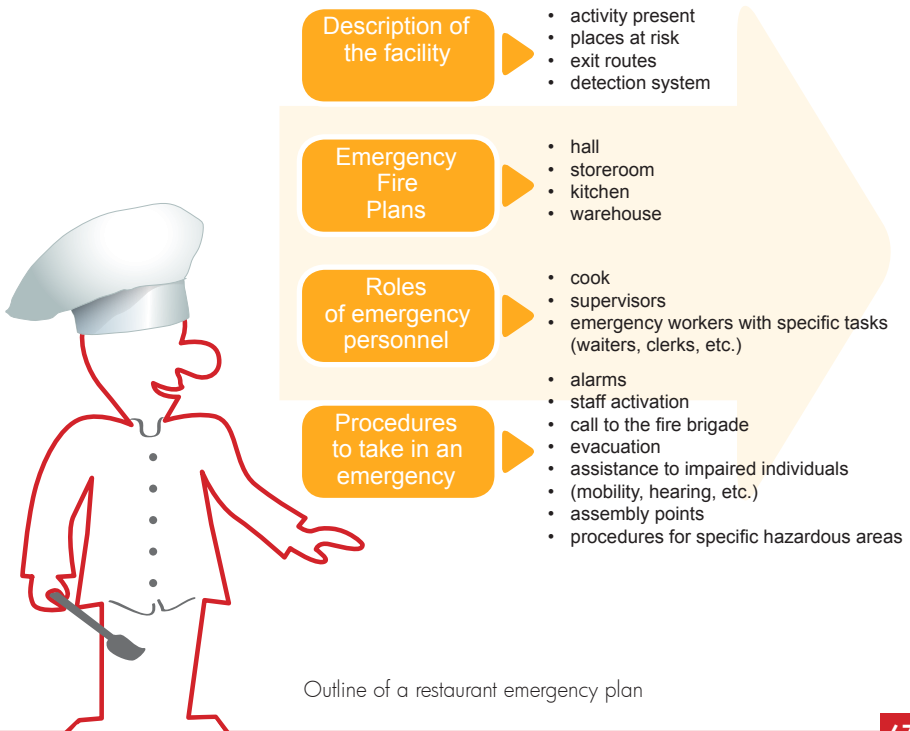
6.2 Contents

The main topics to be considered in the emergency plan are those connecting the fire event to the actions that should be performed by workers, including the people present, the sites affected, and the type of activity.

The risk assessment describes the types of fires that may occur at the workplace. Indeed, if the hazards present in the workplace have been correctly identified (see Ch. 2), the risk assessment document will provide cross-reference information regarding fire risk events based on the environments, materials and work activities contained in the document.

The employer should thus envisage emergency scenarios and evaluate them by considering the particular aspects of the workplace. Among the main things that should be considered are the typological features and layout of the places affected in the potential event and how, in

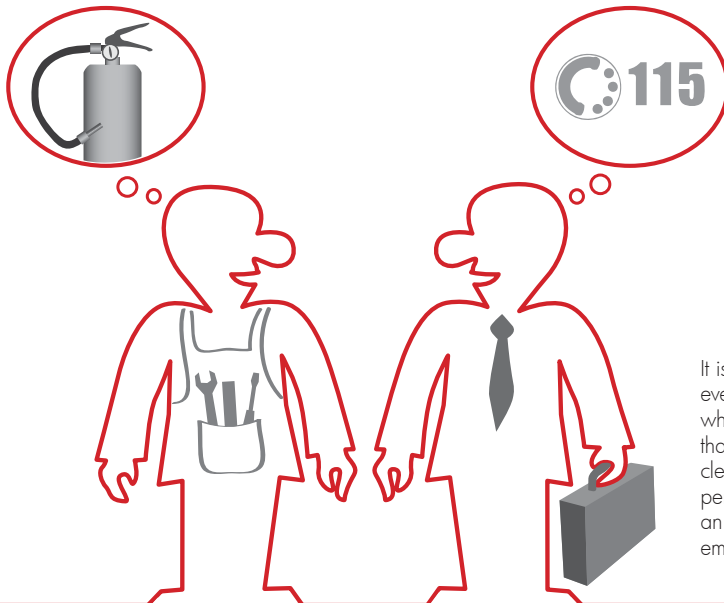
an emergency control situation, they relate directly to the evacuation of the building and the containment of the fire. Effects produced by the typical features of the workplace and of the site are, for example, those that relate to geometry: height, number of floors, openings and internal layout. These features may affect the fire brigade's ability to reach the place where the fire has started, for reasons connected to the use of vehicles, the height of the motorized fire ladder, and the use of personal protective equipment.



The site where the workplace is located will also affect the emergency plan: being located in an urban centre as opposed to an industrial area or in the country makes for different road conditions and types of emergency vehicle access.

The emergency response system should be outlined for each potential emergency scenario and also consider the location of the workplace. This means identifying a sequence of actions that include the alarm, evacuation, assembly points, the activation of staff, and support from the fire brigade response teams.

The employer should therefore determine the number of employees to appoint to emergency management for each scenario outlined in the plan. The persons entrusted with the various emergency management roles should be clearly and individually identified in order to effectively carry out the planned procedures. The duties of the persons indicated should be made clear, so that it is known "who does what" and there is no overlapping of responsibilities.



It is important that everyone knows what to do and that they are clearly identified as persons who have an active role in the emergency plan.

Finally, the people who may be present during the fire event should be identified. During an emergency this will aid in recognizing the hazards and the layout of the rooms and the readiness to implement established behaviours.

The preparation of the emergency plan must still take into account the type of business activity and the size of the workplace. For small workplaces the plan may be limited to written notices containing rules of behaviour.

For workplaces located in the same building with different employers, the plan must be drawn up together by the various employers.

For large or complex workplaces, the plan must also include a floor plan that indicates:

Procedures and behaviours to be written in the plan

- duties of the staff responsible for carrying out specific tasks relating to fire safety, such as: telephone operators, janitors, foremen, maintenance workers, and security personnel;
- duties of the staff entrusted with special responsibilities in the event of fire;
- necessary measures to ensure that all staff are knowledgeable about the procedures to be implemented;
- specific measures to be implemented for workers exposed to particular risks;
- specific measures for high fire risk areas;
- procedures for calling the Fire Brigade, providing them with information after they arrive, and assisting them during the event.



Example of a floor plan included in the emergency plan.

- layout features of the workplace, with particular reference to the specific use of the various areas, exit routes and fire compartmentalization;
- the type, number and location of the extinguishing equipment and systems;
- the location of alarms and control panel;
- the location of the main power supply breaker, shut-off valves for water, gas and other combustible fluids.

Contents of the plan

- actions to be implemented by workers in case of fire;
- procedures for evacuation of the workplace, to be implemented by workers and other persons present;
- instructions for requesting assistance from the fire brigade and providing them with necessary information upon their arrival;
- measures to assist people with disabilities.

6.3 Critical situations

When preparing an emergency plan as described in the preceding paragraph, it is a good idea to analyze some problems that may arise during the fire and that may greatly affect the functionality of the plan. One of the first aspects to consider relates to the psychological impact of the event taking place.

An emergency is a sudden state of danger to which an individual must respond promptly, putting a series of technical and mental skills into action. Individual responses, in addition to being immediate, must ensure the proper actions are taken, without panic. In order for this to happen, it is essential to be familiar with the emergency plan and the scenarios outlined in it, learning how to modify behaviours so as to better respond during the event taking place.

Something else to consider is the products of combustion (smoke, heat, flame and gas). Their presence will make it difficult to implement the actions detailed in the emergency plan, especially the time required to perform them which will be greater than that ordinarily required.

This aspect also affects the layout of the workplace, especially as regards exit routes and emergency exits that are not properly identified or generally located in random positions and thus are not easily identified in low visibility

Factors affecting the plan

- layout features of places, especially as regards exit routes;
- fire detection and alarm system;
- number of people present and their location;
- workers exposed to particular risks;
- presence of disabled workers;
- number of employees involved in the implementation and monitoring of the plan as well as assisting evacuation;
- level of information and training provided to workers.

conditions. In such scenarios, it is instinctive to attempt to exit by retracing the entry route taken to the point where one is located, rendering the exit routes established in the plan completely ineffective.

Finally, an issue of fundamental importance when preparing the emergency plan involves actions aimed at assisting people with disabilities, especially those in crowded places, or located away from emergency exits or on the upper floors. Thus, the planned control measures should provide for:

- sufficient people or teams to assist people with disabilities;
- distinguishing assistance needs (blind, motor disabilities, etc.);
- training of security personnel;
- equipment and aids for emergency exit (e.g. wheelchairs, etc.);
- identification of a secure assembly point for the disabled.

Finally, after discussing the main points to include in the emergency plan, it should be also be pointed out that the plan itself must be made familiar and understood. To this end, the employer must provide workers with adequate information and training on:

- fire hazards associated with the business activity;
- fire risks associated with tasks;
- prevention and protection measures in use in the workplace;
- location of exit routes;
- procedures to follow in the event of fire;
- names of workers tasked with implementing security measures;
- name of the person in charge.



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FIRE SAFETY & EMPLOYERS

Guidelines for the assessment of risks

