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SME FIT

HEALTH AND SAFETY
AT WORK

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GENERAL ASPECTS

FUNDAMENTAL SAFETY CONCEPTS

The concept of safety is tightly connected to that of QUALITY OF LIFE. Safety is the result of a set of actions, directed to obtain a BALANCED CONNECTION between:

- **MAN** (Abilities, characteristics, needs and motivations)
- **ENVIRONMENT** (meant as a whole and as far as possible “comfortable” entity between the building structure and the equipment disposition)
- **WORK ORGANIZATION** (interaction Man - Machine, personal relationships, work satisfaction)

In other words safety is reached when risky situations have been located and managed correctly. Risk situations are common within the work environment. Essentially they derive from the presence of dangerous elements typical of work environment, from machineries, equipment, plants and substances. Yet, in order for such dangerous elements not to create a risky situation, it is necessary to put into place a check and assessment action to locate the approach mode for the employees responsible for such elements.

This principle which introduces a risk situation assessment is an innovation implemented from the prevention principles contained in the new legislation which we will deal with in this installment.

It is clear that, faced with the location and assessment of risk situations, the most suitable safety measures should be taken (protections, adjustments, procedures, automation, etc.) to manage them safely and correctly.

In relation to the above listed concepts the current technical norms are defined by the terms:

**DANGER**

Every possible cause of injury or harm to health.

**DANGEROUS SITUATION**

Any situation in which one or more persons are exposed to danger.

**RISK**

The combination of probability and gravity of possible harm to health or injuries in a dangerous situation.

The reading of such definitions, together with the above mentioned concepts, underlines how a PREVENTION policy is fundamental to allow a complete and safe risk management before it produces its negative effects.

PREVENTION

Prevention is meant as a preordained activity undertaken in order to avoid particular events, believed to be harmful or unpleasant, from happening:

**FORESEEING** means estimating the future probability that a certain danger will occur.

**PREVENTING** means promoting suitable behaviour in order to avoid future accidents.

MOTIVES FOR PREVENTION

MORAL ASPECTS:

The PROTECTION of NATURE understood as a combination of MAN plus ENVIRONMENT must be a primary component of working activities and it should therefore represent a precise MORAL DUTY for all.

LEGAL REQUIREMENTS:

They are connected with the need to comply with the numerous GENERAL PROVISIONS of law
(Constitution, Penal Code and Civil Code) as well as numerous SPECIFIC MEASURES that for some time have been regulating the issue and that anticipate in the case of non-fulfillment HEAVY PENALTIES, both penal and civil.

**PENAL LIABILITY**

**PENAL LIABILITY:** IT IS PERSONAL, (art.27 of the Constitution), and it is based on the behaviour of the individual incriminated.
The following people could be, personally, accountable for offences carried out in the field of prevention:

- **THE EMPLOYER**
- **THE MANAGER**
- **THE SUPERVISOR**
- **THE EMPLOYEE**
- **THE WORKSHOP COORDINATOR**
- **THE PRINCIPAL**

**CIVIL LIABILITY**

**CIVIL LIABILITY** occurs every time someone’s behaviour causes damage to things and/or property.

Based on the Italian Civil Code art.2043, the person liable must pay an INDEMNITY FOR DAMAGES; it is worth bearing in mind that in the Civil Code the liability for actions carried out by an employee of the company, will always fall on the company itself.

In the subject regarding accidents at work the CIVIL LIABILITY often descend from the PENAL one.

**ASPECTS OF PENAL LIABILITY**

The **PENAL LIABILITY** takes on various aspects, according to the type of unlawful behaviour in the event of:

- **A dangerous situation** (Penal Code art. 437 and 451)

- **A situation of injury** (Penal Code art. 589 and 590)

In relation to the existence or absence of INTENTION to violate the law the penal liability is divided as follows:

- **FRAUD** - “or based on the intention....” - Where there is the intention to cause damage or, according to some interpretations, even just having the awareness of a dangerous situation without taking steps to eliminate it.
- **NEGLIGENCE** - “or against the intention.......” - Where there is no intention to cause damage (even if it is taken care of ) and the event has taken place due to one of these three factors (GENERAL FAULT).

*In short, penal liability can indirectly derive from attitudes, behaviours or actions, in which the following can be seen : NEGLIGENCE, IMPRUDENCE, INEXPERIENCE.*
E.U. LEGISLATION

Bearing in mind that legislation and rules concerning the problems of hygiene and safety in the workplace are already in force in each Member State, in the last twenty years the European Community has dedicated its efforts towards two issues:

1. **Eliminating borders between the Member States, to allow free trading of goods and products**
2. **Ensuring a high standard of prevention in each Member State**

The legal tools used to attain the objectives listed above are constituted by the following series of acts:

- **REGULATIONS**
  
  Mandatory laws, directly applicable in each Member State, which do not need to be assimilated into national legislation. The regulations can be adopted by both the Council and the Commission.

- **DIRECTIVES**
  
  Laws which are mandatory for Member States in terms of results but which leave the ways and means of enforcement up to the discretion of each State.

- **DECISIONS**
  
  A decision plays a mandatory role for everything it concerns. National legislation is not needed for it to be adopted by Member States. These are acts generally passed by the Council, but in some cases also by the Commission.

- **RESOLUTIONS**
  
  They are not legal acts provided for in the treaty, but they are useful tools to outline the ways of approaching a particularly complex problem, to establish a program and give a sense of direction towards the future. The resolution limits itself to establish an action plan for the E.U. Institutions which have to carry it out.

- **RECOMMENDATIONS**
  
  They are tools through which the Commission asks the Member State to adopt certain behaviours.

The creation of new guidelines in safety matters by the European Community, was based on the principles of prevention previously considered while the content of Italian law 547/55 was looked at.

Among the acts created from E.U., two Directives play an important role:

- **Framework Directive 83/189/EEC concerning industrial products**;
- **Framework Directive 89/391/EEC concerning social objectives**.

As far as the first directive is concerned, where national laws have often represented some kind of a technical obstacle, with the Directive 83/189/EEC “Directive of Product”, passed in the spirit of the “New Approach”, national authorities’ activities regarding regulation and standards have been put on hold.

The new regulation of matter brought about by the Directive of Products was possible due to new rules in which it is substantially defined that:

1. Safety rules are split up into a general level (Directives) and specific rules (Technical Standards).
2. General safety requirements provided in the Directives impose the characteristics that products must have before they are introduced in the market.
3. The technical specifications explain in a non binding way the characteristics necessary for the products to enjoy having the presumption of conformity to the requirements listed in point 2.
4. Governments of the various member States must recognize manufactured products according to
corresponding standards, which are presumed to conform to essential safety requirements (RES) set by the Directive.

In order for essential requirements to be met, each single directive requires the manufacturer to go through various procedures which result in the affixing of the CE mark.

Depending on the chosen procedure, the CE mark could be accompanied by certificates, conformity marks, test results released by qualified independent organizations, conformity declaration released by the manufacturer of the product.

Examples of Directives of products are:
- Directive 73/23/EEC defined “Directive Low voltage” relative to safety warrants which electrical material set to be utilized within certain voltage limits must have;
- Directive 89/686/EEC relative to the drawing together of the Member States' legislations relative to individual protection devices;
- Directive 89/392/EEC called Machinery Directive relative to the re-approaching of Member States' legislations relative to machinery.

After these laws have been issued, they have been adopted by the various Member States. In Italy for example one of the most important product Directives, Directive 89/392/EEC (also called the machinery Directive), was accepted in 1996 with the Law N. 459 of July 24th.

Other Directives like the one relating to Individual Protection Devices (89/686/EEC) have been accepted in Italy in 1992 with Law N. 475 of December 4th.

With reference, on the other hand, to the second one, an action of primary importance of the Community is relative to the approval of Framework Directive 80/1107/EEC relative to the protection of workers against risks of exposure to chemical, physical and biological agents whilst at work.

- Directive 82/602/EEC relative to risks linked to exposure to metallic lead;
- Directive 83/477/EEC subsequently modified by Directive 91/382/EEC relative to the protection of workers against risk of exposure to asbestos;
- Directive 86/188/EEC relative to noise pollution;
- Directive 88/364 regarding the protection of workers through the banning of certain specific agents and/or activities.

The issues concerning the protection of workers against risks from exposure to chemical, physical and biological agents while at work, provided by Framework Directive 80/1107/EEC and by particular Directives, were implemented in Italy in 1991 with the passing of Law N. 277 of August 15th which, except from some parts repealed due to the acceptance of other more recent E.U. Directives, is still in force.

Subsequently with reference to the contents of the new article 138 of the E.U. treaty (introduced in 1986 with the Single European Act) and in particular to the three objectives contained in it:

1. Improve health and safety conditions for workers in the workplace
2. Harmonize the conditions of work environment for all workers working in any of the Member States
3. Fight against the “social dumping” with the realization of a single market,

other Directives have been adopted that set minimum requirements in health and safety matters in the workplace so that in all Member States the same level of protection exists. Countries whose standards are below are required to raise them. This, whilst improving the safety conditions in the work environment, does not however put off businesses from researching competitive advantages by moving their operations towards countries with a lower level of protection.

On the basis of these issues in June 1989 the E.U. Council adopted another important Directive, Framework Directive 89/391/EEC.

The main purpose of such a Directive is to balance the protection levels of the workers within the Community, by trying to improve the existing level of protection.

As a result of some people’s interpretation of the Directive (in particular the eleventh, twelfth, and fourteenth), the promotion of health and safety includes the implementation of preventive measures of protection against injuries and professional illnesses, but more so with the help of:
- Information, consultation, balanced participation and training for workers and their representatives.

*With this Directive the European Community has outlined the general structure and in saying so the basis of safety and hygiene standards in the work environment.*

In this standard base, directions of a more specific content have been inserted. These were contained in a series of *particular Directives* which indicate prescriptions and requirements to guarantee a high level of safety and protection while working, in different areas of production and during the use of work equipment. In the following chart the specifications of the different particular Directives are noted.

<table>
<thead>
<tr>
<th>Directive Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>89/654/EEC (I° Particular Directive)</td>
<td>Minimum health and safety regulations for work environments</td>
</tr>
<tr>
<td>89/655/EEC (II° Particular Directive)</td>
<td>Minimum health and safety requirements for the use by workers of work equipment</td>
</tr>
<tr>
<td>90/269/EEC (IV° Particular Directive)</td>
<td>Minimum health and safety rules as regards manual loads moving manual loading which include risks of back-lumbar injuries for workers.</td>
</tr>
<tr>
<td>90/270/EEC (V° Particular Directive)</td>
<td>Minimum health and safety regulations for work activities carried out with equipment with video-terminals</td>
</tr>
<tr>
<td>90/394/EEC (VI° Particular Directive)</td>
<td>Protection for workers against risks of exposure while working with carcinogenic agents</td>
</tr>
<tr>
<td>90/679/EEC (VII° Particular Directive)</td>
<td>Protection for workers against risks of exposure while working with biological agents</td>
</tr>
<tr>
<td>90/527/EEC (VIII° Particular Directive)</td>
<td>Minimum health and safety regulations to be put into effect in temporary and mobile construction sites</td>
</tr>
<tr>
<td>92/57/EEC (IX° Particular Directive)</td>
<td>Minimum regulations for health and/or safety signs at the workplace</td>
</tr>
<tr>
<td>92/85/EEC (X° particular Directive)</td>
<td>Implementation of measures aimed at promoting the improvement of health and safety for workers during pregnancy, childbirth and the nursing period.</td>
</tr>
<tr>
<td>92/91/EEC (XI° particular Directive)</td>
<td>Minimum regulations for improvement and protection of the health and safety of the workers in drilling and extraction industries</td>
</tr>
<tr>
<td>92/104/EEC (XII° particular Directive)</td>
<td>Regulations for the improvement and protection of the health and safety of the workers in extraction industries both in open space and underground</td>
</tr>
<tr>
<td>93/103/EEC (XIII° particular Directive)</td>
<td>Minimum prescriptions for the improvement and protection of the health and safety of the workers on board fishing boats</td>
</tr>
<tr>
<td>1998/24/EEC (XIV° particular Directive)</td>
<td>Minimum requirements for the protection of workers against the risks deriving from chemical agents during work</td>
</tr>
<tr>
<td>1999/92/EEC (XV° particular Directive)</td>
<td>Minimum regulations for the improvement of the protection of the safety and health of workers exposed to the risk of explosive atmospheres</td>
</tr>
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</table>

Unlike existing measures, all these new beginnings, which allow improvement in the workers' health and safety conditions, provide an active type prevention procedure which considers businesses as first protagonists even in safety activities which are considered a very important and fundamental parameter of the entire productive process.
The entire chart of standards is based on a constant correlation between work activities and relative safety measures, between technical innovation and its respective intervention on the workers’ health and safety protection.

This correlation is implemented through the test of the technological process, of applied operational techniques and the simultaneous verification of the implementation of prevention measures.

Prevention measures must be chosen according to the criteria of priority and suitability and they are proposed under an articulated scheme of successive and consequential interventions.

In other words the intervention is articulated in two phases:

1. **Definition of safety measures**;
2. **Their fulfillment and implementation**.

During this process the implementation of the following operations becomes of fundamental importance:

A. **Risk assessment**. It means creating a working cycle analysis directed towards locating potential operational risks, their definition and measure.

B. **Intervention of prevention**. It means setting intervention directions and criteria for the elimination, or at least reduction, of risks through the scheduling of intervention of integrated prevention, of an organizational and procedural type.

C. **Intervention of protection**. It means carrying out a programming of protective interventions considering the principle under which measures of **collective and individual** protection must be put first.
EXAMPLE OF A MEMBER STATE:  
LAW 626/94 (ITALY)

With Law N. 626 of September 19th 1994, Italy, even with a considerable delay, has taken steps to incorporate within its own regulations a series of Community Directives and therefore fell into line with EU standards concerning hygiene and safety at work.

In particular Framework Directive 89/391/EEC and the first seven particular Directives listed on the previous chart have been incorporated.

Therefore a law came out which was divided into ten sections, with a total of 98 articles which set new standards for the improvement of health and safety for workers in the work environment. After being postponed many times, this law finally came into force on January 1st 1997 and, due to its nature, it is destined to go through continuous modifications following the evolution of technical expertise and international directions.

There are in fact 20 Decrees to be passed into effect by Law 626, not all yet defined.

With the incorporation of Framework Directive and of the seven particular Directives, Law 626/94 is structured in a General part (contained in the first and also partly in the ninth title) and in a series of specific parts (second to eighth titles) where the minimum health and safety requirements are confirmed. These are relative to:
- workplaces
- working equipment
- individual protection devices
- manual moving of loads
- use of equipment fitted with video terminals
- protection from exposure to carcinogenic agents
- protection from exposure to biological agents

and are applicable to both the private and public sectors.

According to the spirit in which directives have been adopted by the European Community, with their incorporation to the national regulations through the passing of Law 626/94, inevitably some points of the pre-existing laws, such as law 547/55 and law 303/56, have been modified.

Even though Law 626/94 has many details, it has an open structure which allows the insertion and interaction with new measures that have been passed or that will be passed in the future.

The most important and innovative aspects brought by the law 626/94 primarily regard:
- the organization
- the method

in which safety is managed in the company.

As concerns the organization, the most important innovations concern the fact that within every production activity:
- the PREVENTION AND PROTECTION SERVICE is established;
- a WORKERS’ REPRESENTATIVE FOR SAFETY is elected;
- personnel for the MANAGEMENT OF EMERGENCY SITUATIONS are picked out.

In regards to the method, the main innovations introduced by the measure are:

- RISK ASSESSMENT which means evaluating, explicitly and methodically, the safety level in which the company's activities are carried out. An analysis therefore becomes necessary of the conditions in which the job is carried out, bearing in mind the specific norms relative to the activity and revealing the risk situations,
in order to be able to fully implement the conditions located in the provisions in force. The assessment is transferred into a safety document which describes the situation in the company and the measures considered to eliminate possible unlawful conditions. It must be reviewed every time there is a change in the conditions or in the mode of production.

- INFORMATION AND TRAINING as a opportunity for cultural growth, as well as the involvement, consultation and active participation in the process of health and safety management of workers in the workplace.

Inevitably, the implementation of innovations turns into a series of obligations for the employer and also for the employees. These obligations are contained respectively in Law 626 (Paragraphs 4 and 5), in which the most important parts of the text are reported in full.

Art. 4 – Obligations of the employer, manager and supervisor

1. In relation to the nature of the company's activity or rather of the production unit, when choosing the work equipment and the substances or the chemicals to be used, as well as the placing in the work environment, the employer evaluates the health and safety risks of workers, including those regarding groups of workers exposed to particular risks.

2. At the issue of the assessment in whose paragraph 1, the employer drafts a document containing:

a) a report on the assessment of health and safety risks during work, in which the assessment criteria to be used are specified;
b) the location of prevention and protection measures and of the individual protection devices, consequent to the assessment of which on line a);
c) The program of the measures believed to be appropriate to guarantee the improvement in time of the security levels.

3. The document is kept on the company's premises or rather in the production unit.

4. The employer:
   a) appoints the person responsible for the protection and prevention service, external or internal depending on the rules in paragraph 8;
   b) appoints the employees for the protection and prevention service, again external or internal depending on the rules in paragraph 8;
   c) appoints, in the cases provided by the paragraph 16, a qualified doctor.

5. The employer adopts necessary measures for the health and safety of the workers, in particular:
   a) appoints in advance the workers instructed to implement the prevention measures for fires and fire fighting, personnel evacuation in case of immediate danger, rescue, first aid, and, also for emergency management;
   b) updates prevention measures in relation to organizational and production changes relevant to health and safety of work, as well as in relation to the level of technical evolution, prevention and protection;
   c) entrusts workers with tasks suitable to their abilities and conditions in relation to their health and safety;
   d) supplies workers with suitable and necessary individual protection tools, after consulting the person responsible for the protection and prevention service;
   e) takes appropriate measures to ensure that only those workers who received proper training can enter the areas of exposure to a specific and serious risk;
   f) requires each worker to observe the norms in force, as well as the company's provisions on health and safety matters at work and to use protection tools and individual protection devices available to all;
   g) requires a qualified doctor to carry out the requirements in the present law and informs him/her of the processes and risks linked to production activity;
h) adopts control measures for risk situations in case of emergency and giving out instructions so that the workers, in the instance of immediate and inevitable danger, evacuate the workplace and the area;

i) informs, as soon as possible, the workers exposed to risk of a serious and immediate danger and the contingency plan taken or to be taken in matter of protection;

l) refrains, except justified exceptions, from asking workers to go back to their activities in a work situation where there is a persistent, serious and immediate danger;

m) allows workers to verify, through their safety representative, the application of safety and health protection measures and allowing the safety representative access to information and business documents (paragraph 19, subsection 1, line e);

n) takes appropriate measures in order to avoid technical measures adopted causing risks to the population or to the external environment;

o) keeps a chronological record of work injuries involving at least a day’s absence from the job. The first name, surname, professional qualification of the injured party, causes and the circumstances of the injury, as well as the date of the accident/injury and return to work are to be written. This register conforms to the model approved by the decree of the Ministry of Employment and the Social Security, known by the permanent consulting commission according to article 393 of law 547/1955 and successive modifications, and it is kept at the workplace, at the disposal of the control organization. Up to the passing of such a decree the register is drawn up in line with the models controlled by the law already in force;

p) consults the safety representative in the cases provided by the paragraph 19, comma, lines b), c) and d);

q) adopts measures necessary to prevent fires and workers’ evacuation, as well as in the case of serious and immediate danger. Such measures should be adjusted to the nature of the activities, dimensions of the company or rather of the production unit, and number of people present.

6. The employer carries out the assessment according to subsection one and devises the document according to subsection two in cooperation with the person responsible for the protection and prevention service and with the qualified doctor where sanitary surveillance is mandatory, upon consultation with the safety representative.

7. The assessment according to paragraph one and the document according to paragraph two are re-devised where there are modifications to the production process having the objective of workers’ health and safety.

8. The employer keeps, at the company’s premises or rather the production unit, the worker’s health and risk file for the worker undergoing check-ups, with confidentiality protection and gives a copy to the worker at the end on the completion of his or her contract, or when the worker requests it.

11. With the exception of the companies listed on note (1) in the attachment I, the employer of a family business and of a business that employs up to ten people is not subject to requirements declared in subsections two and three, but is required, however, to provide a written self-certification of risk assessment and to conform to requirements linked to it. The self-certification must be sent to the representative for safety. In every case family businesses and the businesses having up to ten employees are subject to requirements in subsections two and three, exposed to certain risk factors, located within specific production sectors with one or more decrees of the Ministry of Employment and of Social Security, together with the Ministry of Health, Industry, Trade, Crafting, Agriculture and Forestry and Interiors, as far as their authority is concerned.

12. Requirements regarding structural intervention and maintenance needed to ensure, in compliance with the decree in force, the stability of building and places assigned in use for public administrations or public offices, including schools and educational institutions, remain the responsibility of the administration, due to norms or agreements, to their supply or maintenance. In this case the obligations provided by the present decree, relative to the above mentioned interventions, are intended to be fulfilled, by the managers or the officials appointed, by requesting the fulfillment to the appropriate administration or the individuals who have legal obligations.
Art. 5. – Obligations for the employees

1. Each employee must take care of his or her own health and safety and the health and safety of others present in the workplace, as far as they are affected by the employee’s own actions and negligence, in compliance with his or her own training and instructions and tools supplied by the employer.

2. In particular the employees:
   a) obey the instructions given by the employer, managers and supervisors, for individual and collective protection;
   b) use correctly machinery, equipment, tools, dangerous substances and mixtures, means of transportation, and other work apparatus, as well as safety devices;
   c) use appropriately the protection devices supplied to them;
   d) report immediately to the employer, the managers or the supervisor the lack of means and devices according to lines b) and c), as well as other possible conditions of danger they come to know, acting directly to eliminate or reduce such deficiencies or danger, reporting them to the workers’ safety representative;
   e) do not remove or modify without authorization the devices for safety, signals or control;
   f) do not carry out on their own initiative, operations or manoeuvres which they are not able or trained to do or that could compromise their own safety or that of others;
   g) have the required health check-ups;
   h) Contribute, together with the employer, managers and supervisors, to the fulfillment of all the requirements imposed by the qualified authority necessary to protect the health and safety of the employees while working.

The analysis of the contents of the paragraphs listed above reaches the conclusion that there are essentially three conditioning factors for health and safety at work:

1. **Security of machinery, plants and equipment.** The employer must deal with its implementation and maintenance through the company (Prevention and Protection Service, workers’ safety representative, qualified doctor) and other technical organizations.

2. **Knowledge of the job.** It is a necessity for the worker, who will receive under the guidance of the direct supervisor all the necessary instructions and assistance for the duration of the job. The information and training allow the worker to acquire specific knowledge in regards to the job or tasks he/she must carry out, so that he/she can perceive any increase in the level of risk.

3. **Behaviour.** The worker’s behaviour while facing a dangerous situation could increase the likelihood of an injury. Information and training allow for the modifying and correcting of wrong and dangerous behaviours.

In relation to the last two points, in the spirit of “considering”, contained in Framework Directive 89/391/EEC, a basic principle under which “the worker must take care of his or her own health and safety and also of the health and safety of the workers present in the workplace, in accordance with his or her own training and instructions” has subsequently come into force.

The role of the workers provided by Law. 626/94 is now becoming more active and requiring participation, compared with the that provided by the pre-existing laws.

It is clear that this assessment of the role of the worker as an individual who actively participates in the process of improving health and safety in the workplace, inevitably leads to stronger obligations for him.

It must be remembered that, apart from the penalties anticipated for failing to observe paragraph 5, Law 626/94 which, could be up to 1 month’s imprisonment and a fine between 206 and 610 Euros, the non-observance of safety rules and of the provision in regards, given by superiors, obviously expose the transgressor to the penalties and to measures provided by the Collective National Work Contract).
RISK ASSESSMENT

The list of standards

The requirement to carry out risk assessment and the fulfillments of the following documents (company’s safety plan) is forecasted and controlled by Law 626/1994 (risk assessment for workers exposed to asbestos, lead and noise is instead controlled by Law N. 277 of August 15th 1991 – see the specific annotations). In particular that requirement is regulated by paragraph 4, 2.nd subsection (generic obligation), 3.rd subsection (obligation to keep a copy of the document drawn up at the assessment of the risks in the company), 6.th subsection (requirement to perform a risk assessment with the cooperation of the qualified doctor, the person responsible for the prevention and protection service and previous consultation of the workers’ representative for safety), 10.th subsection (provisioning of ministerial decrees which dictate standardized procedures for SME companies).

With regards to the latter it must be noted that the Ministry Decree December 5th 1996 which provides for standardized procedures for the drawing up of the assessment document (particularly for agricultural and forestry companies which employ up to 10 workers with an open-ended contract, of the fishing companies up to 20 employees, of industrial companies up to 30 employees and other companies up to 200 employees) was passed. The Circular from the Ministry of Work dated August 7th 1995, N. 102, supplies further clarifications on the preparation of the document relative to risk assessment.

The obligation to perform a risk assessment and the consequential obligations or substitutive cannot be delegated.

Obligation to perform risk assessment and draw up a safety plan

The employer – and not necessarily, the manager and supervisor – must draw up a document containing an account of risks assessment for health and safety at work, in which the criteria adopted for the assessment are specified, also containing the location of the prevention, protection measures and the individual protection devices following the assessment and the program of measures believed to be suitable to guarantee the improvement over time, of the level of safety (safety plan) as a consequence of the assessment itself.

The obligation to evaluate risks and to create the document mentioned above must be fulfilled by the employer in cooperation with the person responsible for the protection and prevention service and the qualified doctor and in cases in which health surveillance is mandatory, with previous consultation of the safety representative.

Small and medium sized companies have the same obligations although it is possible that for them a ministerial decree will be passed which defines “standardized procedures”.

The document mentioned above should be kept on the company’s premises or rather by the production unit and it could be consulted by the workers’ representative for safety.

Law 242/1996 – modifying paragraph 4 of Law 626/1994 - declared a simplified regime for family businesses and for those which employ up to 10 people with the exception of:
- companies with risks of relevant accidents which, according to par. 1 of Law 175/1988 are subjected to the obligation of declaration and notification;
- thermo-electrical stations, plants, nuclear laboratory;
- companies dealing with extraction and other mining activities;
- companies which deal with the manufacturing and depositing of explosives, powders and ammunitions;
- private and public structure for admission and care;
- Companies subjected to particular risk factors located in specific production sectors by one or more decrees of the Ministry of Work.

In particular, due to the modification mentioned above, family businesses or those employing up to 10 people are not obliged to draw up the document containing risk assessment and the safety plan, but they are required to self certificate in writing the execution of risk assessment and the fulfillment of the obligations linked to it.
Office relocation
According to the Ministry of Work, the document must be updated in the event of office relocation, particularly as far as work environments are concerned.

Fulfillment deadline
For those companies in activity on May 7th 1994 the fulfillment deadline for risk assessment and the connected obligations (or rather the written self-certification substituting the drawing up of the document) is of (art. 30, fourth subsection, D.L. N. 242/1996):
- January 1st 1997 in general;
- July 1st 1996 for those industrial companies having over 200 employees, for mining companies having over 50 employees, thermo-electrical stations, for nuclear plants and laboratories, for those companies manufacturing and dealing with the disposal of explosives, powders and ammunitions;

The employer who undertakes the activity is required to draw up the risk assessment document and the safety plan within 3 months from the effective start of the operations (art. 96 bis of Law 626/1994).

EC study on risk assessment
The following are some considerations taken from the study carried out by a Commission nominated by the European Community as to the guidelines to conform to for the making of risk assessment and consequential documentations.

Definitions
- The terms “risk” and “danger” do not always have the same meaning in all Member States, even within the single scientific disciplines. The above-mentioned terms have been used in the drawing up of this document with the exceptions that conform more closely to the needs of the workplace.
- Therefore we have used those terms, on the basis of the following definitions:
  - **Danger**: intrinsic property or quality of a certain entity (e.g. work materials or equipment, work methods and practices) having the potential to create damages;
  - **Risk**: probability of reaching a potential level of damage in the condition of use and exposure, as well as the possible dimensions of the damage itself;
  - **Risk Assessment**: the risk assessment process for the health and safety of the workers, in performing their duties, deriving from the circumstances of danger at workplace

Objective of risk assessment
In general, the employer has the duty to ensure that health and safety for the workers is guaranteed in each workplace for any operation and duty. The objective of risk assessment consists of allowing the employer to take the measures necessary to safeguard the health and safety of the workers.
Those measures include:
- professional risk prevention
- information for workers
- professional training for workers
- organization and tools to implement the necessary measures

Even if the objective of risk assessment includes the professional risk prevention – which should always be its primary objective – this is not always feasible in practice.

In those cases in which it is not possible to eliminate the risk, they should be reduced as much as possible and the residual risks must be put under control. In a successive phase, in regards to the revision program, the residual risks will be re-evaluated in the possibility to eliminate or reduce them further more, making use of the knowledge acquired.

Risk assessment must be structured and implemented with the intention to help the employers and those controlling professional activities in doing the following:
- identifying the dangers existing in the workplace and evaluate the risks linked to them, in order to determine the measure to be adopted to protect health and safety of the employees, in conformity to the law;
- evaluate the risks in order to make a motivated selection of work equipment, of product and of chemical mixes used, of the tools used in the workplace, and of their organization;
- check that the measures in place result in an appropriate way;
- create a list of priorities in case additional measures are necessary as a result of the assessment;
- demonstrate to employers, to control personnel, to the appropriate authorities and to their representatives all the factors regarding work activities taken into consideration and what has allowed to formulate a valid and motivated judgment in regards to the risks and measures necessary to safeguard the health and safety of the workers;
- ensure that prevention, work and production measures and methods, considered necessary and implemented after a risks assessment, will allow an improvement of the protection level of the workers, in accordance with health and safety requirements.

As previously mentioned, a risk assessment at work is necessary every time changes modify the perception of risks in the workplace - for example - a new production system is put into service, new equipment and materials are used, there is a change in the work organization with the result of new working situations in different environments.

In each risk assessment and in the following operations meant to eliminate them, also in the implementation of control measures, it is essential that risks are not simply “moved”, in other words the solution of a problem does not create a new one. For example, there would be a doubtful advantage in mounting in an office double windows on a frame to reduce the noise coming from the outside, if there is not a suitable ventilation system. Another aspect of equal importance is that the risk should not be moved to another area. For example, it should be avoided that the ventilation system fumes of toxic substances is installed in a way that the dumping does not create risks for another area of work or for the public. It has been found that in a hospital the ventilation system fumes of a morgue was placed directly under the window of a pediatric ward.

In table 1 a flow chart is presented in which the assessment procedure and the risk management elements are summarized.

| 1. To define the program of work risk assessment | 2. Structure assessment (deciding the orientation - geographical/functional/procedural/flow) |
| 3. To gather information (environment/tasks/population/previous experiences) | 4. To identify the dangers |
| 5. To identify people exposed to risks | 6. To identify the models of people exposed to risks |
| 7. To evaluate risks (possibility of damages/serious damages in present circumstances/inadequate remedies/adequate remedies) | 8. To study the possibilities to eliminate or reduce risks |
| 9. To establish a set of priority actions and to decide the adequate control measures | 10. To implement control measures |
| 13. Revision (in case of changes or periodical expiry dates) | 14. Monitoring of the program of risks assessment |

Note: the content and the dimension of each phase depends on the conditions of the workplace (e.g. Number of workers, accident situations, registering of illness cases, work materials and equipments, work activities, characteristics of the workplace and specific risks).

**Fundamental elements in risks assessment**

The risks assessment is a systematic test of all aspects of the work undertaken to define the probable causes of injuries or damages. Whether it is possible to eliminate the danger or not, protection measures of the case must be defined, or if still possible reducing the risks to an acceptable level.

The process for the implementation of risks assessment must be undertaken by the Management, in consultation and/or with the participation of all the interested parties at the work place, that is employers, managers, employees and/or their representatives, who can contribute together to the different phases of the process.

Risks assessment is structured as follows:
- identification of dangers;
- identification of the workers (or third persons) exposed to potential risks;
- risk assessment, from a qualitative and quantitative point of view;
- study on the elimination of risks and, on the contrary case
- decision on the necessity to introduce additional measures to eliminate or reduce the risks (see below “Methodology”).

Assessment must concern risks deriving from the working activity and with reasonably predictable results. Risks deriving instead from everyday life, in general, and not subjected to particular precautions (e.g., an employee hurts him or herself by cutting himself on a piece of paper) will not normally require such a detailed concern, unless the work organization and the activities increase such risks.

It is appropriate to create a risk assessment relevant to all jobs, which can be categorized, in general terms, as follows:
- permanent facilities, e.g.: offices, schools, factories;
- jobs subjected to changes, e.g.: construction sites, quays, shipyards;
- mobile work sites, e.g.: temporary jobs carrying out public services, inspections, etc.

For each type of location, the job can, however:
- follow a predetermined direction, as in a plant having a production line;
- have characteristics of change and development, for example in the case of a construction site;
- moreover, obviously, there will be a range of variations possible between those two extreme cases. It is clear then that risks assessment should be conceived considering the different models of work.

For the relatively stable jobs, such as an office, a workshop or a textile plant, risks assessment should be such as to:
- keep in consideration the usual conditions;
- not be repeated in the case of similar jobs;
- identify in any case the need for a reviewed or different assessment in the event of a change in circumstances, e.g.: when new materials or machineries are introduced, or during maintenance works.

In the workplaces in which conditions and circumstances may vary, such aspects should be considered during the assessment. The risks can be defined in a generic way, so that the principals of elimination and control are applied to them even if the workplace changes. Therefore, for example, the principle of a correct assembling for scaffolding is valid for all construction sites, analogously to what occurs to farmers, who must consider the various seasons, or whoever works outdoors, while window cleaning companies must consider access methods.

The risks assessment must be made not only by the employer or by his representative, but rather through the employees and their representative’s involvement, who must be consulted for such a procedure and must receive all the information in regards to final assessments and prevention measures to be implemented.

Another important element that must always be considered is the presence in the workplace of other company’s employees, or third persons. They should not be considered as people exposed to probable risks, but it must be considered the fact that their work could create additional risks to the permanent employees of a certain plant. For example, there could be other company’s transportation vehicles on site and their presence could cause unforeseen events. In addition, those people can use welding plants or handle big pieces of equipment in proximity of corridors or bridges, which create additional elements of risk for the permanent workers, for whom those activities are unusual.

Similarly, the employers who employ their own employees in other company’s plants, as in the case of a maintenance company whose personnel comes from a temporary agency, should guarantee the health and safety of their own employees during profession activities. The employers mentioned above should also evaluate the risks considering the interactions between their own employees and their activities with the activities of the company in which they perform their jobs. It is up to them to inform the employment office or other employers and their employees of all the risks deriving from a situation and of the necessary prevention measures.

The presence of visitors, such as students, the general public, the patients in the hospitals, the people present in a plant or company, should also be taken into account because it is probable that they are not familiar with the probable risks and the precautions to be taken. For such reasons many companies have implemented rules for visitors and often the supply them with a summarized copy.
Methodology
There are not fixed norms in regards to the methods adopted for the execution of risk assessment, even though two fundamental principals must be considered during the preparatory phase:
- structuring the assessment so that it guarantees the inclusion of all the noteworthy risks and dangers (e.g. do not neglect tasks, such as cleaning, which can be performed during “regular” work hours, neither the secondary activities, such as the pressing of waste products);
- Once a risk has been identified and determined, start an assessment from the fundamental principals, researching the possibility to eliminate it based on the existence or not of a principle of cause. For example, it means asking ourselves if a traffic problem on an internal road could be avoided by directing all the traffic towards one road situated inside the plants, but around their perimeter.

A series of orientations, even in a combined form, can be used for risk assessment, under the condition that fundamental elements are covered.

The directions relative to risk assessment at work, regularly used, are based on the following aspects:
- observation of the work environment (e.g., access roads, conditions of the floors, machinery safety, fumes and dusts, temperature, lighting, noise, etc);
- identification of the tasks carried out on the job (to define all the tasks and include them in risks assessment);
- examination of the tasks carried out on the job (risk assessment deriving from single duties);
- observation of the job being executed (procedures are respected, or involve other risks);
- examination of work models (to evaluate the exposure to risks);
- examination of external factors that may have effects at the workplace (e.g., climatic aspects for workers working outdoors);
- reviewing the psychological, social and physical factors which can contribute to create stress at work and researching the way in which they interact with each other and with other factors within the organization and work environment;
- examination of the organization assigned to maintain satisfying work conditions, such as safeguard measures (e.g. by insuring that the appropriate assessment systems for risks deriving from the use of a new plant, new materials, etc. are in place, so that the information about risks can be updated).

The observations made can then be compared with the standards set to guarantee health and safety, on a basis of:
- legal standards;
- published standards and guidance, e.g. national technical standards, good practice codes, professional exposure level, professional association standards, manufacturers’ directions, etc.;
- hierarchical principals for risks prevention;
- avoiding risks;
- replacing what can cause danger with what is not or less dangerous;
- fight the risks at the source;
- apply collective protection measures rather then individual ones (e.g. control the exposure to fumes through the room's ventilation system, rather then through personal respirators);
- adjust to the technical process and to the changes in the information field;
- Try to guarantee an improvement of the level of protection.

Those standards are listed separately in the below table 2.

| Legal norms |
| Norms and orientations as published, e.g. national technical norms, best practices codes, professional levels of exposure, norms of business associations, orientations of the builders, etc. |
| Hierarchical principles linked to risks prevention |
| To avoid risks |
| To substitute what is a danger with what constitutes a minor risk or a risk at all |
| To fight for risk at its source |
| To apply collective rather than individual protection devices (to control the exposure to fumes through ventilation plants of the premises, rather than through personal respirators) |
| To adapt to the technical progress and to changes in the information fields |
| To try to guarantee an improvement of the level of protection |

Table 2: Standards to be applied for risk assessment
For some complex problems in risk assessment, in particular for the problems that join limited risks with serious consequences, a mathematical model of risks assessment could be used to facilitate the decisions. In the large majority of workplaces, the mathematical result of what could be considered an acceptable risk is replaced by the implementation of good practice models in common use, as the ones listed above.

The orientation that will create the base for the assessment will depend on the following aspects:
- nature of the employment (e.g. permanent or temporary);
- type of process (e.g. repeated operations, change or development of the work method, processing on order);
- task carried out (e.g. occasional and repeated operations, such as the production in series, high risk operations, like electro-technical works on command panels, or the entering in areas of small dimensions);
- technical complexity.

In some cases only an exercitation on all the risks that can be encountered in a workplace or for a professional activity will be appropriate and sufficient. In other cases, a different direction based on the various areas of a workplace will instead be preferable.

Therefore, in a big production plant for technical items, in which a range of standard products is manufactured, it could be appropriate to make an assessment considering separately:
- the machineries and the mechanical dangers, including the ones deriving from the use of technological control by computer;
- the materials processed or used on the machineries, e.g. special alloys, cooling fluids, etc. and the probable consequent health risks;
- the environment in general, e.g. temperature, ventilation, humidity, noise, lighting;
- accessibility;
- the use of subsidiary equipment, such as lifts and transportation;
- special processes, e.g. metal surfaces treatment, hardening, etc;
- electrical safety;
- other activities such as cleaning and maintenance jobs;
- psychological, social and physical factors that contribute to stress at work.

Some of these activities regarding the plants can be evaluated separately by considering the tasks as a whole carried out in the workplace, e.g. window cleaning, lighting equipment, choosing new machinery, professional training for new employees.

Even though these activities are evaluated separately, it would be essential to decide whether there could be such an interaction influencing risk assessment.

The majority of the assessments regarding the above-mentioned example would probably be based on the observation of the work activities. Some aspects, though, like the case in which the use of control technology is the computer, or some cleaning and maintenance, would require a more detailed and organic orientation based on the procedures that have been defined and implemented.

In practice, it is often useful to think of risks assessment as a process split into a series of phases in which each single one tends to highlight or analyze in depth a particular subject in which a risk is identified. At a high level, these phases can be described in the following terms:
- complete assessment in order to separate the risks in two categories: the ones well known for which the control measures in place are promptly identified and the ones which require a more cautious and detailed examination;
- further risk assessments for which a more cautious and detailed examination is necessary. This phase could cause others if a more sophisticated system for risks assessment must be applied for more complex situations.

For each direction chosen, it is essential to guarantee the consultation and/or the participation of all parts subjected at the workplace. To make sure that all probable dangers are identified:
- not only based on the known principles, e.g. chemical substances properties, dangerous machineries parts;
- also based on the knowledge of the work conditions and of the models in which the unconsidered side effects on the workers can be described. This is the case, for example, of a group of workers or an individual, showing strong pathological symptoms requiring an investigation in depth to identify the dangers caused by it and then assess the risk.
When a risk assessment at work is made, the quickest and safest system to identify the various aspects of the cause often directly involves the workers concerned. Indeed, they know which work method they use, they are in a position to state which work practices are not correct and unsuitable for carrying out a difficult task, in addition to the information on the precautions used. The employers should therefore ensure that, whoever the person working on the definition of risks, whether he is an employee or external consultant, implements a proper dialogue with the workers or other parts, such as contractors carrying out the job.

Employees must also pay attention to certain dangers that, due to their nature, are difficult to identify. Those problems can derive from work organization, activity models applied or from the workplace. They are additional aspects sometimes taken for granted or determining a reduction, at times tacitly accepted, of the regular conditions of comfort. The employees can point out the fact that the job carried out this way creates difficulties, either because it is fast paced and therefore generates stress, or because the employee must hold an uncomfortable and unnatural position which in the long term can cause sharp pains and damage.

**Preliminary assessment**

A preliminary assessment must include:
- where possible, the identification of the risks that can be eliminated. In a lot of cases it may be impossible, however the job hypothesis should be borne in mind;
- a complete examination of the dangers for which further actions are unnecessary (e.g. permanent ladders, hand tools, properly conceived and subjected to a regular use). It is however necessary to bring to attention any exceptional or special use. For example, if particularly heavy loads must be moved on a permanent ladder, or manual tools are used for stone processing, it is appropriate to evaluate the risks in a more detailed way;
- identify well known risks for which the appropriate control measures are available and clearly underlined;
- Indicate the case in which a more complete assessment is necessary and, if it is the case, apply more sophisticated techniques.

In the case in which further actions are required, risk assessment must be divided as follows:
1. Identification of the dangers in every aspect of the work activities;
2. Identification of all the people that might incur dangers, including those people exposed to particular risks;
3. Estimation of the risks, considering the dependability and adequacy of the existing prevention and safety measures;
4. Making decisions on which new necessary measures must be introduced to eliminate or reduce the risks, maintaining as guideline the good practice in use;
5. Definition, as a priority, of the safety measure to be adopted.

**Actions deriving from the risk assessment at work**

The conclusions regarding risk assessment at work must stress the following aspects:
- whether the risk is properly controlled or not;
- if not, having options to reduce the risk;
- priorities;
- whenever possible, to carry out measures to improve workers’ protection level in relation to issues of health and safety;
- Other people that might be involved.

**Employers’ responsibility**

Employers must accurately prepare the activities intended to be carried out in order to take on the responsibilities deriving from risk assessment and to take the necessary measures to protect workers’ health and safety. It is recommended that all of this is carried out through the development, the implementation and the monitoring of an action plan meant to eliminate and control the risks.

The action plan must:
- entrust, organize and coordinate the assessment;
- nominate qualified people having the task of implementing the assessments;
- consult the workers’ representatives in regards to the agreement for the appointment of the person entrusted with the assessments;
- supply all necessary information, professional training, resources and support for the person entrusted with the assessment which might also be the employer’s subordinates;
- an adequate coordination between the people entrusted with the assessments (if it is the case);
- involve the management levels and encourage the participation of the work force;
- determine the agreements to be stipulated in order to review and reexamine risk assessment;
- ensuring that prevention and protection measures take into account the results of the assessments;
- continuous monitoring of prevention and protection measures to ensure the maintenance of its effectiveness;
- to inform the workers and/or their representatives of the results of the assessments and measures introduced.

Selection of the people to be entrusted with the assessment of the risks

In any organization, the final decision in regards to the people to be entrusted with the assessments is up to the employer. Such people could be:
- the employers themselves;
- employees, appointed by the employers;
- external services.

Responsibilities for the people carrying out assessment

 Whoever is chosen to carry out risk assessment at work must be qualified for the job. It might happen that the person entrusted with risk assessment is not qualified for all the tasks to be included in the assessment. For example, an electro-technical engineer, even if qualified in such a field, may not have the professional knowledge and training necessary to evaluate the risks deriving from a high complexity chemical process. It is essential that the people entrusted with assessments and the employers recognize the need to ask for external help, where necessary, by specialists, who will then take part in the assessment process.

In practice, it will always be necessary for the assessment to be carried out by a work group whose members bring to it a wide range of skills.

The people carrying out risk assessment can illustrate their own competences by demonstrating the following skills:
1. Understand the general direction of risk assessment;
2. Be able to put their skills into practice on the job where there will be an assessment and on the single tasks that will be examined. This will require:
   - the identification of the problems pertaining to health and safety;
   - evaluating and establish a priority order for the action to be taken;
   - proposing probable options to eliminate or reduce the risks, by illustrating the reasons;
   - evaluating effectiveness;
   - promoting and communicating appropriate tools and systems to improve health and safety conditions;
3. Be able to identify situations in which their qualifications may not be suitable for risk assessment, without external assistance and highlight such necessity.

In cases in which quantitative assessment techniques are required, people in question must master the implementation of sophisticated methods of analysis, as well as simulation and quantification techniques (in particular for accidents happening rarely but having serious consequences).

Relationship between the people entrusted with risk assessment and the prevention services

The result of the work of people entrusted with risk assessment, consists in the identification of the risks: which precautions can be taken to eliminate or reduce, as well as proposing the appropriate measures to prevent them, on the basis of a priority list. However, in some cases the prevention of the risks at work is seen as a separate entity. In other words a job that can be carried out by the safety personnel or the technicians of the sector who, among their tasks, also carry out the inspection and control of the workplaces.

The agreement taken by an employer to complete risk assessment and the activities of prevention, control and monitoring, are a matter in which the employer has the last word. In the cases of smaller companies, it is proper that such a job is carried out by one person. In larger and more complex companies, the various tasks could be shared between different people who will merge their knowledge and experiences.

Needs in the field of information

The people carrying out risk assessment at work must know and/or be informed on what follows:
- risks and dangers already known and the manner in which they arise;
- materials, equipment and technology used to carry out the job;
- work procedures and organization, as well as interactions between the employees and the materials
used;
- type, probability, frequency, and duration of exposure to dangers. In some cases modern techniques of measurement can be used, the ones that have already demonstrated their value;
- relation between the exposure to a probable danger and its side effects;
- standards and legal requirements in relation to the existing risks at the workplace.
- the different aspects constituting the so-called “good practice of work” for each area in which there are no specific legal rules.

In cases in which employees having a different employer work together, the people entrusted with risk assessment can share the information regarding risks and health measures in use. It is up to the employer to facilitate the exchanges in such matter.

Sources of information
The above-mentioned information can be obtained through:
- analysis of the work activity and determination of probable accidents (in particular when systems for a quantitative risk assessment are used);
- consultation and/or participation of the workers and/or their representatives;
- manuals and data supplied by manufacturers and suppliers;
- sources of information and experiences in relation to the activities made, e.g. documentation of the commercial associations or qualified professionals in the field of the health and safety;
- specialized subscriptions and databases;
- orientations proposed by national organizations or specialized institutes in the field of health and safety at work;
- information relative to accidents and injuries (including reports on dangerous events, e.g. missed accidents), and epidemic investigations;
- work methods, manuals and operational procedures in relation to a certain work location;
- continuous control of the data and the measurement register;
- classified data, supplied by the Inspectorate of Work;
- scientific and technical publications of the sector;
- norms settled by national and European organizations of standardization;
- minimal norms in the field of health and safety at the workplace conform to the attachment I (workplace being used for the first time) and the attachment II (workplaces already being used) of Directive 89/654/EEC regarding the minimal norms in the field of health and safety for the workplace.

File
It will be convenient to create a file in which the results of risk assessment can be recorded.

The purpose for the file is to become a useful tool. It can serve as reference point in indicating that all the risks have been evaluated and the proper standards have been used during the assessment, while the results omitted from the recording are believed to be irrelevant.

However, this judgment should be defended, and therefore the following should be demonstrated:
- that a program for risk assessment has been implemented and carried out;
- in which way the program has been carried out;
- exceptional or uncommon risks (e.g. risks of infection at work);
- workers’ groups exposed to certain risks (e.g. local organization workers entering drainage or waste conduits, workers carrying out electrical systems maintenance, crane workers, etc.);
- other risks of concern;
- in case, the decisions taken in risk assessment, including the information on which such decisions are based, for the cases in which standards or published advice do not exist;
- published standards or advice if applied in a different way (e.g. maintenance standards for machineries);
- recommendations regarding measures to further reduce the risks or improve the protection in other ways;
- agreements for the assessment auditing.

The data relative to assessments must be processed with the participation and consultation of the workers and/or their representatives and made available to them. The workers directly concerned must anyway be informed of the result of each assessment referring to their jobs and to the actions to be taken in consequence of such assessments.

The data regarding risk assessments must be also made available to:
- workers entrusted by the employer of special functions for the health and safety protection;
- workers’ representatives having specific responsibilities in the field of health and safety.

Monitoring of the effectiveness of the measures

Agreements regarding planning, organization, monitoring and auditing of the protection and prevention measures must be chosen based on risk assessment, in order to guarantee the effectiveness of such measures and to keep the risks under control. The information generated by monitoring activities must be used to organize the auditing and the reexamination of assessments.

Auditing and reexamination

Risk assessment should not be intended as an activity to be carried out “as a one off”. It is in fact necessary to proceed with the auditing and the reexamination of the assessment itself, whenever a necessity arises for various reasons, such as:

1. Assessment involving significant changes to the work process, like the substitution of a chemical agent with a less inflammable one, or the use of different machineries. The putting into effect of such changes must be evaluated beforehand. Nonetheless, after their introduction it is appropriate to evaluate the new working conditions in order to reexamine the practical consequences of the new measures.
2. The measures of precaution implemented to reduce risks can have an effect on the work process. For example, the introduction of a permits system for jobs involving inflammable materials, will involve the necessity to eliminate some of them, or change the access roads to improve transportation safety, even though it could have an effect on the arrangements of the materials in the warehouse.
3. The assessments:
   - may not be applicable anymore, because the data and the information on which they are based on have lost their value;
   - can be improved;
   - must be reviewed and updated.
4. Protection and prevention measures currently in force will not be sufficient, or appropriate, e.g. as new information has been added to the control measures.
5. As a consequence of the results of the investigation into an accident or near miss. The investigations into accidents causing damages or other consequences to health could reveal the necessity of a change in order to prevent them from happening in future. The investigations into near misses accidents can bring very important information in regards to the risks and contribute then to enforcing the appropriate measures to reduce the risks.

The “near misses” accidents supply the most useful information concerning the situations of risk. The workers are able to supply information on “near misses”, in those cases in which a similar phenomenon occurs but it does not cause physical injuries or damages to the goods.

Other terms such an “accidents without injuries” or “dangerous events” are sometimes used to express this idea and the definitions vary based on the objectives to be reached: in the majority of the cases, a “near miss” is defined as an accident that does not cause injuries. Often, after an accident or after damages to the goods, the employees are able to gather that a similar situation has happened previously, on other occasions. It is much better to identify the “near misses” and act appropriately to avoid them in the future. The employers should create an environment around the workplace where opinions can be shared, so that the employees are encouraged to report missed accidents. The managers for health and safety of the workers have useful tasks to carry out in such perspective, giving a channel of information about “near misses” and contributing to the investigation of the causes and the identification of prevention measures. In the majority of the cases, it will be prudent to revise risk assessment at regular intervals, depending on their nature and on the probable changes of level within the work activities, with the exception of the norms prescribed by the directives of the Council for the regular auditing of the assessments.
NEW MODELS PROVIDED BY LAW 626/94

As previously mentioned Law 626/94, here as a modification of Law 242/96, anticipates that the employer, faced with the general obligation to guarantee the health and safety of employees, will surround him or herself with new “models”. They have the task to collaborate with employer for the implementation of proper measures in order to improve the safety and health at the workplace.

These new figures are:
- the prevention and protection service manager;
- the workers’ representative for safety;
- a qualified doctor.

The prevention and protection service

In compliance with art. 8 of the Law. 626/94, the employer must:
1. establish the PREVENTION AND PROTECTION SERVICE (PPS)
2. find a person RESPONSIBLE for the PPS

It is a body formed by experts on the subject of work safety, coordinated by a manager.

*In many cases, law allows the employer to personally and directly carry out the tasks assigned to the prevention and protection Service. In such hypothesis, then, the employer will be the only one executing such a function, without the aid of a proper “Service”.*

The Service can be:
- internal, in the case in which is assigned to the employees of the company;
- external, if it assigned to people not employed by the company.

The main function of such service, established by the art. 9 of Law. 626/94, is to collaborate with the employer to improve, where possible, the level of health and safety in the company, through activities of prevention, control and information concerning the risk factors at the workplace.

In particular, the tasks can be summarized in:
- locating the risk factors of the workplace and of the production processes and promoting the safety measures to be adopted for their elimination.
- coordinating the employer in risk assessment and in the processing of the relevant document.
- programming and taking care of the information and of the general and specific training for the workers.
- being involved in every matter concerning work safety within the company. The service must also take care of the constant improvement of the safety at the work place through the promotion of prevention measures, the identifying of more effective protection devices, the introduction of control systems to verify the degree of actual implementation of the adopted measures.

The workers’ representative for safety

The workers’ representative, a new figure introduced by Law 626/94, is the guarantor for the workers who elected him, in protecting their rights in regards to the health and safety at the workplace and with their contribution, he must promote constant improvement. In order to put into practice his duties, he receives specific training and has the time and the tools necessary to carry out tasks. It cannot be placed under judgment or disciplinary measures for the carrying out of its job.

The role of such a model is to liaise between the employer and the employees in regards to the health and safety at work. Law 626/94 attributes to him a range of functions. Indeed he:
- has access, respecting the procedures agreed on with the employer, to the workplaces and any documentation of the company relative to the safety for workers (injuries registers, risk assessments document, etc.),
- receives information from the security services,
- is consulted before any programming, assessment, nomination or designation directly involving safety,
- proposes themes of prevention, can formulate own observations during the inspection made by the security organizations and participate in periodical company meetings on safety,
- appeals to the proper authorities whenever he believes that prevention measures and tools used are not suitable to guarantee the health and safety of the workers.
The qualified Doctor

In companies where there are situations that can create risks for the health of the workers, it is anticipated that the employer will nominate a qualified doctor. This condition exists where there is the obligation of sanitary control, for example in cases of companies with:

- workers assigned to the work for which the insurance against silicosis and asbestosis is mandatory,
- workers assigned to jobs in compressed air boxes,
- workers exposed to the risk of ionizing radiations,
- workers assigned to industrial processing in which toxic and polluting substances are produced,
- miners and caves workers,
- operators of steam generators,
- workers assigned to the creation of vaccines, serums, viruses, toxins and related products,
- workers assigned to the use of toxic gases,
- workers exposed to chemical and physical agents, noise, lead and asbestos.

The workers must be informed about the name of the qualified doctor. The qualified doctor is required to:

- collaborate with the employer in the planning and implementation of prevention in the company;
- run sanitary check ups before the worker is employed in order to exclude counter-indications for the job assigned to the employee;
- run periodic check ups in order to control and express a final assessment on the suitability of the workers to perform the duties assigned to them in the company;
- keep a medical record for those workers undergoing health checks;
- collaborate with the employer to organize first aid in the company.
WORKPLACES

Introduction

Laws 626/1994 and 242/1996 have modified radically some of the articles of laws. 547/1955 and 303/1956 regarding specifically the workplaces and inserted some new general standards. Those innovations which brought substantial modifications to the preexisting normative are the results of the incorporation of the new E.U. standards.

In particular, as far as the contents of this chapter are concerned, the origins of the minimum requirements for the improvement of the level of health and safety in the workplaces, go back to the Directive 89/654/EEC (first directive particular) “minimum prescriptions of health and safety for the workplaces” and in a more detailed way in the contents of the attachments of the Directive itself.

As already mentioned, the innovative Directive, together with Framework Directive 89/391/EEC, were implemented in Italy with the passing of the Law 626/94. This Directive in fact, being specifically about the minimum prescriptions of health and safety for the workplaces, constitutes the first particular Directive. The second title of Law. 626/94 reports the minimum requirements for the workplaces, as well as the modification made to some of the articles of the preexisting normative (laws 547/55 and 303/56).

Definition

Workplaces are defined as the places designed to contain jobs, located inside the company or the production units, and any other place within the company or the production unit areas somehow accessible for work (par. 30 Law 626/1994).

Dimensional requirements and prevention obligations

Companies employing more than 5 workers, those in which workers are exposed to harmful and toxic substances and those in which the activities carried out may cause harm to the health (based on the judgment of the inspectorate of work/local health unit) even when there are less than 5 workers present, must use for their work activities premises having:
- clear height not less than three meters;
- volume not less than 10 cubic m per worker inclusive of its contents in machineries and furniture;
- surface not inferior to 2 sq. mt. per worker inclusive of its contents in machineries and furniture.

Extensions to the deadline could be granted by the various Authorities having the duty to supervise the workplaces (Local Health Authority), in regards to the height, by advising the adoption of a suitable ventilation of the environment. The above-mentioned extensions in art. 6 of Law. 303/1956 (height, cubing and surface of the workplaces) can be granted for the height level equal to the minimum requirements provided by the regulation of the local public health or by the regulations of the building trade. The request for the extension must be filled out by the employer and sent to the local health authority qualified in the field, and justified by unbreakable technical requirements of the company (particulars of the production, etc.) with the indication of the proper measures to be adopted on the subject of ventilation and change of air.

Barring particular needs however imposing the adoption of systems of aeration, lighting and humidity protection the use of working places as underground and semi-subterranean facilities is forbidden. For the premises used or to be used as offices, independently from the company type, and for the commercial companies, limitations for the height are the ones listed by the town planning standards. (art. 6, comma 5, Law 303/1956).

It is forbidden to use underground and semi-subterranean facilities as places of work. The ban on working underground does not make a distinction between continuous and temporary works but it is applicable to all kind of works, no matter how many workers are employed.

For the use of underground and semi-subterranean facilities making an exemption to the above-mentioned ban, the outside access of the facilities alone is not sufficient; they must also meet the minimum requirements of hygiene and safeguard of health for workers that can be reached with proper precautions in the field of ventilation, humidity, and lighting.

Depending on the dimensions and the use of the buildings, the existing equipment, of the chemical-physical properties of the products utilized inside, as well as the maximum number of workers allowed on the premises, the workplaces must be equipped with appropriate fire extinguishing devices and alarm systems.
The non automatic devices (portable fire extinguishers, trolleys, etc.) must be easily located with the proper signs, accessible and quickly usable.

The workplaces and transit roads, sanitary services and the specific workplaces need to be made disability friendly only in the case where a disabled worker is actually present.

For the buildings used before January 1st 1993 appropriate measures should be taken to allow disabled workers the mobility and utilization of sanitary services. Such interventions however must be carried out at a convenient time.

The employer must leave the hallways and the emergency exits free of obstacles; control, maintain, and clean periodically the systems and the safety devices and eliminate as quickly as possible the defects revealed that can cause harm to the health and safety of the workers.

Articles 30 and 32 of Law 626/1994 regarding places of work used before November 27th 1994 state that they must be in compliance within January 1st 1997.

If the adjustments to the workplace to fulfill the obligations of the new standards need an authorization measure (e.g. building authorization) the employer must immediately start the procedures for the granting of the authorization and comply with the requirements within six months from that date of the measure, adopting in the meantime alternative measures of safety having an equivalent level of protection for the workers. The alternative measures should be introduced to the worker's representative for safety.

If the interventions of conformity of workplaces are hindered due to town planning and architectonic bonds (e.g. museums, historical centers, etc.) the employer adopts alternative safety measures, after consulting the safety representative and obtaining the authorization by the vigilance organisms.

**Microclimate**

In the workplaces, an adequate temperature (microclimate) must be maintained related to the work methods and physical strains imposed on the workers. To determine the microclimate, the level of humidity and the air circulation must be considered. The temperature of the resting areas, the places for the surveillance, the sanitary services, the refectories and the first aid must comply with the specific allocation of the areas. Where there are windows, skylights and glass walls, it is necessary to avoid excessive sunlight in the workplace. When the activity does not allow the modification of the microclimate, localized technical measures must be adopted or supply the workers with individual protection tools against the exposure to temperatures which are too high or too low.

The aeration system must always be functioning and it should be equipped with an alarm system in case of failure. A periodic cleaning (e.g. every six months) is necessary when air conditioning systems or mechanical fans are used. This is to avoid the formation of micro-bacteria and dust on the walls and the filters of the conditioning system.

**Lighting**

The workplaces must receive a sufficient natural light unless otherwise requested, due to the conditions of the processes and exception made for underground places. However, all areas and workplaces must be equipped with adequate artificial lighting for the safety, health and wellness of the workers (art. 10, Law 303/1956). In case of a failure of the lighting system that could create a risk for the workers, the workplace must be equipped with an emergency lighting system. Regular cleaning and maintenance are necessary for the windows allowing the entering of natural light and the artificial lighting systems (e.g. window washing and cleaning, the replacement of exhausted light bulbs, etc.).

**Floors, walls, attics, ceilings, stairs**

For permanent works it is forbidden to use closed places which don't meet the following conditions:
- good protection against atmospheric agents;
- equipped with a sufficient thermal insulation;
- having sufficient openings for air circulation;
- being dry and protected against humidity;
- having floors, walls, attics, ceilings which can be easily cleaned.

The attics used as warehouses should have on their walls clear indication of the maximum load in kg/cubed m.; the loads should not exceed the weight limits and should be evenly distributed on the entire surface. The openings in the attics or on the walls for the passing of the materials must be properly protected with regular
and sturdy railings.
The floors of the rooms must be without holes, dangerous overhanging, hollows and at a dangerous tilt. In the
rooms where degradable and liquid substances are used on the floor, it must have a compact and waterproofed
surface with a slope to allow the evacuation of the liquids towards the collection and waste points.

When the floor is constantly wet, it should be equipped with shelves and the danger must be indicated with the
proper signs.
The room windows should have windowsills being at least 90 cm off the ground.

Walls of the workplaces should be painted if possible with light colors. The windows, the skylights and the air
circulation systems must be easily accessible to the workers for the switching on and/or the regulation and while
functioning they should not create any danger for the workers.

See-through walls, especially those made entirely of glass at the workplace or where there is the possibility of the
presence of a worker, must be signaled and built with safe materials (up to one meter high from the floor or
somehow isolated to avoid contact with the people even in the case in which the walls themselves shatter and
cause harm to workers).

The cleaning of the windows and skylights must take place without danger for those who do the cleaning itself
and for the workers in the vicinity.
The access to the roofs built with non-sufficiently resistant materials can be authorized only with equipment
guaranteeing the complete safety to execute the job. (scaffolding, shelves, anti-fall harnesses).
The stairs and the mobile walkways must have easily locatable and accessible emergency stopping devices.

The platforms and the ramps, as well as being of the right dimension to ensure the stability of the maximum
transportable load, must be equipped with protections (railings) to prevent workers from falling down.
If platforms exceed 25 meters, where technically possible, they must be equipped with an exit.

Rest rooms
The workers, if required by their work activity, must have the use of rest rooms. The rest rooms must be furnished
with enough tables and chairs for all personnel. The rooms must be provided with protection for non-smoker
workers. The overseeing organization can order the workers to sit while carrying out their jobs, as long as it does
not compromise the normal execution of the work.

Pregnant women and nursing mothers must have the possibility of resting by lying down.

Exit ways and emergency exits
The exit ways and the emergency exits must always be free of obstacles and allow a quick evacuation of the
workers towards safe places (art. 32, Law 626/1994).

The number, the distribution and the dimensions of exit ways and emergency exits are determined based on
workplace dimensions, location, purpose, machineries installed and maximum capacity; for the workplaces in use
before January 1st 1993, the requirements in the previous subsection do not apply, even though they must have a
sufficient number of exit ways and emergency exits. The exit ways and the emergency exits should have a
minimum height of 2 meters and a minimum width as prescribed by the fire prevention regulations (normally 1.2
meters).

The emergency exit doors must be easy to open and directed to the outside and, unless specifically authorized,
the doors should not have keys.

Doors opening onto the outside are not required when there could be dangers due to the passing of vehicles or
other causes, exception made for the adoption of alternative measures authorized by the Fire Department
operating on the territory.

The exit ways and the emergency exits must be highlighted by proper signs visible from far away and supplied
with emergency power in case of system failure.

A workplace having more than 25 employees or more than 5 employees if exposed to the risk of fire or explosion,
must have 2 separate easily accessible stairways or what is provided by fire prevention standards.
In buildings already in use, where the overseeing organization has verified the impossibility to fulfill the above listed requirements, adequate cautions and measures should be adopted.

**Main entrances and doors**

The doors of the facilities should allow, through a quick opening from the inside, a very quick exit of people. When in a workplace there are more than five employees present and activities involving risks of explosion or specific risks of fire are carried out, the room must have a door per 5 people and have the opening towards the outside with a minimum width of 1.2 meters.

In the other work areas minimum width for the doors should be:

a) up to 25 employees in the same work area, at least 0.8 m wide (minus 2 %);  
b) between 26 and 50 employees, at least 1.2 m wide (minus 5 %)  
c) between 51 and 100 employees, at least 1.2 m wide (minus 5 %) and an additional one measuring at least 0.8 meters wide, both having the opening towards the outside.  
d) over 100 employees at least 1.2 m wide (minus 5 %) and additional one, at least 0.9 m wide, another one at least 1.2 m wide for each 50 employees or group of between 10 and 50 employees (in addition to the original hundred).

The number of doors can be reduced as long as the total width is not inferior. When the emergency exits are also doors, they must comply with the fire prevention regulations.

In workplaces or warehouses where there are not outward opening doors, sliding doors, rolling shutters and revolving doors are not allowed.

The sliding doors must be equipped with a safety system. In addition, the doors and the main entrances having the opening towards the top must have a safety system to prevent them from shutting; they must also be equipped with an immediate stop button and it should be easy to open them mechanically or automatically even in the event of a power cut.

The main entrances also used by vehicles, unless the passing for the workers is safe, cannot be used for pedestrian crossing; where it is not possible doors must be installed allowing pedestrians to cross. The doors and the main entrances opening in both directions must be transparent and built with high-resistance materials, or they should be shatterproof.

In addition, on transparent doors an entrance sign must be placed at eye level. The workplaces utilized before January 1st 1993 must be provided with emergency exits (opening from the inside) that allow people to make a quick exit. Such emergency exits whether opening from the inside or out, must be transparent and a direction sign must be placed at eye level.

For workplaces created or used before November 27th 1994, the width of the doors does not have to comply with the above listed dimensions, but it should be in conformity to the town planning concession or to the habitability permit.

**Traffic roads, danger zones, floors and passages**

Preferably, the traffic roads used by the workers for crossing must be separated from the ones used by the vehicles. If it is not possible, proper measures should be adopted to avoid as much as possible the interference between the pedestrians and the vehicles.

In dimensioning the traffic roads for vehicles, the obstacles must be considered also in relation to maneuvering. The traffic road must be built in accordance to the needs of the company and the outline on the ground should be made obvious with yellow lines.

If in the company there are danger zones and a risk for the workers is present, the zones must be segregated and well signaled to prevent non-authorized personnel from gaining access. The personnel authorized to access the danger zones must be protected.

The floors should not have holes, depressions or overhangs that could constitute danger to the workers crossing of tripping, and compromise the stability of the lifting and transportations machines maneuvering materials.

Finally, on the floors and the nearby crossing areas there should not be placed any materials creating obstacles.
or hindrances to the circulation of people and vehicles. If that is technically not possible, the obstacle should be brought to attention.

**External workplaces**

The stairs and the landings must be equipped with a standard and sturdy platform.

The scaffoldings, the platforms, the access ramps, the balconies, the workplaces, the flyovers must have normal railings with foot switch off.

Railings need not be used only near the loading levels which are less than 1.5 m off the ground.

Railings are defined normal when:
- they are built with stiff and resistant materials;
- they are high at least one meter;
- they are built in two levels, of which the intermediate one is placed halfway between the upper one and the floor;
- they are built to be resistant to the maximum strain under which they are submitted.

The railings are defined normal with foot switch off when they are equipped with a 15 cm. high band.

The building, the systems and the industrial chimneys must be protected against the atmospheric discharges. A preliminary assessment of the probability of a fulmination should be provided, and, if needed, a protection system against atmospheric discharges should be created.

The metallic structures of the buildings, the big containers and the metallic devices of large dimensions located outside should be equipped with a connection to the ground to ensure the dispersal of atmospheric discharges.

Such a connection should be checked periodically (at least every two years).

As already mentioned for indoor areas, also workplaces, traffic roads or other outside places must be created keeping into consideration the safety of the workers in relation to the circulations of the vehicles.

For outdoor workplaces the same provisions of article 8, subsections 1 - 8 of Law. 547/1955 apply, or rather:
- traffic roads, including the stairs, must be built to guarantee the safety of pedestrians and vehicles traveling along;
- dimensions of traffic roads must be adequate to the number of people and goods passing;
- a safety distance for traffic roads must be provided, on which machineries and workers can get in contact;
- the vehicles must pass by a safe distance from doors, main entrances, pedestrian crossing, hallways and stairs;
- the outline of the traffic roads must be defined where possible;
- access to dangerous areas must be denied to non authorized workers;
- adequate measures must be taken to protect the authorized workers accessing the danger areas;
- danger areas must be properly signed.

The outside workplaces must be appropriately lit if the natural light is insufficient, they must also be structured in such a way that workers are protected against atmospheric agents and the probable falling of objects and they are not exposed to harmful noise levels, or harmful external agents, such as gases, steams and dusts.

Workplaces must also be structured in such a way that the workers cannot fall or slip down, can be helped without obstacles and can abandon quickly the workplace in case of danger.
SAFETY SIGNALS

Introduction
The obligation to provide safety signals within the work environment is a general requirement provided for the legislative measures in regards to health and safety at work. For safety signals to be effective, they must comply with precise parameters. In relation to the directions of the European Community, such parameters must be unambiguous in all the Member states. These parameters of uniformity are contained in Directive 92/58/EEC. The directive indicates in fact the minimum prescriptions for the safety and/or health signals at the work place. The Directive constitutes the ninth Directive particular to Framework Directive 89/391/EEC.

The directions contained in Directive 92/58/EEC were introduced in Italy in August 1996 with the passing of the Law 493 "Implementation of Directive 92/58/EEC concerning the minimum prescriptions for the safety and/or health signals at the workplace".

The obligations
Every company, facing precise law obligations, but especially after the results of risk assessment provided by Law 626/94, must put up in the workplaces appropriate safety signals (danger signals, prohibitions, obligation, information, etc.) with the purpose of:

- warning people of a risk or a danger
- forbidding behaviour that may cause danger
- prescribing determined behaviours necessary for the safety
- supplying indications relative to emergency exits or first aids or rescue
- supplying indications re. the field of prevention and safety
- disposing of the use of I.P.D.

The respect of the indications reported in the safety signals by all workers assumes a particular relevance for the prevention of the injuries; these indications must be therefore observed scrupulously.

The definition of safety and/or health signs locates the signals that refer to an object, an activity, or a specific situation, supplies an indication or a prescription concerning safety and/or health at the workplace, by using, depending on the cases:

- a sign;
- a colour;
- a bright or acoustic signal;
- a verbal communication;
- a hand signal.

Definitions:

a) prohibition signal, a signal that forbids a behaviour that could create or cause a danger;
b) warning signal, a signal that warns about a risk or a danger;
c) prescription signal, a signal that prescribes a certain behaviour;
d) rescue and first aid signals, a signal that supplies indications relative to the emergency exits, first aid, or rescue;
e) information signal, signal that supplies indications different from the ones specified in line a) through d);
f) sign, a signal which, through a combination of geometric forms, of colours and of a symbol or pictogram, supplies a determined indication, of which the visibility is guaranteed by a lighting of sufficient intensity;
g) supplementary sign, a sign used in conjunction to a sign of the type indicated in line g) and that supplies subsidiary indications;
h) colour of safety, a colour to which has been assigned a specific meaning;
i) symbol or pictogram, an image representing a situation or that prescribes certain behaviour, applied on a sign or a luminous surface.
j) luminous signal, a signal given out by a device made of transparent or semitransparent material which is lit up from the inside or from the back in such a way to appear as a luminous surface;
k) acoustic signal, a sonorous code signal emitted by a device, without the use of a human voice or vocal synthesis;
l) verbal communication, a predetermined verbal message, with the use of a human voice or vocal synthesis;
m) hand signal, a movement and/or a position of the arms and/or the hands in a conventional form to guide people making maneuvers creating a risk or an actual danger for the workers.
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**RED**: stop or prohibition. Examples of use are stop signal, emergency stop devices, prohibition signal

**YELLOW**: attention! Latent danger. Examples of use: danger signals (fire, explosion, chemical substances, thresholds signal, danger crossing, obstacles

**GREEN**: safety situation, first aid. Examples of use: crossing and security exits signals, rescue exits

**BLUE**: prescription and information. Examples of use: obligation to wear a safety equipment, indication of infirmary.

The employer must predict or verify the existence of safety and/or health signals at the workplaces in conformity to the provisions of the new decree, when the risks cannot be avoided or sufficiently limited by means of collective protection or by measures, methods or work organizational systems.
Danger signals

The system of danger signals is applied to indicate all the constant points of danger, as for example those which present a danger of collision, of falling and tripping over for people. Besides, it is adopted within the company, to paint the floors, the walls, the structures, the machineries, etc., with the purpose of calling the attention in order to prevent injuries.
MANUAL LOADING

Introduction

In order to improve health and safety at work, and particularly to reduce risks deriving from the manual transportation of heavy loads, Directive 90/269/EEC regarding exactly the minimum health and safety prescriptions for manual loads moving which can cause, among other things, back-lumbar injuries for the workers has been adopted.

This Directive, together with others, due to the particularity of the subject in question, constitutes the fourth Directive particular of Framework Directive 89/391/EEC. The directions listed in this Directive have been adopted in Italy with Law 626/94. The 5th title of this law (articles 47,49) reports the prevention measures finalized to eliminate or reduce the risks deriving from manual moving of loads.

The obligations

The back-lumbar injuries represent one of the main risks under which the workers that manually move heavy loads are subjected. For this reason, it is proper that the worker knows the specific techniques for a correct transportation of the loads and respects scrupulously the obligation reported below.

DEFINITION: For manual load moving not only the typical action of lifting is meant, but also the one of pushing, towing and transporting of the loads.
Back-lumbar injuries can be simply avoided by following some practical advice.

Before Moving

• examine preventively the loads to verify the weight;
• check the load in each part by considering corners, weak parts, if it is slippery, fragile, bulky, difficult to be grabbed, unstable balance, etc;
• ensure the body with a stable position so to make a safer lifting;
• utilize the protection devices supplied by the employer, such as, for example, gloves, safety boots, helmets, etc;
• wear proper clothes and shoes and avoid wearing inappropriate personal belongings (necklaces, bracelets, etc.) non compatible with the moving activity;
• before lifting assume a position so that the legs are spread out well, with one foot next to the load and the other behind.

While lifting

• use the leg muscles as a lever, by bending them, instead of letting the back muscles take the strain;
• the back must be kept in a straight position;
• hold the load so that fingers and palms of both hands are in contact with the object;
• keep the load next to the chest keeping the arms bent;
• avoid twisting the upper body and bending the torso;
• avoid rough movements.
While moving

- be sure that the size of the load allows full visibility of the way ahead;
- in the event that the load must be loaded/unloaded on/by a vehicle with edges, make sure that the edges lean against a stable support;
- make sure that there are not obstacles along the way in which it is possible to trip over.
VIDEOTERMINALS

Introduction
In order to improve health and safety at work, particularly reducing the risks deriving from the use of equipment supplied with video terminals, Directive 90/270/EEC relative to the minimum requirements on the subject of health and safety for those activities carried out on equipment supplied with video terminals has been adopted.
This Directive together with others, due to the particularity of the subject, constitutes the fifth Directive particular to Framework Directive 89/391/EEC.
The directions listed in such Directive have been adopted in Italy with Law 626/94. The 6th title of this Decree (articles 50 – 59) reports the prevention measures with the objective of eliminating or reducing the risks deriving from the use of equipment supplied with video terminals.

Definition
By definition, the video terminals (VDT) are equipments provided with an alphanumerical screen independently from the process of visualization, composed of personal computers, word processing systems, data processing, text and images. Cash registers, calculators, word processing systems not having screens, portable systems not being used regularly at the workplace and control panels are excluded from the regulations of the 6th title of Law 626/94.

The VDT units, in regards to the profile of Health and safety, are considered composed of, other than the screen, keyboards, disk units, desk, chair, document holder, environment, and other accessories such as the printer, the data entry system, the software for the interface man-machine.

Pathology

Visual problems
Heaviness, tension, burning sensation, eye redness, problem focusing, blurry vision.
In the past, those types of problems used to be more frequent; thanks to the technical evolution, new equipment has been built to reduce to a minimum the visual discomfort. These discomforts may occur where the lighting of the work environment is inadequate and when ergo ophthalmologic screens unsuitable for their brightness, contrast, the size of the letters, wobbling, etc. are used.

Postural problems
Improper postures causing secondary phenomenon of strained muscles and tiredness.
They are problems deriving from the position kept by the operators and employees, more precisely, by the height of the chair, the dimensions of the work table, the presence of or not of a foot-rest or of support surface for the forearms, height and positioning of the screen, the shape of the keyboard, the positioning of the page holder.
See the image indicating the parts subject to postural problems.

Psychological problems
Anxiety, nervousness, irritability, depression and mood alteration.
These problems are difficult to classify because they are normally caused by the work organization and the intellectual contents of the activity performed.

Problems caused by rays and radiations- exclusions
Even risks caused by radiant emissions have been taken into consideration, but all the studies made documented that the level of electro-magnetic radiation, present in the vicinity of a video terminal are comparable to that of color TVs and that the intensity of the ultraviolet and infrared radiations is extremely low and as such will not generate any problem.
Also the emission levels of the radiofrequencies and the ionizing radiations are inferior to the ones recommended by the international standards; the only detectable ionizing radiation is the one of the radio cores traces present in the glass of the screen, the X-rays instead given off by the tube active in all video terminals, are not, in many cases, detectable.
Employer obligations

Law 626/1994 art. 52, Title VI, relative to the use of equipment supplied with video terminals, states that the employer, implementing health and the safety of the workers’ assessment (art. 4, subsection 1, Law. 626/1994) must perform an analysis of the workplaces in order to determine:

- the risks for the sight and the eyes;
- the problems tied to the posture and to the physical and mental tiredness
- The ergonomic conditions of environmental health (art. 52, subsection 1, line. a), b), c), Law n. 626/1994).

The activities through which an analysis of the risks anticipated in article 4, subsections 1, 2, 4, line a) and 11, first period, of Law 626/1994 is carried out, cannot be delegated.

The work activity must be organized in such a way to avoid as much as possible the repetitions and the monotony of the operations: for those activities carried out for more than four consecutive hours, interruptions must be provided (breaks or changes of activity), with methods decided by collective agreements even at the company level or, if missing, give the worker a 15 minute break each 120 minutes of continuous activity.

The breaks can be decided temporarily at a personal level, on medical order by the qualified doctor who deems them necessary and they cannot be combined at the beginning and at the end of the working hours. The breaks are an integrated part of the working hours and agreements providing for the reduction of the total work hours cannot be included. In the calculation of the time of interruption, the time waiting for the answer of an electronic system, which is included in the actual work hours when the worker cannot abandon the workplace, is not included.

The employer, besides, must supply the personnel with adequate information and training in regards to the measure to be adopted at the workplace, the direction for carrying out the job, the protection of the eyes and the sight; in addition, he or she must communicate to the workers and the representative for safety the technological changes that may vary the organization of the work.

Article 55 of Law 626/1994 establishes the obligation to submit the workers to a medical check up, performed by the qualified doctor and, if necessary, to ophthalmologic examinations; the visit, should be done before the assignment of tasks, and it should highlight probable structural malformations and evaluate the vision and ocular functionality.

The visit must conclude with an assessment of fitness, non-fitness of fitness with prescriptions; for the workers suitable with prescriptions and for the ones over 45, there is the obligation of a periodic follow up at least every two years. When it is explicitly requested and when there is the clinical suspicions of vision alteration, confirmed by the qualified doctor, the worker must undergo an ophthalmologic check up; the probable necessity of the use of special devices for sight correction, in relation to the job performed, should be ensured by the employer at his or her own expenses.

In the attachment 7 of Law 626/1994, the minimum technical requirements for video terminal workplaces are reported.

- The equipment should not represent a risk for the workers.
- The screen should be adjustable and inclinable, it must have a steady image, free of wobbling, with controllable brightness and contrast, and it should not produce annoying reflections or reverberations.
- The keyboard should be inclinable, removed from the screen, free of reflections, its keys being easily legible from the work position.
- The work area must have a sufficient and low reflecting surface and it should have an adjustable document holder.
- The chair must have adjustable height, back and footrest if requested by the workers.

The attachment VII does not include the environmental health requirements, they are however contained in Directive 90/270 and prescribe, that:

- The workspace must allow for changes of position, without creating discomfort.
- The general and specific lighting must guarantee an appropriate contrast between screen and environment.
- The reflections and the dazzling must be avoided using an adjustable device covering the windows and the prevention of annoying phenomenon reflection from the walls and other surrounding equipments.
- The equipments should not produce heat that may annoy the operator.
- The radiations, with the exclusion of the visible electromagnetic screen, should be reduced to an unimportant level.
- The noise coming from the equipment in the workplace must be evaluated, in order to avoid disturbance for the attention and the verbal communication.
- The humidity of the environment should be acceptable.
- The computer must be equipped with software appropriate for the job to be performed, user friendly, and equipped of indication systems for program developing with acceptable operational rhythms.

Ergonomics principles must be applied particularly for the processing of the information by men. The terms for complying with the obligation of adjusting to the mentioned regulations has been deferred to January 1st 1996 for workplaces utilized before the passing of Law 626/1994 (November 27th 1994).

Interventions of prevention and individual protection devices

The main interventions of prevention are in regards to the technical characteristics of the work equipment and the environment in which it is placed.

Screens

The screen for the VDT unit must be built in a way in which the reflections are avoided also with the use of additional optical glass filters. The filters, besides having antireflection properties, increase the contrast, the image resolution and reduce the accumulation of electrostatic charges. The filters must have a double protection film (coating) and a barrier against the electromagnetic radiations, equal to the 80% of spectrum of energy given out from 0 to 20 KV, and to the low frequency radiations VLF and ELF.

Workplace

The work desk must have an opaque surface, having a grade of reflection between 20 and 50%, circa 150-160 cm. long, and circa 90-100 cm. wide. The height should be adjustable within a limit of 70-80 cm. The keyboard must be positioned on the desk in such a way to allow the operator to keep the arms parallel to the floor and the forearm at an angle between 70 and 90 degrees; the screen must be placed at circa 90-110 cm. from the floor (distance floor-center of the video) and at a distance between 35 and 60 cm from the face of the operator.

The chairs, revolving type, with 5 spokes and wheels, should be adjustable in height between 40 and 55 cm, having an inclination mechanism between 2 degrees forward and 15 degrees back, the back must be around 50 cm high from the seat with the padding at the place of support for the lumbar column (10-20 cm. from the seat).

The footrest must have an average minimum dimension of 40X30 cm., having an adjustable inclination and variable height up to 15 cm.

Lighting

Artificial lighting must be of suitable intensity, quality and distribution of the luminous sources, for the nature of the job; for jobs like the ones to video terminals, lighting localized on the single workplaces to be integrated with the general lighting could be provided.

Nowadays a general lighting of the terminal workplace is recommended to be between 300 and 400, the brightness between screen, document, background and desk should be included in the following optimal standards: screen-document 1:3 (max 1:10), screen-desk 1:5, screen-background 1:15, document-background 1:1.

Health vigilance

For the purpose of the health vigilance the “person responsible” is considered to be the worker who uses systematically or regularly the video terminals for at least 20 hours per week, excluding the breaks according to article 54, while for the application of the norms provided by Law 626/1994, are excluded the activities relative to the driving of vehicles or machineries, the computer systems placed on vehicles or for the exclusive public use, portable systems but not in the cases in which they are used for extended period of time, the calculators, the cash registers, the small visualization devices, the word processors without a separate screen.

If applicable for one of those cases, the worker should be submitted to periodical sanitary check ups.
INDIVIDUAL PROTECTION DEVICES (I.P.D.)

Introduction

In regards to the improvement of health and the safety at work, in order to provide indications on which the Member States can establish general rules for the use of equipment and of individual protection devices and particularly to reduce the risks deriving from the misuse of such devices, E.U. has adopted Directive of November 30th 1989 n. 89/656/EEC relative to the minimum requirement in the subject of health and safety of the workers using individual protection devices during work.

This Directive among others, due to the particularity of the subject in cause, forms the third Directive particular to Framework Directive 89/391/EEC.

The orientations listed in the considered Directive have been adopted in Italy with the Law 626/94. Its 4th title (articles 40 – 49) reports the prevention measures targeted to eliminating or reducing the risks deriving from the use of individual protection devices.

Definition

By definition, individual protection devices (IPD) are products having the function to safeguard the person wearing or bringing them with him or her from the health and safety risks, or rather:

a) the different products as a whole, gathered by the employer, meant to protect the person from one or more simultaneous risks;

b) a connected IPD, even if separable, to a product not specifically meant to protect the person wearing it;

c) the interchangeable components of an IPD, usable exclusively as parts of it and indispensable for the correct functioning;

d) Connection systems of an IPD to an external devices, commercialized simultaneously to the IPD, even if they are meant to be used for the entire period of exposure to risk.

The following items are not considered IPDs:

- IPDs designed and built specifically for the military or to maintain public order (helmets, shields, etc.)
- IPDs of self-defense in case of aggression (aerosol generators, deterrent personal weapons, etc.).
- IPDs designed and built for private use against atmospheric conditions (head coverings, seasonal clothing, boots and shoes, umbrellas, etc.); humidity, water (gloves for cleaning up, etc.); heat (gloves, etc.)
- IPDs meant to protect and safeguard the people traveling on boats or aircrafts, which are not used continuously.
- Helmets and visor for people operating on a two or three wheeler vehicle.

IPDs are divided up in three categories.

First Category

The IPDs belonging to the first category are the ones meant to safeguard the person from the risks of minor physical damages. The person using the IPD must have the chance to evaluate the effectiveness and understand, whether the IPD is efficient for the entire period in which it is utilized.

The IPDs being exclusively parts of such category are the ones having the function of safeguarding from:

a) damaging actions having superficial effect produced by mechanical instruments;
b) damaging actions having minor and easily reversible consequences caused by cleaning products;
c) risks deriving from contacting or the bumping into hot objects, not exposing to a temperature higher than 50° C;
d) ordinary atmospheric phenomena happening during the professional activities;
e) minor bumps or vibrations, such not to reach vital organs and provoke permanent lesions;
f) damaging action by sunrays.

Gloves, work suits and glasses belong to this category.
Third Category

The IPDs belonging to the third category are those meant to safeguard from risks of death, serious damages and permanent injuries. The person using the IPD should not take the chance to perceive the immediate verification of damaging effects.

The IPDs being exclusively parts of the third category are:

a) respiratory protection devices filtering the solid and liquid aerosols or against irritating, dangerous or radiotoxic gases;
b) insulating protection devices, including those used for underwater diving;
c) the IPDs insuring a limited protection over time against the chemical aggressions and against the ionizing radiations;
d) the IPDs for activities in environments having conditions equivalent to air temperature not inferior to 100°C, with or without infrared radiations, flames or material in fusion;
e) the IPDs for activities in environments having conditions equivalent to air temperature not higher than -50°C;
f) the IPDs meant to provide protection for people falling from a height;
g) the IPDs meant to safeguard from the risks linked to activities that expose workers to dangerous electrical voltages or used as insulation for high electrical voltage.

Second category

All the IPDs that are not included in the other two categories belong to the second category.

Requirements

IPDs must be utilized only after determining the impossibility to implement all the technical, procedural and re-organizational measures of prevention such as the collective protection measure. The worker could be facing a “residual risk” unpredictable and inevitable despite the implementation of prevention measures; the IPD has the objective to eliminate or reduce the consequences of probable accidents.

IPDs must comply with terms provided by the Law 475/1992 and must also be suited to the risks to be prevented. They must not create new risks themselves and must take into account the individual parameters depending on the use and the nature of the work carried out.

In case the same employer supplies many IPDs, they must be compatible; in the case that different workers must use the same IPD, the hygienic regulations must be rigorously respected.

Certification

CE certification is the act with which an authorized control organism certifies that an IPD has been built in compliance with what it has been provided by the Law 475/1992.

The IPD user should ensure that CE mark is displayed visibly, legibly and permanently, for the life span of the IPD itself.

Harmonized standards

The technical provisions adopted by European organizations on behalf of the European Commission are intended as harmonized standards.

The references of the national regulations that transpose the harmonized regulations are issued with decree of the Minister of the Industry, of Commerce in conjunction with the Minister of Work and Social Security.

The IPDs in compliance with the requirements provided by the harmonized regulations are presumed to be in conformity with the essential requirements of safety. The list of the harmonized regulations relative to the IPDs is reported in the ministerial decree of January 17th 1997.

On the Official Journal of the European Union L 317 of October 18th 1997 a Communication reporting the harmonized regulations in the field of the application of Directive regarding IPDs was published.
Obligations for the employer and the employees

The responsibility for the employer starts at the moment of locating among the IPDs available the most suitable ones to specifically protect the employee from present danger at the workplace, highlighted by risk assessment. The choice must be done also in relation to the information supplied by the IPD maker.

The employer must supply IPDs conforming to the standards of CE marking, establish the conditions of use and provide maintenance such to guarantee the perfect functionality.

The employer must make sure that necessary information for the use of the IPD is available in the company in a form and language understandable to the workers that use them (particularly, where there are foreign workers or workers speaking a language different from Italian).

The employer should organize training and exercise meetings for those workers that are interested, to make sure that the IPDs are used in respect of the instructions given.

The employees and/or their representatives are in any case informed by the employer of the measures adopted for the protection of their health and safety with the use of the IPDs and they are consulted with regard to the most effective application methods of the provisions provided by the internal procedure in regards to the safety of the workers.

The employer must give training to the personnel on the utilization of hearing protection devices and on the ones meant to safeguard the risks of death or serious injury (Law 475/1992).

Another obligation for the employer consists in updating the choice of IPDs every time there is a variation of risk in a workplace.

Finally, the IPD should not limit the ability to move and in particular, it should be worn for the entire time in which the worker is exposed to risks.

The employees have the obligation to correctly utilize IPDs, to take care of them and not to modify them, to report any defects or specific problems. Workers must undergo the training program when required.

Methods for identification and use

For the identification of the right IPDs, the instructions for the use and the circumstances in which they can be used, references can be made to Law 626/1994, attachments III (indicative scheme for the inventory of the risks), IV (indicative list of the IPDs) and V (activities for which the use of the IPD can be necessary).

The indications reported in the attachments are generic and not exhaustive, so it must be remembered that the demand of priorities is to grant collective protection: IPDs represent the last means of defense from injuries.

The methods for the choice and the use of IPDs, as well as the circumstances and the situations in which their use becomes necessary will be object of an appropriate ministerial decree.

The IPDs already in use at the date of the passing of the Law 626/1994 (March 1st 1995) and commercialized by December 31st 1994 (Law 475/1992) are valid until December 31st 1998, as long as they are in conformity with the norms in force. In the case of emergency devices meant for self-rescue in case of evacuation, the extension is valid until December 31st 2004.

For the purchasing of IPDs before the expiration foreseen by Law 626/1994, when choosing, the employer must stick to the requirements provided in article 42 of this law (IPDs requirements) (Circular of the Ministry of Work August 7th 1995, N. 102).
INTRODUCTION

The indication of precise safety measures intended to reduce risks represented by the use of electrical power in work environment goes back to 1955. In law 547/55 in fact title VII is purposely dedicated to machinery systems and electrical equipment. Requirements contained in the title mentioned are still in force.

Subsequent to this law, a series of technical norms (issued by the Electro-technical Italian Committee CEI) have established additional and more detailed indications for the manufacturing of electrical equipments and systems.

In 1968 national law 186/1968 ratified that all materials, equipments, electrical systems and installations, should have been built and designed properly. The same law established besides that all materials, equipments, electrical systems and installations, built and designed on the indication contained in the norms CEI, are to be considered properly planned.

Nowadays, one of the most important technical CEI standards in the sector of electrical systems is CEI 64-8.

In the European Union, in line with the provided principles, aimed at increasing the level of safety and to eliminate the borders to a free circulation of goods and products, with a Directive of product, Directive 72/23/EEC relative to the guarantee of safety that an electrical material must have in order to be utilized within certain limits of voltage, an additional increment of regulation and safety in the electrical system sector was brought, particularly in response to the harmonized norms established by the Community and CE marking of the materials. The directions of this directive have been adopted in Italy with Law 791/1977.

In 1990 an additional State law, 46/1990, has elaborated further on the safety level of the technological systems including the electrical one, establishing precise obligations with regard to:

- people qualified for the installation, transformation and maintenance of the systems;
- the designing of the systems;
- the declaration of conformity;
- the checks.

OUTLINES OF THE ELECTRICAL PHENOMENON

The electrical power is a flow of electrons moving through a conductor and it can be compared to the water running in a pipe: the water flows from the container in which the level is lower.

The quantity of water (flow), which transfers from tank A to tank B, grows by increasing the difference in depth, and while it flows down the tube, makes the narrow neck (the central point indicated in the diagram) bulge.

It is important to observe that if the two tanks were placed at the same level there would not be water transferring, canceling the flow.

Similarly to the water circuit, in the electrical circuit electrons move along the wire on condition that a different “electric level” exists, more precisely called “differential of potential” or “electric voltage” and measured in Volts. This is the condition necessary so that we can talk of danger of electrocution. In other words, it means that for electricity to go through a person he or she must necessarily be in contact with two points having a different potential.
These points could be the electric circuit and the ground or two points of the electric circuit. The intensity of the electrical power that flows in an electric circuit derived from two points from which a certain “difference of potential” exists, grows by increasing “electric voltage” while it diminishes by increasing the “resistance”.

The human body is also a conductor and, when in contact with two points having different potential, offers a certain resistance to the flowing of the electricity. Normally, the highest values of resistance are the entrance and the exit points (e.g. hand-foot or hand-hand). These values depend fundamentally on the resistance present in the point of contact with the first point, and on the resistance of the skin. Similarly, to exit the body the electricity will again find the resistance of the skin and the resistance of contact with the second point.

Keeping in consideration that in the inside of a human body a considerable quantity of liquids is present and that the resistance offered to the flowing of electricity is slight, it is easy to know instinctively how certain external environmental conditions (humidity, water) can substantially change the above-mentioned values of resistance making the human body more vulnerable to the electricity.
FIRE PREVENTION

INTRODUCTION

The generic term of “fire prevention” is understood as a subject of interdisciplinary relevance in which measures, actions and interventions directed towards AVOIDING THE BEGINNING and LIMITING THE CONSEQUENCES of a fire. In order to guarantee the safeguard of human lives, goods and activities are studied, promoted, predisposed and experimented with. These objectives are implemented through:

- prevention and protection
- extinguishing
- emergency handling
- maintenance

The subject is controlled by numerous laws, measures, standards, circulars, etc. Already since 1955 with the Law 547/55, with the heading VI of the title II, safety measures aimed at achieving the objectives mentioned, have been prescribed (an example are articles 33, 34, 35). Also for particular activities a preventive control by the Fire Department has been prescribed, to which the issue of a Fire Prevention Certificate follows.

Omitting the numerous laws and rules regulating the subject, with the purpose of improving the safety conditions at the workplace, deriving from the adoption of E.U. Directives, with Law 626/94 the already existing aspects of prevention have been further on reinforced. Law 626/94 contains in fact a number of prescriptions on the subject of fire prevention, successively integrated in details with Ministerial Decree March 19th 1998 “General safety methods for the management of emergency situations at workplaces”.

One of the most important changes introduced by new measures are the ones associated:

- to fire risk assessment
- to the management of emergencies within the work environment

In relation to the last aspect, even if all safety measures deriving from the result of risk assessment are in place, it is prescribed that, within every company a fire-fighting team is instituted, made out of people assigned by the employer who are properly equipped and trained to intervene in case of fire, try to extinguish it and allow the evacuation of the people.

Due to the complexity of such subject, in this chapter only some of the problems will be discussed, with the indication of the most important prevention measures to be put in place. For a better understanding, the subject will be introduced by indicating the main obligations for both the employer and the employees and report an overview on two aspects in which employees are mostly interested:

- extinguishing;
- emergency handling.

EXTINGUISHING

Fire-fighting fulfillments

In every company or processes, appropriate fire prevention and protection measures for workers’ safety in case of fire emergency must be adopted.

The personnel should be warned not to use certain substances when putting out fires because the materials with which they can get in contact may produce a dangerous reaction.

Both companies and processes are subjected, for fire prevention, to the control of the Fire Department:

- in which flammable products or explosives are produced, used, developed and stored;
- which, for dimension, location and other reasons represent in case of fire serious dangers for workers’ safety.

The method used to determine which companies and processes are subjected to the control by the Fire Department’s Chief operating on the territory is made on the base of Ministerial Decree 26/05/59 n.689 successively modified by Decree 16/02/82. These acts include some charts for the substances and the processes on the base of which is possible to find out whether an activity is subjected or not to the control by the Fire
Department.

<table>
<thead>
<tr>
<th>N.</th>
<th>Denomination and sector of activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Companies using combustible gas that has to undergo further transformations.</td>
</tr>
<tr>
<td>3.</td>
<td>Companies producing combustible gas compressed, melted or liquefied.</td>
</tr>
<tr>
<td>8.</td>
<td>Companies for welding and cut of metals, with the use of combustible gas, with centralized generator plant or with more than three workplaces</td>
</tr>
<tr>
<td>9.</td>
<td>Companies where the second glass processing is made, with the use of more than 15 gas pipes.</td>
</tr>
</tbody>
</table>

**New fulfillments provided by Law 626/94**

There must be people responsible for the implementation of fire prevention measures, of workers evacuation in cases of serious and immediate danger, of rescue, of first aid and, however of emergency handling procedures. For the designations, the dimensions of the company or the specific risks resulting from fire risk assessment must be considered.

The workers cannot, unless justified by a valid reason, refuse the designation of the task. They should be trained, be in a sufficient number and be able to use adequate equipment.

Each worker must receive proper training on:

- first aid procedures, fire fighting and workers evacuation;
- names of the workers responsible for applying the measures of fire fighting and first aid.

The workers responsible for fire prevention and fighting, who cannot refuse the task, must:

- put out the fire or reduce its effects;
- facilitate and assist the workers in abandoning the workplaces in case the presence of a fire can cause immediate and serious danger;
- provide first aid.

The penalty charged to the workers refusing, without a justified reason, the designation is up to one month in jail or a fine from 200 to 600 euro.

**The general principle of combustion**

A reaction of combustion is the source of fire. It is defined “fire” a combustion in which the control of the effects in time and in space has been lost. This helps to clarify that the starting of a fire can be controlled within few minutes from the moment of ignition. Sequentially to give up the tentative and get to a safe place is a proper behaviour. Promptness and the modality of the intervention are therefore important.

This is the main reason for which the people designed by the employer to handle emergency MUST BE WELL TRAINED.

Combustion is a chemical phenomenon of reaction between a substance capable of burning, called combustible, and a substance chemically reacting with the combustible, called supporter of combustion. In order for the chemical reaction to happen a certain quantity of heat is needed, that is, the combustible must reach the temperature of combustion.

The supporter of combustion that usually participates to the combustion is the oxygen in the atmosphere (contained in the air at a percentage of circa 20%). The oxygen is a gas, and therefore the substance able to burn must be chemically combined with the oxygen in the atmosphere. Therefore, the combustible must assume a gas form.

If the combustible substance is solid (coal, wood, paper, plastics, etc), liquid (oil, alcohol, gasoline, etc.) or in gas form (hydrogen, methane, etc.), it must be heated so that the fumes are separated in a sufficient quantity; which, getting mixed with the air (therefore the oxygen) will create a flammable mix that will be burnt by a sufficient heat.

The chemical reaction of the combustion is exothermic, or rather, it produces heat by itself. The radiating heat produced by a fire, besides acting on the same combustible by creating the self-feeding phenomenon, will heat all the nearby combustibles, so that those, heating up, can reach the point of combustion and start into a fire. Consequently the fire will have the tendency to extend itself to all the combustibles present at a distance in which they can be heated up to the temperature of combustion.
The state of aggregation of the matter is therefore very important in regards to the combustion of a material, because:
- a solid or a liquid never burn;
- a fume or a gas burn quickly.

A solid or a liquid to burn must be first evaporated by the heat.

**Fire put off actions**

Considered that the presence of a fire is conditioned by the simultaneous presence of a **combustible** (in forms of gas or fumes), of a **supporter of combustion** (oxygen) and of **heat** (sufficient to create the reaction to the combustion) and of a particular chemical phenomenon called **catalysis**, it is common to represent the fire with a cross. This serves to remember that, these four elements are indispensable for the chemical reaction of the combustion and therefore for the prevention and the fire put offs, it is sufficient to eliminate the presence of one of them so that the fire does not break out or can get extinguished. This means:
- Cooling off the materials
- Removal of the combustible
- Suffocation of the flames
- Inhibition of the chemical reaction

**Fire Classification**

For the purpose of determining the exposure to dangers of a place or an area or a work environment, in relation to the combustibles present and the rapidity in which a fire can spread out, it is common to divide the fires in classes of fire. This conventional classification is used also for choosing the type of extinguisher. The table below reports such classes and the American version of the symbol.

**CLASS A**

fires of combustibles having a relatively high point of flammability, such as wood, paper, cloths, coal (generally organic materials); fires belonging to this class do not usually spread out rapidly because the phenomenon of self-feeding is not very violent. The combustion usually happens with the formation of hot ashes.

**CLASS B**

fires of combustibles having a low point of flammability, therefore generally liquids (oil, alcohol), liquefiable solids and gas forms; fires of this class spread out very rapidly because the quantity of combusting fumes is elevated and tends to grow rapidly for the effect of the self-feeding phenomenon.
CLASS C: fires of combustibles in gas forms; fires of this class tend to spread out with a very large rapidity because all the gas quantities are available to participate at the fire.

CLASS D: fires of metals such as sodium, potassium, aluminum, lithium, etc. Fires of this class are very violent and do not tend to spread out rapidly, but they radiate high heat.

CLASS E: fires of electrical nature, such as conductors, stations of command and distribution, transformers, electrical engines: Fires of this class usually are not very violent and do not tend to spread out very rapidly; the main danger comes from the presence of electrical power and, when it can be sectioned they are taken to class A or B fires.

**Action**

The various extinguishers available to put off fires present characteristics of suitability in relation to the class fire on which an intervention is required.

<table>
<thead>
<tr>
<th>ACTION PERFORMED</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOLIDS</td>
</tr>
<tr>
<td>WATER</td>
</tr>
<tr>
<td>FOAM</td>
</tr>
<tr>
<td>CARBON DIOXIDE</td>
</tr>
<tr>
<td>DUST</td>
</tr>
<tr>
<td>HALON</td>
</tr>
</tbody>
</table>

**Powder extinguisher**

The fire-fighting powder, as shown on the table of suitability of the extinguishing substances in relation to the class of fire, is the only extinguisher that, even if it causes considerable damages to the equipment and the environment in which it is used, can be utilized for all the classes of fire.

It is essentially made out of a saline compost able to decompose for the effect of the heat, mixed to proper additives, having the function to improve the characteristics of fluidity, hydro-repellence and anti-compacting.

The most used salts are the sodium and potassium CARBONATED (for fires of class B and C) and the ammonium SULFATES and PHOSPHATES (for fires of class A, B and C). The additives are made out of STEARIC and SILICON with loads of siliceous, calcium, calcium carbonated and calico phosphates.

The extinguishing action of the chemical powder is based essentially on:

- **Suffocation:** during the thermal decomposition, enormous quantities of inert (water and carbon dioxide) are created.
- **Cooling:** among the products of the thermal decomposition, there is lot of water.
- **Negative catalysis:** the products of the extinguisher thermal decomposition generate an action of inhibition of the combustion.
• **Shielding:** physical action of interposition with the absorption of the thermal radiation produced by the flame.

**Rules of distribution**

• After removing the safety-catch, start spreading the extinguisher on the fire, starting from a distance of **4-5 meters** from the flames, and reducing such distance to the one necessary to distribute well the extinguisher on the fire.
• The extinguisher distribution must be done at the base of the flames, starting from the **windward**, without pointing the jet against people.
• To distribute well the powder, it is necessary to move the wrist quickly holding the extinguisher’s handle.

To improve the distribution of the powder, the operator must **rotate around the hearth**; its action must be progressive and aimed at avoiding waste and useless actions.

**Extinguishing blankets**

If there are blankets in the company, they can be used to suffocate the fire on clothing or small flammable liquids containers and to be used as protective shield between the operator and the flames.

**Extinguishing ability of the extinguishers**

Independently from the weight, size or other physical characteristics, each extinguisher is able to put out a fire having certain characteristics according to the class of fire on which it is used. For example, an extinguisher having extinguishing ability of 13 A 89 BC means that the extinguisher is able to put off a fire of material class A designation 13 and fire of material class B and C designation 89. The designation 13 for the first type of fire means a pile, having particular dimensions, of 13 floors while the designation 89 for the second type of fire means 89 liters of a mix made of 1/3 of water and 2/3 of gasoline.

The hearths type for class A fires are made of a pile of wooden beams placed on a metal base of 250 mm high and 900 mm wide. The hearths type for class A fires has an equal length to the one of the hearth type.

The hearths types for class B fires are made in a series of sheet-steel cylindrical containers welded of which dimensions are defined in the following prospect. These hearths are designated by the letter B and before by the volume of the liquid, in liters, present in the container.

The containers used a base of water in the following proportion: 1/3 of water, 2/3 of gasoline. The quantity of liquid contained is such that the level of water in the containers is approximately equal to 1 cm and the level of gasoline equal to 2 cm.

**Distribution of the extinguishers**

<table>
<thead>
<tr>
<th>Extinguisher Type</th>
<th>Distance Max. from the extinguisher</th>
<th>Surface protected by an extinguisher</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Low Risk</td>
</tr>
<tr>
<td>13 A – 89 B</td>
<td>30 mt</td>
<td>100 m²</td>
</tr>
<tr>
<td>21 A – 113 B</td>
<td>30 mt</td>
<td>150 m²</td>
</tr>
<tr>
<td>34 A – 144 B</td>
<td>30 mt</td>
<td>200 m²</td>
</tr>
</tbody>
</table>
EMERGENCY HANDLING

Behaviour in case of an emergency
In case of an emergency, follow scrupulously the following rules:

- Do not linger in the rooms to get personal belongings or other objects.
- Do not bring with you umbrellas, bags, large and heavy packages.
- Use a behaviour such not to create alarming or panic scenes (ex. screaming, running, pushing) in the hallways and especially along the stairs.
- Calmly go to the emergency exits by following the directions on the signals in the hallways.
- Do not use for any reason lifts or hoists, even if they are in service.
- To improve your agility is advised to women, wearing high heels shoes, to take them off before taking the stairs.
- Unless explicitly requested, do not move the vehicles parked in the lot but quickly leave the area on foot.
- In the event that smoke reaches the inside of the places, leave the area by walking with the head down or crawl on the floor, to protect the airways cover the mouth and the nose with a handkerchief (preferably wet).
- If wearing wool clothing (coats, scarves, shawls, pullovers, etc.), it is advised to wrap them around the head to avoid the exposure of the hair to the fire.

These indications or others can be reported on a proper signal. It is important that each worker knows these procedures and follows them scrupulously even during possible drills.

Evacuation
The studies on the safety of fire fighting materials have allowed the elaboration of precise national and international norms, because the experimental use of such materials is very similar to the conditions that we have during fire emergency.

Relatively to the evacuation of the building in case of fire, the human behaviour is difficult to reconstruct in laboratory simulations. At the stage of the current norms in force, the methods to determine the crowd dispersion from a building during an emergency are established according to the experience and the information provided by accidents that happened in the past.

Besides the regular indications to be followed in emergencies cases, the designation of safe places is fundamental, where the workers must go when they are asked to abandon their regular workplace. These safe places must be designated for each department and indicated on maps put up in appropriate areas.

Doors
The doors of work areas and the emergency exits must always be free of obstacles at the opening. Possible automatic doors must be equipped with a manual opening device. On transparent doors an indication sign at the eye level must be attached. The non-transparent doors opening in both ways must have a little window allowing the vision to other side.
In work areas and warehouses sliding doors, rolling-shutters and revolving doors are not allowed, when there aren’t other doors opening towards the outside.

Next to the main entrances used for the circulation of vehicles there must be, unless the pedestrian crossing is safe, doors properly marked for pedestrian crossing. If the transparent or translucent surfaces of the doors and main entrances are not made out of safe materials and there is the risk that the workers can be injured for the shuttering of such materials, the surfaces must be armoured.

The sliding doors must be equipped with a safety system that prevents them from getting out of alignment or fall. The doors and the main entrances opening towards the top must be equipped with a safety system preventing them from coming down.

The doors and the main entrances opening through a mechanical device must operate without causing any risk of injuries to the workers. They must be equipped with emergency stopping devices easily identifiable and accessible; they can be manually operable, unless the opening is automatic in cases of power failure.

The doors situated on the path of the emergency ways must be marked with proper lasting signals conform to the norm in force. They must be operable, in every moment, from the inside without special help. When the workplaces are occupied, the doors should be in condition to be opened.

**Doors for areas exposed to a particular risk of fire**

When the processes and the materials involve in an area risks of explosion or specific risks of fire and there are more than 5 employees working in the same area, at least a door every 5 people should open towards the outside and having a minimum width of 1.20 meters.

**Doors for areas not exposed to a particular danger of fire**

When in a work area the processes do not involve dangers of explosions or specific risks of fire, the number, the width and the characteristics of the doors should be as follow:

- between 26 and 50 employees, at least 1.2 meters wide (+/- 5 %) with opening towards the outside;
- between 51 and 100 employees, at least 1.2 meters wide (+/- 5 %) and an additional one measuring at least 0.8 meters wide, both having the opening towards the outside;
- over 100 employees at least 1.2 meters wide (+/- 5 %) and additional one, at least 0.9 meters wide another one at least 1.2 meters wide for each 50 employees or fraction included between 10 and 50 over 100;
- over 100 employees at least 1.2 meters wide (minus 5 %) and additional one, at least 0.9 meters wide another one at least 1.2 meters wide for each 50 employees or fraction included between 10 and 50 over 100, all having the openings towards the outside.

The opening towards the outside for emergency exits is not required when it can determine dangers for the passing of vehicles or other causes, exception made for the adoption of other measures specifically authorized by the Fire Department.

<table>
<thead>
<tr>
<th>Nº workers</th>
<th>120 mm</th>
<th>80 mm</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Places with explosion and fire dangers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n &gt; 5</td>
<td>1 x 5 work.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Places without explosion and fire dangers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n &lt; 26</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 &lt; n &lt; 51</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 &lt; n &lt; 101</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>n &gt; 100</td>
<td>1</td>
<td>1</td>
<td>+1(120) x 50 work. or fractions</td>
</tr>
</tbody>
</table>

The number of the doors can be inferior but the complexive width cannot be inferior. If these doors become emergency exits, their minimum height is m. 20.

<table>
<thead>
<tr>
<th>Places that already exist or utilized before</th>
</tr>
</thead>
<tbody>
<tr>
<td>27/11/94</td>
</tr>
<tr>
<td>Larghezza come da concessione edilizia</td>
</tr>
</tbody>
</table>
Doors and emergency exits

**Emergency paths:** path free of obstacles at the down flow allowing people occupying a building or an area to reach a safe place;

**Emergency exits:** passage to a safe place;

**Safe place:** place in which people can feel safe from the effects deriving from a fire or other emergency situations;

**Width of a door or net light of a door:** width of a passage not including the shutter at the maximum position of opening if sliding, in position of opening at 90 degrees if hinged (width limit of passage).

The exit ways and the emergency exits must remain free of obstacles and allow the reaching of a safe place as fast as possible.

In case of danger, all the workplaces must be evacuated rapidly and in full safety by the workers. The number, the distribution and the dimensions of the emergency ways and exits must be suitable to the dimension of the workplace, to their location, to their utilization, to the equipment installed, as well as to the maximum capacity of the area.

The exit ways and the emergency exits must have a minimum height of 2.0 meters and a minimum width in conformity to the legislation in force regarding the subject of fire fighting.

In the event that emergency exits are equipped with doors, they should open toward the exodus and, if they are closed, they should be easily and immediately operable by any person who needs to utilize them in emergencies. Door openings of emergency exits towards the exodus are not required when they could create dangers for the means of conveyance or other causes, exception made for the adoption of other measures specifically authorized by the Fire Department operating in the territory.

The emergency exit doors should not be locked, unless otherwise specifically authorized by the authority.

In workplaces or warehouses it is forbidden to use as emergency exits: vertical sliding doors, rolling shutters and revolving doors.

The exit ways and the emergency exits, as well as the circulation ways and the doors giving access into them, should not be blocked by any objects so that they can be utilized at any moment without impediments.

Exit ways and emergency exits must be highlighted by proper signaling, conform to the norms in force, lasting and placed in appropriate areas.

Exit ways and emergency exits requiring lighting must be supplied with safety lighting having a sufficient intensity, which will automatically switch on in case of electrical system failure.

The buildings built or entirely adapted to the processes representing risks of explosion or specific risks of fire in which more than 5 workers are assigned, must have two distinctive stairways easily accessible or comply with what is provided by the specific normative on fire prevention. For the buildings already built we should proceed conformingly, unless impossibility is checked by the organ of vigilance: in such case the most efficient measures and precautions are provided. The derogations already granted maintain their validity, except different measures provided by the organ of vigilance.

For the workplaces already in use before January 1st 1993, the provision contained in comma 4 (about number, distribution and the dimensions of the ways) is not applicable, but they must have a sufficient number of exit ways and emergency exits.

**The evacuation for disabled people**

Workplaces must be structured keeping into consideration, if it is the case, probable disabled workers. This obligation is in force, in particular, for the doors, the ways of circulation, the stairs, the showers, the bathrooms, and the work areas occupied and utilized directly by disabled workers. This provision is not applicable to the workplaces utilized before January 1st 1993, but suitable measures should be adopted in order to allow the mobility and the use of sanitary and personal hygiene services.
Fire resistance of materials

<table>
<thead>
<tr>
<th>Resistance</th>
<th>Etancheite</th>
<th>Isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>E</td>
<td>I</td>
</tr>
<tr>
<td>Capacity to resist to the collapse</td>
<td>Material not producing flames or gas</td>
<td>Capacity of thermal isolation</td>
</tr>
</tbody>
</table>

- **R**: XXX element that maintains **resistance** over time (XXX = minutes)
- **RE**: XXX element that maintains **resistance** and **eteancheite** over time (XXX = minutes)
- **REI**: XXX element that maintains **resistance**, **eteancheite** and **isolation** over time (XXX = minutes)
FIRST AID

Introduction

Analogously to what has been provided for fire prevention, also first aid is considered as part of the problem that the employer must deal with inside its company.

Law 626/94 in fact provides for the designation of people who must intervene to promptly help an injured person and if necessary handle the situation up to the arrival of professional rescuers.

Already since 1955 with Law 547/55 (chapter IV° of title X “Personal means of protection and emergencies aid”), obligations have been prescribed for the workers to report promptly the occurring of an accident to the management and the employers including the ones of minor damage, so that the person injured can be immediately treated.

As concerns the improvement of safety and health conditions at the workplace, deriving from the transposition of EU Directives into Law 626/94, the problematic of first aid has been further on regulated (see chapter III° of title II° “Prevention of fires, evacuation of the workers, first aid”, in particular art. 15). Such article of law prescribes that, within every company, protocols of intervention should be predisposed regarding the matter of first aid and the designation of people who must intervene if necessary to help an injured person.

Obviously, the persons committed to intervene in case of an accident, should receive proper training and equipment in accordance to the principals of a Law passed successively to Law 626/94.

Sanitary emergency

A sanitary emergency is usually considered an uncontrollable and dramatic event. As a matter of fact in Italy the education of the masses and the permanent training for the population to organize and provide first aid does not exist. The outcome of such situation heavily reflects on the result of sanitary emergencies involving the stopping of vital function (cardiopulmonary arrest, respiratory arrest).

In case of such emergencies, it is very important to immediately activate the chain of survival:
1. precocious alerting (call the emergency operator);
2. precocious cardio respiratory resuscitation (to be done by the rescuer);
3. precocious defibrillation;

It is fundamental to support the vital functions through the cardiopulmonary resuscitation because it keeps the oxygen flow to the brain – limiting the neurological damages – the heart and other organs up until the arrival of a doctor properly equipped for the definitive restoring of the suspended functions.

When is it necessary to support the vital function?

Respiratory arrest

In case of primary respiratory arrest, the heart keeps beating and the blood carries oxygen to the brain and to the other vital organs for a few minutes. The pulse of the carotid is present.

The respiratory arrest can be caused by:

- obstruction of the airways by foreign bodies,
- extended loss of consciousness,
- inhalation of smoke during a fire,
- drug overdose,
- fulguration,
- heart attack.
The intervention of the rescuer in case of respiratory insufficiency or arrest improves, through the resuscitation mouth-to-mouth, the oxygenation to people having a beating heart to prevent cardiopulmonary arrest.

**Cardiopulmonary arrest**

In case of primary cardiopulmonary arrest the circulation of blood is completely stopped, the oxygen does not reach the vital organs, such as the brain, in which the irreversible neurological damage starts 4 minutes after the arrest.

The cardiopulmonary arrest can be produced by heart attack, heavy bleeding, fulguration, trauma with bleeding.

The intervention of the rescuer in case of cardiopulmonary arrest, which makes sure of the presence of a pulse by touching it, allows through the external cardiopulmonary resuscitation the restoring of blood circulation in order to protect the brain and other organs from the lack of oxygen.

In case of primary coma, not as consequence of a cardiopulmonary arrest, there could be a regular cardiorespiratory activity.

**State of coma**

The state of coma is the condition in presence of which the person injured does not answer to the basic commands, as the requests to show the tongue or open the eyes. The state of coma can be caused by:

- ictus,
- intoxication by drugs,
- syncope,
- hypoglycemia,
- fulguration,
- epilepsy.

The rescuer should maintain the airways opened by contrasting the lowering of the tongue base with the maneuver of overexertion of the head and place the victim on the side in safety position because during coma the reflexes of the cough and deglutition may not function. Such deficit exposes the victim to the risk of inhalations of gastric substances regurgitated that could cause choking.

**Sequence of intervention**

For a correct and effective approach to a person having an arrest of the vital functions, it is necessary to follow a predefined sequence of operations that allow the rescuer not to omit important maneuvers and maintain the necessary control even in dramatic circumstances.

The phases of the sequence are:

1. verification of the state of consciousness;
2. call the emergency operator;
3. open the mouth and verify that the airways are opened (look, listen, feel);
4. aid ventilations (2 insufflations);
5. palpation of the carotid pulse;
6. start cardiopulmonary resuscitation (15 compressions);
7. continue the cycles of the cardiopulmonary resuscitation and the mouth-to-mouth ventilation with a relation of 15:2.

Approaching a victim seized by an illness, it is recommended to check the consciousness by asking: “how are
you?” and slightly moving the shoulder.
If no answer is received (state of coma), call immediately the emergency operator and supply the following information:
• place of the event;
• telephone number from which you are calling from;
• description of what happened;
• number of people involved;
• conditions of the victim (consciousness, breathing, cardiopulmonary activity).

Next steps consist in evaluating the respiratory activity. Such analysis requires some preliminary maneuvers:
• place the victim on its back and on a hard surface (floor);
• open the mouth by keeping your fingers crossed and check the presence of liquid or solid materials which should be removed with the use of the fingers as hooks and of an handkerchief;
• Positioning of the head in overextension, by putting one hand on the forehead and the other one under the jaw; the maneuver lifts the base of the tongue which could be obstructing the airways

\textbf{Overextension of the head and opening of the mouth}

At this stage it is possible to evaluate the missing of a spontaneous breathing by putting the ear on the victim’s mouth for no more than 5 seconds.

From this position it is possible to see with the code of the eye the moving of the rib cage, the breathing noises and the passing of warm air.

\textbf{Assessment of breathing activity}

Once verified the absence of spontaneous breathing, the rescuer must give two insufflations by blowing slowly approximately 800 cc of air (equivalent to a forced exhalation) in the victim’s lungs using the mouth-to-mouth method, in other words cover the victims’ mouth with your own, block the nostrils with your fingers and maintain the head in an overextended position.
In this phase it may happen not to be able to put air in the victim's lungs; such situation should make think that a foreign body can be stuck in a place not reachable by the rescuer's fingers and therefore the maneuver of Heimlich is necessary, which consists of compressing the chest to expel the foreign body obstructing the airways.

After the 2 insufflations, the rescuer must check the presence of cardiopulmonary activity palpating the carotid pulse for no more than 10 seconds. This maneuver is executed by maintaining the overextension of the head with one hand on the forehead and with three fingers of the other hand positioned between the larynx and the neck muscles try to find the pulse.
The taking of the heartbeat at the pulse is not reliable because it could absent in certain situations, though the maintenance of a cardiopulmonary activity. Once the absence of the carotid pulse has been verified and therefore the condition of cardiopulmonary arrest, the rescuer must start immediately the maneuver of cardiopulmonary resuscitation that consists of compressing the heart between the sternum and the spinal column. The rescuer knees down on the victim’s side, he puts one hand on top of the other and on the lower half of the sternum; then he compresses, keeping his arms straight, the sternum with a sufficient force to lower it of 3-5 cm (only in adults).

The reading and the study of the maneuvers illustrated in this chapter, reduced to the essential for necessity, should be supported by practical mastering, indispensable for facing with efficacy and confidence the situations presented.
FOOD SAFETY

MAIN TENDENCIES IN COMMUNITY LAW REGARDING FOOD INDUSTRY

Tendencies in doctrinal classification

In doctrine two tendencies are recognized, linked to a general approach in matter of rules and regulations in various countries. These are:
- Countries with prevalently protective-fiscal set of rules,
- Countries with prevalently hygienic-sanitary set of rules.

It is important to underline the term “prevalently” because it indicates a tendency and not an exclusive behavior in setting out rules and regulations in a specific field. However, at a careful analysis we can see that in any country both tendencies are generally or maybe inevitably present, since it is evident that a normative relating to food safety disregarding completely the hygienic-sanitary aspects would mean exclusion of the element safety for the consumer, and even before that exclusion of the element safety during the phase of production.

In other words, it’s not possible to assert that in the draft of a normative a hierarchy of rights to defend may be present, in which the economic interests might have aprioristic prevalence on the interest to preserve and protect the health status.

It is, however, possible to identify a tendency by considering the quality and quantity of legislation regarding the food industry.

a) countries in which a hygienic-sanitary approach prevails have developed a simple set of laws, characterized by easiness of interpretation and correlations among provisions. It's easy than to understand how the straightforwardness of all this is linked to a scientific knowledge that can only entail immediateness of reading and interpretation.

b) countries in which a protective-fiscal behaviour prevails, present a massive set of laws, very often characterized by a higher level of difficulty of interpretation. Also in this case it's easy to understand why the opportunity of implementing a political-economical approach follows quite linear logics, or at least linear respect to single opportunities that may vary according to changing economical situation, which are probably not at all linear, hardly repeatable and poorly comparable in time.

The community stance

Since the beginning, it has always been the policy of the European Community to plan a legislation of sector that would facilitate the development of a common language that would allow reasonable protection of the health status of the consumer through a series of rules that presented:
- the highest level of transversality in respect to the interests of the ultimate consumer, which should in time be always less an ultimate consumer of single member country and always more an ultimate European consumer. These are always in the form of “Regulations”.
- The maximum level of “Detailed Directive” that, during the phase of absorption, would reduce to a minimum the possibility of adaptation for the single member countries.

It might be interesting to underline the fact that at the beginning of the production of community laws regarding food industry, the European legislator clearly showed a will to establish order in specific sectors through Regulations.

The first sectors to be thus regulated were those regarding food products with the highest level of distribution and that therefore required the maximum level of protection in Europe. At that time (decade 1970-1980), with a normative based on hygienic-sanitary elements, but inspired by the necessity to establish economic harmony among the various interested countries (which all had an agricultural economic system strongly linked to such products and therefore to be safeguarded), were issued:
- EEC Regulation n. 144/71 of the Council of June 29, 1971, concerning drinking milk and dairy products “Provisions of common organization of markets relating to drinking milk and dairies”. (France, Germany, Italy and Benelux were all countries in strong competition upon aperture of markets).
- EEC Regulation n. 566/76 of the Council of March 15, 1976 on provisions relating to “….fat content in whole milk.”
EEC Regulation 337/79 and 338/79 of the Council concerning wines, followed by a number of other regulations necessary to resolve such a complex subject, due mostly to the interests in this category.

All these represent the drag of an economic system in which:
- by one side we see the will to go towards a community in the most complete sense of the word, while
- by the other side it is still evident the sense of a Europe of nations firmly tied and deeply-rooted in centuries of political individualities and geographical boundaries.

We must go to the decade 1980-1990 to witness the promulgation of norms settled at a less imperative and strict level: the Directives.

Following this approach are issued:
- Directive 89/109/EEC of the Community Council of December 21, 1988 “...relating to materials and articles intended to come into contact with foodstuffs”.
- Directive 89/227/EEC “...relating to import of products of animal origin from third countries”.
- Directive 89/397/EEC “...relating to import official microbiological control of foodstuffs”.

However, all of these have the characteristics of the “Detailed Directives” and it is therefore evident the will to leave no space to recipient countries, mainly because of the prevalent hygienic-sanitary nature of the regulated subject.

In the decade 1990-2000 we observe an alternation of law-making, which proposes:

a) Regulations:
- Inspired mainly by the necessities originating from the entrance in the community of new countries, which consequently determined new equilibriums based on political-economical interests (for example, in view of the entrance of Greece, a country in strong productivity competition with Italy and Spain lead to the Regulation (EC) n. 2568/91 of the Commission of July 11, 1991 “... relating to the characteristics of olive oil.”)
- Inspired by the necessity to regulate new sectors coming into market (for example, Regulation (EC) n. 2092/91 of the Council of June 24, 1991 “... on organic production of agricultural products and indication referring thereto on foodstuffs”).
- Inspired by the urgent necessity to safeguard the hygienic-sanitary status (for example, Regulation (EC) n. 194/97 of the Commission of January 31, 1999 on “... setting maximum levels of certain contaminants in foodstuffs”.

b) Directives
All with precise hygienic-sanitary connotations; contemporarily we must also observe a strongly reduced production of “Detailed Directives”.

Therefore we can identify the aspects of a Directive in:
- Directive 90/220/EEC concerning “...deliberate release into the environment of genetically modified organisms”.
- Directive 93/99/EEC “...on the subject of additional measures concerning official control of foodstuffs”.

While it's possible to identify the characteristics of “Detailed Directive” in:
- Directive 90/18/EEC “...on inspection and verification of food laboratory practice”.
- Directive 92/05/EEC “...relating to sanitary problems concerning production and distribution of meat products and foodstuffs of animal origin”.

A fundamental line of demarcation
At the end of the decade 1990-2000 we may say that the community legislator has accomplished all the work of
ordinary administration necessary for a legislation able to guarantee an acceptable asset in terms of protection of hygienic-sanitary safety.

Despite an accurate use of the language which led to a production of sufficiently clear norms generally free of possible interpretations, there are still topics (and this is easily comprehensible due to massive quantity of material produced) that led to the necessity of an outline law.

On February 1, 2002 Regulation (CE) 178/2002 was published, dealing with the “European Parliament and the Council laying down the general principles and requirements of food laws, establishing the European Food Safety Authority and laying down procedures in matter of food safety”.

A reading of the “Considerations” (67 motives inspired the Parliament) is sufficient, much more than what is contained in the detailed text of the Regulation, to acknowledge the reach of this law in regards of:
- a clear and unequivocal definition of “food”
- immediate identification of appropriate procedures to guarantee food safety.

The text of Regulation (CE) 178/2002 fits completely the food sector when considered jointly with Directive (EC) 46/2002 of the Council of June 10, 2002, with which we obtain a complete definition of the possible different types of foodstuff for human use, identifying:

a) After “commonly used foodstuffs” considered in terms of safety:
- in Directive 89/109/EEC of the Council of December 21, 1988 “relating to materials and articles intended to come into contact with foodstuffs”.
