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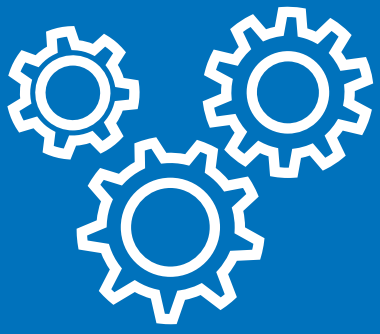
Disaster and Emergency Planning Guide for Industry and Workplaces

Istanbul Seismic Risk Mitigation and Emergency Preparedness Project (ISMEP)



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Disaster and Emergency Planning Guide for Industry and Workplaces

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In 2007, “Disaster Preparedness Training Materials for Society” were prepared by the Istanbul Project Coordination Unit (IPCU), Governorship of Istanbul, under the component A of “Istanbul Seismic Risk Mitigation and Emergency Preparedness Project (ISMEP)”.

In 2020, “Disaster Preparedness Training Materials for Society” were rewritten under the “Society Training Modules” in line with the developing technologies, new approaches of learning and having regard to the changing conditions, regulations and laws, theories and experiences worldwide

We wish to thank all institutions and persons, especially the Ministry of Interior, Republic of Turkiye, and AFAD Presidency who did not withhold their precious contributions from us and all owners of the publications listed under “References” for their contributions as well as the project team for their careful and devoted efforts throughout the project, which is actually a product of a long an labour-intensive study which came into being thanks to a vast knowledge and experience of many institutions and persons.

CONTENTS

Abbreviations

AFAD	Disaster and Emergency Management Presidency
AFADEM	Disaster and Emergency Training Centre
AYM	Disaster Management Centre
BLEVE	Boiling Liquid Expanding Vapor Explosion
CBRN	Chemical, Biological, Radiological, Nuclear
DASK	Natural Disaster Insurance Agency
EEC	European Economic Community
EN	European Norm
EP	Emergency Plan
FEMA	Federal Emergency Management Agency
GIS	Geographical Information Systems
HAZMAT	Hazardous Materials
IBHS	Institute for Business and Home Safety
ICS	Incident Command System
IEC	International Electrotechnical Commission
ILO	International Labour Organization
IPCU	Istanbul Project Coordination Unit
IPKB	Istanbul Project Coordination Unit
ISMEP	Istanbul Seismic Risk Mitigation and Emergency Preparedness Project
ISO	International Organization for Standardization
ISO	Istanbul Chamber of Industry
IT	Information Technology
ITB	Workplace Registration Certificate
LPG	Liquefied Petroleum Gas
MSDS	Material Safety Data Sheet
MTA	General Directorate of Mineral Research and Exploration
NACE	National Association of Corrosion Engineers
NFPA	National Fire Protection **Association**

NGO	Non-Governmental Organization
OHSAS	Occupational Health and Safety Assessment Series
OSB	Organized Industrial Zone
OSTIM	Middle East Industry and Trade Centre
PASS	Pull, Aim, Spray, Sweep
PMR	Private Mobil Radio
PPE	Personal Protective Equipment
SARS	Severe Acute Respiratory Syndrome
SGK	Social Insurance Institution
SIM	Civil Engineering Certificate
SOP	Standard Operating Procedure
TAMP	Turkish Disaster Response Plan
TS	Turkish Standards
UDSEP	National Earthquake Strategy and Action Plan
WEF	World Economic Forum

How to Use This Guide?

This Guide is not intended for a specific sector or industry. It is designed as a general Guide to help the business managers or corporate emergency planners prepare their own specific disaster and emergency plans in terms of certain issues.

Being a resilient and prepared workplace against disasters and emergencies is not only the responsibility of the government, but also of public institutions, private institutions and all people in workplaces. To this end, the target audience of the *Disaster and Emergency Planning Guide for Industry and Workplaces,* which has been updated and developed according to the Occupational Health and Safety Law No. 6331 and entered into force on June 20, 2012 and the subsequent regulations and communiqués, include all businesses, workplaces and employers, employers' representatives, personnel and all employees, apprentices and interns in both private and public organizations.

The employers and businesses are liable to provide healthcare and safety of all employees in accordance with the applicable laws and regulations. As requirements of this liability, they:

1. Work to prevent occupational risks, take all kinds of measures, make organization including training and information, provide necessary tools and equipment, adapt health and safety measures to changing conditions and improve the current situation;
2. Monitor and inspect to make sure the occupational health and safety measures taken at the workplace are observed and ensure that any nonconformities are eliminated;
3. Make or cause to make risk assessments;
4. Take into account suitability of the tasks for work in terms of health and safety when assigning such tasks to employees;
5. Take the necessary measures to prevent employees from entering places where there is vital and special danger, except for those who have been given adequate information and instructions.

You are not required to be an expert in emergency planning management to benefit from this Guide. What is required is that key personnel and organizational authorities in workplaces should make planning and disaster and emergency preparedness a part of the organizational culture. The primary purpose of the principles described here is to equip business owners, managers, supervisors and employees with such tools, plans and processes that facilitate disaster and emergency preparedness. For this purpose, this Guide:

- Provides you with guidance and a standardized approach to disaster and emergency planning using earthquake as an example;
- Creates a framework to facilitate preparedness of your organization for earthquakes and similar disasters;
- Constitutes a template for your organization to develop disaster and emergency plans.

In accordance with the applicable laws and regulations, while it is the responsibility of the employer to commission experts to perform all kinds of work for disasters and emergencies in the workplace, it is the responsibility of the employees to comply with the plans and measures taken in this regard. Consequently, the target audience of this Guide are all people who need a Disaster-Prepared Workplace.

We based our method on all applicable laws, regulations and communiqués in Turkiye, particularly Law No. 5902 on the Organization and Duties of the Disaster and Emergency Management Presidency, Law No. 6331 on Occupational Health and Safety, Law No. 7269 on Measures to Be Taken and Assistance to Be Provided in Case of Disasters Affecting Public Life, Law No. 2941 on Mobilization and State of War, and Law No. 5703 on Disaster and Emergency Response Services as well as AFAD's initiative of Disaster-Prepared Workplace. The Disaster-Prepared Workplace is a national program developed to help businesses in communities under risk to implement actions for mitigation of Earthquake Risks.

We recommend the following three steps for businesses to achieve the goal of being prepared for disasters and emergencies within the scope of Disaster-Prepared Workplace:

1. ASSESS YOUR RISKS
2. MAKE A PLAN
3. TAKE ACTION

These three steps seek answers to the following questions:

1. Where would you, as an employer or employer representative, like to be in terms of disaster and emergency preparedness?

This is a question which should be asked strategically. As per the law and regulations, it is mandatory for the employer to fulfil his/her responsibilities in this respect, allocating financial resources and administrative assignments to this end. Hence this Guide will help you understand the significance of making a Disaster and Emergency Plan by first providing information to assess your internal and external risks.

2. In relation to the risks you have assessed, to what extent is your workplace prepared for disasters and emergencies or is it actually prepared for the identified risks?

Making a plan to identify control measures of structural and non-structural risks and show how and with whom they will be dealt in order to answer this question constitutes the second step of this Guide. Many businesses have fire prevention or evacuation plans for their facilities. However, if you are a small business owner without a fire prevention, earthquake or other emergency plan, this Guide provides you with a general framework for preparing such a plan and helps you to reduce potential risks and damages and control risk and, consequently, make the right response. **The Disaster and Emergency Plan** essentially combines together and organizes different plans such as **Emergency Plan, Internal Emergency Plan, Business Continuity Plan, Work Resumption Plan, Continuity Operations Plan, Support Continuity/IT Continuity Plan, Crisis Communication Plan, Preventive Plans Against Internet-Based Attacks and Disaster Rescue Plan** under a single roof.

To understand where you stand in terms of disaster and emergency preparedness, you can start by asking yourself a few simple questions:

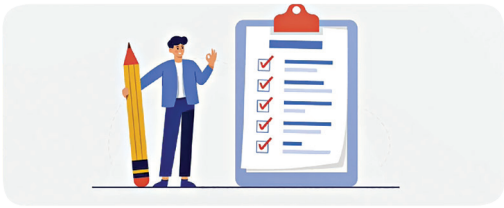
- Do you have any disaster and emergency plan?
- Are you organized for disaster and emergency planning?
- How vulnerable is your business to damage, injury and loss?
- What can be done to mitigate the hazards and risks with respect your employees and their families?
- What will you and your employees do when an earthquake or similar disaster strikes?
- How quickly can your business resume its works after an earthquake or similar disaster?

3. How to achieve your target?

Creating a plan is just one element of a disaster and emergency preparedness program. The plan raises the employees' awareness of possibility of a disaster and emergency and the company's awareness of approach to respond to it. This Guide provides information about preparing a plan which includes identification of risks and mitigation of potential damages in case of a disaster and emergency and about the steps to be taken about the required trainings and drills afterwards.

1 **Assess Your Risks**

2 **Make a Plan**



3 **Take Action**

In order to create a Disaster-Prepared Workplace, you can mitigate your potential damages in disasters and emergencies or overcome them with minimum damage when they occur by following the steps of the planning process as reduced to three stages indicated in Figure 1.

Intended for industry and workplaces, this Guide benefits from current approaches and international standard methods concerning disaster and emergency planning. Forms, checklists and templates to be used as examples in the stages of mitigation, planning, preparedness, response and recovery are included not at the end of the book, but in the relevant chapter as far as possible. At the end of each main heading, a checklist containing the steps regarding that heading, if applicable, is also included.

Each building, facility, workplace and employees working in them have specific conditions; each manager or operator should, therefore, develop his/her own unique disaster and emergency plan to satisfy current requirements and working methods. The goal of this Guide is to help initiate and develop the planning process according to the needs and financial means of the business.

As you review the checklists provided in this guide, don't be discouraged by the fact that at first you will answer NO to most of the questions.

If your organization already has a good plan, you can use this Guide as a resource to reconsider and update your plan.

The Disaster and Emergency Plan will help you assess potential hazards and risks, prepare for disasters and emergencies, and check how your workplace will deal with disasters and emergencies. The planning work to be performed to make your workplace a Disaster Resilient Institution and Disaster Resilient Workplace in a short time basing on the integrated approach summarized above may consist of the following steps:

In scope of the planning process, you will be able to:

- Assess hazard and risk and thus identify disasters and emergencies that could affect you;
- Identify how you can minimize risks;
- Build disaster and emergency organization and teams;
- Make assignments for works to be performed before, during and after disasters;
- Designate evacuation and assembly areas and rules;
- Define in the plan how you will respond upon occurrence of disasters and emergencies;
- Learn the possibilities of cooperation with other institutions and organizations in case of disasters;
- Test your plan regularly through annual exercises and drills.

Every deficiency you correct will improve you in being prepared for disasters and emergencies. And the knowledge you will gain from this process will help you prepare a Disaster and Emergency Plan specific to your needs.

This Guide is a practical reference which will meet the need of industries and workplaces in all our cities in the Marmara Region, especially Istanbul, the heart of the Turkish economy, to prepare for possible disasters. The Guide contains the best and most up-to-date information available at the time of its publication, aiming effectively mitigating of loss of life and property by arising disasters and being prepared against risks. Such preparedness can certainly increase the safety of your life and property, but does not give any guarantee in this respect.

Foreword

Disasters, emergencies, incidents and accidents such as earthquake, flood, deluge, fire, storm, landslide, avalanche, hazardous materials, work accidents, ship and aircraft accidents, terrorist attacks, cyber-attacks or global pandemics such as avian influenza, SARS, Corona, etc. may occur anytime, anywhere and in different forms. Such disasters, emergencies and accidents may have devastating impact on business life in case there is no planned and systematic preparedness. While an earthquake or similar crisis situation can give damage to stocks, the loss of key personnel and collapse of the computer system can make it difficult to conduct business or maintain services, making it impossible to continue normal daily activities. Worse still, these events can result in the loss of important customers or even the bankruptcy of the company. However, risk mitigation and preparedness as well as response and recovery in scope of a good planning against these events can minimize the adverse impacts of disasters and emergencies and, furthermore, prevent occurrence of some disasters and emergencies.

By means of a Disaster and Emergency Plan, it is possible to prepare for earthquakes, floods or fires and all related disasters and emergencies, from theft and collapse of IT systems to unauthorized entry into restricted areas and illness of key personnel. In this context, disaster and emergency planning is also crucial for small businesses, which are mostly lack of the resources to cope with these situations. Lack of a plan or an inadequate or unsuccessful plan for disaster and emergency preparedness can turn disasters, emergencies and accidents into catastrophes. A business may, at best, lose some customers and markets as it tries to resume its daily routine after a disaster or emergency. However, if it fails to go back to its normal order after a disaster and emergency, it may, at worst, be completely vanquished from the market. As it is, a proper Disaster Management System approach is required for business and service continuity as well as safety of life and property against all kinds of disasters, emergencies and accidents. Disaster Management is an integrated management system that includes elements such as damage and risk mitigation, preparedness, response and recovery on the basis of risk and hazard analysis everywhere and against all types of disasters and emergencies. Thus, it allows all business continuity actions against disasters, emergencies and accidents are handled as a whole within a single system.

We should stop discussing when and at what magnitude disasters such as earthquakes will occur and, instead, first consider the studies carried out so far and learn to look at disasters and disaster management as a whole.

I would like to thank those who gave me this opportunity and did not spare any help in preparing this Guide and, finally, I wish it to be useful.

Prof. Dr. Mikdat Kadıoğlu

Istanbul, 2023

Introduction

It is known that disasters and emergencies such as earthquakes at home and abroad have severe impacts on businesses or workplaces, resulting in heavy loss of life and property. For this reason, business owners, employers, managers, directors and employees should consider not only the physical and emotional impacts of disasters and emergencies such as earthquakes on their lives, but also the economic loss leading to loss of production for the business.

Megacities and industrial plants where thousands of people work as well as the complex technologies used in these plants increase the accident risks and the negative impacts of accidents. As one of the world's largest cities, Istanbul bears the burden of both its dense population and industrial plants. The fact that Istanbul is located on the banks of an international sea route with heavy tanker traffic, i.e. Bosporus, and in a region with high earthquake risk also increases the likelihood of disaster and accident risks.

In the 1989 Loma Prieta earthquake in the San Francisco Bay Area, it is estimated that 50% of small businesses in Santa Cruz, for example, became permanently inoperative. Following the 1994 Northridge earthquake in California, 25% of the 1,100 businesses were unable to recover from the damage according to the survey. This loss of business directly caused by the earthquake disaster had a major negative impact on the regional economy. *(Earthquake Planning For Business: A Guide For Businesses in British Columbia, Canada.* https://www.iclr.org/wp-content/uploads/ PDFS/earthquake-planning-for-business.pdf)

In short, even in the case of the United States alone, it has been stated by US research institutions that "two out of five businesses that experienced a disaster or an emergency leading to a major disruption could not continue their operations, and one third of those that managed to continue their operations ceased after two years." (Gartner Roberta Witty, Donna Scot: *Disaster Recovery Plans and Systems Are Essential,* 2001. Gartner, Inc.)

After the 1995 Kobe earthquake in Japan, property loss alone, not including loss of equipment and inventory, caused a loss of 147 billion dollars. In addition, indirect losses of 50-150 billion dollars are estimated to have been incurred because of the disrupted business operations and production losses. More than 1,000 small- and medium-sized businesses closed permanently, mostly due to reduced cash flow for an extended time.

Likewise, in Turkiye, disasters and emergencies such as earthquakes and floods have adversely affected public and private sector businesses, institutions and organizations. According to the reports by the Kocaeli Chamber of Industry, for example, after the earthquake in August 17, 1999, 345 out of 1,062 member businesses were damaged. Large companies account for 20% of Kocaeli Chamber of Industry members. 34% of small- and medium-sized and 26% of large-sized businesses were damaged. All large-sized businesses are insured. While the operating capacity of member businesses was 70%

before the earthquake, it dropped down to 31% one month after the earthquake. This rate increased to 54% six months after the earthquake, while production stopped for 34 days in average.

Another example of structural damage is Adapazarı. There were 340 industrial plants in Adapazarı and 23 of them were large industrial plants. After the 1999 earthquake, 34 plants suffered heavy damage and 73 got medium and 19 light damage. A total of 42,902 workplaces and 285,211 houses got damaged in the 1999 Gölcük earthquake in the Marmara Region, which was felt in a wide area from Ankara through Izmir. While the number of injured people was 43,953, people who became disabled were recorded as 505. Collapsed and heavily damaged buildings were 16,649 in number and there were 90,536 houses and 14,133 workplaces with medium damage and 102,822 houses and 13,344 workplaces with minor damage.

Furthermore, flood disasters, increasing in number and severity in recent years, cause losses similar to earthquakes. In the 2009 Ayamama Creek flood disaster in Istanbul, for example, a total of 4,730 houses and workplaces and 17 factories were damaged. The rate of insured workplaces among those damaged was reported to be 30%. There were a total of 27 deaths and 4 casualties, mostly employees in the workplaces.

During a disaster, official rescue teams should prioritize communal living areas, especially schools, depending on the day and time of the incident. On account of many reasons such as disruption or blockage of the transportation network, it may take time for specialized search and rescue teams to have access to disaster areas in neighbourhoods. For this reason, activities such as **Disaster Preparedness** trainings and **AFAD Volunteer** training programs are carried out in the body of AFAD Presidency.

While the Disaster-Prepared Workplace Project in scope of the **Disaster- Prepared Turkiye Program** initiated by the Disaster and Emergency Management Presidency (AFAD) gives support for prevention of big industrial accidents and minimize their impacts in case of disaster and emergency, it also aims to prevent possible loss of life and property and environmental damages (AFAD, 2020).

This approach adopted by AFAD emphasizes upon Disaster Preparedness as an important issue. The basic principle in disaster management is to prepare for the worst. For this reason, among the scenarios we will list such as incident, accident, emergency, major (industrial) accident and disaster, the worst scenario is disaster. As shown diagrammatically in Figure 2, any event or hazard can have consequences such as disruption or interruption of the business activities as well as the community life in a settlement, and even causing loss of life and property. Sometimes only the workplace, sometimes the region, and sometimes both the region and workplaces can be affected by disasters. A workplace resilient to disasters and emergencies will, therefore, be naturally prepared and resilient against major accidents and incidents as well.

Disasters occur as a result of the negative impacts of events caused by nature, technology and people, causing considerable damage and reaching to such dimensions that society cannot cope with. A natural event such as earthquake, for example, may turn into a disaster on account of inadequate or poor building stock, preparedness, response capacity and similar factors in the area it occurs.

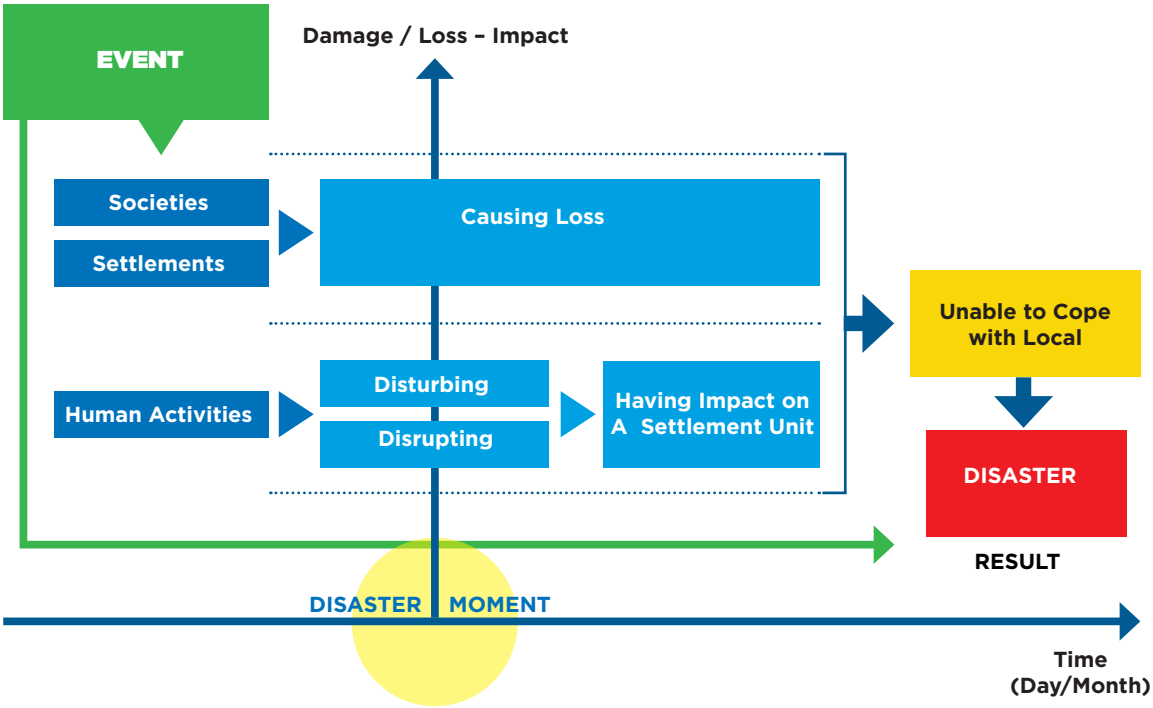


Figure 2. The process leading to DISASTER with most devastating RESULT because of EVENT (hazard, threat, accident and similar things caused by nature, technology and human) and its impact.

Large-scale accidents in connection with disasters and emergencies in industrial plants can adversely affect the safety of both employees and production, while giving serious damage to the environment. These accidents may occur as a secondary disaster resulting from disasters or may occur due to failure to take necessary actions. Legislative efforts have been started to prevent environmental damages as well as loss of life and property. In this context, the "Regulation Regarding Prevention of Major Industrial Accidents and Mitigation of Their Impacts", which assigns duties and responsibilities to industrialists in line with the "Seveso Directive" issued by the EU for the prevention of industrial accidents and mitigation of their impacts, was published in 2013 with the contributions of AFAD. In the same year, the **Disaster-Prepared Workplace Project** under the **Disaster-Prepared Turkiye Program** launched by AFAD and the **Major Industrial Accidents Training** were also launched to facilitate the measures to be taken in industrial facilities.

Thus, we are trying to meet our need for better education, training, preparedness and planning in disaster and emergency management in Turkiye to create disaster-resilient workplaces. Our country is now in a position to get out of the spiral of destruction and recovery after a disaster. **In modern disaster management, instead of crisis management consisting of intervention and recovery activities, risk management consisting of mitigation and preparedness activities is emphasized.** For this reason, in our country, instead of the approach of "How can we save our people from under the wreckage?" priority should be given to the works carried out within the approach of "Our people should not be buried in the wreckage!"

Why Is Disaster and Emergency Planning Important for Industry and Workplaces?

As can be understood from the national and international examples given in the previous section, experience up to date shows that most businesses are not prepared for disasters and emergencies, particularly earthquakes, floods and major accidents. This is despite the fact that the employers and employees are legally obliged to know the impacts of major earthquakes and similar disasters and emergencies that may occur in the workplace and to plan and prepare in advance (see Occupational Health and Safety Law, Articles 11 and 12). For this reason, businesses should make, put into effect and regularly implement plans to minimize physical, material and economic loss.

The main importance of disaster and emergency planning of businesses can be summarized as "providing safety of everyone, minimising the impacts of disasters and emergencies, and achieving a rapid recovery/business recovery after the disaster". The basic goal of planning is to ensure that employees, facilities and business activities are ready for disaster and emergency conditions. The Disaster and Emergency Plan is a tool that we do not want to have to use, but when we have to use it, it will put us in an advantageous position against disasters and emergencies. Having a good Disaster and Emergency Plan will give the workplace the capability and speed for response to the disaster correctly when required.

If you are a business owner, your employees are your most important asset to be protected. Likewise, if you are the owner of a building, the security of the business activities in it is closely related to your economic interests. If these are somehow disrupted, you may experience loss such as income, market and reputation. In addition, you, as an employer, are obliged to make a Disaster and Emergency Plan as specified by the relevant laws and regulations.

Disaster and Emergency Planning:

- It helps you fulfil your humanitarian and moral responsibilities as an organization to protect your employees, society and the environment.
- It ensures you are prepared for many hazards such as earthquakes, floods, fires, hazardous material releases/overflows, power and communication outages.
- It ensures compliance with local and national laws, regulations and standards.
- Being prepared for disasters and emergencies reduces a company's exposure to financial loss, legal fines, loss of market share, damage to equipment and products, or interruption of business operations, and increases its ability to recover.
- It reduces the burden of legal or criminal liability in the event of major or minor accidents.
- It protects and enhances the image and reliability of the workplace in the eyes of employees, customers, suppliers and society.

Consequently, public buildings, private companies and workplaces, as well as families and schools, should have a disaster and emergency plan in accordance with laws, regulations and standards. The biggest reason is that employees spend a significant part of the day in their workplaces. Disasters can

happen anywhere at any time, and the people or institutions responsible for response to disasters may not be able to meet our needs in a very short time after the disaster. Every organization or workplace should, therefore, have a disaster and emergency plan. In the absence of preparedness such as a disaster and emergency plan, everyone working in the workplace should participate in preparing and implementing of this plan.

Many settlements in our country are under threat from major risks arising from different types of disasters and emergencies such as earthquakes, floods, fires, landslides or occupational accidents. It should be kept in mind that disasters caused by nature, technology and human may result in loss of life and property, major damage to infra- and superstructures and to the living spaces, and disruption of production and deliveries. In general, those working in public institutions, private companies and workplaces, small and medium-sized industrial plants, factories or businesses such as OSBs, and those residing in their immediate surroundings are always under minor or major risk.

Like all segments of the society, public institutions and organizations, private companies, workplaces and business owners are also obliged to take necessary measures against disasters and emergencies in their buildings/plants that may affect the region in which they are located. Community-based preparedness for disasters and emergencies of any scale should, therefore, be among our main duties and goals.

In this context, both public and private sector buildings/facilities and workplaces should take all measures against all disasters and emergencies caused by nature, technology and human that may occur in their region. The Disaster and Emergency Plan must be implemented correctly in order to minimize the loss and damage that may occur.

Response and other similar works to be carried out after occurrence of the disaster cannot guarantee the continuity of public institutions and organizations and private businesses. However, actions to be taken before disaster help you get out of disasters and emergencies with the least damage possible.

In all kinds of disasters and emergencies, the employers, managers, administrators, operators, managers, teachers, personnel, technical personnel, occupational safety specialists, workplace physicians, nurses and similar employees working in different institutions, organizations, businesses and plants desire to:

- Minimise possible injuries/losses;
- Identify the hazard in advance and prevent/reduce it prior to occurrence of loss;
- Reduce the expenses that will arise from possible losses and responsibilities;
- Use tested processes and equipment;
- See that the institution/organization/business/facility is capable to resume working again and survive in terms of moral and legal obligations.

And, consequently, the purpose and main objective of disaster and emergency management activities is to:

1. Ensure life safety;

2. Protect property together with facilities, equipment, records and documents;

3. Take necessary measures so that production is not interrupted and service and business continue in the workplaces and their units in the event of any disaster and emergency.

The ripple effects of business scope and disasters should also be assessed. For example, the current situation, threats and sensitivities, critical time functions, operational, financial/economic impacts on businesses, relocation costs, loss of rent and business income, as well as suspension of public services should be evaluated separately. Furthermore, loss of business and customers, displacement, migration and late deliveries should also be considered and deemed as the wave impacts of disasters. Cost should be handled in two ways: direct and indirect costs. Loss is irreversible, and their economic impacts are felt even more deeply with direct and indirect costs. The indirect impacts of losses may cause businesses to close a few months after the disaster.

Considering all these conditions, it is known that there is a great need for an easily understandable and applicable updated disaster and emergency planning guide for industry and workplaces, the locomotive of the economy, depending on the changing laws and regulations as well as the increasing risks of disaster caused by nature, technology and human, especially the threat of earthquake.

Updated and developed in the light of this need and information the *Disaster and Emergency Planning Guide for Industry and Workplaces* will provide businesses with the ability to perform the activities in the steps summarized below in order to fulfil the goal of business continuity together with the safety of life and property:

• ***Before the disaster;*** determination of the hazards and risks that may arise as a result of the disaster, prevention of them if possible or mitigation of their possible impacts and to be prepared for disasters.

• ***During the disaster;*** correct behaviours acquired through trainings and drills and implementation of the principles of rescue, first aid and evacuation without fail.

• ***After the disaster***; timely, fast and effective response to the event; determination and implementation of the activities to be performed to minimize the losses and to enable the institutions to resume their normal work routine as soon as possible.

Current Status and Legislation

Considering the frequency of Turkiye's exposure to disasters caused by nature (earthquake, flood, landslide, avalanche, etc.), technology (nuclear, biological, chemical and industrial accidents, etc.) and human (accidents, fires, terrorism, war, migration, epidemics, etc.), the approach of **Integrated Disaster Management** and the relevant legal regulations and existing legislation regarding preparation and implementation of Disaster and Emergency Plans in workplaces are briefly presented in this section.

In the most general definition accepted by the United Nations, **disaster** is defined as: "All kinds of events caused by nature, technology or human which lead to physical, economic and social loss for people, negatively affecting societies by stopping or interrupting normal life and cannot be handled by local means." As can be understood from this definition, in order for an event to cause a disaster, it must cause loss in the settlements by disrupting or interrupting human activities. In other words, **a disaster is not an event itself, but a consequence, sometimes expected and sometimes occurring suddenly** (see Figure 3).

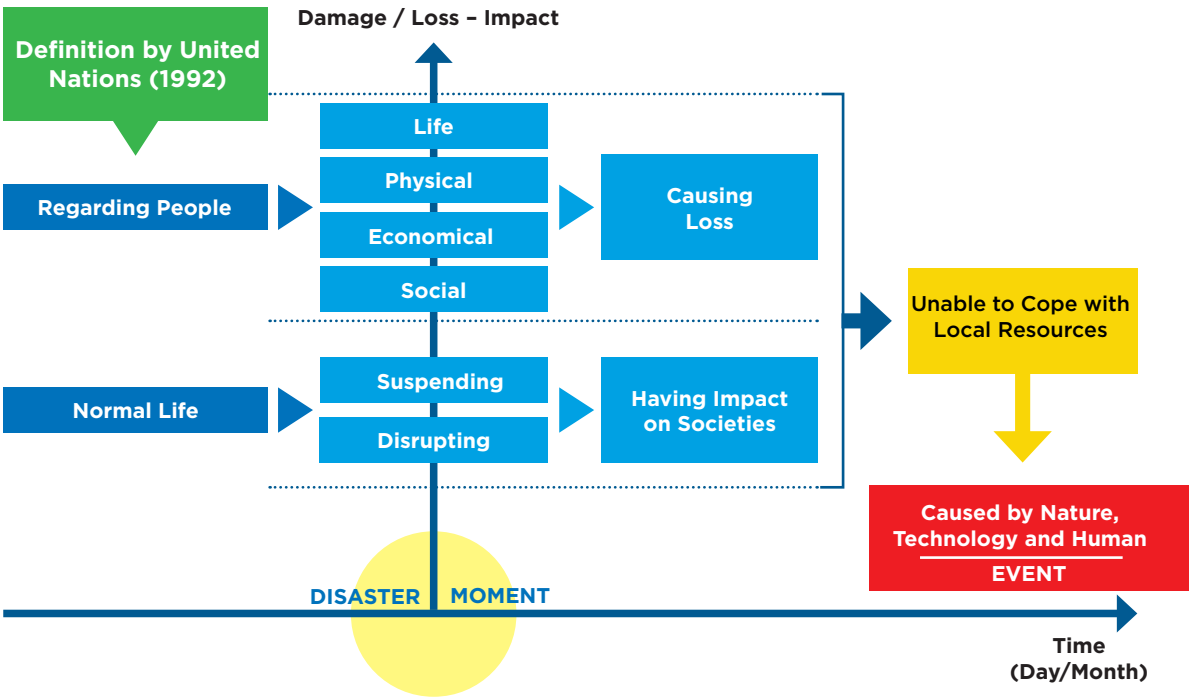


Figure 3. Schematic Definition of Disaster by United Nations

Many concepts and definitions such as disaster, disaster management, emergency management or disaster and emergency plan take place in the relevant legislation of Turkiye. Some of the terms used in the relevant laws, regulations and standards are given in the "Glossary" at the end of this Guide.

The emergency in the concept of disaster and emergency defines events such as fire, explosion, etc. that may occur in all or part of a workplace or facility and where police, fire brigade and ambulance response to it is sufficient (see Figure 4). **A plan that includes the works and operations to be carried out in all disasters and emergencies that may occur in the workplaces as well as the actions to be taken for information, referral, administration and implementation is also called Disaster and Emergency Plan.**

First of all, it should be understood that disaster and emergency management covers all the processes of analysis, planning, decision-making and evaluation to organize existing resources for mitigation, preparedness, response and improvement activities against all kinds of hazards. In the outer circle in

1. Mitigation Phase
2. Preparedness Phase
3. Response Phase
4. Recovery Phase

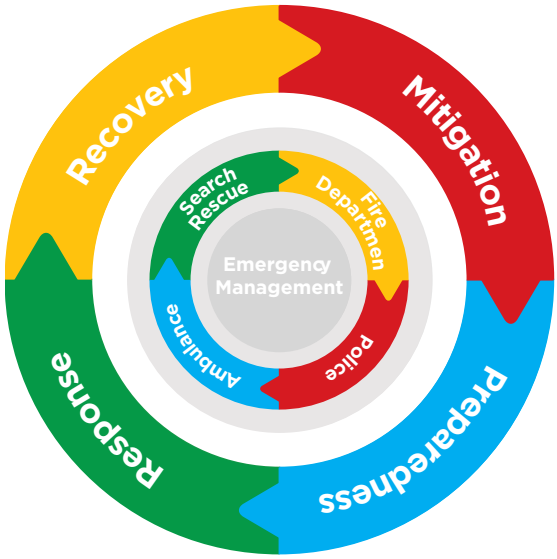


Figure 4. Basic Elements of Disaster Management

When the disaster studies which have been carried out in our country so far are closely analysed, it is seen that in the past we have directed most of our efforts to the "response" stage after disasters, i.e. crisis management. However, **Disaster Management** does not only consist of response activities such as rescue of people from under debris, hospitalization of them and fire extinguishing. On the contrary, the priority of modern disaster management (to minimise the need for response activities) is to protect people from hazards and reduce existing risks before disasters occur.

For this reason, you should remember that Disaster Management covers all the works of mitigation and preparedness for possible damages against disasters as well as emergencies and response and improvement works after disasters and emergencies. When even one of these actions is missing, we cannot talk about either the success of disaster management or the success of other stages.

Modern disaster management consists of four main phases, the content of which is explained in Figure 5 below. However, these four phases may sometimes need to be carried out in sequence and sometimes simultaneously. Because of this fact, it may be difficult to make a clear distinction between the phases, but it is conceptually useful to use these four main phases.

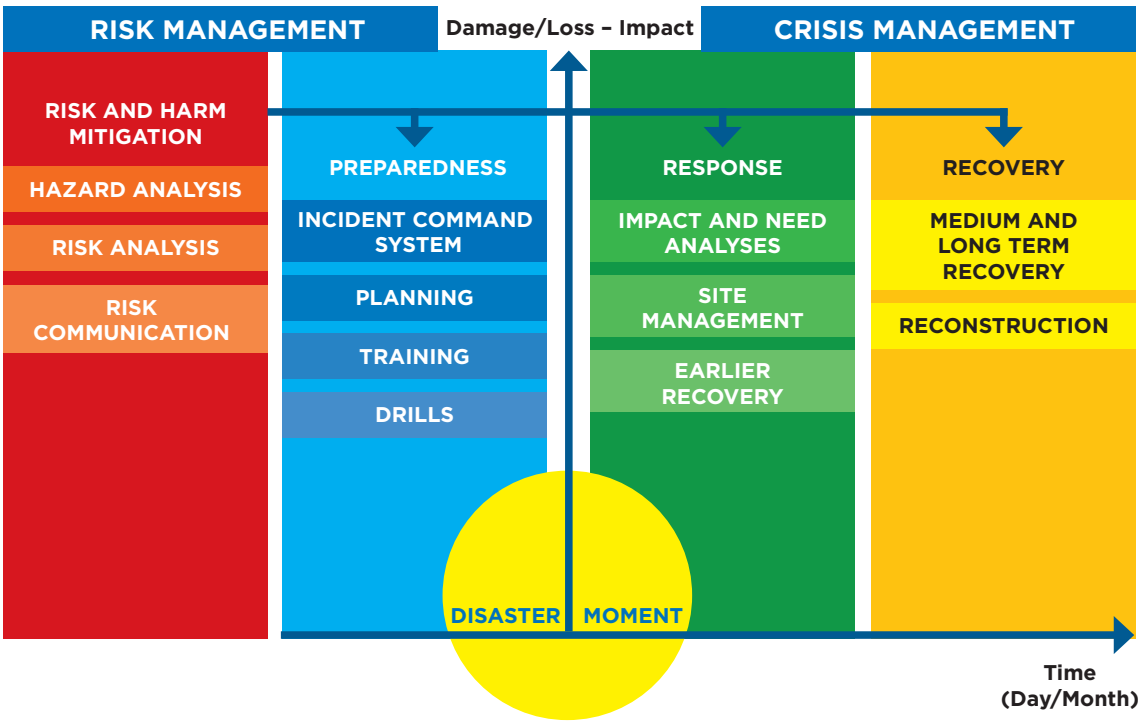


Figure 5. Contents of disaster management cycle; schematic representation of the elements of Risk and Crisis Management which constitute disaster management

The aims and objectives of the four main phases of disaster management shown schematically in Figure 4 and Figure 5 are briefly as follows:

1. **Mitigation:** This first phase of disaster management determines the steps to reduce the risks of injury and loss due to structural and non-structural factors in disasters like earthquake long before disasters occur.
2. **Preparedness:** This phase provides checklists that can be used to assess current practices and capabilities. Its purpose is to shed light on areas where your workplace needs to be better equipped and trained to fight against disasters and emergencies such as earthquake.

3. **Response:** This phase provides guidance on what employees should do as individuals and teams during and immediately after disasters and emergencies such as earthquake.
4. **Recovery:** This phase aims to support the assessment of capabilities of the workplace for re covery and resumption after disaster and emergency and the planning of recovery work to be performed after disaster.

In summary, in disaster management, pre-disaster protection activities such as Mitigation and Preparedness are called **Risk Management** and post-disaster recovery activities such as Response and Recovery are called **Crisis Management.** The sum of risk and crisis management is defined as **Disaster Management** together with all the phases they include. What should be taken into consideration here is that the activities at each stage in Figures 4 and 5 affect the success of the next activity. In other words, crisis management cannot be successful when risk management is neglected. **Crisis management applied alone is a reflexive and inefficient management style!**

Such an approach is reactive, uncoordinated, ineffective, untimely, unreliable, addresses the wrong target group and causes the disaster to turn into a catastrophe. For this reason, in our country, now more importance is given to preventing the occurrence of disasters, mitigation of damages, preparedness, forecasting and early warning before disaster response and recovery by switching from crisis management approach to risk management approach.

Modern disaster management requires an integrated and multidimensional approach. It aims to take into account all hazards listed below; carry out activities for all phases of disaster management, especially for mitigation activities and involve everyone in these activities, utilizing all resources.

The elements of Integrated Disaster Management can be briefly listed as follows:

- **All Hazards**
- **All Phases**
- **All Resources**
- **All Individuals/Units**

National Legislation

Obviously, the disasters and emergencies caused by nature, technology and human, especially earthquake that may occur in and around Istanbul will, considering its weight in Turkiye's economy, cause loss of life and property as well as a great destruction on the national economy.

Disaster and Emergency Planning Guide for Industry and Workplaces was prepared in 2008 as one of the Training Materials for Disaster Preparedness of Society in scope of Element A of the Istanbul Seismic Risk Mitigation and Emergency Preparedness Project (ISMEP) conducted by Istanbul Project Coordination Unit (IPCU) of the Istanbul Governorship. In the same year, *Disaster and Emergency Management Guide for Industry* was also prepared in scope of Istanbul Chamber of Industry Publications to facilitate the members of Istanbul Chamber of Industry (ISO) to work on the subject (July 2008, Istanbul Chamber of Industry Publications, No: 2008/7).

Regarding the national legislation, Occupational Health and Safety Law No. 6331 dated 20 June 2012 aims at regulating the duties, authorities and responsibilities, rights and obligations of employers and employees in order to ensure occupational health and safety in workplaces and improving the existing health and safety conditions (see Appendix A). This law does not directly cover disaster and emergency management, but some issues of Disaster and Emergency Management are related to the regulations and communiqués of this law.

The construction sector is, for instance, the most risky sector in terms of working conditions, ranking first among all sectors in terms of the number of occupational accidents and the death rate arising from accidents:

- About 4% of accidents in the construction sector results in death.
- In 2018, 589 (38.22%) of the 1,541 work accidents resulting in death were in the construction sector.
- It has been found that accident costs account of 8% of the project cost of a construction company.
- In the event of the death of a person as a result of an accident, the at-fault party may receive significant compensation for loss of labour (income) alone.

These losses do not include other material loss and non-pecuniary damages. In fact, such figures do not show all the loss caused by disasters and emergencies in any labour sector. And the scope of **direct and indirect loss caused** by disasters and emergencies is actually much larger.

[1] https://www.sgk.gov.tr/ (Access date: 21.02.2023)

Direct Cost of Work Accidents

- Treatment
- Claims
- Court expenses, penal costs
- Work accident and occupational disease premiums covered by SGK
- Temporary or permanent incapacity for work
- Repair or replacement cost of damaged materials, plant and equipment

Indirect Cost of Work Accidents

- Loss of work of workers, craftsmen and managers
- Disruption in workflow and schedule due to suspension of production
- Legal payments: Administrative fines, retraining costs, governmental investigation costs
- Loss of prestige, money, early delivery bonus and customer/market because of failure to fulfil the order on time

For these reasons, many legal arrangements have been made to protect the health and safety of employees in workplaces. Some of the regulations and communiqués published before and after the Occupational Health and Safety Law No. 6331 which are closely related to disaster and emergency management are as follows:

Laws

- Civil Defence Law No. 7126, Law No. 9/6/19585902 on Organization and Duties of Disaster and Emergency Management Presidency, Disaster Insurances Law No. 6305 of 17 June, 18 May 2012
- Law No. 5188 on Private Security Services, Law No. 6/6/2004-25504 2565 on Military Prohibited Zones and Security Zones, 22/12/1981-17552

Presidential Statutory Decree (KHK)

- Decree No. 4 on the Organizational Structure of Ministries and Institutions and Organizations Associated with and Related to Them and Other Institutions and Organizations Regulations

Regulations

- Regulation Regarding Disaster and Emergency Response Services, 18 December 2013
- Communiqué on Turkish Disaster Response Plan, 3 January 2014
- Shelter Regulation, 25 August 1988
- Regulation Regarding Organization and Planning Principles of Emergency Aid for Disasters, 8 May 1988
- Regulation Regarding Fire Protection of Buildings, 19 December 2007

Other legislation on protective safety and fires:

- Regulation Regarding the Protection of Employees from the Dangers of Explosive Atmospheres (*Official Gazette* Date: 30.04.2013, No.: 28633)
- Regulation Regarding Fire Protection of Buildings, 27/11/2007-2007/12937
- Regulation Regarding Prevention, Extinguishment and Rescue Measures to Be Taken Against Fires Starting on Land and Fires that May Start at Sea, Port or Coast, Reaching and Spreading to Land or Fires that May Start on Land and Reach Coast, Port and Sea, 08/09/1975-15350
- Municipal Fire Brigade Regulation, 21/10/2006-26326
- Regulation Regarding the Implementation of the Law on Private Security Services, 7/10/2004-25606
- Regulation Regarding Military Forbidden Zones and Security Zones, 30/04/1983-18033
- Regulation Regarding Protection against Sabotage, 1610/1988-88/13543
- Regulation Regarding State Archive Services, 16/5/1988-19816
- Regulation Regarding Security Investigation and Archival Research, 14/02/2000-2000/284
- Principles of the Security of Confidential Documents and Equipment, 13/05/1964-6/3048
- Regulation Regarding Occupational Health and Safety Risk Assessment, 29 December 2012
- Regulation Regarding Occupational Health and Safety Committees, 18 January 2013
- Regulation Regarding Emergency Situations in Workplaces, 18 June 2013
- Regulation Regarding Prevention and Mitigation of Major Industrial Accidents *(Official Gazette,* Date: 02.03.2019, No.: 30702 of)
- Communiqué on Internal Emergency Plans to Be Implemented in Major Industrial Accidents, Ministry of Environment and Urbanisation, 15 August 2020

International Legislation

The first step in international legislation was taken with the Seveso Directive (82/501/EEC), which was prepared to prevent the occurrence of industrial accidents and to take necessary measures after an accident in the town of Seveso in Italy in 1976. On 9 December 1996, Directive 96/82/EC on the **Control of Major Accident Risks Involving Hazardous Substances (Seveso-II Directive)** was published. The **Regulation Regarding Prevention of Major Industrial Accidents and Mitigation of Their Impacts,** which harmonises the Seveso-II Directive with the legislation of our country, was prepared by a commission established by the Ministry of Environment and Urbanisation and the Ministry of Labour and Social Security, entered into force after being published in the *Official Gazette* of 30 December 2013, bis 28867, and updated on 2 March 2019.

Major Industrial Accident means a major emission (release/spread), fire or explosion event caused by a hazardous chemical substance resulting from uncontrolled situations during the operation of any organization, which may cause immediate or subsequent serious hazards to the environment and human health inside or outside the organization.

The following international conventions are also binding for our country:

- European Union Council Directive 89/391/EEC of 12 June 1989
- ILO Convention No. 155 on Occupational Health and Safety and the Working Environment
- ILO Convention No. 161 on Health Services
- ILO Convention No. 187 on the Framework Convention for the Promotion of Occupational Health and Safety
- ILO Convention No. 167 on Safety and Health in the Construction Industry Convention

Standards

- TS EN ISO 22301 Security and Flexibility - Business Continuity Management System - Requirements, 2020
- ISO 22320 Safety and Resilience - Emergency Management - Guidelines for Incident Management
- ISO 45001 (OHSAS 18001) Occupational Health and Safety Management System
- TS ISO 31000 Risk Management - Principles and Guidelines, 2009
- ISO 31001 Risk Management Standard
- TS ISO/IEC 27001 Security Techniques of Information Technology - Information Security Management Systems-Requirements, 2006
- NFPA 1600 Continuity, Emergency and Crisis Management Standard

Since you can have access to laws and regulations via digital platforms, these laws and regulations are not included here. However, we would like to mention, although briefly, about **ISO 22301 Security**

and Flexibility/Resilience-Business Continuity Management System.

This standard is an integrated management system that enables organizations to determine the methods necessary to ensure business continuity, create related plans, implement, execute, monitor, review and maintain them, and make preparedness to reduce risks and determine strategies to recover their business from catastrophic events. Furthermore, **TS EN ISO 22301** enables you to be prepared for all events that will affect critical functions and processes in your workplace and to give response to any event as planned and tested in advance.

Emergency Management Standard ISO 22320, developed under Management Standard ISO 22301 also guides you to improve yourself in dealing with all types of events (such as disasters, emergencies, crisis, disruptions) in your workplace.

Business continuity is not just an IT (Information Technology) problem. It is not possible to ensure business continuity in a workplace without being fully prepared for disasters and emergencies.

In summary, basing upon Disaster and Emergency Management and/or ISO 22301 principles and methods in your workplace, you can:

- Reduce interruptions in your activities and improve your time to return to normal working order.
- Reduce the impacts of disasters and emergencies caused by different types of events or accidents.
- Ensure uninterrupted operation of critical functions in times of crisis.
- Prevent financial losses that may occur due to loss of business.
- Protect your brand value.
- Identify threats in your activities in advance and thus make a risk and mitigation plan for elimination of them correctly.

3 Steps of Disaster and Emergency Planning for Industry and Workplaces

1. Assess Your Risks

2. Make a Plan

3. Take Action

Step 1

Assess Your Risks

General Information

Many businesses are familiar with the concepts of emergency management and continuity planning. However, these can be complex matters depending on their sector, size and scope as well as the level of risk arising by natural, technological and man-made hazards. All organizations should take into account all direct and indirect hazards to which they may be exposed in order to perform their activities in a reasonable manner.

In the context of potential hazards, it is critical that businesses incorporate applicable disaster and emergency risk mitigation solutions into their planning and operational decisions. In this way, companies can protect their assets (people, property, operations); protect cash flow and the ability to provide goods and/or services to customers and/or the supply chain, maintain competitive advantage and reputation, and gain the ability to meet legal, regulatory, financial and contractual obligations.

In scope of the activities carried out by AFAD, disaster awareness and social assistance programmes are implemented to identify and mitigate all disaster hazards and risks, particularly earthquake risks, and to increase the resilience of the society in disasters.

AFAD has been taking initiatives for long years, especially in the areas of disaster-resistant building regulations, trainings, guidance development and planning support. With an intention to further enhance this partnership with the private sector, AFAD launched in 2013 the **Disaster-Prepared Turkiye** programme and the **Disaster-Prepared** Workplace project to collaborate with businesses on earthquake awareness and mitigation.

Build Your Planning Team

In order to conduct analyses and planning studies such as risk assessment, a **Planning Team** must first be created to carry out these studies. The participation of experts and employees from different departments in this team is a very important and indispensable. The employer should guide the planning team and authorise them to take all necessary steps during the preparation of the plan. It is of critical importance to make sure that the prepared plans are known by all stakeholders, by updating and testing these plans according to changing conditions for the operability and continuity of the plan. For this purpose, **Disaster Board, Planning Team** and similar working groups should be formed with the participation of representatives from different segments such as administrative personnel, employee representatives, support personnel, volunteer employees and occupational safety specialists together with the employer or employer's representative. Disaster-Prepared Workplace can only be achieved with the help of a team work. This team also performs hazard and risk assessment works.

Risk Assessment

It refers to the necessary studies to be carried out to identify the hazards that exist in the workplace or may come from outside; analyse and rank the factors that cause these hazards to turn into risks and the risks arising from hazards and decide on control measures.

Risk assessment requires comprehensive information about the organization or workplace such as:

- Market or market conditions
- Legal, social, political and cultural environment
- Strategic and operational objectives
- Key factors for success; target risks and oppor tunities
- All activities adding value to the organization and the risks they entail

The results of the risk assessment can be used to create a risk profile in which the significance degree of each risk is determined separately after the hazard analysis and the measures to be taken are prioritised. Thus, each risk identified is relatively rated. This process relates the risks to the relevant business areas and identifies where the level of investment needs to be reduced, increased or reformed through identification of the applicable main control mechanisms. Risk assessment ensures effective and efficient operation by identifying risks that require attention of management and prioritises the potential benefits to be provided by risk control actions for the organization.

Scope of appropriate risk response approaches:

Starting from the stage of design and establishment, the Disaster and Emergency Plan should be prepared for all workplaces **by following the stages of; identification of hazards with respect to disasters and emergencies; taking measures to prevent and limit their negative effects, i.e. risks; determining the persons to be assigned; establishing emergency response procedures; documentation, drills and renewal of the disaster and emergency plan and documentation and drills.** Dealing with hazards and risks in the workplaces primarily when preparing for disasters and emergencies makes it easy to allocate and use resources effectively, enhances operational effectiveness and efficiency, prevents possible loss and improves case management when it occurs.

The basic risk assessment steps in the legislation are as follows:

Step 1: Description of Hazards

Step 2: Identification and Assessment of Risks

Step 3: Risk Control

Step 4: Documentation

Step 5: Audit, Monitoring and Renewal

Assessment of risks first requires having a proper understanding of the concepts of hazard, exposure and vulnerability that constitute risk. Definitions of specific terms for the topics covered in this Guide can be found in the "Glossary" in the appendix. The concepts of risk, hazard, exposure and vulnerability and the relationship between them are illustrated in Figure 6. Risk is the predicted effects of a hazard on people, services and certain facilities in society. The occurrence of these effects is called **disaster.**

As shown in Figure 6, we cannot talk about risk unless there is a hazard or a situation of exposure or vulnerability. Consequently, to take risk under control, it is therefore essential to deal with risk management first of all and thus reduce the loss of life and property before a disaster and emergency occurs (see Figure 7).

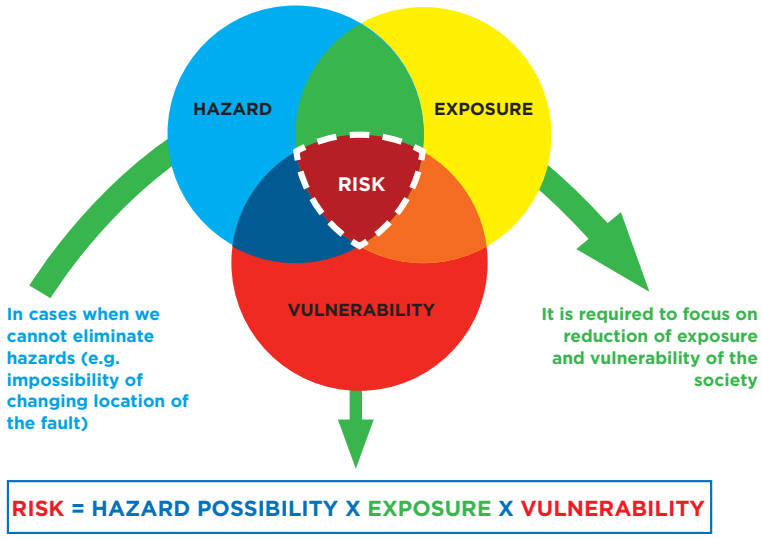


Figure 6. Schematic representation of risk and concepts that constitute risk.

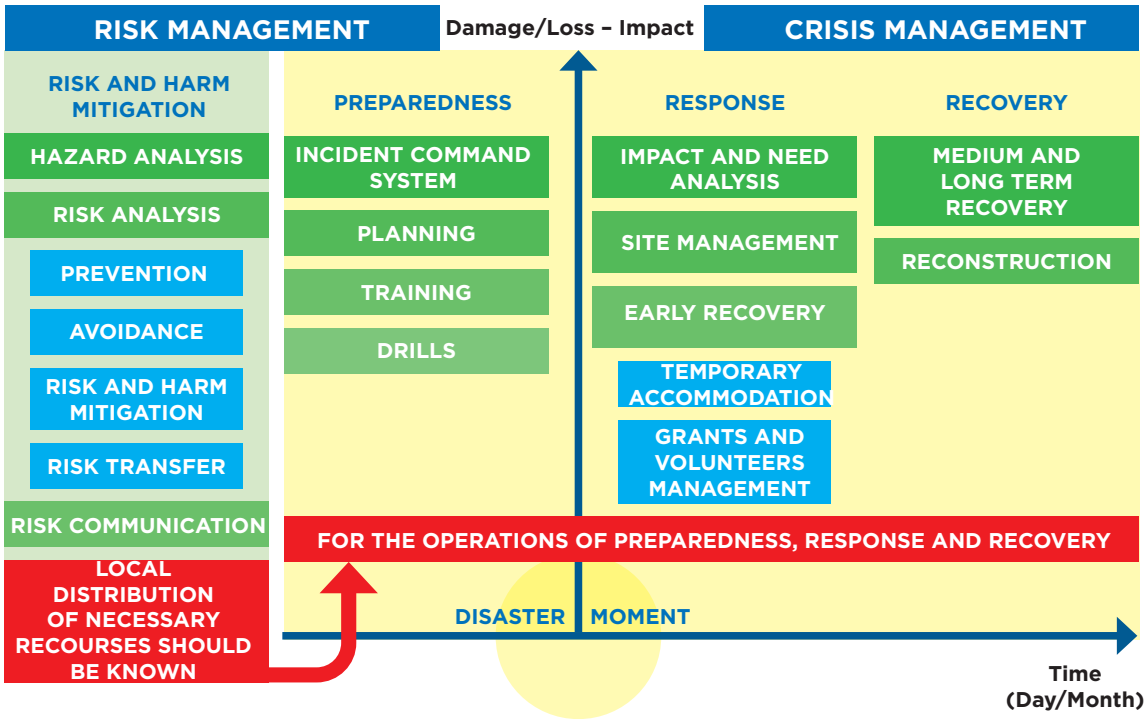


Figure 7. Schematic representation of Hazard and Risk Assessment in the disaster management system.

Many activities of organizations involve risks. In order to identify all hazards by means of a multi-/integrated approach, analyse all aspects of risks and make the necessary risk control measurements, all undesirable events that may cause death, illness, injury, damage or other loss in the workplace should be identified. And in the process of this identification, you should make sure no hazard is missed and real hazards are not overlooked by giving excessively detailed information. Potential hazards should not be ignored by concentrating on insignificant hazards. If protective measures have been taken for certain potential hazards, the effectiveness of these measures should also be taken into consideration when assessing the remaining risks.

When hazards are identified, issues such as materials, equipment, manufacturing methods and work organization should also be reviewed. Special laws and regulations that must be observed may help to identify hazards. Sources of hazards should be systematically analysed. Some sources of hazards may need to be categorized, e.g. machinery, work equipment, electricity, chemical procedures, work site. In other cases, operation-based approaches, such as construction technique or technical practices, may be more useful. In this regard, it is possible to utilise the **Occupational Health and Safety Risk Assessment Regulation** as a guide (see Appendix B).

ISO 27001 is an Information Security Management System standard published by the International Organization for Standardisation and the International Electrotechnical Commission in October 2005 as part of the ever-increasing standard series of ISO/IEC 27000. The full name of the standard is ISO /IEC 27001: 2005 / Information Technology Security Techniques Information Security Management Systems Requirements; however, it is generally known as ISO 27001 Certificate Standard.

ISO 27001 has been developed to:

- Systematically audit the information security risks of the institution/organization, threats to information assets, vulnerabilities of assets;
- Define and implement information security controls consistent with risk processing plans and transfers of residual risks, and reduce risks to acceptable levels;
- Accept and implement management processes to ensure the continuity of information security controls according to information security principles.

Today, information and ISO 27001 are always mentioned together with business continuity. However, the standards of Environment 14001, Occupational Safety 45001, Food 22000 and Supply Chain 28000 are also intended to determine the risks in their fields and, in this respect, they are related to business continuity and disaster and emergency management. However, all standards refer to the Risk Management Standard ISO 31000.

Risk Management Standard TS ISO 31000 is also a good guide for management of risks by identifying, analysing, rating the risk that the workplaces may encounter and finally assessing whether it may change the risk. On basis of the fundamental training on risk management that the employer will provide to his/her employees, the articles of the said standard such as risk identification, analysis, risk judgement, risk treatment should be interpreted and how they will contribute to the establishment and implementation of a risk management should be emphasised.

In summary, during the process of assessing and managing risks, workplaces periodically check changes in their activities, communicate and consult with their stakeholders, make sure if there are additional considerations to deal with the risk, and continuously monitor and review the risk through control of the factors that change the existing risks. Relevant regulations and standards provide organizations with a number of principles for effective risk management. These principles guide organizations to develop, implement and continuously improve a framework that integrates risk management processes in line with their overall governance, strategy, planning, management, reporting processes, policies, values and culture. This Guide aims at providing principles and guidelines for the systematic, transparent, reliable, comprehensive and context-sensitive management of any type of risk.

Structural and **Non-Structural Risks** that may occur indoors and outdoors in all types of workplaces should be identified.

To this end, the hazards and risks of disasters such as earthquake, flood, tornado, landslide, drought, rock fall, hail, forest fire, lightning strike and the **Secondary Disasters** caused by them should be definitely taken into consideration in addition to workplace-specific occupational accidents, gas leakage, possibility of sabotage, communication and communication problems, hazardous and/or chemical substances, leakage, contamination, fire and explosion possibility, events which require first aid and evacuation, and also damages to the environment and similar hazards.

Consequently, hazard and risk concepts, hazard analysis, historical hazard profile, collection of information from employees, determination of existing and potential hazards, checklists and forms, risk analysis, assessment of risks such as severity and frequency of occurrence all are discussed in the following section.

Hazard Analysis

Identification of hazards is one of the principles of **Preliminary Hazard Analysis.** In order to assess risks and take necessary precautions, all undesirable situations that may cause death, illness, injury, damage, interruption of work and service or a combination of these are identified in the workplace. A potential source of harm to human health, the environment, property or business continuity may originate from a hazardous material and also from an activity performed.

The first work to be done after the formation of the planning team is to identify the hazards the business is or may be exposed to. In this way, the business will learn what kind of events it may encounter and it will be able to take the right measures accordingly. Events that can be called hazards may vary depending on the type of business. While events such as earthquakes are a common source of danger for many businesses, others may vary depending on sector and location. The planning team should, therefore, identify in detail the events that may be perceived as hazards for their own business.

Different methods can be used to identify hazards. When identifying hazards, the main objectives of the disaster and emergency plan should not be forgotten. Hence the impact of possible physical events on at least three different factors should be considered:

1. Human

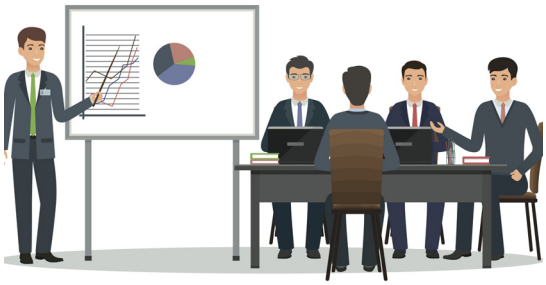
2. Property, Equipment, Records

3. Service, Production, Business Continuity

Hazards may be towards one or more targets; they may appear in one or more phases; they may pose different risks from target to target or according to the phase of operation; and they may not be identified until the undesired event occurs. Consequently, in the preliminary hazard identification study, you should look at the event from a broad perspective by including secondary disasters. When making assessment of hazard, you should also take into consideration the impacts of major potential disaster that may occur in your region and society. In this way, it will be possible to anticipate unusual problems and the risks associated with them, e.g. the risk of earthquake and close position of your workplace to a dam or a hazardous material plant. Consequently, first of all, you should understand how each disaster, e.g. an earthquake itself and the secondary disasters it may cause may affect workplace and employees.

In addition to shaking ground, earthquakes can also cause secondary hazards such as landslide, avalanche, surface faulting, tsunami, liquefaction and flash flood. To learn more about the secondary hazards that disasters may cause, see the relevant sections of the official website of AFAD and the new Earthquake Hazard Map of Turkiye (Figure 9).

General Directorate of Mineral Research and Exploration (MTA) and Disaster and Emergency Management Presidency (AFAD) have provided an updated map of active fault lines so that you can identify hazards such as earthquake, flood and landslide that may affect your workplace and thus you can be acquainted with your region and/or neighbourhood. In addition to this map, you can also get information from



the local AFAD Directorate of your province to determine whether your organization is in an earthquake hazard area.

The revised map has been prepared with much more detailed data, taking into consideration the latest earthquake source parameters, earthquake catalogues and mathematical models of new generation. Unlike the previous map, the new map shows maximum ground acceleration values instead of earthquake zones and the concept of "earthquake zone" has been eliminated.

Historical accidents, disasters and emergencies are indicators of future hazards. In addition, listing information such as the hazards that have occurred in the workplace in the past, when they occurred and the consequences they caused is an extremely important preliminary assessment study. In this way, both the hazards experienced by the workplace are recorded and characteristics such as accident season and time of occurrence are determined, making it possible to provide basis for future risk analyses.

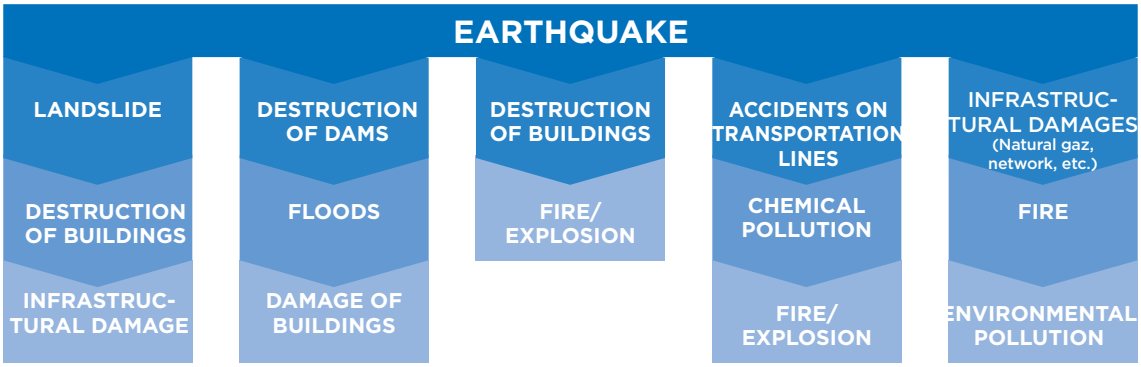


Figure 8. Basing upon earthquake as an example, representation of secondary disasters which develop in connection with a disaster and should be taken into consideration.

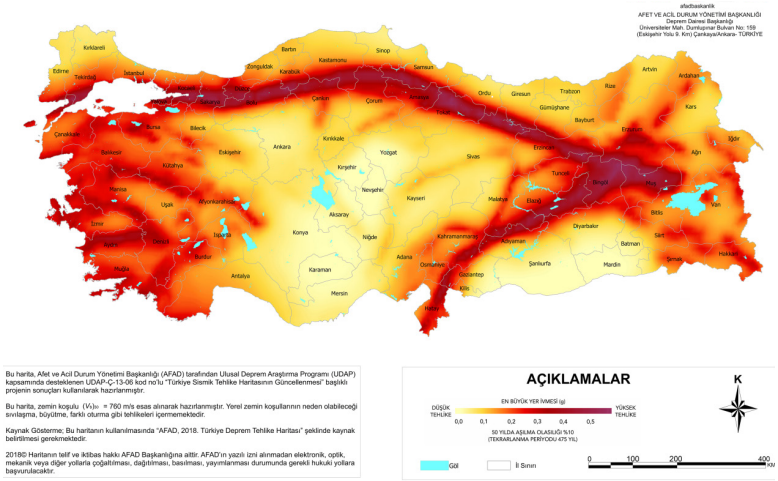


Figure 9. Earthquake Hazard Map of Turkiye renewed by AFAD Presidency.

However, today compilation of information on the frequency of occurrence and perception of hazards may be different from the times when historical records were kept. Since some hazards occur very rarely, it is difficult to determine the probability of occurrence from historical records. Hence current trends and probabilities need to be taken into consideration when collecting information from the past.

Experts (e.g. meteorological engineer, geologist, seismologist, geophysicist, environmentalist, occupational safety specialist, fire department, etc.) should also be consulted during field studies to get information on hazards caused by natural disasters. When the planning team does brainstorming and similar studies for identification of other hazards against workplaces and installations, it would be useful to compile other characteristics that may be necessary in taking into consideration the information given in page 44 and making risk assessment shown in Table 1.

Collection of Historical Information on Occupational Safety and Health Pursuant to the Regulation

1. When identifying hazards, the following information about the working environment, employees and the workplace information has to be collected:

a. Workplace buildings and annexes
b. Activities, works and transactions carried out in the workplace
c. Production processes and techniques
d. Work equipment
e. Materials used
f. Operations concerning residues and wastes
g. Organization and hierarchical structure, duties, authorizations and responsibilities
h. Experience and opinions of employees
i. Work permit documents to be obtained before starting work as per applicable legislation
j. Records showing details about the employee such as education, age, gender and medical condition
k. Groups which require special policies such as young, elderly, disabled, pregnant or breastfeeding workers
l. Results of the inspection in the workplace
m. Medical reports on occupational disease
n. Records of work accidents
o. Records of incidents that occur in the workplace, giving damage to the workplace or work equipment without injury or death
p. Near miss incident records
q. Material safety data sheets
r. Ambient and personal exposure level measurement results
s. Previous risk assessment studies, if any

2. When collecting information on hazards, occupational work accidents and diseases at similar workplaces producing with the same methods and techniques can also be evaluated.

Collection of Historical Information for the Region and Workplace in Connection with Disaster and Emergency

References to be used:

- Databases
- Archives
- Newspapers
- Bulletins
- Scientific Resources
- Articles
- Papers
- Books
- Technical Reports/Catalogues
- Websites
- Videos
- News
- Interviews with local people
- Cultural resources (tales, folk songs, epics, etc.)

Things That May Be Required for Risk Assessment	
• Use of intuitive engineering • Examination of similar workplaces and systems • Legal and other conditions concerning occupational health and safety • Literature review (standards, etc.) • Information from former employees and other related parties • Typical hazard risks specific to the workplace, accidents and incidents that have occurred in similar organizations • Data obtained from other similar workplaces • Records of occupational accidents resulting in loss of more than three working days • Audit results • Communication documents • Use of Power	• Information about manufacturing • Site plans • Work flow charts, review of work activities • Information on machinery, equipment, etc. • Material inventories (raw materials, chemicals, waste, products and sub-products) • List of chemical, physical and biological agents, Material Safety Data Sheets (MSDS) of chemical and dangerous materials • Methods, tasks • Medical/first aid reports, Health Risk Screening • Examination of measurement reports on ambient conditions • Evaluation of manufacturer data • Examination of technical periodic control reports

..... Historical Event Profile Form			
HAZARD	EFFECTIVE DURATION AND DATES OF EVENT	LOSS OF LIFE AND PROPERTY IN SPACE AND/OR SECTORS	SOURCE OF INFORMATION

Table 1. Hazards compiled from different sources about the workplace and the region where the workplace is located and some characteristics in relation to them.

To make an initial hazard analysis or list according to the resources and requirements in Table 1, you can prepare a general list to conduct risk analysis of the relevant personnel and workplace. For instance, the list of hazards that workplaces should assess with NFPA 1600-2019 FEMA is given on page

List of Hazards Workplaces Should Assess

(1) Geological
- Earthquake
- Landslide, mud flow, depression
- Tsunami
- Volcanic eruption

(2) Meteorological
- Drought
- Extreme temperatures (heat wave, cold wave)
- Hunger
- Flood, flash flood, standing wave (seiche*), tidal wave
- Geomagnetic storm
- Lightning
- Snow, ice, hail, sleet, avalanche
- Forest fire
- Windstorm, tropical cyclone, typhoon, tornado, dust storm, sandstorm

(3) Biological
- Foodborne diseases
- Infectious/pandemic diseases

(4) Caused by people accidentally/by mistake
- Collapse of building/structure
- Trap
- Explosion/fire
- Lack of fuel/resource
- Spillage or release of hazardous substances
- Equipment breakdown
- Nuclear reactor incident
- Radiological event
- Transportation event
- Lack of expert/key employee(s)
- Failure of water control structure
- Misinformation

(*Seiche, is a standing wave, similar in motion to a seesaw, in which the largest vertical oscillations are at each end of the body of water.)

(5) Caused by people deliberately
- Arson
- Bomb threat
- Demonstration/civil disturbance/riot/ insurrection
- Discrimination/harassment
- Information (rumours, false claims or accusations)
- Kidnapping/capture/blackmail
- Geopolitical risks such as acts of war, change in government and political instability
- Missing person
- Cyber security incidents
- Product defect or contamination
- Theft/fraud
- Strike or labour dispute
- Suspicious package
- Terrorism
- Vandalism/sabotage
- Violence at workplace/school/university
- Restriction or failure of supply chain

(6) Technological
- Interruption or error in hardware, software and network connection
- Interruption, disruption or failure of infrastructure

(7) Economic/financial
- Changes in exchange rate
- Economic recession
- Boycott
- Theft/fraud/dishonesty/bad dealing/ misconduct/malfeasance/scandal involving currency, monetary instruments, goods and intellectual property

(8) Strategic
- Loss of senior executives
- Unsuccessful procurement/strategic initiative

(9) Human-related matters/eventsr
- Migration

A preliminary hazard list specific to each unit should be determined separately for workplaces with more than one unit that differ from each other in terms of the hazards they contain such as plants, regions, warehouses, general directorates

	Plants
	1. Group
1	**Gas leakage**
2	**Explosion**
3	**Fire**
4	**Earthquake**
5	**Sabotage**
6	**Weather Conditions (frost, hail, ice, snow, lightning, static electricity)**
7	**HAZMAT (Hazardous Material)**
8	**Emergency Health Problems (epidemic, occupational disease, food)**
9	**Natural Events (flood, drought, wind)**
10	**Occupation/Social Events**
11	**Environmental Impacts**
12	**Supply/Procurement**
13	**Transportation**
14	**Work Accidents**
15	**Communication**
16	**War**
17	**Contractor/Subcontractor Works**
18	**Power Failure**
19	**Information Technology (IT) Security**
20	**Personnel Backup**
21	**Vegetation Cover**
22	**Pipeline**

	Regions
	2. Group
1	**Earthquake**
2	**Economic Crisis**
3	**Fire** Fire at Building
4	**Weather Conditions** a) Icing and Frost b) Rain c) Storm d) Snow/Blizzard e) Lightning, Static Electricity
5	**Power Failure**
6	**Sabotage** Terrorism
7	**Security** a) Theft b) Zone Entrance Check
8	**Occupation/Social Events**
9	**Transportation** a) Public Transportation/Travel b) Traffic Accident
10	**Information Technology (IT) Security**
11	**Emergency Health Problems** Epidemic Diseases
12	**Communication**
13	**Work Accidents**
14	**Natural Events** a) Flood/Deluge b) Landslide c) Rock Fall
15	**Contractor/Subcontractor Works**

	Warehouses
	3. Group
1	**Gas Leakage**
2	**Explosion** a) LPG Explosion b) LPG Cylinder BLEVE
3	**Fire** a) LPG Fire b) Vehicle Fire c) Fire at Building
4	**Emergency Health Problems** a) Food Poisoning b) Epidemic Diseases
5	**Earthquake**
6	**Sabotage** Terrorism
7	**Security** Theft
8	**Social Conflicts**
9	**Weather Conditions** a) Icing, Frost, Snow b) Lightning, Static Electricity
10	**Communication**
11	**Transportation** a) Public Transportation b) Personnel Traffic Accident
12	**Information Technology (IT) Security**
13	**Contractor/Subcontractor Works**
14	**Personnel Backup**
15	**Power Failure**
16	**Work Accidents**
17	**Natural Events** a) Flood/Storm Sewage b) Landslide

	General Directorate
	4. Group
1	**Earthquake**
2	**Explosion** a) Natural Gas Explosion b) Natural Gas Pipeline Explosion b) Water/Utilities Pipeline Explosion
3	**Occupation/Social Conflicts**
4	**Sabotage** Terrorism
5	**Security** Theft
6	**HAZMAT (Hazardous Material)**
7	**Emergency Health Problems** Epidemic Disease
8	**Fire**
9	**Information Technology (IT) Security**
10	**Weather Conditions – Transportation**
11	**Power Failure**
12	**Transportation** Public Transportation/Travel
13	**Work Accidents**
14	**Communication**
15	**Natural Events** Flood/Deluge
16	**Loss of Personnel**

Figure 10. An example of hazards list of difference units of a workplace involving different hazards.

	Material Warehouse
	5. Group
1	**Fire** a) LPG Fire b) Vehicle Fire c) Fire at Building
2	**Earthquake**
3	**Emergency Health Problems** a) Food Poisoning b) Occupational Diseases
4	**Sabotage** Terrorism
5	**Security** Theft
6	**Occupation/Social Events**
7	**Weather Conditions** Icing, Frost, Snow
8	**Communication**
9	Transportation Personnel Traffic Accident
10	**Work Accidents**
11	**Natural Events** a) Flood/Storm Sewage b) Deluge

The next step after identification of hazards is to focus on risks.

The goal of risk analysis is to be able to demonstrate how the identified hazards pose a risk to the business with more precise numerical data. Quantification of hazards through risk analysis also helps determine which of the risks have a higher priority.

In this way, the organization can see the way ahead better and can take the necessary measures for the hazards that create greater risk immediately, while the measures to be taken for the hazards of lesser risk can be left for later. Risks are therefore determined according to the occurrence probability of the hazard and the damage it may cause. For hazards involving insignificant or negligible risks, it is not necessary to prepare standard operations for the mitigation or occurrence of risks.

Risk Identification and Analysis

Each of the identified hazards is taken into account individually and the possible risks to arise from these hazards and possible frequency of the risks and who, what, in what way and with what severity may suffer from the risks should be determined. When making such determination, the effect of existing control measures should also be taken into consideration.

Emergency risks determined in the light of the information and data collected should be analysed by using one or more of the selected methods in combination with factors such as the operational characteristics of the business, the nature of the hazards or risks in the workplace and the limitations of the workplace or national or international standards. The analysed risks are ranked and recorded according to the magnitude and significance of their impacts in order to decide on control measures, starting with the one with the highest risk level.

For this, let's first look at how disasters can affect workplaces through the earthquake example. You can handle other disasters and emergencies in a similar way.

How Do Earthquakes Affect Workplaces?

Thousands of earthquakes occur in Turkiye every year; most of them are too small to significantly affect businesses and society. However, large and devastating earthquakes have occurred in the past and are likely to occur again at any time. Unlike flood, cyclone and other natural hazards, earthquake is an unpredictable event. It is, therefore, very important for industries and workplaces to understand this risk and make risk and damage mitigation plans for occupational safety and future security.

Small-Sized Businesses

Together with their employees, they account for more than 99% of all companies, employ 50% of all private sector workers and provide about 45% of the country's payroll. Today, businesses of all types and sizes are the backbone of the economic power of every country and community. If businesses are unable to continue operations after an earthquake, it can affect the efficient production of critical products and services (i.e. food, medicine, utilities, financial, etc.), limit individual and community livelihoods, and significantly delay recovery from disaster. In general, many businesses make investments for management of disaster and emergency and continuity of business planning. However, most organizations do not take measures for mitigation of earthquake risk to protect their assets, personnel and business operations. During an earthquake, buildings (or their components or contents) can collapse, overturn, break down, scatter around, or render equipment inoperable or unusable. The same can be true for transport networks such as roads, bridges, railways, ports and airports, or utilities like distribution lines for water, wastewater, electric power, telecommunications, etc., or vital utility systems and components such as natural gas and liquid fuels. Damage from hazards such as broken gas or water pipes can start fires or cause further (secondary) damage to buildings due to flooding. Furthermore, other hazards such as structural damage, fall, collapse, airborne objects, earthquake-induced fires or floods can also cause serious injuries. In addition to casualties, individuals may suffer direct economic losses resulting from damage to personal or business property. Organizations may temporarily lose their ability to generate revenue due to other business and employment disruptions or terminations that may damage private property or public infrastructure.

REDUCING YOUR EARTHQUAKE RISK means going back to your business processes and resuming your activities after an earthquake.

By reducing the risk of earthquakes, you:

- Reduce the injury risk of employee and customer,
- Gain a competitive advantage,
- Protect your inventory,
- Reduce insurance premiums potentially, and
- Gain trust of your customers, suppliers, employees and society.

Hazard and Risk Profiles

Among various definitions of risk are the combination of the probability of occurrence and consequences of a certain hazardous event; the probability of harm to human health, the environment or property; and the damage that may be caused by a hazard present during normal operation. In the previous section, the probability of occurrence and the hazards that may cause harm were investigated and listed in a table.

At this stage, the possible hazards in the building (plant, workplace, institution, organization and settlement unit), the possible places and estimated number of people exposed to these hazards, the existing preparedness and deficiencies, if any, in relation to these hazards in the workplace will be discussed separately for each hazard. In addition, for each hazard included in the hazard list, factors such as the probability of occurrence and impacts of the hazard, which will be used to determine the severity of the risk by means of the risk matrix as shown in Figure 11 should also be determined.

The following different methods can be used to determine the hazards identified in the workplaces:

- Hazard and Operability Analysis (HAZOP)
- Matrix (MATRIX)
- Checklist (CHECKLIST)
- Preliminary Hazard Analysis (PHA)
- Job Safety Analysis (JSA)
- Preliminary Risk Analysis (PRA)
- Event Tree Analysis (ETA)
- What if?
- Other

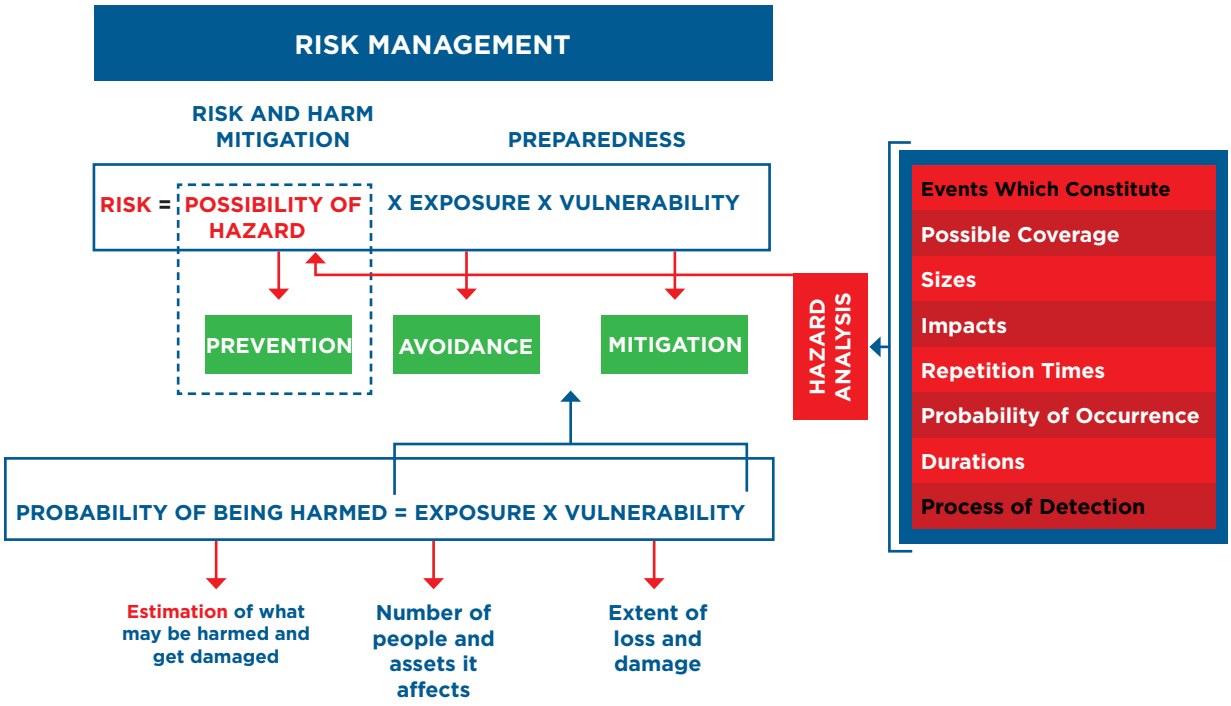


Figure 11. Characteristics of the hazardous events by means of hazard profile to determine the extent and significance of each hazard identified in the hazard analysis which will be subject to possible risk control.

..... Hazard Profile		
Level of Impact Severity		
LOSS OF LIFE	**LOSS OF PROPERTY**	**BUSINESS/SERVICE CONTINUITY**
5. Catastrophic	5. Catastrophic	5. Catastrophic
4. Critical	4. Critical	4. Critical
3. Limited	3. Limited	3. Limited
2. Moderate	2. Moderate	2. Moderate
1. Insignificant	1. Insignificant	1. Insignificant
Probability of Occurrence/Frequency of Repetition/Frequency of Occurrence		
❑ **(5) Very High:** Probability of occurrence in one year is 90% or 100%.		
❑ **(4) High:** Probability of occurrence in the range of 50% - 90% in one year or at least once in the next 10 years.		
❑ **(3) Occasionally:** Chance of occurrence in the range of 10-50% in one year or at least once in the next 50 years.		
❑ **(2) Rarely:** Chance of occurrence in the range of 1-10% in one year or at least once in the next 100 years.		
❑ **(1) None:** (or almost none.) Less than 1% chance of occurrence in the next 100 years.		
Area or Space to Be Affected Most:		
Total Number of People It May Affect:		
Duration and Period During Which It May Have Impact on Production/Service:		
Estimated Time of Occurrence and Warning		
❑ Occurs more than 24 hours and early warning can/cannot be given.		
❑ Occurs in 12 - 24 hours and early warning can/cannot be given.		
❑ Occurs in 6 - 12 hours and early warning can/cannot be given.		
❑ Occurs in less than 6 hours and early warning can/cannot be given.		
❑ Occurs suddenly and early warning can/cannot be given.		
Early Warning System or Method, if any:		
Estimated Duration for Internal and External Evacuation (in minute or hour):		
Your Existing Preparedness and/or Suggestions for Hazard:		

Table 2. An example of Hazard Profile Form which is used for collecting information about risk size, risk control and disaster preparedness.

The items in this list are defined as Risk Assessment Techniques in ISO 31010 and they are used to for determination of hazard or probability and severity.

In this Guide, it is determined which hazard should be prevented first by using a risk analysis method of FEMA similar to those above in terms of its suitability for disasters and emergencies.

The first step to be taken for identification of risks is to determine whether the workplace is under earthquake and similar disaster risks. After hazards the workplace or facility is exposed to are determined, Hazard Profile Form in Table 2 is prepared for potential hazards. These forms, to be prepared separately for each hazard, are important in terms of revealing not only the magnitude of the risk but also the current state of preparedness of the workplace for the hazard in question.

When filling the headings in the Hazard Profile Form given in Table 2, the following information and guidance should be taken into consideration. In addition to the severity of the impact and the impact of the event on people, it should also be evaluated whether this hazard is adequately taken into account in the plan together with its impact on property and the environment. The places/areas that may be affected by the hazard should be understood as the size of the area that may be affected by this risk or the area it will cover. The conclusion to be drawn from this is that it should be foreseen how much damage the hazard may cause and which places, to what extent will be affected. The total number of people possible.

to be affected should be considered or estimated by taking into account the most effective timeframe in which the hazard under investigation could occur. For instance, the most critical point for the hazard risk and the period of time during which employees are most concentrated in the workplace should also be considered. If the risk caused by a particular hazard involves only a specific group of people, this should be indicated as well.

Hazard profiles identify the following characteristics of each hazard:

- Severity/magnitude of impact and definitions
- Frequency of occurrence/formation
- Areas and spaces to be affected most
- Total number of people it can affect
- Periods and seasons that may have an impact on production and service
- Early warning time with initial velocity and estimated occurrence
- Early warning system or method, if any
- Estimated duration of internal and external evacuation
- Recommendations to experts and employees about this hazard
- Other

Loss of Life	Loss of Property	Business and Service Continuity
Catastrophic: One or more casualty	**Catastrophic:** High damage of property/equipment/building	**Catastrophic:** Downtime in business/service production more than 6 months
Critical: Disability/disease resulting in permanent damage	**Critical:** High damage of property/equipment/building	**Critical:** Downtime in business/service production for 1 to 6 months
Limited: Disability/disease not resulting in permanent damage in case of six months' treatment	**Limited:** Medium damage of property/equipment/building	**Limited:** Downtime in business/service production for 1 week to 1 month
Moderate: Disability/disease not resulting in permanent damage in case of 20 days' treatment	**Moderate:** Low damage of property/equipment/building	**Moderate:** Downtime in business/service production for 1 day to 1 week
Insignificant: Disease which can be treated by first aid	**Insignificant:** Very low damage of property/equipment/ building	**Insignificant:** Downtime in business/service production for 1 day or less

Table 3. An example of identification of business and service continuity together with loss of life and property.

- **Severity/Magnitude and Definitions of Impact**

Loss of life and property as well as business and service continuity are categorised into five categories. Although not recommended, the number of categories can be reduced to 3. Although there is a consensus on the definition of the categories for loss of life, loss of property and business continuity may vary depending on the type of workplace. First of all, the values (shaded areas) in Table 3 should be determined and defined by the disaster committee or planning team of the workplace. In some workplaces, business and service continuity may need to be reduced to hours or even down to minutes.

- **Frequency of Occurrence/Formation**

If we take the frequency of occurrence in the form of events on the scale of hours (economy, information technologies, procurement, maintenance, process safety, etc.) and to give another example, it can be defined as follows:

(6) Frequent:		$f \geq 1*10^{-5}$
(5) Likely:	$1*10^{-6} \leq$	$f \leq 1*10^{-5}$
(4) Occasional\Sometimes:	$1*10^{-7} \leq$	$f \leq 1*10^{-6}$
(3) Very Unlikely:	$1*10^{-8} \leq$	$f \leq 1*10^{-7}$
(2) Unlikely:	$1*10^{-9} \leq$	$f \leq 1*10^{-8}$
(1) Unusual:		$f < 1*10^{-9}$

- **Areas and Spaces It Will Affect Most**

This question refers to the area to be covered by the potential disaster (risk). These areas can also be considered as hot spots.

- **Total Number of People It May Affect**

It includes all persons such as personnel, employees, guests, etc. it may impact and the total and probable number of them if it occurs during the busiest time period (such as daytime

working hours). If the risk only involves a specific group of people, this should also be specified (e.g. civil servants, employees, subcontractors, guests, customers).

• Periods and Seasons During Which It May Affect Production and Service

An earthquake, for instance, lasts only a few seconds and response and recovery can be started immediately after its occurrence. Floods, on the other hand, can last for days, so response and recovery may take more time. The forest fire season, for example, starts in May. It is, therefore, necessary to identify which specific events are most likely to occur at which time (period) of the year. Forest fires occur most likely in the period running from 1 May to 1 November. Other events may not follow a seasonal pattern, but may be influenced by seasonal factors. Some chemicals, for instance, are sensitive to evaporation at a specific temperature. The threat of a chemical spill on a very hot day combined with a seasonal wind may be greater than the threat on a colder day or in a different windy weather.

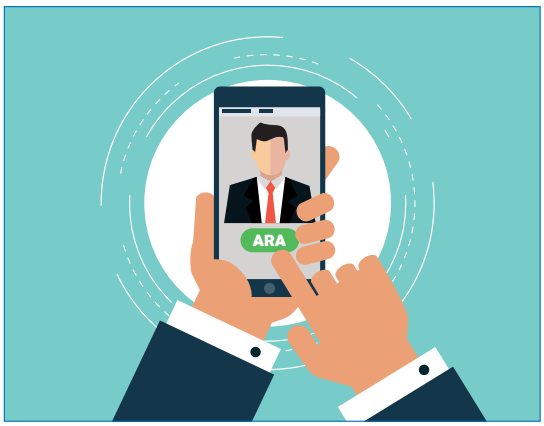
- When the risk occurs, how long (in hours or days) do you think it has been or will be effective?
- Are there specific times and periods during the year when the risk in question occurs? Does the disaster occur at regular intervals?
- Does this risk occur only in certain seasons? If yes, please indicate which month it is.

Duration also describes the expectation of how long a hazard is expected to last and strongly influenced by other factors and variables. For instance, the duration of flood conditions is influenced not only by the magnitude and severity of the event which causes the flood, but also by the type of water saturation of the soil prior to the hazard, the amount of ice and/or debris blocking the flow of water, and temperature of water and air.

• Initial Speed, Estimated Time of Occurrence and Early Warning

Knowing the initial speed of a potential disaster is important for early warning and response phases. River floods can take several hours and days to occur, but earthquakes strike suddenly. The rate of occurrence defines how fast a hazard will occur.

Some hazards, such as major weather systems, can also be forecast and monitored for days afterwards. For hazards such as earthquakes, cyclones, flash floods and similar hazards, there may be little or no warning time. Hazards that occur very rapidly and allow very little early warning time are seen as a great difficulty for the planning team and response personnel. The point to be emphasised here is the time and means required for the evacuation/emergency assistance of your employees, customers and visitors:



- Can evacuation of people from potentially dangerous places and relocation of them to safe places ensure protection of them?
- Can property be moved away or protected?
- Is there a flood or disaster response plan specific to your settlement?
- Have evacuation and emergency routes been identified and signposted in your settlement?
- Is it clear where to assemble (assembly area) in case of evacuation?
- Do you know how much time you need to evacuate people in danger (it may be useful to do a drill for this)?
- How soon do you think you can get help from the fire department, health and similar services in case of flood risk?

- **Early Warning System or Method**

The existence of an early warning (alert) system determines whether there is a time and method to warn people who will be affected by the hazard when it occurs:

- Can the hazard be anticipated?
- Is an early warning system possible?
- Is there a method you use for early warning specific to each risk? If there is, explain.

- **Estimated Time for Internal and External Evacuation**

What time and means are required for the evacuation of employees, personnel and visitors?

- Can it protect people to evacuate them from places where danger may occur and settle them in safe places/assembly areas protect them?
- Can property/equipment/documents etc. be moved or protected?
- Does your building have sufficient number of evacuation routes, emergency exit doors and fire escapes etc.?
- Are your building's evacuation routes, emergency exit doors and fire escapes designated and labelled properly?
- Is it clear where to assemble in case of evacuation (assembly area)?
- Considering the condition of the building (evacuation routes, emergency exit doors and fire escapes, etc.), how much time do you think you need to evacuate people in danger when a risk occurs? (You should definitely do several drills for this.)
- How long will it take you to get help from fire department, healthcare services, etc. in case of a risk?
- In case of simple health problems/injuries, is it possible to immediately reach the people who can provide first aid response to the victims/injured people?

- **Recommendations to Experts and Employees in Hazard and Risk Analysis**

When the consequences of hazards are considered, the worst-case scenario is based on the most severe/destructive foreseeable impacts of the hazard, and attention is also paid to the availability of mitigating measures such as capacity of response to disaster and emergency. In the case of a hazard that would lead to a controlled evacuation, for instance, the availability of an early warning system for the region is crucial for the consequences of the hazard. By adopting this approach, the most severe/destructive consequences are assessed for each hazard scenario as mentioned above and, furthermore, the hazard in question and the existing preparedness and activities are not ignored.

Authorities and employees must be able to act quickly and effectively in the event of a disaster or emergency. Prevention of loss of life and property depends on your ability to make quick decisions. The above checklist can help you determine what basic issues you need to prepare for and what you need to take into consideration against hazards.

Upon compilation of the hazard profiles, the information can be brought together to determine the risk situation of the workplace. The hazards posing the highest risk to the workplace can then be addressed.

Hazard and Risk Preparedness Checklist

IMPACT	YES	NO
Do your personnel know how to give first aid?		
Has a disaster and emergency kit been prepared? (To enable the personnel to survive for 72 hours alone.)		
Has a first aid kit been prepared?		
Are the building name and street numbers, if any, available and readable for quick response by the fire brigade, ambulance and police when called for help?		
Have emergency telephone numbers been given to the personnel?		
Is drinking water available for disasters and emergencies?		
Is there a search and rescue team?		
Does your settlement unit have a Disaster and Emergency Plan?		
Do the personnel know how to switch off units such as electricity and gas?		
Is it possible to go out of the buildings when the main entrances and exits are unusable?		
Are there any preparatory activities that have been started or have already been performed?		

Risk Magnitude and Rating

It is necessary to determine and rank the magnitude of the risks posed by each hazard according to the frequency of occurrence and different effects by using the results obtained from the Hazard Profiles given in Table 2 and summarised in Table 4. The fact that a hazard occurs very frequently or has a great impact when it occurs, does not make it a great risk by itself. Hence risk matrices should be used for this purpose (see Figure 12).

There are critical points to be aware of when using risk matrices:

• The frequency of occurrence is actually a very important factor that determines the severity of the risk.

• Extreme caution should be given when acting on the assumption that the event has never occurred in the past or that the probability of occurrence is very low.

• The probability of occurrence of events that have never happened should also be estimated; for instance, even though the probability of a comet hitting the earth is once in a million years, the impact it will create is a complete disaster.

• However, although the impact of the comet can cause a catastrophe, it can be considered as an insignificant risk by assuming there is no probability of it to occur.

"Risk Score = Occurrence Probability of Hazard x Impact-Damage Rate" is calculated by assessment of the combination of the severity and the occurrence probability of the hazard. At this stage a decision matrix, which is a risk assessment method can be used. According to a simple risk matrix, unacceptable (very high/

	Frequency of Occurrence	Impact on Personnel, etc.: **Loss of Life**	Impact on Space and Property: **Loss of Property**	Impact on Business, Production, Service, etc.: **Business Continuity**
Hazard A	1= None 2= Rarely 3= Occasional 4= High 5= Very High	1= Insignificant 2= Limited 3= Critical 4= Catastrophic 5= Very High	1= Insignificant 2= Limited 3= Critical 4= Catastrophic 5= Very High	1= Insignificant 2= Limited 3= Critical 4= Catastrophic 5= Very High
Hazard B	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Hazard C	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Hazard D	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
.....				

Table 4. This table contains summary of frequency and rating of occurrence obtained for all hazards after preparing the hazard profile described above (Table 2). (Naming of the categories in this table is different from that of the previous tables and given as a possible case.)

unmanageable) high risks must be reduced to an acceptable level and made manageable by use of incident or disaster and emergency management.

Figure 12 shows the Risk Level Matrix and acceptability zones together with low and very low zones. These should be decided by the planning team according to the sensitivity of the incident. According to the risk scores, risks of life, property and business/service continuity can be listed in a table from highest to lowest according to their magnitude (Table 5).

Risk Score = Occurrence Probability of Hazard X Impact-Damage Rating

	IMPACT SEVERITY				
FREQUENCY OF OCCURRENCE	CATASTROP-HIC 5	CRITICAL 4	LIMITED 3	MODERATE 2	INSIGNIFI-CANT 1
5 VERY HIGH	INTOLERABLE 25	HIGH 20	HIGH 15	MEDIUM 10	LOW 5
4 HIGH	HIGH 20	HIGH 16	MEDIUM 12	MEDIUM 8	LOW 4
3 OCCASIONAL	HIGH 15	MEDIUM 9	MEDIUM 6	LOW 6	LOW 3
2 RARELY	MEDIUM 10	MEDIUM 8	LOW 6	LOW 4	LOW 2
1 NONE	LOW 5	LOW4	LOW 3	LOW 2	INSIGNIFCANT (NEUTRAL)

Figure 12. An example of Risk Matrix used to calculate risk score and risk magnitude.

ITEM	NAME OF HAZARD	HUMAN	PROPER-TY	SERVICE	TOTAL
1	Forest Fire	15	25	25	65
2	Flood-Deluge	25	15	20	60
3	Fire at Home and Workplace	20	20	20	30
4	Hot Air Wave	25	20	10	55
5	Drought	12	20	20	52
6	Landslide	5	25	20	50
7	Bluetongue Disease	5	25	20	50
8	Rabies	12	20	16	48
9	Earthquake	15	15	15	45
10	Human Trafficking	15	15	5	35
11	Dam Explosion	10	10	10	30
12	War	10	10	10	30
13	Whirlwind	6	12	12	30
14	Chemical (Industrial) Fire	8	10	10	28
15	Diseases Caused by Birds Migration or Airborne Diseases	3	12	12	27
16	Water cut-off	12	9	6	27
17	Nosocomial Infections	10	10	4	24
18	Terrorist Attack	6	9	6	21
19	Food Poisoning	9	9	3	21
20	Tick-borne diseases	15	3	3	21
21	Power Failure	10	8	2	20
22	Lightning	3	9	6	18
23	Communication Interruption	3	12	3	18
24	Failure of Computers	2	10	4	16
25	Air Pollution	10	2	2	14

Table 5. An example for listing the risk magnitude from the highest to the lowest in the continuity of life, property and business/service related to the risk score.

Risk Control

If a hazard such as an earthquake bears a primary risk of life, property and business continuity, then it is a very difficult one to control. If a critical loss such as the destruction of a large number of facilities is identified, the risk of the earthquake in question is uncontrollable to that extent. Since the aim is to control all risks as rationally as possible, i.e. to minimise them as much as possible, our process is simply to assess these risks according to their priorities.

Mitigation of Earthquake Risk: Refers to any action taken to reduce damages or loss of your business, employees, building and equipment in the event of an earthquake.

In addition to basic preparedness activities such as making and implementing disaster and emergency plans, preparing disaster and emergency supplies, and learning the action of **DROP-COVER-HOLD ON,** the private sector should implement mitigation actions to reduce earthquake risks and minimise the resulting disruptions.

Study of different earthquake risk ratings from the Earthquake Hazard Map of Turkiye, prepared by AFAD, assists in making informed decisions on mitigation policies, priorities, strategies and funding levels in the public and private sectors. For instance, potential loss in new buildings can be minimised through application of seismic building codes and use of special construction techniques. Although we have considerable knowledge about earthquakes and what needs to be done in high-risk areas such as Istanbul, there is still a significant risk of damage and loss in other areas under an average earthquake risk. Buildings and infrastructures, densely constructed without modern seismic design, have intrinsically a high level of risk.

In addition to potential structural damage, non-structural elements (equipment, furniture, architectural elements, etc.) significantly increase earthquake costs and damages and adversely affect safe evacuation, business continuity and rapid recovery for many businesses.

If businesses cannot continue the work flow immediately after an earthquake because of damage or loss of labour, it greatly disrupts society and economy as well as the ability to recover after an earthquake. When businesses reduce earthquake risks, the whole society can recover and rebuild faster and stronger.

Risk and mitigation enables your personnel, plants and their equipment to be resistant to earthquake, making it easier for you to maintain the work flow. Co-operation with other local organizations to reduce risk is important for your organization to recover quickly after disasters and emergencies.

The risks identified in Figure 12 are recorded in the Risk Assessment Table Basing on Matrix Methodology in order of magnitude, i.e. severity, from the most unacceptable level to the acceptable level (see Table 5). According to the magnitude of the result, necessary measures should be taken for all possible risks starting from the highest value. In order to take these measures, a Hazard Hunt should be carried out and the actions to be taken for Risk Mitigation should be determined one by one. To assess your overall earthquake risk, you need to review structural and non-structural vulnerabilities, i.e. risks, of your building.

Steps of Risk Control:

1. **Eliminate:** You should answer the question of whether the disaster and emergency can be eliminated or destroyed.
2. **Substitute/Relocate:** You should answer the question of whether the hazard can be substituted by something else or the hazard can be relocated.
3. **Engineering Solution:** If you cannot relocate the hazard, then the persons at risk must be isolated from the hazard, i.e. protected. To this end, we can for instance have resort to engineering solutions such as mitigation of structural and non-structural risks.
4. **Administrative Controls:** At this stage, planning, training, paperwork and documentation are carried out.
5. **Personal Protective Equipment (PPE):** Finally, personal preparedness should be completed.

The order of these risk control steps is the same for all types of hazards or disasters and emergencies, only the subject changes. (For detailed information, see Figure 19, p. 80.)

Know Your Building/Facility: When dealing with structural risks, the objective is to make your building more resistant to collapse, damage and deterioration in case of an earthquake. Depending on when and how they were designed and constructed, there may be structural weaknesses making the existing buildings more vulnerable to earthquakes. Find out from the relevant zoning directorate whether the buildings in your location were built in accordance with the Turkish Earthquake Code for Buildings and from which date the regulation has been in effect. There may be seismic weaknesses in buildings constructed before the regulation entered into force.

Structural risks include building types prone to collapse such as fragile concrete structures, unreinforced masonry (made of brick, block or adobe), irregular planning (non-rectangular buildings), and soft ground configuration (weak ground).

Whether it is a house we live in or a workplace we work in, we have to be sure of the structural risks. It would be a miracle to get out

In the 1999 Marmara earthquake, about half of the damage was caused by non-structural factors. During and immediately after the shaking caused by the earthquake, a high number of injuries also occurred. In a study conducted after the earthquake, it was determined that 50% of the injuries and 3% of the casualties were caused by non-structural factors.

of a building which is so unsound that it could easily collapse.

Hence we should, if possible, replace our office or workplace with a building known to be strong. The solution for this may include renting another office or consent to live in a smaller (but strong) space.

Questions such as “what is the earthquake risk of our building” become a matter of curiosity after every earthquake. You can get your building assessed for risk by institutions and organizations licensed by the Ministry of Environment, Urbanisation and Climate Change. You can have access to the list of "Institutions and Organizations Authorised for the Assessment of Risky Buildings in the scope of Law No. 6306" on the website of the General Directorate of Infrastructure and Urban Transformation Services of the Ministry. You should definitely apply to the institutions authorised by the concerned ministry in order to have your building earthquake tested and to get a Building Strength Report for information or for submission of it to the official agencies. If your building is found not resistant to earthquake after the seismic test and a Building Strength Report is prepared, your building can be strengthened or rebuilt within the framework of urban transformation.

If your building is of "new building" class built after 2000, you can have your building examined by civil engineering static offices or firms certificated by the Chamber of Civil Engineers to carry out static projects (ITB-SIM certified). You can also be assured that your building is resistant to the expected earthquake by securing a report at the Provincial Directorate of Environment, Urbanisation and Climate Change. If soil properties and/or building statics are not satisfactory, it is of great benefit for you to reinforce or rebuild your building or rent another one.

Secure Everything: Ground movement during an earthquake is rarely the direct cause of death or injury. Most loss arising from earthquake is caused due to walls collapsing, windows bursting and objects flying or falling.

Prevention of damages caused by non-structural elements such as furniture, machinery and similar non-structural elements in workplaces is essential to save life of people and also to ensure business and service continuity.

Non-structural risks arise from the use of equipment, installations or objects in our workplaces. They can cause loss of life, injuries, loss of historical and cultural heritage and major economic damage.

Among non-structural sources of risk are unreinforced brick parapets, brick chimneys, decorative cladding, suspended ceilings, lanterns, gas-powered equipment and the presence of hazardous substances. Objects that may pose a risk include high or heavy furniture, storage racks, other furniture and equipment that may fall, and blocks that may fall/slip/dislodge. Steps taken to prevent these will help you comprehensively identify and prioritise your and your organization's level of earthquake risk in general.

For instance, during an earthquake, which of the non-structural elements listed on the next page could cause loss of life, injury, fire, additional damage, interruption of business operations, or costly repair/recovery expenses at your facility? Non-structural seismic weaknesses can be as dangerous, costly and destructive as structural vulnerabilities. Non-structural items not effectively secured, braced, reinforced or otherwise fastened can cause safety hazards or property loss during an earthquake. Design and construction specialists need to design and construct these elements appropriately. Maintenance personnel or other workers must also securely fasten non-structural objects.

A sample of a basic checklist of possible structural and non-structural vulnerabilities is given below. Just as the Hazard Hunt given as an example for the Administrative Floor, the structural and non-structural hazards can be assessed together or these matters can be checked individually as in the other examples given below.

Measures for mitigation for earthquake range from inexpensive methods of securing building contents to more extensive and expensive structural modifications. The most appropriate combination of measures may vary depending on the severity of the seismic hazard in your area, the current condition of your facilities, whether the workplace is your own property or a leased one and how vulnerable your business activities are to facility damage.

.....Measures for Mitigation at Workplace Date: .../.../20...

RISK SIGNS	MEASURES REQUIRED TO BE TAKEN	Urgency (1-4)*
Emergency Exit/Evacuation Route	Emergency exit/evacuation routes should be designated and illuminated directional signs should be deployed.	4
Loose materials, items and cabinets	Bookcases, all cupboards, TV-set and electronic equipment, desks, berths, kitchen equipment, storage and auxiliary equipment in the garage should be secured.	4
Loose objects in the cabinets, shelves and bookcases	All objects and materials in the cabinets, shelves and bookcases should be secured.	4
Heavy objects at height	Large pots on top shelves in the kitchen and cellar and heavy equipment on top shelves in the warehouse should be lowered to floor level.	4
Door and window panes of the building	Desks by the windows and berths in the dormitory should be taken away.	4
Wall-mounted objects	Clocks, tables and maps on the walls must be reinforced with extra fixing materials for protection against falling.	1
Items around the door	Cases and cabinets behind and close to door should be taken away and secured.	4
TV-sets	Protective and housing cabinets should be made for TV-sets.	4
Computers, monitors and electronic equipment	Protective covers should be specified for computers and camera-recorders and monitors should be secured on desk.	4
Electronic instruments	Fixable cabinets should be made for electronic instruments.	3
...		

***4: Very urgent; 3: Urgent; 2: Required; 1: Preferably required**

Completed by: **Date: ___/___/20__**

Approved by: **Date: ___/___/20__**

Signed:

..... Example of Hazard Hunt for Administrative Floor

Building Name: ..... **Floor No.: .....** **Date: ___/___/20__**

	Y	N	U	NA
Is there a fire cabinet nearby? Is it in good order?				
Is the fire cabinet so designed that it can be opened easily but not damaged by shaking?				
Is the location of first aid equipment such as fire cabinets, fire extinguishers etc. clearly marked?				
Are the emergency exit routes clearly marked? (These signs should be visible even in an emergency – even under darkness and smoke.)				
Are free-standing cupboards, bookcases and shelves secured with any structural support?				
Have measures been taken to prevent objects in cupboards, bookcases and shelves from falling and injuring people during shocks?				
Have heavy objects been lowered from high shelves?				
Are precautions taken to prevent office windows from shattering and injuring people in a possible shaking or explosion?				
Are aquariums and other potentially hazardous objects away from seating areas?				
Are wall-mounted/hanging clocks, maps, fire extinguishers protected against falling?				
Are plant pots that could sway and fall or break windows during an earthquake placed correctly?				
Are the items around the door arranged in such a way that they do not fall and block entry and exit?				
Have paper and other easily ignitable materials stored near electric or flame heaters been removed?				
Is the TV monitor placed on a secure platform/cabinet in such a way that it does not pose a danger?				
Are computers, monitors, printers and other valuable office equipment secured in such a way that they will not fall off in case of shaking?				
Do portable/mobile cabinets housing electronic equipment and computers have lockable wheels?				

	Y	N	U	NA
Are containers having all kinds of chemicals protected against spillage and breakage?				
Are the suspended electrical equipment (lamps, projectors, etc.) fixed in such a way that they will not fall during shaking?				
Are precautions taken against suspended ceilings, ventilation ducts and stove chimneys falling and injuring people during shocks?				
Are cylinders containing hazardous gases and flammable substances placed in such a way that they will not fall during shaking?				
Are water and heating pipes reinforced against shaking?				
Are office partitions resistant against shaking?				

Y: Yes **N: No** **U: Unknown** **NA: Not Applicable**

This form is completed by _____

First of all, you should determine your risk in order to decide what you should do to detect weak points of your facility related to earthquake and eliminate them. Earthquake risk varies from region to region, business to business, structure to structure and person to person. The questions in the list on the next page may be difficult for you at first. However, every NO answer will easily lead you to the information you need to obtain or the actions you need to take.

In the risk assessment phase, it is determined how much effort, time and money a business or facility owner should allocate for each disaster and emergency.

You can use the following hazard identification checklists to determine the preventive-restrictive measures for the emergencies specific to the business and for fire, explosion, earthquake, flood, food poisoning, sabotage, incidents and accidents which require first aid and evacuation, and to prepare the appropriate budget, priorities and work plan for mitigation.

Non-Structural Building Service Systems	
❑ Propane Tank	❑ Unreinforced Wall Construction
❑ Water heater	❑ Unstable Walls
❑ Piping	❑ Old, Ductile Concrete
❑ HVAC Equipment and Ducts	❑ Other
❑ Suspended Heater	
❑ Tank Fuel Reservoir	❑ Reinforced Concrete Construction with Freestanding Roof System
❑ Air Compressor	
❑ Automatic Fire Extinguisher Pipes	❑ Soft Floor Construction or Other Building Irregularities
❑ Other	
❑ Internal Partitions	
❑ Suspended Ceiling Bars	❑ External Signs
❑ Pendant Luminaires	❑ Freestanding Walls or Fences
❑ Stairs	❑ Other
❑ Windows	
❑ Roof Parapets	
❑ External Cladding	❑ Pedestal Partitions of Half-Height
	❑ Various Furniture
❑ Computer	❑ Other
❑ Fragile Artwork	
❑ Long Pedestal Wall Unit Without Shelf	
❑ Library Shelves	❑ Loose and Unreinforced Bricks on your Building
❑ Tall File Cabinets	
❑ Drawers and Cabinets	
❑ Compressed Gas Unit	
❑ Dangerous Goods Containers	

Risk Identification Checklist

IMPACT	YES	NO
Have assessments been made to reduce the injury (or loss of life) risk of building users as a result of an earthquake?		
Do you know the repair or relocation costs of your building(s) after a major earthquake?		
Does your building comply with the latest updates of building regulations, fire protection regulations and other relevant regulations?		
In the event of a large-scale disaster and emergency or loss of operational capacity, is it possible for your company or business to regain its competitiveness quickly and efficiently?		
Have critical functions and processes been identified and appropriate strategies of recovery identified?		

Building and Surroundings Checklist

IMPACT	YES	NO
Is the building of your workplace earthquake resistant?		
Have the external components of the building (sunshades, awnings, tarpaulins, chimneys, cornices, panels, signboards, etc.) been checked by specialised engineers for their strength and adequacy of support?		

Office Inventory Checklist

IMPACT	YES	NO
Have all your offices and other working environments been inspected by specialists for structural and non-structural hazards?		
Are cupboards, bookcases, free-standing storage racks and shelves securely fastened so that they cannot turn over during a severe shaking?		
Are ceiling objects such as lighting fixtures, ventilation devices, room heaters and ceiling coverings securely fixed so that they will not break during a strong shaking?		

Office Risks Mitigation Checklist

IMPACT	YES	NO
Are desk drawers, file drawers and cupboard doors fitted with robust latches and kept closed when not in use?		
Are personal computers, printers, telephones and other similar items secured to desks?		
Are ties stretched in front of the shelves to prevent the contents from falling?		
Are heavy objects placed on lower shelves and light objects on upper ones?		
Are heavy mechanical/production equipment and devices securely fastened or generally made more secure?		
Are toxic materials (including photocopy toner, cleaning products and other building maintenance products) stored securely?		
Is there under meeting and work tables clear and easily accessible space for use as shelter during an earthquake?		
If it becomes necessary to escape through windows, are hammers or similar tools available to break earthquake-resistant glass?		

Computer Network Server Checklist

IMPACT	YES	NO
Are the elevated floors in the computer server rooms fixed?		
Are partition walls and lighting fixtures fixed?		
Are all ceiling grids secured against shaking?		
Are computer equipment and storage racks secured where necessary?		
Have cables and connections been tested to withstand a major earthquake?		
Have ventilation and cold water systems been made resistant to earthquake?		
Do computers have plastic or vinyl covers/coverings to protect them from fire suppression systems or pipe leaks in the area where they are located?		
Do computers have plastic or vinyl covers/coverings to protect them from fire suppression systems or pipe leaks in the area where they are located?		
Do computers have plastic or vinyl covers/coverings to protect them from fire suppression systems or pipe leaks in the area where they are located?		

Checklist for Office Interior Space Infrastructure

IMPACT	YES	NO
Are internal partition walls securely connected to the floors and adjacent walls, and securely fixed from the top to the overlying structure?		
Are free-standing hot water tanks securely fixed so that they do not move and prevent gas and/or water leaks?		
Are large glass panes which may break and injure employees securely arranged or installed in such a way as to prevent injuries in case of possible breakage?		
Do heating systems and ventilation ducts contain insulating coatings that may scatter particles into the heating/cooling system due to break of pipe connections during an earthquake?		

Infrastructure/Connection Checklist: Gas and Electricity

IMPACT	YES	NO
Do your employees know what natural gas smells like, where to check and when the natural gas inlet should and should not be switched off?		
Did you know that switching off the natural gas or propane inlets unnecessarily causes long wait times to restore connections?		
Do all employees know where the natural gas main inlet valve is located and how it should be shut off?		
Do employees know that once the natural gas has been switched off, it must NOT be switched back without the assistance of a qualified person?		
Is a 30 cm long crescent spanner in a place where it is easily visible to anyone who wants to switch off the main gas inlet valve?		
Have you communicated with your natural gas supplier to ensure that your meter is clear of vehicle traffic and objects that may fall from higher structures?		
Are your ventilation, air conditioning and cold water supply systems earthquake-resistant?		
Do you work with a company that carries out regular maintenance of all your natural gas appliances? (This company can help to restore and repair the appliances after an earthquake.)		
Have your employees been informed about the location of the technical service unit and shutdown/start-up processes?		
Are alternative energy sources (emergency generators, emergency lighting, etc.) available?		
Are there arrangements for testing alternative energy sources at regular intervals (e.g. once a month)?		
Are all main switches and/or circuit breakers clearly identified as to their function in electrical service rooms or departments?		
Are electronic equipment such as transformers, circuit breakers and main switches adequately secured?		
Are there arrangements to switch off machinery and equipment during an earthquake?		

Risk Documentation

Risk Reporting provides information on historical losses and trends; **Risk Identification** is a future-oriented estimation of emerging risks. There is a great difference between measuring and monitoring risk performance and taking steps to improve the risk management process by learning from experience. Through reporting, important lessons can be learnt that can be utilised for the development of the risk framework and its associated functions.

With regard to the documentation of the risk assessment in Article 11, the relevant regulation requires not only the identification of risks, but also information on their remedy.

In this Guide, the stage of auditing, monitoring and renewal of the identified risks is dealt with in the third step **"TAKE ACTION"** section. In addition to the information in Table 5, it may be useful to create a new table and risk documentation as in Table 6. This table can be further developed with the risk improvement measures mentioned in the following section.

Risk Assessment Form – Sample

Full Name	**..... .....**	**Date**	**20.08.2020**
Time	**13:00**	**Working Area**	**..... Inc.**
Activity to Be Assessed	**Routine Production Activities**		

What is Hazard?	**Who May Suffer from Hazard?**	**How People May Suffer from Hazard?**	**Current Risk Controls**	**Risk Level**			**Necessary Additional Measures**	**Instantaneous Risk**			**Responsible**
				O	**Ş**	**R**		**O**	**Ş**	**R**	
Occurrence of a 7.5-magnitude earthquake	All employees and visitors	Injury and death	Giving training to employees each year	3	5	15	• Test and development of the plan by means of exercises • Revision of policies and procedures • Updating the incident command team • Inspection of facilities and settlement areas • Record of risk management needs • Review of insurance needs • Increasing the diversity of personnel training	3	3	9	Production Manager, Shift Supervisors
Smoking near flammable substance	Smoking employee and visitors near the area	Occurrence of uncontrollable fire, injury and death	There are warning signs which designate the smoking area	4	5	20	• Establishment of a smoking policy • Establishment of a temporary smoking area outside the building • Giving training to employees • Performance of periodic inspections • Having a fire extinguisher	3	2	6	Production Manager, Shift Supervisors

Date of Revision	**.....**	**Signed**	**.....**

Table 6. Representation of recommendations made for Risk Assessment, Current Status and Risk Control in the table prepared as an example for the risk documentation. (P=Probability; S=Severity; R=Risk)

Before Disaster and Emergency: Recovery of Risks

As explained in the risk assessment section, it is necessary to determine the severity of each disaster to estimate the degree of possible damage that workplaces will encounter as a result of disasters and emergencies. The severity indicates the magnitude of the expected impacts of the disaster on people, major facilities, property, works, production, services and responses.

In summary, this step includes preventive activities, e.g. the implementation of all pre-planned and foreseen measures to eliminate or reduce the risks of disasters and emergencies related to occupational health and safety at all stages of the work carried out in the workplace.

In the section of hazard and risk analysis, it was defined whether there is a risk mitigation method currently applied against the hazard in question and what additional preparedness can be made. For workplaces, the ranking is based on the severity of the impact on people and on life, property and work/service/production. The main goal is to reduce the risk as much as possible by minimising the hazard and/or exposure and/or vulnerability or all of them.

Make sure your plan is fully endorsed by the business owner (tenant, owner), plant engineers, emergency managers, investment planners and other relevant decision-makers to ensure that the risks are duly understood, and provide resources (i.e. personnel, time, funds, etc.) to ensure effective implementation of the plan.

Steps to be taken for Damage and Risk Mitigation Plan/Risk Improvement activities before the disaster:

1. **Formation of the Disaster Team of the organization;**
2. **Provision of participatory approach and top management support;**
3. **Establishment and assignment of Disaster Board and Planning Team;**
4. **Identification of experts and consultants to build the teams;**

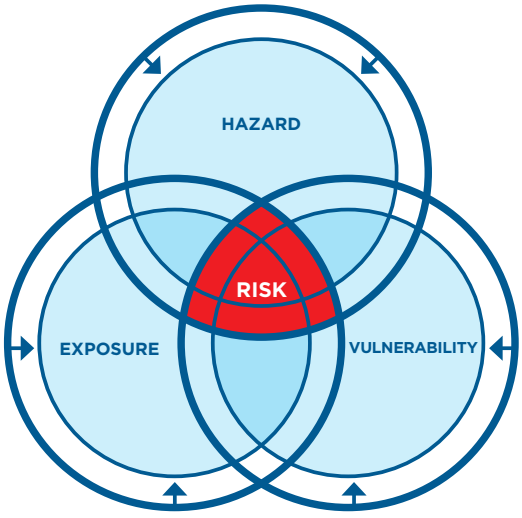


Figure 13. Representation of risk elements by the Venn Diagram.

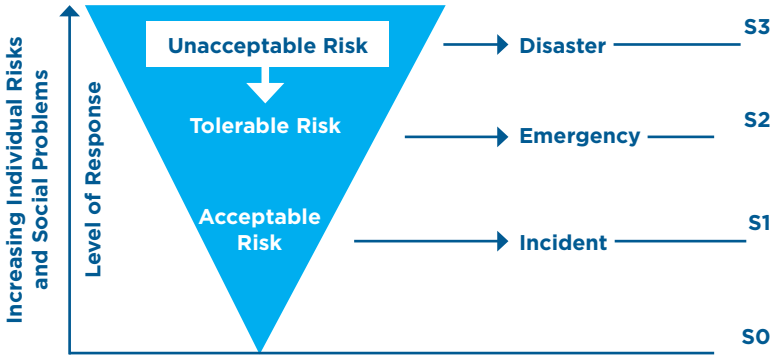


Figure 14. The main objective of disaster and emergency planning activities is to reduce unacceptable risks to tolerable and manageable risk levels as quickly as possible.

5. Determination of the authorities and responsibilities of the teams before, during and after disasters and emergencies.

Furthermore, coordination of the work with the human resources and customer service department ensures that employees and customers are informed about future activities and that the company can also use its commitment to safety as a marketing tool with slogans such as "safe facility, safe branch" and similar slogans. If you plan to hire the workplace through a professional or contractor, check references and make sure that the contractor has satisfactory experience. When the disaster and emergency team tries to create a disaster-prepared workplace, the companies you receive service from should also be aware of the structural risks of the offices or facilities they rent on your behalf and should be in a position to convey them to you.

Disaster risk and mitigation measures are measures to eliminate or reduce the effects of hazards before the occurrence of disaster and emergency. Thus, loss of life and property can be minimised by reducing the impact of disasters. In order for risk reduction and mitigation measures to be effective and to reduce human and financial loss (through the steps of analysing the risk, mitigating the risk and taking out insurance against the risk), action should be taken before the next disaster and emergency.

Since risks cannot be completely eliminated, Risk Recovery for disasters and emergencies means designing the relevant process in a way to reduce the amount of risk to a tolerable level.

Expressing the level of Tolerable Risk is one of the most difficult tasks encountered by workplaces trying to comply with standards.

Willingness of organizations to take risks, or their criteria for what risks they are and are not willing to accept, depends on a variety of factors, including industry standards, local and (in terms of import-export) foreign government regulations, the practices of industry partners, and qualitative assessments of what is reasonable and sensible. The risk situation determined on the basis of these factors is compared with the risk criterion considered tolerable by the workplace. The employer and the committee appointed by the employer make a decision on risk mitigation based on a cost-benefit analysis. The main objective for disasters and emergencies is to reduce all possible risks to a tolerable risk level

before the workplace becomes operational (Figure 14).

Tolerable risk is a level of risk which is acceptable to the workplace where the risk is assessed and taken under control to achieve a certain benefit or functionality. According to ISO 45001:2018 and similar standards, the basic risk scales and the actions to be taken and durations are summarised in Table 7. Table 7 shows the actions to be taken according to the five risk levels between "Insignificant" and "Intolerable". Table 8 gives an example for analysis of the risks at four levels.

As shown in Figure 15, the final step is the implementation of the risk mitigation plan and solutions. This stage includes **Non-Structural Solutions,** e.g. securing loose and fragile items, storage of heavy items on floors and installation of flexible gas lines. **Structural Solutions** may include reinforcement of walls, installation of shear walls and strengthening the structural frame of the building by creating a continuous load path and so on.

In some disasters like earthquake, we do not have the option of eliminating or reducing the possibility of the first hazard component that creates risk. As explained above, we have to minimise the risk by mitigating its consequences, if not the hazard itself, by means of structural and non-structural measures for earthquakes (see Figure 16).

As seen in Figure 13, disasters occur when the hazard and the vulnerability of societies (exposure + vulnerability) intersect, i.e. when the risk is realised. Hence as we cannot eliminate the hazards (such as relocating the earthquake fault line) to minimise the disaster, we need to focus on reducing the vulnerability of the society. Therefore, modern disaster management does not focus on hazards such as earthquake fault lines, but on weaknesses or vulnerabilities in connection with them.

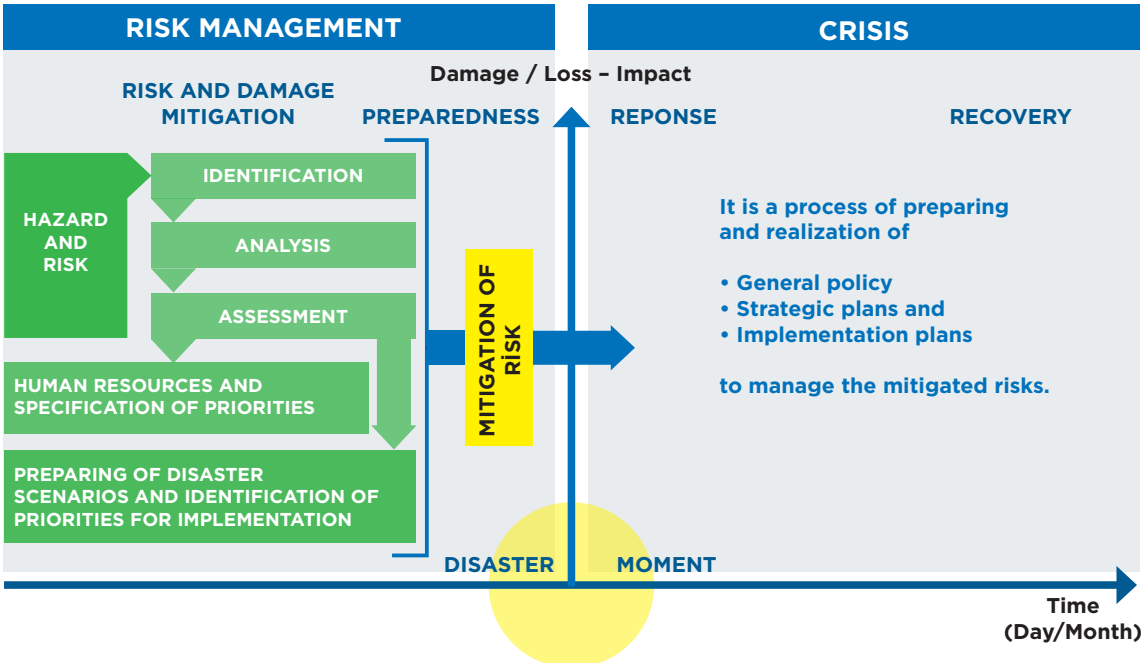


Figure 15: Steps required to be followed to reach the stage of mitigation.

RISK LEVEL	ACTION AND TIME SCALE
INSIGNIFICANT	No action is required and no record-keeping is necessary.
TOLERABLE	No extra supervision/control is required. A more cost-effective solution or recovery not creating extra cost burden can be chosen. Monitoring is necessary to keep it under control.
MEDIUM	Efforts should be made to reduce risk, but the costs of prevention should be carefully measured and restricted. Risk mitigation measures should be implemented over a period of time. Where moderate risk may involve highly detrimental consequences, further assessment may be required to fully characterise the likelihood of damage to determine the need for better control measures.
SIGNIFICANT	Work should not be started unless risk is reduced. Significant resources may be required to mitigate the risk. If the risk is related to the development of the business, urgent action should be taken as soon as possible.
INTOLERABLE	Work should not be started until the risk has been mitigated. If it is not possible to reduce the risk even with unlimited resources, the work should be prohibited.

Note: "Tolerable" does not mean acceptable. It means the risk in question is reasonable and can be practically reduced to the lowest level.

Table 7. Basic risk scales according to standard ISO45001 and actions required to be done with their durations.

RISK LEVEL	DESCRIPTION	PRIORITY OF ACTION
R4 (Very High)	Unacceptable	Priority/urgent action should be taken.
R3 (High)	Very Significant	Action should be taken in short term.
R2 (Medium)	Significant	Action should be taken in medium term.
R1 (Low)	Acceptable/ Insignificant	It has no priority, but should be monitored and, if required, action should be taken in long term.

Table 8. Levels of acceptability, description and mitigation strategies according to the level specified by risk score.

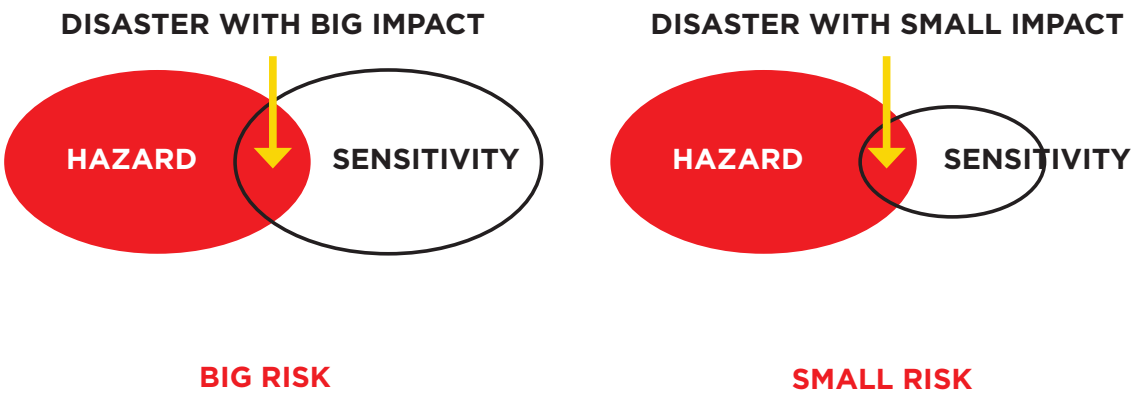


Figure 16. Representation by Venn Diagrams of the mitigation method for risks that could be caused hazards such as earthquake.

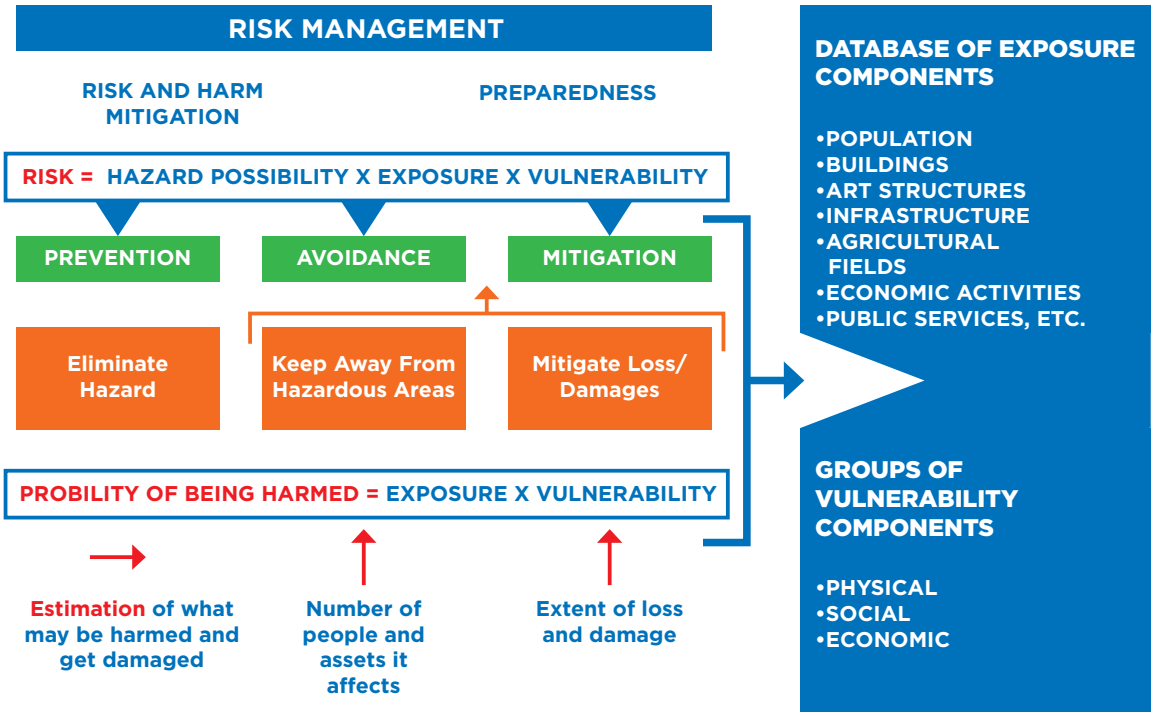


Figure 17. Risk elements of disaster and risk mitigation methods applicable for each element to mitigate disaster risks.

As shown by the Venn Diagram in Figure 13, in addition to hazard, there are also elements of exposure and vulnerability on which we can work to reduce risk. The concept of sensivity in Figure 16 corresponds to the sum of exposure and vulnerability.

In disasters and emergencies that may have a great impact, the hazard should be reduced if possible; if it is not possible, prevention, avoidance and mitigation should be applied for risk control by reducing the levels of exposure and vulnerability against the disaster (Figure 17).

Laws and regulations require employers to fulfil their obligations in accordance with the principles of risk protection and, in doing so, to avoid risks (avoidance of exposure), to fight against risks at their origin (hazard prevention) and, if they cannot prevent the adverse effects of the hazard, to use methods to minimise them (mitigation). One of the risk control measures is insurance, i.e. transfer of the risk.

Firstly, the probability of occurrence of the risk must be prevented or minimised. If this is not possible, the potential severity of the damage should be mitigated or the hazard should be insured and transferred.

It should be determined whether measures will be taken against the risks posed by problematic locations. If it is required to take measures, then it should be decided whether this will be in the form of prevention, avoidance or mitigation and implemented according to the risk degree identified through the risk matrix to be prepared and the risk mitigation/control method in connection with it. As shown in Figure 18, it is recommended to be done in four ways called "4T" in short.

Disaster management literature deals with

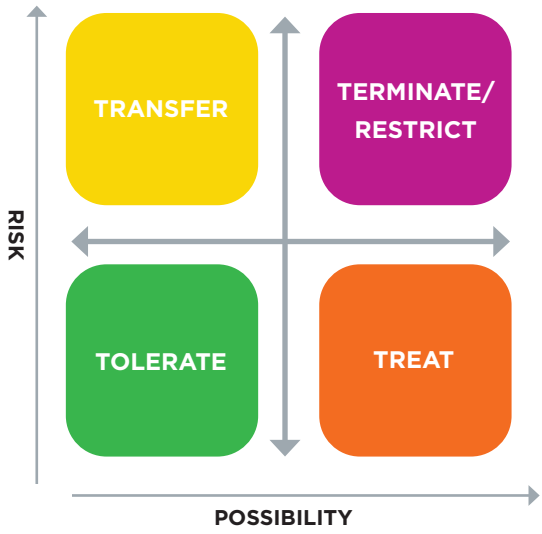


Figure 18. The rule "4" (Transfer, Terminate, Tolerate, Treat) that determines how to response to the risks.

risk response in five different ways as summarised in Table 9.

The priorities in possible approaches to be used for risk and loss mitigation, i.e. risk control, can be summarised by the pyramid in Figure 19.

If we consider the steps in Figure 19 for

EARTHQUAKE:

1. **Eliminate:** You should answer the question of whether an earthquake or a similar disaster and emergency can be eliminated or removed. It is not possible to eliminate an earthquake.
2. **Substitute/Relocate:** You should answer the question of whether an earthquake or a similar hazard can be substituted by something else or relocated. We cannot change the zone of an earthquake.
3. **Engineering Solution:** If we cannot relocate the hazard for earthquakes, then people at risk must be isolated from, i.e. protected

METHOD OF RISK MITIGATION	DESCRIPTION	PRIORITY OF ACTION
Prevent	If possible, take structural and non-structural actions to prevent formation of risk.	Bring forward the issue to prevent the risk and/or act as leader in this respect as an organization.
Avoid	Take measures in terms of management and legislation to ensure people and assets are not exposed to risk.	Do not waste resources on mitigation and/or prevention of risk if it will not work. Permanently remove those who will be affected by the risk away from the risk area and do not allow new ones.
Mitigate	Take structural and non-structural actions to reduce the frequency of occurrence and/or impacts of the risk.	Keep the issue on the agenda and/or take leadership as an organization to mitigate the potential harm of the risk.
Transfer	Insure the risk and/or assign responsibility for its mitigation to another institution or organization.	Ask other institutions and organizations to mitigate the risk and/or allow them and give assistance to them as far as possible.
Accept	If the risk is very low (according to the profit and loss calculation), leave it as it is. Accept the possible consequences but continue to monitor it.	Despite the current risk, do nothing to minimise it as you have done so far, but deal with it again in future.

Table 9. Summary of possible approaches usable for mitigation of risk and loss, i.e. risk control in the disaster management.

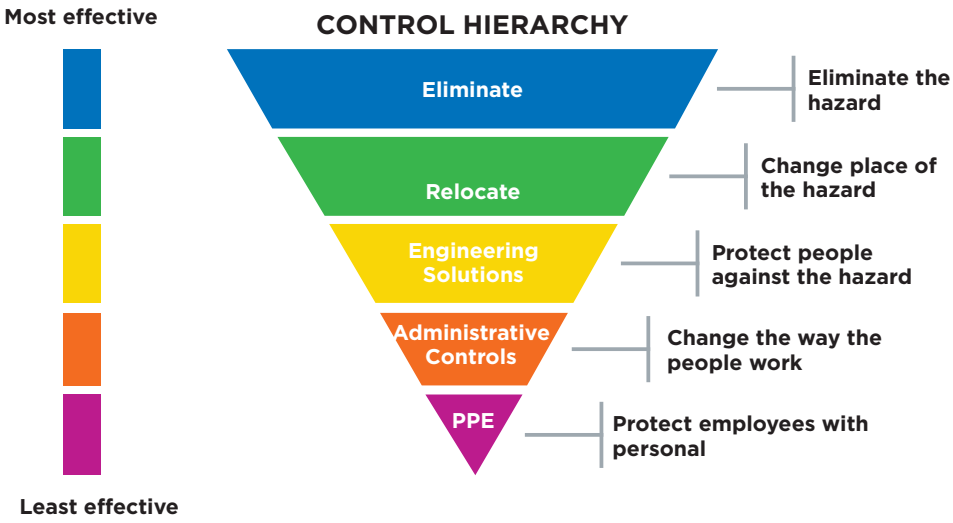


Figure 19. Ranking the methods to be applied to control risk according to the degree of impact. (Reference: NIOSH/National Institute for Occupational Safety and Health, USA)

against the hazard. To this end, we can have resort to engineering solutions, for instance structural and non-structural risk mitigation.

4. **Administrative Controls:** Planning, training, paperwork and documentation are carried out at this stage.
5. **Personal Protective Equipment (PPE):** Finally, personal preparations should be completed.

This sequence is same for all types of hazards or disasters and emergencies, only the subject changes.

Earthquakes can trigger secondary hazards such as fire, water damage, etc. However, thanks to a well-prepared **Earthquake Hazard Hunt Checklist,** we can also eliminate secondary disasters and emergencies such as fire, floods and power outages, that is, we can control secondary risks. You can adapt the examples given in Chapter 2 for Hazard Hunt to office and administrative units in your workplace and use them as a risk control method.

Step 2

Make a Plan

General Information

Making the necessary preparedness in a planned manner and taking precautions before occurrence of disasters and emergencies is much more important than effective response during the disaster. The reason is that measures and resources not available in normal time, i.e. before the disaster, cannot be used during the response and will not be available after the disaster and emergency. Good response planning and effective response are integral parts of a whole.

Depending on the experience background of our country and other countries, disaster and emergency management is changing and its scope is developing. Since the moment of disaster and especially "search and rescue" have been emphasized so for with respect to disaster and emergency management, the response stage remains incomplete in many respects; for instance, the **INCIDENT COMMAND SYSTEM** is not known, although it should be applied in order to avoid a leadership gap in the response. For this reason, it is necessary to establish a common understanding and language on the basis of a correct and single plan in terms of Management, Dispatch, Administration, Training, Material and similar concepts that we define with the help of techniques such as Procedure, Way, Method, System and Model.

There are three different planning levels that complement each other as shown in Figure 20 to implement a successful disaster and emergency management in businesses. At the first level, the workplace management should have an answer to be a Disaster-Prepared Workplace and a strategy for the **WHY** question. At the second level, a tactical plan is determined on how this strategic goal will be achieved with whom and with which distribution of duties and responsibilities, that is, a tactical plan is determined for the second-level **WHO** question. After the Command, Service and Teams determined at the tactical level are established, it is determined at the next level by Action Plans **HOW** they will perform the duties and responsibilities assigned to them. In this Guide, for instance, the matters and questions such as how to extinguish a fire, how to provide first aid, etc. are not covered in detail. Refer to the relevant regulations, instructions and guidelines.

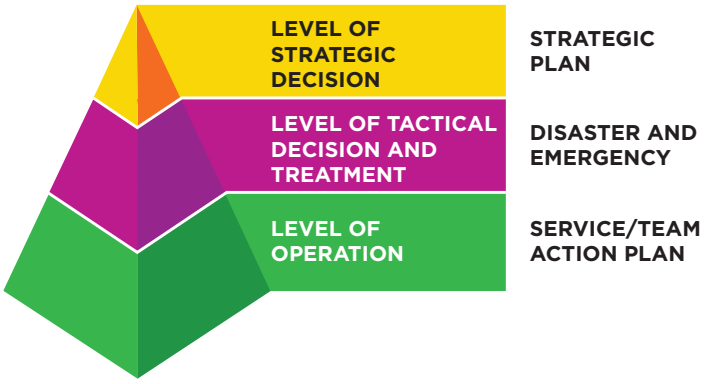


Figure 20. Three different levels of planning that complement each other for successful disaster and emergency management in the businesses.

A tactical Disaster and Emergency Plan can be prepared in 4 stages:

1. Building a Planning Team

2. Assessing the Structure of Current Situation

3. Making Risk Assessment

4. Preparing and Writing a Disaster and Emergency Plan

Preparing the disaster and emergency plan, i.e. step 4, is discussed in this section. This section also refers to the legislation regarding fire, evacuation, first aid and emergency planning in the applicable laws and regulations and the issues to be taken into consideration in planning, giving examples of checklists, organizational structure and plan documentation about these points.

The most important point that you should not forget in your disaster and emergency planning is that you may have to be self-sufficient for 72 hours (golden hours) or longer after a large-scale disaster such as an earthquake. Roads, bridges, public transport networks and important vital links may be severely damaged. As official emergency services such as fire, police and ambulance services will be at full capacity, it will not be possible for everyone to receive support/assistance immediately after such a disaster. Senior personnel may be unreachable, injured or away. The survival of your business depends on correct planning about the possibility of disruption of your normal authority order. In other words, an applicable Disaster and Emergency Plan in compliance with the laws, regulations and standards should be made against all disasters and emergencies as determined by risk analysis.

Each workplace has a plan which has been developed and used so far. These plans should be constantly updated and developed with the changing conditions. Undoubtedly, a written plan alone is not sufficient. Issues such as material, infrastructure, training, etc. which are indispensable for the functionality of this plan, should be reviewed and resolved as soon as possible. For this reason, you should first deal with disaster and emergency preparedness and infrastructure individually according to different aspects as shown in the sample checklist given on the next page.

Disaster and Emergency Planning Preparedness Checklist

IMPACT	YES	NO
Does your business have a Disaster and Emergency Plan to contain all hazards?		
Does your business have a Disaster and Emergency Plan that recognises employees as the most valuable asset and identifies safety and well-being of them as the most important goal?		
Does your organization have a person or department responsible for the development or updating of the Disaster and Emergency Plan and its implementation after an earthquake?		
Does your business have a Disaster and Emergency Plan for each building that is specific and integrated with the emergency plans of other tenants in the building?		
Have you checked with the local AFAD authority that your processes and plans are in line with the general emergency planning measures of the local authorities?		
Are there assigned response personnel, including substitutes, for each building (and each floor)?		
Are all personnel in charge to fulfil what is expected of them when they are asked to implement any part of your Disaster and Emergency Plan?		
Do you have clear, open and up-to-date notification process and a call list for both working and non-working hours?		
Does your Disaster and Emergency Plan include telephone numbers and other contact information for emergency public services such as fire department, police, ambulance, etc.? Is this contact information constantly updated?		
Does your Disaster and Emergency Plan deal with hazards such as glass break, collapse of building and ceiling, break of lighting fixtures, overturned furniture and equipment and fires caused by damage suffered by the connections of utilities or pipes?		
Has your company or business identified an alternative location for your operations?		
Are agreements in place with nearby businesses to temporarily help employees and organizations of each other?		
In mixed-use buildings, are all tenants/users included in your disaster and emergency plans and informed of their existence?		
Does your company have an inspection plan to minimise potential hazards?		

IMPACT	YES	NO
Have all workers' compensation rights and regulations related to disaster and emergency preparedness been considered?		
Is the register of assets in internal circulation kept up to date? (It helps in determining insurance claims for lost/damaged items.)		
Are operational and leasing records, legal and financial information and other important documents stored, duplicated and backed up in a secure and fire-protected location on site and in a secure and fire-protected location off site?		
Are there drawings showing the "as-built" details of your facility and are they stored offsite?		
Are you aware that modern buildings with insulated glazing should be evacuated in the event of a power failure and failure of ventilation and air conditioning systems?		
Are you aware that particularly underground garages should be evacuated in the event of a power failure and the failure of ventilation fans to remove carbon monoxide?		
Does your facility have an emergency generator that generates power only for emergency supplies of your facility by activating automatically when the lines collapse?		
Do your authorised personnel know how to use this generator and have enough fuel to operate it for at least 24 hours?		
Do you have a list of service personnel who can perform repairs in emergency?		
Does your facility have battery/cell-powered emergency lighting that will switch on automatically?		
Are emergency lighting levels checked for adequacy?		
Are batteries/cells checked regularly (e.g. monthly)?		
Has been preparedness made to protect fire extinguishing systems (e.g. sprinklers, carbon dioxide, halons) against earthquake damage?		
Has the company made an arrangement for special preparedness required for employees/ customers with disabilities?		
Does your Disaster and Emergency Plan deal with the possibility that external help will likely be unavailable to the company for at least three days or more after a major earthquake?		

Infrastructure/Connection Checklist: Telecommunication/Communication

IMPACT	YES	NO
Have you identified a contact point at a distance (outside the area) to act as communication centre of your company during a major earthquake?		
Have you informed your main customers to contact this communication centre after a disaster and emergency such as an earthquake?		
Have you taken measures for an alternative communication system for your employees to contact their families?		
Has a warning network been set up to distribute information to employees and their families using the methods of dispersal from a single point or alternative reporting points?		
Will a power failure render your telephone network inoperable if you have no uninterruptible power supply?		

Workplace Insurance Policies

Insurance plays an important role in disaster and emergency preparedness. A devastating earthquake, for instance, can disable a business temporarily or permanently. It is important for businesses to obtain and maintain the right insurance cover, because the disaster financial assistance programme does not provide support for loss resulting from a disaster if existing insurance covers the loss reasonably and directly (for more information see: www.dask.gov.tr).

You should check whether your insurance policies include earthquake as a specific hazard as part of planning and risk control methodology. You should also plan and make sure you are covered not only for the loss of physical assets, but also for the financial loss of your business due to a large-scale closure after an earthquake or another disaster. Insurance policies can be taken out on a replacement/renewal cost basis, so you should plan and determine your insurance coverage needs correctly.

Insurance policies are different from each other. Some policies are more comprehensive than others. First of all, a professional insurance representative should determine what the policy does and does not cover according to the checklist on page 88.

After checks of disaster and emergency preparedness and infrastructure, it is useful to consider your plan or all processes from the very beginning in the light of relevant and up-to-date laws and regulations.

In 1999, "Civil Defence Affairs Guide for Departments and Establishments" was issued by the Civil Defence College of the abrogated General

Directorate of Civil Defence, Ministry of Interior of the Republic of Turkiye for the convenience of the concerned persons of workplaces, public institutions and organizations including schools.

"This guide shows the civil defence planning and other services of public and private departments, institutions and factories, as well as the organizations, facilities and measures to be taken for this purpose, and the tools, materials and equipment pertaining to them, according to the Civil Defence Law No. 7126 and its annexes and the regulations, instructions and orders published so far regarding the implementation of this law."

Entered into force in 2012, Law No. 6331 on Occupational Health and Safety also includes regulations regarding Emergency Plans and Evacuation (see Appendix C). Additionally, the Ministry of Environment and Urbanisation of the Republic of Turkiye published a Communiqué on Internal Emergency Plans to Be Implemented in Major Industrial Accidents on 15 August 2020.

The purpose of this communiqué is to determine the procedures and principles regarding the internal emergency plan that the operators of the high-level establishments specified in the Regulation on Prevention and Mitigation of Major Industrial Accidents published in the Official Gazette of 02.03.2019, bis 30702, should prepare or have prepared in accordance with Article 13 of the same regulation.

Occupational Health and Safety Law No. 6331, Article 11 b, concerns Emergency Plans, Fire Fighting and First Aid, and Article 12 is about Evacuation (see Appendix C). According to these articles, it is necessary to establish new teams with similar or different names in addition to the Civil Defence Plan and to plan the dispatch and administration in it. Hence, the legal planning requirements for fire, first aid and evacuation based on Law No. 6331 are discussed before the Incident Command System.

Insurance Policy Checklist

IMPACT	YES	NO
Does your company have an up-to-date asset valuation?		
Does the insurance cover the value of the assets?		
Is interruption of business operations included?		
Does your company's policy include contingent external cover?		
Can a temporary and alternative workplace be financed?		
Does your company's policy cover all machinery and equipment, including IT equipment?		
Is the general liability limit of your company's policy adequate?		

Fire

As seen in Article 1 of the Law No. 7269, entered into force in 1959 in Turkiye, fire is deemed as one of the major disasters along with (1) Earthquake, (2) Fire, (3) Flood, (4) Landslide, (5) Rockfall, (6) Avalanche and similar disasters. The **Regulation Regarding Fire Protection of Buildings,** published in the *Official Gazette* No. 26735 of 19.12.2007, defines emergency situations as the events considered as disasters and the situations arising from events which occur as a result of careless, imprudent, negligent and intent acts and various reasons (see Appendix D). According to the Regulation Regarding Emergency Situations in Workplaces, an emergency situation is an event such as fire, explosion, spread of hazardous chemical substances, natural disasters e.g., that may occur in the whole or part of the workplace and require immediate response, struggle, first aid or evacuation.

In accordance with the Regulation Regarding Fire Protection of Buildings and the Occupational Health and Safety Law No. 6331 referring to it, emergency team is defined as follows:

Emergency Team: It is the team that provides evacuation of those in the building in case of fire, earthquake and similar disasters, makes the first response to the incident, participates in search and rescue and fire extinguishing works and applies first aid when necessary.

These teams are commonly formed in practice as follows:

In 2017, according to the ***Emergency Plan Preparation Guide*** published by the General Directorate of Occupational Health and Safety, Ministry of Labour and Social Services, the duties and responsibilities of the teams, team leaders and other teams recommended to be specified in Emergency Plans are set forth in articles and are not repeated here.

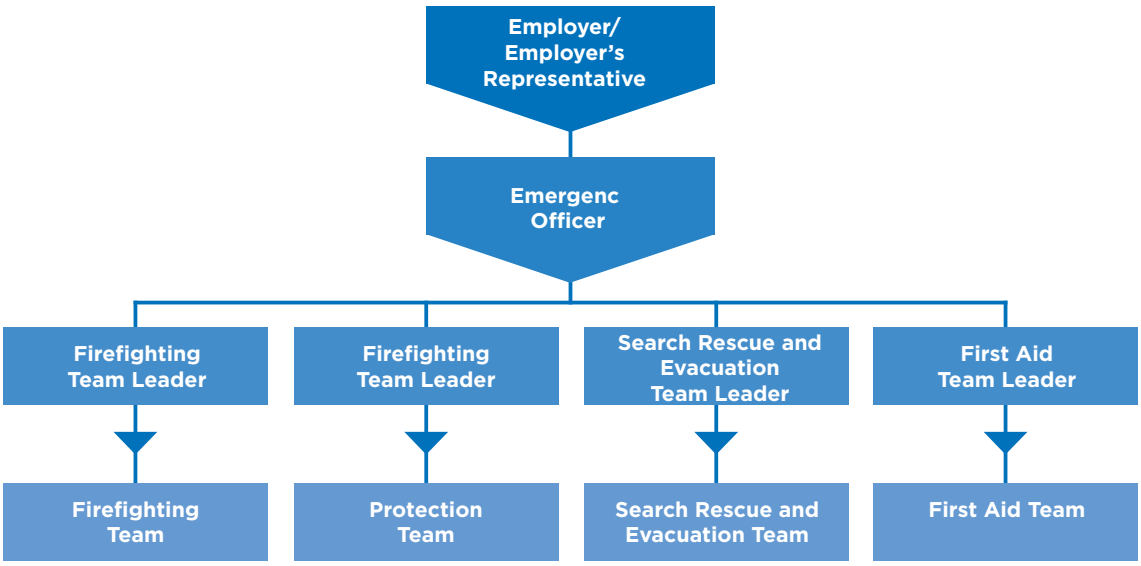


Figure21 The **Emergency Organization Scheme** commonly used in workplaces for the evacuation of people in the building by the emergency team in case of fire, earthquake and similar disasters pursuant to Law No. 6331 on Occupational Health and Safety. (Reference: Emergency Plan Preparation Guide, General Directorate of Occupational Health and Safety, Ministry of Labour and Social Services, Republic of Turkiye, 2017)

Along with the Regulation Regarding Fire Protection of Buildings, there are many other protective safety and fire-related legislations such as the following ones (see National Legislation/Regulations section).

Regulation Regarding Fire Protection of Buildings drawn up in accordance with Appendix-9 of the Civil Defence Law No. 7126: It is widely used in Turkiye for extinguishing any fire that breaks out in any way during the design, construction, operation, maintenance and use of all kinds of structures, buildings, facilities and businesses used by public and private institutions and organizations and natural persons by minimising loss of life and property and for taking measures before and during the fire and for provision of organization, training and supervision.

This regulation covers the fire prevention and extinguishing measures to be taken in all kinds of structures, buildings, and indoor and outdoor facilities throughout Turkiye as well as the principles of design, construction, use, maintenance and operation necessary to minimise the hazards to life safety caused by fire heat, smoke, toxic gas, suffocating gas and panic. However, the protective equipment of the personnel responsible for response to fire is also an important issue.

First of all, it is useful to develop and use a checklist similar to the one at the end of the section for the personnel to fight the fire. In scope of fire extinguishing activities, team members can assess themselves by putting an X in the **YES** box for the skills they have gained and in the **NO** box for the skills they have not gained.

The NO-answers given at the end of this assessment should be reviewed again. If you do not consider the equipment of the team sufficient, provide the missing ones or if you do not consider the team members are able to use equipment properly, plan to give training to the team again.

As it is known, the three elements constituting the fire, i.e. (1) **Combustible Material,** (2) **Oxygen** and (3) **Heat** are indispensable requirements of life. These elements should be emphasised when taking measures to prevent fire. It is not always possible to prevent fire, but it is possible to take measures to reduce and delay the possibility of fire to a great extent. For instance, in the legal case on the explosions occurred in two separate points in OSTIM, Ankara on 03.02.2011, with 20 casualties and 52 injured, significant sentences were given to employers and responsible persons because they did not take the measures specified in the Occupational Health and Safety Law.

As will be seen in the following sections, the plant manager usually assumes the role of commander of the firefighting group and designates the responsible fire-fighting staff in each department to work under his control. In the next step, the person responsible for firefighting in each department appoints other persons to be responsible for firefighting activities in their department. He/she also makes the necessary arrangements on vital issues such as first aid, emergency medical intervention, search and rescue.

In summary, according to the regulations, the employer or the employer's representative assigns a sufficient number of people who are properly equipped and trained on prevention, protection, evacuation, firefighting, first aid and similar matters, taking into account materials used in the working environment, work equipment and environmental conditions, size of the workplace and the special hazards it bears, nature of the work performed, number of employees and other persons in the workplace; provides tools and

equipment; conducts training and drills and makes sure teams are always ready.

In order for the employer to develop fire protection measures, checklists similar to the following one should be prepared and periodically implemented in every part of the workplace. Items with NO-answers in the list should be reviewed and planned to be eliminated as soon as possible.

Fire Extinguishing Operations Checklist

LEVEL	ASSESSMENT CRITERIA	YES	NO
1	Dou you wear a fire helmet?		
2	Do you wear gloves?		
3	Do you wear heat-resistant gloves?		
4	Do you wear rubber-sole fire boots?		
5	Did you check the waterproof torch?		
6	Did you test the respiratory equipment?		
7	Are you wearing your respiratory equipment?		

Fire Protection Checklist

IMPACT	YES	NO
Are fire safety drills conducted periodically?		
Do trained employees and/or municipal fire department personnel conduct fire protection inspections regularly?		
Does your facility include an approved fire alarm and/or audible warning system?		
Are fire evacuation routes equipped with battery-driven backup lighting which switch on automatically when power or emergency power fails?		
Are all employees familiar with evacuation alarms and signs (audible and/or visual)?		
Do you have an approved smoke control system?		
Is your facility equipped with a fire extinguishing system?		
Have these systems been checked for their seismic adequacy in accordance with applicable standards?		
Are periodic inspections and regular maintenance of fire/smoke alarms and/or sprinkler systems carried out in accordance with fire protection regulations?		
Is there an adequate number of fire extinguishers?		
Are fire extinguishers located along the designated evacuation routes?		
Are employees trained in the location and use of fire extinguishers and other fire emergency systems?		
Are monthly inspections and annual maintenance of fire extinguishers carried out?		

First Aid

The Regulations also emphasise first aid along with fire under the headings of Emergency Plans, Fire Fighting and First Aid. According to the Regulation Regarding Emergency Situations in Workplaces, an emergency situation is an event such as fire, explosion, spread of hazardous chemicals, natural disasters that require immediate intervention, struggle, first aid or evacuation that may occur in the whole or part of the workplace.

First Aid Team

It is responsible for:

- Emergency medical response;
- Hospitalization of the injured people to the nearest hospital together with the evacuation team;
- First aid and medical counselling;
- Reporting to the Operations Supervisor and the Emergency Officer, who is the Incident Commander;
- Acting most properly if there is a possibility of death for the victim.

The employer is obliged to provide and maintain a cabinet for first aid equipment as required. The First Aid Team uses appropriate safety equipment and first aid techniques. They assist in giving first aid to the sick and injured, identifying the dead and injured people, implementing triage (prioritisation of emergency medical intervention) and ambulance services.

Hence the employer should make arrangements related to first aid. **According to the Regulation, the employer should appoint a sufficient number of people who are properly equipped and trained in first aid and similar matters and provide the necessary tools and equipment.** You can check the first aid materials that should be available in your workplace by using the checklist below.

The duties and responsibilities of the first aid teams, team leaders and other teams specified to be established in the Emergency Plans of the workplaces are given in the *Emergency Plan Preparation Guide* published by the General Directorate of Occupational Health and Safety, Ministry of Labour and Social Services, in 2017.

First Aid Materials Checklist

IMPACT	YES	NO
Are first aid supplies kept available for use and in a damage-proof cabinet?		
Are there sufficient medical supplies to meet the high casualty load that may occur as a result of earthquake?		
Are first aid supplies distributed to the points where employees can easily reach and have easy access in case of a disaster?		
Are there portable first aid materials available in case they need to be transported to a safer place in emergency?		
Are first aid materials fixed in such a way that they will not be damaged in case of flood, earthquake, etc.?		
Are there sufficient first aid supplies to meet the needs of customers, visitors and other people who may be legally under the responsibility of the business?		
Are first aid supplies regularly inspected and replenished?		
Are any employees trained to use all first aid equipment?		
Is necessary equipment available for casualties?		
Do you have pagers and telephone numbers to contact with first aid personnel?		
Do you have first aid trained employees who are ready for duty at any time?		
Is there an easily recognisable First Aid Supplies Cabinet with sufficient stock on each floor of your building?		
Do you have a stock of emergency cleaning supplies such as toilet paper, plastic bin bags and lime powder?		
Is there one thick blanket or sleeping bag per person?		
Do you have flashlights and spare batteries or an emergency torch?		
Are there tarpaulins or plastic boards to build an emergency shelter if necessary?		

Evacuation

There is a short period of time to warn the employees and evacuate the workplace in some disasters, particularly flood, landslide and storm, but in earthquakes and similar disasters you have no such time. Hence employees should be ready to evacuate the workplace and the surroundings as soon as possible, even immediately in the face of a possible danger. For a successful evacuation, first of all a successful early warning system is required.

There are 4 important elements for a successful early warning:

1. Identification of Risk

2. Monitoring and Warning

3. Dissemination and Communication

4. Response Capacities

Workplaces should also have a well-planned and systematic preparedness for return to the workplace and the recovery works as the last stage of evacuation. Uncontrolled evacuation and return may cause more loss of life than the direct effects of the disaster.

One of the main objectives of the Emergency Plan is to evacuate victims by using emergency personnel, equipment and resources to protect/rescue life and property and carry out disaster and emergency relief operations to make sure food, drink, shelter, medical care and critical services are provided to those in need.

In addition to the efforts to save life and property after a disaster and emergency, efforts should also be started to normalise the extraordinary situation in the administrative unit. Among these actions are:

- Determination of the personnel to be assigned in the response stage
- Warning of employees
- Evacuation and accommodation of employees elsewhere
- Keeping employees and the public around the plant continuously informed
- Continuation of search and rescue operations
- Provision of medical assistance
- Assessment of damage
- Identification of things to be done for mitigation

- Determination of the assistance to be requested from outside the region. (These are also the activities in the scope of "response" phase, but they should be handled in the disaster preparedness and planning phase).

In accordance with the regulation, necessary arrangements are made in advance and necessary instructions are given to the employees so that they can leave their workplaces immediately and go to a safe place in case of emergency. Unless it is inevitable, employees cannot be asked to continue their work except for those having necessary equipment and are appointed specifically.

However, the Occupational Health and Safety Law does not mention about early warning, notification, alarm, warning, sensor/sensing and similar concepts and issues at all. The Regulation Regarding the Fire Protection of Buildings only specifies sensor/detection and warning systems for fire. Hence, the checklists also include questions about whether a Fire Warning System is available in the workplaces. The fact that evacuation and first aid are often considered together in this law and in the regulations published referring to this law, may cause difficulties in practice.

Regulation Regarding Emergency Situations in Workplaces, Article 10, paragraph 3 under Occupational Health and Safety Law, reads:

"In the event of an emergency in the workplace, the employer shall specify in the emergency plan the appropriate evacuation arrangements that can be followed to protect employees from the adverse effects of this situation and give the necessary instructions to employees in advance."

Basing upon this statement, in case of an emergency, guiding works should be carried out to make sure quick evacuation of everyone (employees, visitors, etc.) from the workplace.

Regulation Regarding Emergency Situations in Workplaces, Article 12, paragraph 3, under Occupational Health and Safety Law, reads:

"The emergency plan shall be documented to cover at least the following points: Evacuation plan including escape routes, assembly points and warning systems if available."

The Evacuation Plan should be posted prominently in all parts of the workplace and organized in a way to help everyone (employees, trainees, visitors, etc.) in the workplace in case of any disaster and emergency. In the evacuation plans commonly used in Turkiye, there is no "buddy system" such as the one specified in the US/FEMA standards and practices. In fact, in case of a disaster and emergency, each person in the room should be obliged to check his/her "buddy" in the room and help him/her if necessary. When employees, interns, visitors, etc. in the workplace evacuate without being aware of the other, those in need of emergency assistance can, most of the time, be detected only too late.

The Regulation Regarding Emergency at Workplaces, Article 12 emphasises that sketches containing the following points should be prepared in scope of the Evacuation Plan:

1. Locations of emergency equipment, including those to be used to extinguish fire.
2. Locations of the first aid supplies.
3. Evacuation plan including escape routes, assembly points and warning systems, if any.
4. First name, family name, title, area of responsibility and contact information of the assigned employees and their substitutes, if any.
5. Contact numbers of external organizations for first aid, emergency medical intervention, rescue and firefighting.

These are, of course, the minimum requirements specified by laws and regulations. We can also add good examples from the world such as "buddy system". Furthermore, heating, ventilation and similar systems should be checked regularly and everyone involved should be taught on how to switch them off during a disaster. Necessary measures should be taken for alternative transportation possibilities considering the inability of the employees to go home after the disaster.

When preparing evacuation plans, the safe place or area, also known as the emergency Assembly Area, refers to the place designated at a distance or shelter where employees will not be affected by the adverse consequences of emergencies. The issues to be considered about the assembly area in workplaces can be listed as follows:

- It should be at a distance that will not be affected by emergencies as specified by the workplace;
- It should be marked with a sign so that evacuees can easily notice it;
- It should be of a such size that will not cause stampede/horde after the evacuation of all persons;
- The assembly area in the disaster and emergency plan must be supported with a sketch showing the route from the workplace to the assembly area;
- This information given in the disaster and emergency plan must be added to the evacuation plan.

If there is an employee with disabilities in your workplace and he/she cannot evacuate on his/her own, make plan to evacuate him/her with the support of a Rescue and Evacuation Team to be created. Some employees with disabilities can leave the workplace on their own.

Evacuation Planning Checklist

IMPACT	YES	NO
Does your organization have an emergency evacuation plan that identifies the person who decides whether to evacuate?		
Does your evacuation plan cover the evacuation of your temporary or permanent customers?		
Do all employees understand evacuation signs/warnings?		
Are floor plans on all floors and placed in noticeable points to show the location of evacuation routes and stair cores?		
Are exits clearly marked?		
Is each evacuation route clear of obstructions and at least 1 metre in width?		
Can each door leading to an exit be opened from the inside so that no one remains locked in?		
Do evacuation routes include emergency lighting?		
Are there at least two emergency exit options on floors above or below the ground floor?		
Are lifts configured to automatically return to the ground floor during an emergency?		
Do you have a pre-designated assembly area where your employees know where to report after evacuation?		
Is there an easily noticeable First Aid Supplies Cupboard with sufficient stock on each floor of your building?		
Do you have a stock of emergency cleaning supplies such as toilet paper, plastic bin bags and lime dust?		
Is there one thick blanket or sleeping bag per person?		
Do you have flashlights and spare batteries or an emergency torch?		
Are there tarpaulins or plastic boards to build an emergency shelter if necessary?		

Checklist for People with Special Needs/Disabilities

(For detailed information, see Disaster and Emergency Planning Guide for People with Disabilities)

IMPACT	YES	NO
Have your employees with special needs/disabilities (e.g. those with hearing, vision or mobility impairments or are pregnant, etc.) been identified?		
Have the specific needs of each employee with disabilities during the earthquake been identified (e.g. working with each of them on their needs)?		
Have emergency safety officers been assigned the task of selecting people (colleagues, etc.) to assist individuals with special needs as "buddies" in emergencies?		
Are employees with disabilities advised to bear medical information about their medical conditions and spare medical equipment with them?		
Are employees assisted by special equipment advised to have spare equipment (e.g. spare batteries for motor-driven wheelchairs or hearing aids, alternative power sources for respirators, spare catheters or urine bags, etc.)?		
Have evacuation drills been conducted to identify the special needs of employees and customers?		

Water and Food Materials Checklist

IMPACT	YES	NO
Is there enough clean water to supply employees, visitors and customers for at least 72 hours or more?		
Is clean water stored in suitable tanks that are unbreakable and non-transparent? Is the stored water replenished at regular intervals (Note: Bottled water should be replenished every three months)?		
Is there a supply of durable food that will last at least 72 hours or more for employees, visitors and customers?		
Are these foods replenished at regular intervals to keep them fresh?		
Are foods kept locked so that they are available in case of emergency?		
Are foods stored in different locations?		
Are food and water stored where they will be least damaged during an earthquake?		

It should be foreseen, particularly when planning the evacuation of visually impaired employees, that they will be evacuated by holding hands in a chain and distributed among the evacuated employees. You should also not forget your visitors, employees in vulnerable group or with chronic diseases and employees working alone (see *Disaster and Emergency Planning Guide for People with Disabilities*).

The regulations do not mention the equipment and materials that evacuees may need in assembly areas, etc. Think together with the personnel and make sure that there are enough convenience goods and that they are stored and kept in a healthy way. The materials that may be needed after a disaster and emergency should be determined, those that are necessary and can be stored should be kept properly, and a plan should be made on how to procure those that cannot be stored. It is of great importance to have a kitolan ve gerekli malzmeleri içeren bir çantanın hazır bulundurulması, tahliyenin hızlı yapılabilmesi containing necessary materials, commonly known in Turkiye as the disaster and emergency kit, which is kept under hand and practical to carry for quick evacuation.

The materials to be put into this kit should mainly consist of medicines, glasses, lenses and important documents like ID cards and special hygiene materials which are difficult to obtain when required.

You can use the sample checklists given on pages 98-99 to determine whether the above-mentioned evacuation conditions are present in your workplace. Each employer should develop and use such checklists specific to workplace and make a plan to complete any deficiencies as soon as possible.

The duties and responsibilities of the evacuation teams, team leaders and other teams required by the Emergency Plan of the Workplaces are given in the *Emergency Plan Preparation Guide* published in 2017 by the General Directorate of Occupational Health and Safety, Ministry of Labour and Social Services.

Things to Be Done for Evacuation Preparedness - Summary

- Designate ASSEMBLY AREAS outdoors for employees to evacuate the building.
- Inform EMPLOYEES and VISITORS about the location of the assembly areas.
- Show employees the different ROUTES leading to the assembly areas.
- Make PLANS for temporary shelter alternatives.
- Inform FAMILIES about evacuation and shelter alternatives.
- Inform employees to take a ROLL CALL upon arriving at the assembly area.
- Instruct your team to create a LIST of absent and present EMPLOYEES, including those normally not part of the office group, e.g. visitors and temporary workers.
- Prevent unnecessary efforts are made for employees located elsewhere by making sure that a LIST OF MISSING, UNREPORTED and ADDITIONAL PERSONS is given to a central coordinating point.

Incident Command System

Planning should include preparedness, response and recovery phases as much as mitigation. As it is, many issues such as who is responsible for what, how coordination and command will function, who will respond in which teams and many issues like these should be addressed and included in the plans.

In summary, so far we have focused on identification of the risks and deficiencies and on fire, evacuation, first aid and similar issues that should be included in the plan according to the applicable regulations. After taking mitigation measures to mitigate or eliminate the identified risks, it is necessary to prepare and train teams and keep them and necessary services available. To this end, teams should be built of personnel, equipped and trained, especially for the works to be done after the disaster. Drills should be organized at least once a year or more if possible with the participation of all personnel.

The next step of the planning involves the establishment of the necessary command, control and coordination systems and centres for all the work to be performed, and especially the establishment of emergency services and teams for the response phase. The most fundamental issue in emergency planning is the establishment of a system to provide effective response to an emergency. Such a system includes the following characteristics:

- Integrated management and co-ordination of emergency operations;
- Determination of command chain and delegation of authority;
- Coordination of requests for assistance, utilisation of company resources and other support;
- Prioritisation and solution of conflicting requests for assistance;
- Coordination of regional and interregional assistance and community-based support;
- Coordination, routing and dissemination of emergency public and employee information;

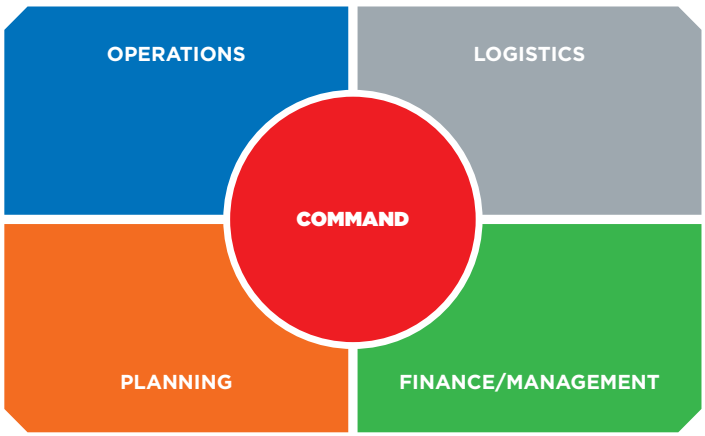


Figure 22. The basic five elements of the Incident Command System (ICS), which is a standardised management system widely used in the UN and the world as a field management system (Kadıoğlu, 2013).

- Collection, assessment and dissemination of damage assessment and other essential infor mation;
- Coordination and maintenance of communica tion with government departments and news channels.

During the operations of response to a disaster or emergency, many things may need to be done concurrently. It is important that people know where and in which task they should take part in the response. And this is possible with a predetermined structure. This organization is possible with what is referred to as an **Incident Command System (ICS)** (see Figure 22). This system is a combination of communication, personnel, equipment, procedures and facilities operating within a standardised organizational structure.

Incident Command System (ICS) is a model for **Command, Control and Coordination (3C)** of response in disaster and emergency.

It makes it possible for different units and organs responsible for giving response to the incident to coordinate their initiatives and efforts by ensuring protection of life, property and environment and balance of the incident by working towards a common goal.

A successful response to disasters and emergencies requires an incident and site command system that creates a combination of communication, personnel, equipment, procedures and facilities operating within a standardised organizational structure. The Incident Command System (ICS) is established within emergency services such as operations, logistics, planning and financial studies and is a modular, tactical and emergency management system on-site which is designed for all hazards and all levels that should include command, dispatch and administration. It is not possible to plan and implement without ICS.

This standardised management system forms the basis of all disaster and emergency preparedness and response management at local, province and district level and nationwide.

Before establishing an emergency organization similar to the incident command system, it is useful for industries and workplaces to check the preparedness works and infrastructure in the workplace which are necessary to establish this system. Here is an example of a checklist that you can use and develop in this regard.

Once response infrastructure and organization together with the current status have been determined, it is recommended to form teams and organizations similar to the sample below (see Figure 23). The persons and teams in charge of Command/Administration (commander), Operations (performer), Planning (organizer), Logistics (supplier) and Finance/Administrative Affairs (payer), the five basic functions of Incident Command System (ICS) are organized as shown in the organization chart in Figure 23. As the organizations responding to disasters and emergencies, such as ICS, have a modular structure intertwining with each other, they easily integrate the relevant units as central management and four main services. ICS organization at headquarters and services level is as shown in Figure 23:

Incident Command System (ICS) ensures that the response to disaster is kept under control in all aspects thanks to sharing of responsibility in line with the areas of expertise within the organization and effective communication between the units.

Emergency Response Team Checklist

IMPACT	YES	NO
Do you have an emergency response team consisting of your employees that can handle all emergencies?		
Are emergency response team members trained in tasks such as area security, food and material distribution, task identification, giving instructions, checking the safety of stairs, managing evacuation and keeping a record of emergency supplies?		
Have emergency response team members been given responsibility and training in post-earthquake Building Damage Assessment and basic search and rescue (help may take hours to arrive)?		
Have emergency safety, recording and enforcement officers been designated to organize and coordinate the work of employees and customers after an earthquake?		
Have the areas of responsibility of emergency safety, registration and enforcement officers been determined taking into account building management, officials and other essential emergency service personnel?		
Are emergency safety officers assigned the task of inspecting equipment and furniture in each work area that could fall and injure workers?		
Are training programmes provided once or twice a year for emergency safety, recording and enforcement officers?		
Does your company encourage its employees to receive first aid and cardiopulmonary resuscitation/heart-lung resuscitation training?		
Are realistic drills conducted to demonstrate the robustness of the methods and that important elements are not forgotten?		
Note: Most of the questions in this checklist should not be answered NO		

The said laws and regulations provide for making plans under different names in the workplaces and for building different services or teams. Ideally, these teams should be ready for service in scope of Disaster and Emergency Plan whenever required. For this reason, bringing these services and teams together in the ICS concept summarised in Figure 23 will be of great benefit in practice. To this end, it is useful to first identify the services and teams required to be created by different legislation in the workplaces and try to synthesise them with ICS in logical sense.

For instance, to summarise the services and teams starting from the oldest one, the following services should be established in scope of Civil Defence Plans as per the Civil Defence Law No. 7126, which is still in force today as explained above:

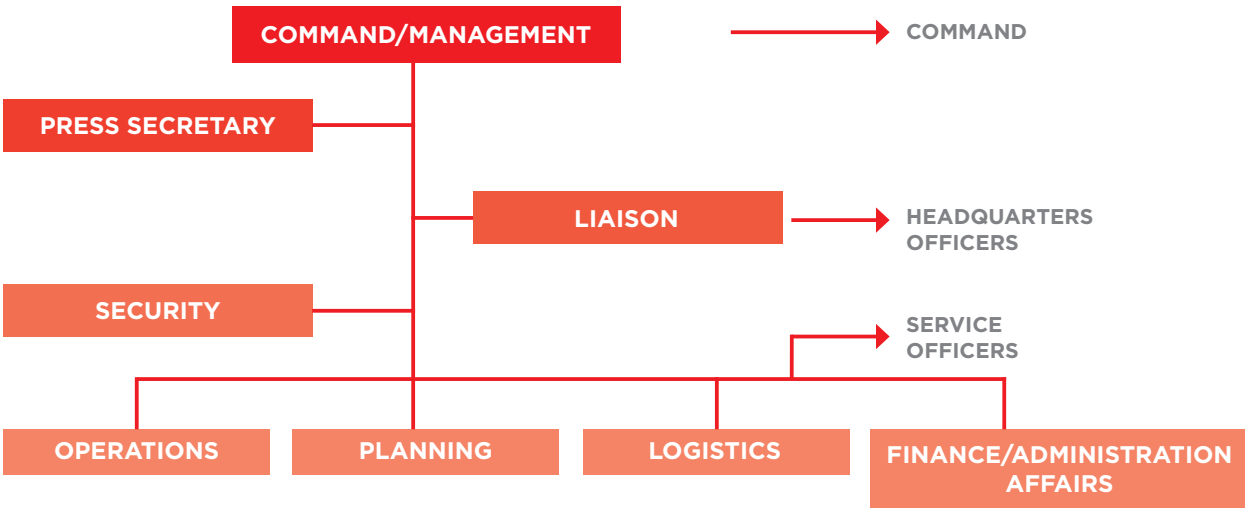


Figure 23. The main elements of the ICS are: Control Centre and Headquarters Service, consisting of Command, Press Secretary, Security and Liaison; and Service Units, consisting of Operations, Planning, Logistics and Finance/Administrative Affairs. Under these four service units, the necessary core and auxiliary teams should be established.

1. Control Centre and Headquarters Service
2. Safety and Guidance Service
3. Fire Service
4. Recovery Service
5. First Aid Service
6. Social Assistance Service
7. Technical Repairs Service

Just as the Regulation Regarding Emergency in Workplaces and the Regulation Regarding Fire Protection of Buildings, the Occupational Health and Safety Law No. 6331, which is widely used today, provides establishment of four teams in the Emergency Plans which should be made in the workplaces:

1. Firefighting / Extinguishing
2. Protection
3. Search Rescue and Evacuation
4. First Aid

However, as shown above, *Guide on Civil Defence Works for Departments and Establishments,* published in 1999, provides creation of more teams than required in the Emergency Plan. In this situation, workplaces that are still obliged to prepare a Civil Defence Plan try to fulfil the requirements of different regulations with different plans.

In addition, the appendix (Appendix-1) of the **Communiqué on Internal Emergency Plans to Be Implemented in Major Industrial Accidents,** published by the Ministry of Environment and Urbanisation on 15 August 2020, states that the working groups to be created should be prepared in accordance with the **Turkish Disaster Response Plan (TAMP),** recommending creation of the following nine working groups:

1. Search Rescue
2. Communication
3. Fire
4. Evacuation and Settlement Planning
5. Chemical Substances (CBRN)
6. Transportation Infrastructure
7. Transport
8. Energy
9. Health

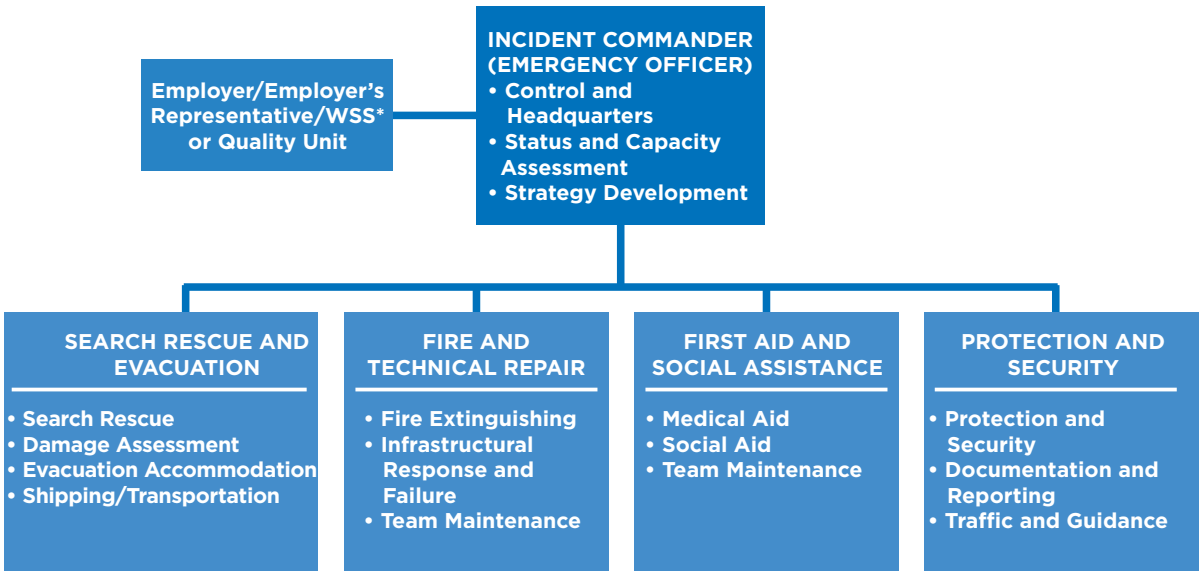
As can be seen, although having somewhat different names and numbers, the creation of similar teams in these three plans is recommended by different ministries. These working teams/groups can be developed separately or combined with ICS logic in accordance with the following organizational ICS schemes. With the help of these schemes, both the requirements of disaster management science and the provisions of the relevant legislation can be fulfilled.

Those who are not businesses of high level organizations as defined in the Regulation Regarding Prevention of Major Industrial Accidents and Mitigation of their Impacts can create the working groups/teams of Command, Rescue Team, Extinguishing Team and First Aid Team in the ICS in charge of emergency and the working groups/teams of Operation Service only in the ICS as shown in Figure 24.

In this organization, while the teams of Firefighting, Search Rescue and Evacuation and emergency response teams are created in accordance with the Regulation Regarding Emergency in Workplaces, the protection team in the diagram is organized according to the Regulation Regarding Fire Protection of Buildings.

The organization of Emergency Plan team according to the Occupational Health and Safety Law No. 6331 in Figure 21 and the team organization in Figure 24 which can be used both as a **Civil Defence Plan** and an **Emergency Plan** are very similar.

In summary, the Emergency Officer, as stipulated by the Regulation Regarding Fire Protection of Buildings and the Occupational Health and Safety Law No. 6331, together with the Team of Command, Rescue, Extinguishing and First Aid in ICS, constitute the working groups of the Operation Service in ICS. Financial and



***WSS:** Work Safety System/Unit

Figure 24. An example of a **narrower** basic ICS response organization in accordance with the relevant legislation, which can be used as both a **Civil Defence Plan** and an **Emergency Plan** for workplaces **without** a higher level organization operator, and which can also be called a **Disaster and Emergency Plan.**

Administrative Affairs in ICS and Planning and Strategy Development at the time of the incident are the tasks of the Control Centre and Headquarters Service (Incident Command Centre), i.e. the Emergency Officer, as stipulated in the applicable regulation.

Workplaces that are **not** operators of higher level establishments and do not wish to establish Search Rescue and Evacuation, Fire and Technical Repair, First Aid and Social Assistance, Protection and Safety and Guidance Services together may establish a response organization that can be used as a **Civil Defence Plan** and **Emergency Plan** under the umbrella of ICS as shown in Figure 25.

In this case, the organization diagram in Figure 25 meets only the operations unit of the incident command system of the relevant laws and regulations in Turkiye, United Nations etc. institutions and countries.

For the operators of high level establishments specified in the Regulation Regarding Prevention and Mitigation of the Effects of Major Industrial Accidents, an integrated ICS for both the Emergency Plan as required by the Regulation Regarding Fire Protection of Buildings and the Civil Defence Plan as stipulated by the relevant legislation can be established as shown in Figure 26.

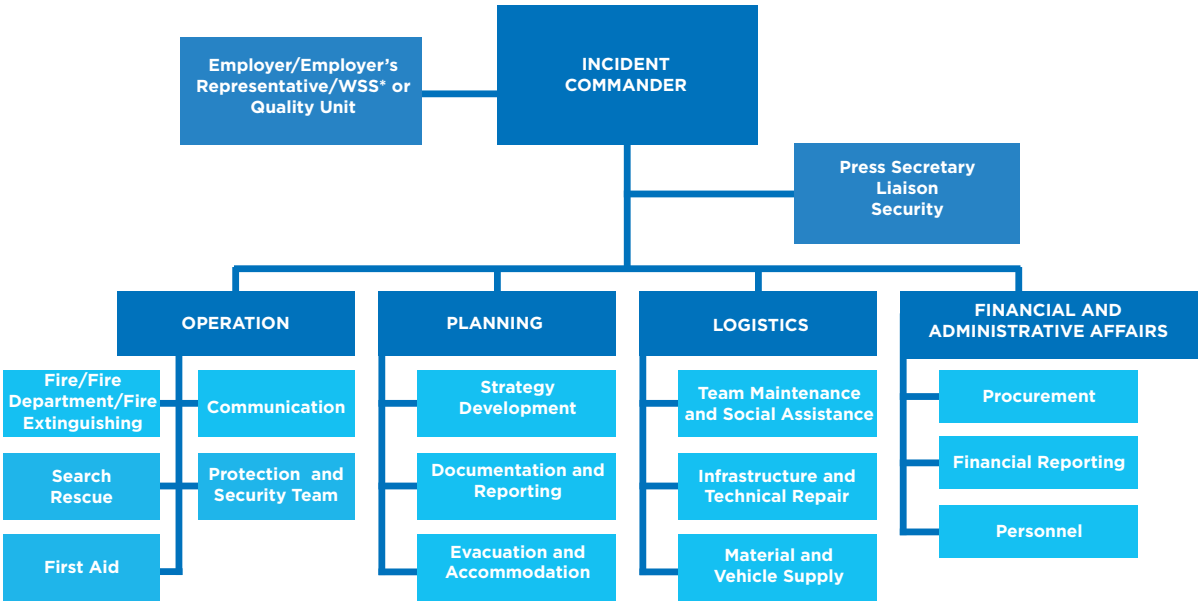
The Turkish Disaster Response Plan (TAMP) of AFAD Presidency has been prepared completely according to the international Incident Command System. The Emergency Plan of the workplaces and TAMP and similar elements should overlap and be able to communicate when necessary. In accordance with the Internal Emergency Plan regulation, the teams required by the TAMP are added to the other required teams in ICS.

Thus, whether or not the workplace is a high-level organization responsible for making an Internal Emergency Plan, it will be sufficient to create a single plan, which can be used as Civil Defence Plan, Emergency Plan and Internal Emergency Plan when necessary, under the name of Disaster and Emergency Plan to cover all of them.

It is recommended that higher level organizations responsible for making an Internal Emergency Plan should establish a single incident command organization which includes appropriate personnel and can be used as the Civil Defence Plan, Emergency Plan and Internal Contingency Plan. The services and teams required by these three plans are brought together in accordance with the ICS in Figure 26.

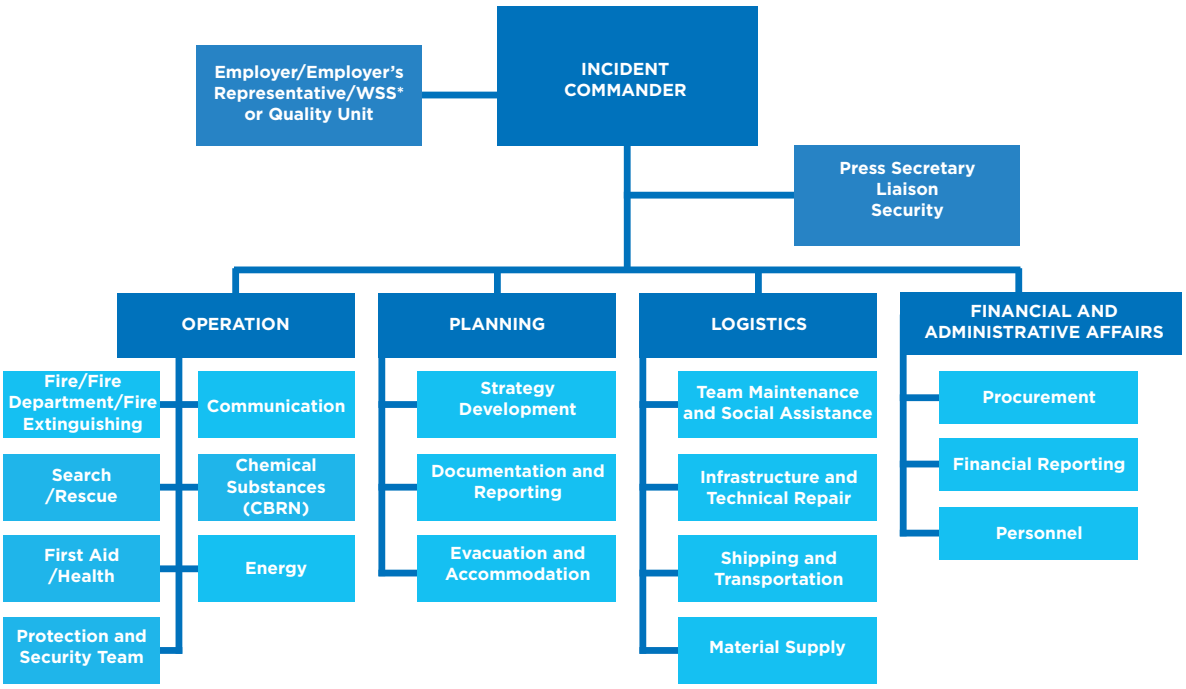
Safe locations should be designated in the workplace, called Control Centres, where the Headquarters Service or Incident Commander can work if required. (Note: Terms such as Crisis Centre or Crisis Desk take no longer place in the legislation). In the Provincial Directorates of AFAD, such places are called Disaster and Emergency Management Centre. Workplaces are also required to designate before a disaster the places to be used as at least three Disaster and Emergency Management Centres similar to the example in Figure 27 which can be made ready for use (equipped with necessary furniture, means of communication, copies of plans, etc.) in a short time like 20 minutes when required. The safest one of these places determined prior to a disaster and emergency should be used as the Disaster and Emergency Management Centre of the workplace after the disaster and emergency.

The description of the services added to the organization chart stipulated by the relevant regulations according to the International ICS is given below. The duties and responsibilities of the teams are given in detail in the guides prepared by AFAD Presidency, TAMP and related ministries; hence they are not repeated here.



***WSS:** Work Safety System/Unit

Figure 25. An example of most basic organization in scope of ICS which may also be called **Disaster and Emergency Plan** in compliance with the applicable legislation that can be used both as **Civil Defence Plan** and **Emergency Plan** for workplaces **without** top level organization operator.



***WSS:** Work Safety System/Unit

Figure 26. An example of basic organization in scope of ICS which may also be called **Disaster and Emergency Plan** in compliance with the applicable legislation that can be used both as **Civil Defence Plan** and **Emergency Plan** for workplaces **with** top level organization operator.

1. Incident Commander/Emergency Officer/ Control Centre and Headquarters Service

- First degree responsible for coordination of the organization and teams in disasters and emergencies.
- Is/are the first person/persons to be informed in case of disaster and emergency.
- Initiates the Disaster and Emergency Plan when necessary.
- Determines the responsibilities of the sub-units under him/her and ensures the command, coordination and supervision of these units.
- Determines and implements the activities to be carried out in case of disaster and emergency under the supervision of the Disaster Board, etc. and updates the building disaster plan when required.
- Immediately notifies the employer or the employer's representative about any disaster and emergency and nonconformities.
- Implements the instructions of the Disaster Board, Emergency Coordinator, etc.
- Provides the necessary environment for the teams (ambulance, fire brigade, etc.) arriving at the site to work comfortably and gives information to them.
- Identifies the scene of the incident and is responsible for reporting the incident and making legal notifications.
- Checks and ensures that emergency exit routes and doors are open and always usable.
- Checks the robustness of the equipment to be used in disasters and emergencies and safe response.
- Makes his/her presence at the Disaster and Emergency Management Centre in case of disasters and emergencies.
- Decides on the necessity to leave (evacuate) the building in case of a danger.
- Provides external and internal communication in accordance with the Communication Diagram in disasters and emergencies.
- Informs the personnel about the disaster and emergency and makes announcements when necessary.

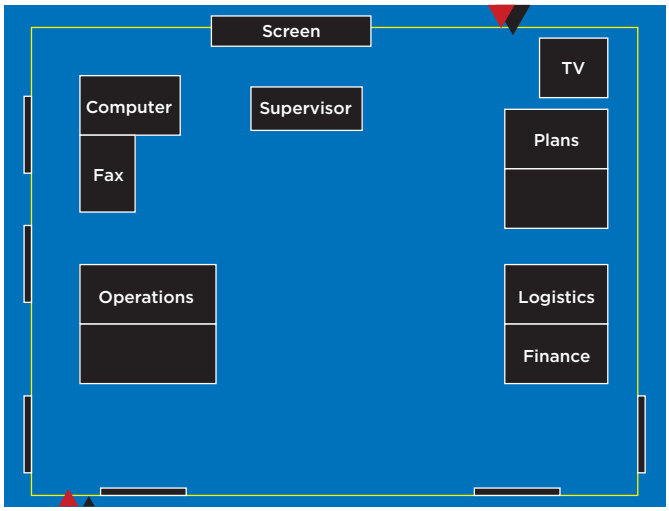


Figure 27. Design example for Disaster and Emergency Management Centre with which Incident Command and Headquarters Service will work at the workplaces.

- Identifies and procures the necessary resources such as personnel and equipment and identifies the departments where these resources are needed and sends them to these departments.
- Ensures the distribution of resources by determining the priority areas.
- Ensures that necessary organizations are made for shelter, nutrition and health services for those who have to be in the building.
- Makes documentation of the activities of the units related to disaster and emergency and submits it to the Disaster Board.
- Determines whether the existing Disaster and Emergency Plan is successful or not and reports to the Disaster Board and similar organizations.
- Informs the personnel about the situation at frequent intervals during the danger, raises their morale, preventing the emergence of demoralising rumours.

2. Operations Service

It is responsible for the management and administration of the operational units of Fire Fighting, First Aid, Search and Rescue, Evacuation, Protection and Security and reports to the Incident Commander. It ensures the coordination and supervision of its subordinate teams before, during and after disasters and emergencies. Other possible duties and responsibilities are to:

- Establish an operation centre close to the incident command centre.
- Hold meeting with the leaders of the teams under his/her responsibility at frequent intervals to make training studies and plans for disasters and emergencies.
- Determine the personnel and materials required for response services and make attempts to obtain them from the Logistics team.
- Make sure a copy of all communications is sent to the Planning Team Officer and all decisions and actions are recorded.
- Decide how many people (including volunteers) will form which teams and be dispatched to the operation.
- Withhold and replace those participating in the operations and inform their families about them.
- Respond to all incidents that occur in the building or in the area under its responsibility.
- Decide whether the building is safe or not, identify the damaged parts of the building and inform the Incident Commander if evacuation is necessary.
- Coordinate and supervise the search and rescue teams, etc. that may come from other buildings.

3. Planning Service

This team is responsible for the status of resources, the collection, evaluation, storage and utilisation of documents and information relating to the development of the incident. It obtains accurate maps of the area as well as plans or sketches of the buildings. It evaluates the situation and resources continuously. Other possible duties and responsibilities of the team are to:

- Select its own team and coordinate and supervise it.
- Allocate resources by identifying priority areas and needs.
- Monitor and identify materials available and needed.
- Control and record the incoming personnel, take roll, report and keep the reports.

- Make sure necessary organizations are made for shelter, nutrition and health services for those who have to stay in the building.
- Create the documentation of the activities of the units related to disaster and emergency and submit the same to the Disaster Board.
- Plan and implement Disaster and Emergency Drills.
- Determine whether the Disaster and Emergency Plan is successful in the existing building/workplace and report the same to the top administrative supervisor in the building. And request some changes in the plans, if required.
- Identify the deceased; assist the first aid team in handing them over to their relatives or performing burial procedures, determine and keep record of the personal belongings left behind.

4. Logistics Service

Logistics team is responsible for the provision of equipment, materials, services and personnel for the incident. It supplies necessary manpower, equipment and materials to the response team when responding to the emergency situation. It builds and operates the necessary communication and infrastructure systems. It is responsible for providing emergency nutrition and care of the personnel. Other possible duties and responsibilities of it are to:

- Provide and classify disaster and emergency supplies and aids.
- Select its own team and ensure coordination and supervision of it.
- Control telephones and other communication infrastructure/systems and repair them when required.
- Determine and manage Disaster and Emergency Assembly Areas.
- Control heating, sheltering and ventilation problems.
- Inspect hazards and problems related to water leaks, sewerage and electricity.
- Perform priority and urgent repairs.
- Procure materials, equipment and fittings and transport them to the relevant teams.
- Provide temporary food, clothes and accommodation and communication services for the personnel.
- Ensure the communication and meeting of individuals separated from their families in cooperation with the local social welfare service.

5. Finance and Administrative Affairs Service

It is responsible for financial and administrative affairs service, cost analysis, financial monitoring and reporting in connection with the disaster and emergency. It keeps and monitors financial records and keeps records of working hours of the personnel. Other possible duties and responsibilities of it are to:

- Select, coordinate and supervise its own team.
- Organise use of financial resources.
- Document and organise the expenses related to disaster and emergency.
- Keep documentation of the materials used and outsourced in disasters and emergencies.
- Issue a report showing the financial data on personnel, resources and various expenditures provided by the logistics and other teams and forward them to the relevant units.
- Record and monitor the expenses incurred for non-disaster victims as well.
- Keep a complete and accurate record of the working hours (with scorecard) of the personnel and volunteers during disasters and emergencies.

- Make sure the purchasing records are kept completely and accurately.
- Communicate with the Planning Team when collecting information and records related to procurement.

We have discussed up to this point how a command service should be established for the management and administration of disaster and emergency preparedness, response and civil defence activities and movements in each institution according to the disaster legislation. Response teams also can fulfil the functions which are performed under ICS. In this context, it may form teams suitable for the Incident Command System in line with the response requirements stipulated in the disaster legislation and in accordance with size of the workplaces.

The number of people to be assigned to the teams according to the Communiqué on Hazard Classes, vary depending on the hazard class in the NACE code and the number of employees. The explanation about the number of employees to be assigned according to the Regulation Regarding Emergency in Workplaces is given in Table 10.

Hazard Class	Number of Employees
Less hazardous	1 person for up to 50 employees
Hazardous	1 person for up to 40 employees
Very hazardous	1 person for up to 30 employees

Table 10. Emergency teams of firefighting, search rescue and evacuation to be formed as per the regulations.

Number of First Aid Team Members

For the number of people to be determined in the first aid team, reference is made to the First Aid Regulation issued by the Ministry of Health which takes place in paragraph 5 of Article 11 of the Regulation Regarding Emergency in Workplaces. Pursuant to the First Aid Regulation No. 29429 of 29.07.2015, which entered into force upon publication in the *Official Gazette* No. 29429 of 29.07.2015, the specified number of first aid members is as follows:

- Less hazardous workplaces: 1 first-aider for every 20 employees.
- Hazardous workplaces: 1 first-aider for every 15 employees.
- Very dangerous workplaces: 1 first-aider for every 10 employees.

As an universal safety rule, the **Buddy System** should always be applied.

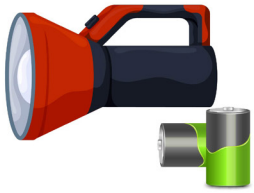
Hence teams should consist of two people and teams should consist of at least three people with one of them being the team leader.

Furthermore, the persons assigned to the task should be warned by stating: "Do not take any action that may endanger you. Do not go beyond the teachings of your expertise and the training you have received. First of all take safety precautions. Determine the extent of the situation. Follow all operational and safety procedures."

The logistics and maintenance team provides the teams and each building with the equipment and materials listed below as an example according to the scale of the workplace, keeping them usable and functional. After a disaster and emergency, they collect these materials from the teams, overhaul them and make up any deficiencies.

Personal Equipment Checklist

No	Content	Required	Available	Need
1	Vest and raincoat	5		
2	Flashlight and batteries, cell phone, charger	5		
3	Whistle	5		
4	Dust mask	5		
5	Work gloves (heavy duty, fireproof)	5		
6	Helmet/hard hat/steel cap	5		
7	Protective goggles (dustproof)	5		
8	Megaphone	5		
9	Multi-functional first aid knife	5		
10	Backpack for personal equipment	5		



Centre's Materials and Equipment Checklist

No	Content	Required	Available	Need
1	Telephone Switchboard (wired)	1		
2	Telephone, Walkie Talkie (PMR) or Handheld Radio	1		
3	AM/FM Radio (battery-powered)	1		
4	Blanket/Sleeping Bag	6		
5	Searchlight or Table Light	3		
6	Spare Batteries and Chargers	48 and 2		
7	Signal Flare	4		
8	Gas Detector/Gas Measuring Instrument	1		
9	Keys	all rooms		
10	Stationery	in sufficient number		
11	All Maps, Floor Sketches and Site Plans	1 set		
12	Disaster and Emergency Plan	6		
13	Disaster Response, Message, Reporting etc. Forms	all		
14	Notice Board/Panel and Pens	1		
15	Table	1		
16	Chair	6		
17	Hygiene Materials (toilet paper, wet wipes, etc.)	in sufficient number		
18	First Aid Kit/Bag	1		
19	First Aid Set for Burns	1		
20	Fire Cylinders	3 types 1a		
21	Cabinet for Above Materials	1		

Building's Disaster and Emergency Material Cabinet Checklist

No	Content	Required	Available	Need
1	Mattock	3		
2	Shovel	10		
3	Hoe	3		
4	Crowbar	3		
5	Axe	3		
6	Sledgehammer (one large, one hammer)	3 each		
7	Heel lever	2		
8	Helmet	12		
9	Blanket / sleeping bag / fire blanket	50		
10	Searchlight / table light / portable light	3		
11	Spare batteries and chargers	48 and 3		
12	Debris gloves	30		
13	Gas detector / gas measuring instrument	2		
14	Foldable stretcher	3		
15	Dust masks and protective goggles	50 each		
16	All maps, floor sketches and site plans	1 set		
17	Disaster and Emergency Plan	6		
18	Message, reporting etc. forms	All		
19	Notice board/panel and pens	5		
20	Safety pin	5 box		
11	Hygiene materials (toilet paper, wet wipes, etc.)	in sufficient number		
22	First aid set/kit	3		
23	First aid burn set	3		
24	Seasonal clothing (gloves, boots, dress, raincoat)	3		
25	Warning safety lane	10		
26	Megaphone	4		
27	Cupboard for above materials	2		

Note: Materials to take place in the Building's Disaster and Emergency Materials Cabinet should be determined by the building officers according to the number of persons in the building and their needs.

Employee Participation and Information

The relevant laws and regulations also specify the obligations of employees along with the employers in the workplace. And it is also a legal obligation to ask for opinions of the employees and arrange their participation. The lawmaker has also emphasised the need for the employer to provide the necessary training and information to the employees in order that they can participate in disaster and emergency planning.

The obligations of the employees can be summarised as: *"Not to endanger health and safety of themselves and other employees who are affected by their actions or works in accordance with the training they have received on occupational health and safety and the instructions of the employer in this respect."*

Employees also have obligations in line with the training and instructions given by the employer. For protection against disasters and prevention of accidents, the employees should:

- Use machines, devices, tools, equipment, hazardous substances, transport equipment and other production tools safety equipment in the workplace correctly.
- Use and protect personal protective equipment properly.
- Notify the employer or the employees' representative immediately when a serious and imminent danger to health and safety is encountered with the machinery, devices, tools, equipment, facilities and buildings in the workplace and when a deficiency is observed in the protective measures.
- Cooperate with the employer and employees' representative in eliminating any deficiencies
- Cooperate with the employer and employees' representative to assure occupational health and safety in the scope of their area.

For protection from disasters and emergencies and business continuity, it is not enough for the employer to plan and provide trainings on occupational health and safety. In order not to jeopardise the health and safety of employees in disasters and emergencies, arrangements should be made to have them participate at least in those of trainings organized by AFAD Presidency for Disaster-Prepared Turkey which are for individuals, families and workplaces. It should not be forgotten that there will be loss of life and property in workplaces in disasters and emergencies. Hence, in addition to trainings on occupational health and safety, trainings on life, property, business and service continuity in disasters and emergencies should also be planned to ensure the participation of employees in disaster and emergency preparedness.

As it is known, preparedness and planning for disasters and emergencies start with the sensitivity of employees, i.e. individuals. Support and training of managers and personnel is, therefore, the first condition for a successful disaster and emergency planning. We should be aware that a good disaster and emergency preparedness cannot be achieved on a social basis without the material and moral support of all individuals.

Employee Training

After the earthquakes in our country, many non-governmental organizations, private organizations, public institutions and organizations started to receive and/or provide trainings on disaster preparedness. However, people have not reached sufficient level of training on what to do before, during and after disasters.

Trainings to overcome this deficiency should be planned in a way to satisfy the needs of the target group with an aim to develop more skills. Standards should be established and quality control should be made. Proper education and training programmes to create a **Disaster-Prepared Workplace** should be widely developed and implemented as soon as possible; topics related to disaster culture should be systematically included in primary and secondary education schedule. As the training progresses, the budget to be allocated to prepare employees for disasters and emergencies in workplaces can be increased (Figure 28).

Employees and employees' representatives, whether their workplaces are classified as hazardous or non-hazardous, should definitely receive trainings on disasters and emergencies and these trainings should be planned to be distributed throughout the year. From a legal point of view, it is required that: *"The trainings of the employees should be revised in accordance with the changing and emerging new risks and should be repeated at regular intervals when necessary."* It is also stated that: *"Those who are specially assigned to emergency affairs should be specially trained for the activities they will carry out."* However, this provision should be planned and implemented for all employees, not only for the specially assigned employees.

Figure 28. Pyramid showing relationship between trainings and cost.

The relevant laws and regulations provide that employees should be informed about occupational health and safety as well as disaster and emergency plans. It is also stated that: *"The employer shall immediately inform all employees who are exposed or at risk of exposure to serious and imminent danger about the hazards and the measures taken and to be taken against the risks arising from them."* New employees are also informed about disaster and emergency plans in addition to occupational health and safety trainings. Furthermore, the risk assessment which is carried out during the planning process and periodically renewed afterwards, protective and preventive measures in connection with occupational health and safety and information obtained from measurements, analyses, technical controls, records, reports and inspections should also be shared with supportive persons and employees' representatives.

In summary, the employer should plan and ensure that employees receive trainings on disaster and emergency for their "safety" both at the beginning of their employment and periodically while working. Of course, the cost of disaster and emergency training cannot be charged to the employees. The time spent in trainings is also counted as working time. If the training periods exceed the weekly working hours, these periods are considered as overtime work.

Employers and all employees must first attend the trainings on **Disaster-Prepared Turkiye** and **Disaster-Prepared Workplace** organized by AFAD Presidency. Disaster-Prepared Turkiye

Disaster-Prepared Turkiye – Contents of Training

- Basic Knowledge and Concepts of Fighting Against Disasters
- Disaster Awareness Culture
- Social Solidarity in Disaster Preparedness
- Risks in Our Living Environment
- Risk Mitigation in Our Living Environment
- Mandatory Earthquake Insurance
- Prevention of Non-Structural Risks
- Preparedness for the First 72 Hours of Disasters
- Family Disaster Plan
- Suggested Correct Behaviours Before, During and After Disasters
- First Hours After Disasters
- Basic Needs After Disasters
- Simple Search Rescue
- Fire Information
- Triage (priority during medical intervention)

training provides participants with the following information on how to be prepared for disasters and emergencies starting from the bottom of the pyramid in Figure 28 and how to plan and implement these trainings.

Disaster preparedness of a country, city, district, neighbourhood, street and workplace starts from home. As it is, the disaster and emergency preparedness activities of the participants of the training on Disaster-Prepared Turkiye starting from home will also be an important gain for Disaster-Prepared Workplace. In scope of the Disaster-Ready Turkiye training, volunteers who desire to take part in helping the society to gain the suggested behaviours before, during and after disasters such as earthquakes which frequently occur in our country, are also trained as **Trainers for Basic Disaster Awareness.** Workplaces can send its employees to these trainings in accordance with a certain schedule to train their own trainers for basic disaster awareness and provide internal training in the organization.

In disasters such as earthquakes, the loss of employees is not only a very painful case in workplaces, but also means a sudden loss of knowledge, experience and human resources.

The employer is legally liable to provide some opportunities to the employees and either to the authorised union representatives or to the employees' representatives in workplaces having two or more employees' representatives to receive opinions of the employees and ensure participation of them. Such opportunities will assure participation of as many personnel and units as possible in the activities concerning disaster and emergency preparedness and planning. Different views and approaches from various units will enrich and strengthen the plan and help you generate more options and resources for solving the problem. Some implementation instructions about it are given below. (Prior to using these instructions, scan the sketches of the floors in your building which you will obtain on paper or draw by hand and then upload them to the computer.)

In case of earthquake and similar disasters and emergencies, employees fully informed about the support systems available both at work and at home will be able to successfully respond to a disaster and emergency. If your employees are provided with proper planning and training on their responsibilities and duties during and after an earthquake, the extent of personnel injuries, equipment/property damage and business interruption can be minimised. **Inadequate training and drills for your employees will increase the risk of significant losses in these areas.**

In summary, it is important that your employees prepare their families for disasters and emergencies according to a plan and schedule. By doing so, they will be less concerned about their family members and able to focus on disaster and emergency response in the workplace. Training applications have been prepared so that businesses can help their employees to plan and evaluate more accurately their awareness and training needs related to disaster and emergency planning.

Training Practices

First of all, we need to reflexively assimilate six basic behaviours for disasters and emergencies. Otherwise, people may freeze due to the trauma experienced during the disaster or run around unconsciously. The six basic behaviours to be done in disasters and emergencies are:

1. Drop-Cover-Hold On

2. Stop-Drop-Roll

3. Crouch-Lie Down

4. Create Shelter in Place

5. Evacuate (Outward/Inward)

6. Escape-Hide-Report

Knowing these six behaviours is important for us to know how to protect ourselves and prevent loss of life in case of any disaster and emergency at home, at work, in the subway, in a skyscraper or in any other similar place. If we frequently practice these behaviours together with our families and colleagues, our reflexes will be activated during any hazard and lead us to do the right behaviours automatically.

These trainings should be received and practiced in order for the six basic behaviours for disasters and emergencies to become reflexive.

The main hazards that managers and employees in the workplace may encounter and the basic behaviours related to them are given below:

1. Drop-Cover-Hold On or Lock-Cover-Hold On!

It is applied in disasters and emergencies such as earthquake, aircraft accidents, bomb threats and explosions, lightning and tornado.

Making a few simple preparations and learning basic behaviour in advance will help protect you from an earthquake. For instance, do not place heavy tools and equipment on top shelves, place anti- slip rubber stands under computers and small appliances, secure hanging objects and toxic, explosive and flammable substances so that they do not fall, and store them in a way to prevent breaking of them (for more information, see Risk Control p. 61).

When an earthquake starts:

- Do not remain stand-up!
- Do not run around!
- Do not go onto the balcony!
- Do not go down the stairs!
- Do not take the lift!
- Do not jump out of windows and balconies!

When an earthquake starts:

- If you are indoors, **DROP** and go to a sturdy desk, counter or table, or get under it, if appropriate. Stay away from windows, doors, glass panes, bookcases, libraries, lamps, paintings, suspended objects, shelves, cupboards, chemicals, cookers, high furniture and loose structural elements.
- **COVER** yourself to protect your head and neck from falling objects, particularly with your back to the windows. **HOLD ON** the leg of the table to move with the shaking table until the shaking stops. Protect your eyes and face from flying objects by placing your face on your arms holding the table leg.
- If there is no desk or table near you, protect your head and neck with your arms by DROPping and **COVER**ing yourself at the bottoms of the interior walls. **HOLD ON** in your position without being thrown and wait for the shaking to pass.
- If you are outdoors, stay away from the buildings, walls, trees, poles, signboards and objects such as power cables that mayfall down, protect your head and neck with your arms by **DROP**ping and **COVER**ing yourself and wait for the shaking to pass by **HOLD**ing **ON**.
- If you are driving a car, pull to a stop carefully and slowly pulling at the far right of the road. The place where you halt should not be close

to bridges, underpasses, power transmission lines or traffic lights. When the shaking stops, check yourself and those around you for possible injury. Do not panic but move quickly to the previously designated assembly area.

2. Stop-Drop-Roll!

Since there is a possibility of fire in workplaces specifically depending on the sector and generally after an earthquake, the action **STOP-DROP-ROLL** is of vital importance for managers, employees and their families in case of ignition. It is extremely important to take special measures and organize and do drills on how to respond, what to do during a fire, how to extinguish the fire. Furthermore, important issues such as advancing on **KNEES** or **CRAWLING** in order to avoid of being affected by smoke and not touching the **HOT DOOR HANDLES** must be explained in practice. (It is of great importance that these measures are also applied for children, especially for workplaces with nurseries).

Disaster and emergency preparedness should not be limited to fires indoors. Forest fires or facilities such as factories, petrol stations, gas cylinder sale or filling stations in the immediate vicinity of the workplace may also pose a serious fire threat. Hence precautions should be taken for all fires that are likely to occur both inside and outside the workplace.

In workplaces, there are systems to give alarm, open fire hoses and communicate with emergency units throughout the floor, building or facility. In addition, anyone on the floor, building or facility can activate manual fire alarms. Be ready to evacuate the building immediately, even if you cannot see or smell a fire!

Whether the fire threat comes from inside or outside the building, the safety of employees and personnel is paramount. Smart planning and preparedness for different types of fire threats ensures protection from fire and, where such protection is not possible, to respond in the most appropriate way:

- **Plan Previously:** Ensure that fire protection measures such as evacuation and response are included in your Disaster and Emergency Plan and are understandable and easy to implement by all people involved.
- **Ensure Safety in All Areas:** Check how much the safety instructions are followed. Check whether there are necessary fire extinguishers, fire cabinets, fire hydrants, fire/smoke detectors, alarm ring button in the building and whether they are in good order and whether the necessary checks are carried out.
- **Get Knowledge About What to Do In Case of Fire:** In order to ensure fire safety, it is necessary to use a smoke detector and have fire extinguishers in the workplace and not to connect a multiple electrical appliances to a single socket and not to leave devices that may cause unattended if they are on.

- In case of fire, execute **KAOS** following steps:

  RESCUE: Firstly, immediately rescue people in danger and if possible important documents.

  GIVE ALARM: Switch on the fire alarm, if avai able, or shout "FIRE" and call **110.**

  CUT OFF OXYGEN SUPPLY: Close doors an windows or cover the fire.

EXTINGUISH FIRE OR ABANDON: If the fire is small, extinguish it; if it is out of control, evacuate immediately.

- Beware of smoke! Crouch and make your way to a safe exit. Do not open hot doors.
- If your clothing catches fire, **STOP, DROP** and **ROLL**. Do not apply anything to the burns. Just keep them under water for 10-15 minutes to cool them down.

- **Display Workplace Plans Prominently:** Placing floor plans of the workplace at key points such as main doors can help firefighters navigate the building or facility in an emergency.
- **Designate Assembly Areas:** A fire spreading quickly can create confusion and cause employees to flee to different locations. Make sure everyone knows where to assemble, e.g. a specific parking spot.
- **Develop Clear Instructions:** Before the first drill, make sure all employees understand what should be done and why. Go over the evacuation rules. Practice the **STOP-DROP-ROLL** movements frequently.
- **Do Fire Drills:** According to the Regulation Regarding Fire Protection of Buildings *(Official Gazette* No. 26735 of 19.12.2007), fire drills should be conducted at least once a year. When doing the fire drills, help employees stay calm reminding them that this is a drill and that they know what to do.
- **Encourage Home Drills:** Remind employees that drills should also be done at home. Teach them the basic principles of kneeling or crawling (smoke accumulates above the ground), touching the doorknob before opening the door (if the doorknob is hot, it means there is fire behind it) as well as the movements of **STOP-DROP-ROLL** (covering the face with hands while rolling over the floor to extinguish the flame on the body). Suggest that they share what they have learnt with their families.
- **Follow all fire protection instructions:** Protect your business or facility by creating "survival zones" around buildings. You should also make sure that materials in the workplace are fire resistant and work with local authorities to make your workplace compliant with the applicable regulations.

3. Lockdown-Lie Down!

Apply it when you hear gunfire in the vicinity and threats made by dangerous persons or snipers.

If you are indoors and hear a gunfire or explosion, ask everyone to get down on the floor.

If you are outdoors, go inside immediately, lock the doors and wait quietly on the floor indoors. This is a behaviour widely known and taught abroad.

4. Build a Shelter in Place!

Apply it in case of a leak or spill of hazardous materials such as Chemical, Biological, Radiological and Nuclear (CBRN), smoke, gunfire, sniper danger or severe storms. This is a behaviour that is widely known and taught abroad.

When there is a risk of a hazardous substance in vicinity:

- Stay indoors until you are told to go outdoors and create a safe shelter inside.
- If you are outdoors, go inside immediately and shut and/or block all external air intakes such as windows, doors, fireplaces, stoves, heating and cooling units in the building.
- Choose a "shelter room" or go to one designated previously. If possible, the room should not have a door opening to outside and have few and small windows.
- If you have medicines, scissors, packaging tape, plastic/nylon sheets, bath towels, radios, flashlights, snacks, games and reading books easily accessible, bring them to the shelter.

- Cover the doors, windows, heating and cooling vents and similar air inlets of the room with the packaging tape and plastic sheets. Cut off the air intake under the doors with wet towels or cloths.
- Cover the mains, cable TV, internet and telephone sockets with electrical or packaging tape.

5. Evacuate!

Evacuation is carried out in case of fire, after earthquakes and explosions, before and during floods, chemical accidents, terrorist/bomb threats and landslides.

Things to do about evacuation planning:

- For fire safety, do not smoke in the buildings and do not connect multiple appliances to a single socket. Keep a fire extinguisher in the building and get it checked it periodically and learn how to use it **(PASS: PULL PIN-AIM AT THE FIRE-SQUEEZ-SWEEP).**
- Make emergency supplies ready.
- Hang the sketches of evacuation routes and assembly areas at prominent places. Plan the emergency exit signs by taking into account the dense smoke at the time of fire and the people looking for the exit by crouching. Mark the evacuation routes and do not place unnecessary items around here.
- Leave the doors of offices, workshops and laboratories open during working hours to prevent possible jamming.
- Remove items that may obstruct passage in corridors, stairs, in front of emergency exit doors and rooms and warehouses.
- Arrange the positions of office furniture and materials (cabinets, tables, etc.) in such a way to facilitate exit in case of emergency.
- Plan the exit from offices, warehouses and laboratories as well as the assembly areas outdoors.
- Teach the personnel and visitors about the evacuation plans and the different drills to be carried out at regular intervals.
- Ensure that emergency lighting lamps are installed where necessary to illuminate evacuation routes in emergency and that emergency lighting is adequate and in good order.
- Depending on the success of the drills, reorganise the evacuation plan and add extra emergency lighting and additional emergency exits if required.

Things to be done before evacuation:

- Determine the ways of evacuation from offices, workshops and laboratories by taking into consideration all possible injuries after the end of the shaking.
- Report to the authorities if injuries, destruction and fire are detected.
- Switch off the small fuses first and then the main one.
- If you suspect a gas leak, open the windows; DO NOT SWITCH ON/OFF THE ELECTRIC SWITCHES!
- Do not use candles, matches and similar flammable materials.
- Extinguish all flame illuminators; switch off or shut off gas and water valves together with stoves, heaters, ranges, ovens and electrical appliances.

Things to be done during evacuation:

After the earthquake, with the permission of the Emergency Officer and by taking the safety measures during the evacuation, leave the building/facility immediately (through the previously

specified routes) with the emergency supplies (prepared in advance) and go to the assembly area. When doing this, the following evacuation procedures are applied:

- Before starting the evacuation, it is checked whether there is anyone who needs help in the next/across office/workshop/laboratory.
- Injured people should be gathered in one office/workshop/laboratory and one staff member should stay with them, the remaining staff should evacuate two offices/workshops/laboratories together.
- The building should be evacuated in each corridor starting from the offices/ workshops/ laboratories closest to the staircase.
- Evacuees may bring only the most necessary items (such as bags) with them.
- The evacuees should pass through the doors in pairs, with quick steps (without running) and without clustering together at the door. After the offices/workshops/laboratories are evacuated, their doors should be closed but not locked for the search and rescue team to enter.
- The building/facility should be abandoned by passing through corridors and stairs without running but with quick steps.
- Personnel not in the plant during evacuation should help people pass through the corridor and stairs in an orderly manner.
- Personnel leaving the building assemble at predetermined places outdoors, squat and wait and take roll call. People should not enter the building again for any reason until the danger has passed.
- If there is no structural damage in the building after the earthquake, it is safer to stay inside.

6. Run-Hide-Report!

RUN-HIDE-REPORT is a series of actions you should do in case of exposure to terrorism, i.e. a physical attack. Today, terrorism has become one of the biggest threats and problems among disasters caused by human all over the world. However, in our country, individuals, schools and workplaces are not yet sufficiently informed and trained on this issue.

In addition to your private security officers, you and some of your employees in the workplace may also need to be trained for this danger. Everyone in the workplace should adopt the principle of "if you see anything suspicious, tell it immediately", especially for suspicious people and packages, and apply it when necessary. For some workplaces, it is useful to establish a warning system connected to local security organizations. When conducting hazard and risk analyses, possible terrorist threats in the vicinity of the facility and on the access roads should also be analysed. If it is determined as a result of the analysis that terrorism poses a significant risk for your workplace, this issue should also be included in your Disa ster and Emergency Plan. Everyone, executives and employees, should identify the two nearest exits and places where they can hide if necessary. If you have employees with disabilities in your workplace, you should take their needs into account both in this respect and for all matters mentioned throughout this Guide (see *Disaster and Emergency Planning Guide for People with Disabilities*).

In summary, when you are subject to a physical attack, you should do the following acts to protect yourself:

If Possible, Run During the Attack!

- Fleeing/avoiding from the assaulter is the first priority.
- Keep your hands above your head while running away so that the surrounding law enforcement officers can see that you are unarmed.
- Leave your belongings behind.
- Help others escape if possible.
- Warn bystanders that a dangerous person is present and not to enter the area and, if possible, prevent them from doing so.

If It Is Not Possible to Escape, Hide!

Move out of the sight of assaulter and hide **(SHELTER IN PLACE/LOCKDOWN/LIE DOWN).**

- Your hiding place should be out of the sight of assaulter and get protection if shots are fired in your direction.
- Keep quiet. Silence all electronic devices and make sure they do not vibrate.
- Lock doors, close blinds and switch off lights.
- Do not hide in groups. Spread along walls or make the assaulter's job more difficult by hiding separately for each other.
- Try to communicate quietly with the police. Use text messages or social media to report your location or put a sign in the window.
- Stay in place until law enforcement officers give permission.

Report if Possible!

- If possible, notify internal and external security services. When you are safe, call

155 and provide information about the shooter, his/her location and weapon.

The questions and training recommendations above may vary depending on the number of employees and the business line of your organization. The occurrence of a major earthquake or flood-like disaster in your area may prevent your employees from coming to work for days or even weeks. Your workforce is crucial to keep up your business. The safety of your employees can also be greatly threatened by non-structural hazards such as falling objects and debris. The Employees Awareness and Training Checklist in the next page may show you some of your shortcomings and accordingly you may want to organise or plan an Employees Awareness Campaign. For this, you can follow the steps suggested below.

For instance, although you cannot control or predict an earthquake, you can train your employees about simple steps they can take to mitigate hazards in their homes before a disaster. Raising their awareness on household hazards and teaching them how to secure their belongings can save their lives and ultimately your business in the event of an earthquake.

Organise an Employees Awareness Campaign

AFAD organises many training programmes to ensure people take action and have awareness to mitigate the risk of earthquakes and similar disasters Studies show that repeated messages are effective in changing the habits of society and individuals. Simple but effective messages, when repeated with appropriate frequency, can trigger considerable behavioural changes.

Plan Your Campaign:

Some of the safe behaviours in the face of physical attack can also be learned from the following trainings organized by AFAD Presidency and Provincial Directorates:

- **Disaster-Prepared Family**
- **Disaster-Prepared Workplace**
- **Disaster-Prepared Young People**

Awareness and Training of Employees Checklist

IMPACT	YES	NO
Are disaster and emergency plans and methods included in the training programmes your business provides to its employees?		
Are floor plans showing the location of exit routes and stairs on all floors placed prominently?		
Have you conducted a survey on the skill level of your employees?		
Have you created a list of emergency response training requirements of your business (e.g. first aid, assessment of building damage, small-scale rescue, survival, use of fire extinguisher, etc.)?		
Are all employees aware of their duties and responsibilities during disasters and emergencies?		
Do your personnel know the emergency shutdown/cut-off methods and controls in the work areas?		
Do all your employees know the meaning of different audible and/or visual alarm systems?		
Have your employees created a family Disaster and Emergency Plan at home? **Have your employees prepared personal disaster and emergency kits for their families for 72 hours or more?**		
Have your employees identified offsite telephone connections for themselves and their families? Have they identified assembly areas for their families (e.g. weekday, weeknight and weekend)?		

- You can plan your campaign week to coincide with the anniversary of an earthquake, special days or months such as Red Crescent Week, Occupational Safety Week, Civil Defence Day or Disaster Training Preparedness Day.
- If you inform the local Disaster and Emergency Managers about your activities before you start the campaign, they may offer you additional ideas or be willing to participate. More and up-to-date information is available on the official website of AFAD Directorate in your province.
- You can inform your employees by e-mail or verbally that you launch an Awareness Campaign on Disaster-Prepared Workplace (see Template A as an example) to provide them with the tools for identification of risks, planning and making their plans.
- Place Disaster-Prepared Workplace posters, desk ads, bulletin boards and AFAD products in co-working areas.
- Send the Tip of the Day/Week for Disaster-Prepared Workplace to your employees by e-mail at the beginning of each week or every morning. These will provide information about risk mitigation actions that your employees can do at home.
- Upload Disaster-Prepared Workplace videos to the website of your company or share related web pages of AFAD.

Associate the Campaign with Your Employees:

- **Employee Survey:** Before the campaign, use an online survey tool to measure risk mitigation awareness of your employees and ask them what steps they have taken to mitigate hazards in their homes. Conduct a survey again after the campaign and measure its effectiveness. If the results are positive, communicate this success to your employees via e-mail or corporate newsletter.
- **Assign the Safe Workplace Team:** Identify one or more people who can act as "team leaders" for earthquake mitigation actions and encourage others. This can be a good opportunity to increase motivation or to highlight specific employees.
- **Bring organizations/individuals together through invitations:** Invite local officials to talk about earthquake risk mitigation, present videos about Disaster-Prepared Workplace, purchase earthquake risk mitigation supplies and draw lots after a meeting for giving them to your employees. For instance, distribute a Home Hazard Hunt form and discuss on it.

Other Recommendations:

- **Collaborate:** If you are a small business, cooperate with neighbouring organizations or the Chamber of Industry and Commerce to get adequate information on earthquake mitigation. If you are a large company, cooperate with AFAD, police and fire departments, risk mitigation supply companies, hospitals, etc. to obtain information on risk mitigation and preparedness.
- **Organise a Competition:** Once employees are more aware of earthquake risk mitigation, create a competition for disaster preparedness at home. You can give non-financial incentives such as certificates of achievement, public recognition or achievement awards to the employees who make the most effort. These pictures can be posted on your company's website or newsletter, e-mailed to customers or stakeholders, or shared with the local media.

Template A: Disaster-Prepared Workplace Campaign Announcement for Employees

Dear Employees,

As you know, if you live and work in an active seismic zone, earthquakes pose a potential threat to your safety at work and at home. That is why we organize a **Disaster-Prepared Turkiye Workplace** awareness week to help you identify your risks, make a plan and take action. On each day of in the week of our campaign, we will provide different tips to help you understand how to mitigate hazards and better secure your home and its contents. At the end of the week, we invite you to join (name of the event) to answer all your questions

To learn more about earthquake risk mitigation or download Disaster-Prepared Workplace links for businesses, please visit www.afad.gov.tr/afadem/afete-hazir-isyeri. Earthquakes can happen at any time. We [Company Name] care about the safety of you and your family and hope you find information about the Disaster-Prepared Workplace useful.

Sincerely yours,

[Company officer]

Template C: Sample for Speech Key Points

- As seen in the seismic hazard map of AFAD, our region is under earthquake risk.
- As you know, our society has been exposed to major earthquakes in recent years.
- Each major earthquake caused loss of life and great financial losses.
- [Indicate here what obligations the organization has to provide for the safety of its employees and customers, especially in terms of its commercial activities.]
- To build a resilient society, all organizations should share their practices and resources to mitigate earthquake risk.
- You can reduce and potentially prevent future earthquake damage by following three-step risk mitigation process for **Disaster-Prepared Workplace:**
    - o Assess your risk
    - o Make a plan
    - o Take action
- To learn more about earthquake risk mitigation, visit the official website of AFAD to obtain and continuously update disaster mitigation data in relation to **Disaster-Prepared Workplace** for businesses.

Template B: Sample for Media Press Release

Company Name] We Launch an Awareness Campaign for Our Employees to Create a "Disaster-Prepared Workplace"

(Date, city, province) Having completed Earthquake Risk Mitigation program, [company name] ..... launches a one-week **Disaster-Prepared Workplace** awareness programme for its employees from the date of ..... The campaign is conducted to enable employees to identify their risks at home, prepare a risk mitigation plan and finally take action against hazards.

The **Disaster-Prepared Workplace** programme has been developed by the Disaster and Emergency Presidency (AFAD) believing that no segment of society will be fully recovered from earthquake damage until businesses in the affected area are operational again. Since businesses will not be ready to resume operations after an earthquake, mitigation of earthquake loss is an economic priority for them. The goal of the programme is to encourage businesses under risk and their employees to create a **Disaster-Prepared Workplace** and to maintain current efforts for mitigation of earthquake hazard throughout the year.

Objects that can be easily secured by means of simple and cost-effective solutions can cause many losses of life and property during an earthquake because of not doing so.

Planning these risk mitigation activities include the following:

- Securing bookcases and shelves to walls to prevent them from falling;

- Having knowledge on how and when to switch off the utilities;

- Securing ceiling fans and lighting fixtures.

At the end of the week, ... [company name] shall host the ..... [event name]. Media participation will be encouraged. To make appointment for an interview, please contact ..... [company contact/representative].

For more information on earthquake risk mitigation or for downloading links of **Disaster-Prepared Workplace** for businesses, please visit: www.afad.gov.tr/afadem/afete-hazir-isyeri

About Our Business:

[Insert a paragraph describing your organization and achievements of it.]

To learn more about our company and its activities, please visit our [website].

Template D: Sample for Press Release

CONTACT: [Name]

[Heading]

[Phone Number, e-mail]

[Company Name] Launches an Awareness Campaign for Our Employees to Create a "Disaster-Prepared Workplace"

(Date, city, province) Having completed Earthquake Risk Mitigation program, ... [company name] launches a one-week Disaster-Prepared Workplace awareness programme for its employees from the date of ..... The campaign is conducted to enable employees to identify their risks at home, prepare a risk mitigation plan and then take action against hazards.

The Disaster-Prepared Workplace programme has been developed by the Disaster and Emergency Presidency (AFAD) believing that no segment of society can be fully recovered from earthquake damage until the businesses located at the affected area are operational again. Since businesses will not be ready to resume their operations after an earthquake, mitigation of loss caused by earthquake is an economic priority for them. The aim of the programme is to encourage businesses under risk and their employees to create a Disaster-Prepared Workplace and to maintain current efforts for mitigation of earthquake hazard throughout the year.

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For more information on earthquake risk mitigation or for downloading links of **Disaster-Prepared Workplace** for businesses, please visit: www.afad.gov.tr/afadem/afete-hazir-isyeri

About Our Business:

[Insert a paragraph describing your organization and achievements of it.]

Template E: Sample for Press Release

*****MEDIA RELEASE*****

..... [Organization name] shall host an information fair for the community to mitigate earthquake risk.

Local businesses, community leaders and citizens will be encouraged to participate in a training event through the programme of **Disaster-Prepared Workplace**.

WHEN: ..... [day], [date], [time]

WHERE: ..... [location]

EVENT: [striking activities such as the following]

- Community and business leaders from [districts] will talk about how they mitigate potential earthquake risks.
- There will be various speakers including Mayor, Local Disaster and Emergency Officials, disaster experts (Names).
- Students [specify number] will participate in various entertaining and training activities about mitigation of earthquake.

Opportunities of Taking Photo/Communication:

[Insert spokespersons]

[Insert community leaders / business leaders / local celebrities]

[Insert examples of active photo opportunities that could be utilised]

For More Information:

[Contact name, e-mail, telephone]

About Our Business:

[Insert a paragraph describing your organization and its achievements.] [Your Business Line] For more information about our company and its operations, please visit ..... [website].

For AFAD trainings on earthquakes and similar disasters and emergencies, visit the following website: www.afad.gov.tr/afadem/toplum-egitimleri

- **Make it a Tradition:** Use the results of your last campaign to revise next year's campaign and answer these questions: (1) Which communication tools worked well? (2) How can the message be kept up-to-date? (3) Can there be new ways for a Disaster-Prepared Workplace? Make sure the relevant website of AFAD is checked frequently to update information and materials.

Suggestions You Can Share with Your Employees about Their Houses:

- Position heavy objects such as paintings, mirrors or high wardrobes away from areas such as beds and sofas.
- Fix high furniture and bookcases to the walls with bolts. Secure valuables to shelves to prevent them from slipping off their supports.
- Place latches on cupboard doors, especially in your kitchen.
- Secure heavy or valuable items to shelves or tables.
- Secure filing cabinets, computers, televisions and machines that may move in an earthquake.
- Use easy-adhesive putty to secure fragile objects on tables and shelves.
- Store potentially hazardous substances such as cleaning agents, fertilisers, chemicals and petroleum products in suitable containers and in sturdy cabinets attached to the wall or floor.
- Place large or heavy objects on lower shelves and store breakable items in lower cabinets.
- Call a carpenter or electrician to determine whether lighting fixtures and modular ceiling systems are securely fastened.
- Make sure your water heater is secured to the wall. If you use propane gas, make sure the storage tank is secured. Unsecured water heaters can often fall during earthquakes, cutting off water and gas connections.
- Secure heavy objects to the building through walls, floors, ceilings, etc.
- Make sure that all gas heaters and appliances are connected to the gas pipe via flexible pipe.
- Relocate objects to prevent those blocking exits.
- Secure your wood-burning stove to the wall or floor. Make sure you have an easily accessible fire extinguisher.

Among other potential hazards inside the home are shelves, windows, lights, crockery, breakable materials, tables, desktop items, filing cabinets, and ventilation channels. To secure different objects, you may get straps, latches, brackets, bracing kits, bonding products, earthquake wax, earthquake putty, wire, and bolts from most of the local hardware stores. In some cases, you may be able to eliminate a hazard by reducing number of objects or consider replacing them with a safer alternative.

Make Use of Media

- Utilise the media to announce and give information about your awareness campaign. Doing so can enhance the reputation of your business and encourage the industry at large to promote the **Disaster-Prepared Workplace.**
- Consider inviting a local TV channel or radio or newspaper reporter to publicise your event (see Template B for an example).
- Promote your competitions and prize-giving events through the media.

Make Use of Social Media

If your company uses social media platforms such as Facebook, Twitter, Instagram or LinkedIn, sharing your **Disaster-Prepared Workplace Training and Awareness** campaign on these platforms can help you create an agenda and attract attention. When doing so, continuously post contents that emphasise any of the actions under the "Plan Your Campaign" section above. Introduce an employee or provide updates on your company's risk mitigation efforts. You can also present successful examples of Disaster-Prepared Workplaces on social media during the campaign week.

Build Partnerships

Businesses in special and industry in general provide support to each other concerning preparedness for disasters and emergencies and mitigation of potential loss of life and property. Partnerships for hazard mitigation generate knowledge, solve problems and assist in planning. Examples of co-operation through partnerships include:

- Development of risk mitigation projects and plans;
- Share of access to specialised tools and expertise, such as geographic information systems (GIS);
- Risk assessment of security gaps;
- Receipt of architectural and engineering assistance;
- Facilitation of authorisation and approval procedures;
- Conduct of industrial surveys;
- Hosting risk mitigation symposia, work set-up meetings and professional strengthening seminars;
- Organization of marketing activities, collaborative expansion activities and awareness-raising seminars.

Partnership Proposals:

- Organise Disaster-Prepared Workplace events to mitigate the risks of your workplace. Invite experts on the subject.
- Work together with other important organizations such as hospital, bank, local government authorities, fire department, police and retailers in your neighbourhood on earthquake measures. Discuss how an earthquake could affect the whole community and how to mitigate its risks.
- You can work together with local authorities, disaster coordination centres and AFAD on earthquake preparedness depending on your location. Visit Provincial Directorates of AFAD for contact details of organizations and individuals involved in earthquake mitigation at country, provincial or civil society scales.
- Use free communication networks: Research news releases, website headlines and public service announcements and similar field studies and assess the costs associated with earthquake risk mitigation against potential damages. Communicate the collected information to partner stakeholders.

- Ask partners to designate a Mitigation and Earthquake Awareness Day.
- Publish your achievements and initiatives on the website of your company. Show what you can do to protect business investment, including potential investors and build a sustainable sector. Use social media as a promotional channel.
- Work with community leaders such as mukhtars, imams, etc. to promote risk mitigation and emergency response planning at local and provincial level, and take initiatives to improve public infrastructure, including communications, transport and utilities.

Share Your Successes

If you have taken the right steps to become a Disaster-Prepared Workplace by identifying your risk, making a plan and taking action, now it is time to share success story of your risk mitigation. By informing your industry about how you have reduced risks, you can encourage others to do the same. Creation of a highly mobile organization ultimately creates a sector that can recover and adapt quickly. Sharing your success story not only informs your industry and the local community about how to mitigate hazards, but can also provide an opportunity to promote your business and services.

Before publishing your risk mitigation success story, it is important to organise your social aid plan and consider the following points:

Identify Your Target Audience:

- Identify Your Target Audience:
- Employees
- Customers
- Other Organizations
- Surrounding Communities/Local Community
- Local Administrations
- Public Servants
- Chambers of Commerce
- Local Media

Define Your Slogans:

- "We are all in this together!"
- "Get information about Disaster-Prepared Workplace from website of AFAD."
- Other

As a case study, you could organise a forum with members of the Chamber of Commerce to encourage action in the workplace and gain visibility in the media.

Prepare Your Speech

Your speech should be consisted of one or two sentences to summarise your story, guide the speakers and emphasise your key messages (see **Template C**).

Prepare Your Press Materials

- Press releases are used to publicise your story (see **Template D**).
- A media release or media message is created to publicise an event to broadcasting media (radio or television) (see **Template E**).

Planning Documentation

Planning documentation brings to mind that all activities performed for disaster and emergency preparedness are brought together according to certain principles and format and a written plan is created. Different formats are proposed by different institutions and organizations. The Ministry of Environment and Urbanisation of the Republic of Turkiye published the Communiqué on Internal Emergency Plans to Be Implemented in Major Industrial Accidents on 15 August 2020. The purpose of this communiqué is to set forth

the procedures and principles for the Internal Emergency Plan that the operators of high-level organizations specified in the Regulation Regarding Prevention and Mitigation of Major Industrial Accidents published in the Official Gazette bis 30702 of 02.03.2019 should prepare or have prepared in accordance with Article 13 of the regulation in question. In the Appendix of this Communiqué (Appendix-1), it is stated that the working groups in the **Internal Emergency Plan** are prepared in accordance with the **Turkish Disaster Response Plan (TAMP)**, recommending formation of nine working groups.

After giving the rules about the format of the Internal Emergency Plan, its content is summarised as follows:

1. **Introduction**
2. **Information about the Organization**
3. **Big Accident Scenario List**
4. **Emergency Response Scenarios**
5. **Emergency Management System**
6. **Emergency Response Organization**
7. **Resources for Response Operations**
8. **Communication**
9. **Steps to Be Followed in Case of Emergency**
10. **Other/Additional Information**

Besides, in the *Emergency Plan Preparation Guide* published in 2017 by the General Directorate of Occupational Health and Safety, Ministry of Labour and Social Services of the Republic of Turkiye, the content of the Emergency Plan should be consisted of the following headings as a minimum:

- Title and address of the workplace and name of the employer;
- Name, surname and title of the persons who prepared it;
- Date of preparation and validity date;
- Identified emergency situations;
- Preventive and restrictive measures taken;
- Emergency response and evacuation methods;
- "Safe place" (assembly areas) designated for emergencies;
- Information about the hospital nearest to the workplace (name, map representation, etc.);
- Sketch showing the workplace or parts of the workplace, including the following elements:
  - Locations of the emergency equipment, including those to be used for extinguishing fire;
  - Locations of first aid supplies;
  - Evacuation plan showing escape routes, assembly areas and warning systems if available;
  - Name, surname, title, area of responsibility and contact details of the assigned employees and their substitutes, if any;
  - Contact numbers of organizations outside the workplace in connection with first aid, emergency medical intervention, search and rescue and firefighting.

The pages of the Emergency Plan shall be numbered and each page shall be initialled and the last page shall be signed by the persons who prepared it and the plan shall be kept in the workplace so that it can be easily accessed by the teams that will fight against the emergency. The sketch prepared in scope of the Emergency Plan is kept hanging in easily visible places of the building.

Established in 2009 pursuant to Law No. 5902, the Disaster and Emergency Management (AFAD) Presidency has prepared the Turkish Disaster Response Plan (TAMP) according to Law No. 7269 on Measures to Be Taken and Aids to Be Provided in Case of Disasters

Affecting Public Life, Civil Defence Law No. 7126, Regulation Regarding Disaster and Emergency Management Centres, Regulation Regarding Disaster and Emergency Services and UDSEP (National Earthquake Strategy Action Plan).

Turkish Disaster Response Plan (TAMP)

With TAMP, it was specified who will do what in the event of a disaster and how the response will be carried out within what kind of organization through 28 Working Groups according to the nature of the services carried out in the response.

Prior to TAMP (in 2007), the "Regulation Regarding Fire Protection of Buildings" was prepared under the coordination and execution of the General Directorate of Civil Defence, still valid throughout the country in Turkiye, covering post-earthquake fire safety to ensure the measures to be taken before and during the fire and the organization, training and supervision to ensure the extinguishing by minimising the loss of life and property by fire broken out in any way during the design, construction, operation, maintenance and use of all kinds of structures, buildings, facilities and businesses used by public, private institutions and organizations and real persons.

And, previously, many institutions and organizations prepared a Precautions Plan including precautions concerning Civil Defence and various matters (e.g. Shelter, Warning Alarm, Fire, Protection and Backup of Valuable Machinery/ Documents, Vehicles/Materials and Substances, Concealment, Evacuation and Dilution) in accordance with this regulation and had it approved by the Local Administrative Authorities and kept it to be applied when necessary.

Sections of the Precautions Plan:

Page for Approval

Establishment and Duties of the Civil Defence Commission

Section I: General Situation

Section II:

- **Protective Preparatory Measures**
- **a) Constructional Protection and Shelters**
- **b) Precautions Against Fires**
- **c) Protection and Reservation of Impor tant Facilities, Materials and Supplies**
- **d) Concealment**

Section III: Firefighting Teams

Teams Formed:

1. **Fire Extinguishing Team**
2. **Rescue**
3. **First Aid**
4. **Protection**

Section IV: Mutual Assistance and Cooperation

Section V: Evacuation and Dilution

Section VI: Equipment and Supply

Although this Precautions Plan is no longer relevant, sections such as Mutual Assistance and Cooperation, Evacuation and Dilution, and Equipment and Supply are still relevant today.

In summary, the Disaster and Emergency Plan contains:

- Plan documentation in accordance with all relevant regulations;
- Name, surname, title, areas of responsibility and contact information of those assigned in the workplace and in the plan;

  Preventive and restrictive measures proposed for the hazards (disasters and emergencies) addressed in the previous and subsequent sections of the Guide and the deficiencies identified with the help of checklists;

- Information on those assigned to emergency teams and their substitutes;
- General contact details and telephone chains;
- Evacuation plans;
- Disaster and emergency equipment and supplies;
- Standard Operation Procedures (SOP).

Sample of Main Disaster and Emergency Plan Sections:	
A. Introduction Objective of the plan Target of the plan Corporate policies Summary of preparedness for emergency	**D. Disaster and Emergency Response** Life saving Detection of damage Communication and mutual aid Infrastructure/Connections
B. Risk Identification Types of hazard Loss levels of hazards Business Impact analysis Mitigation of hazard	**E. Recovery/Continuity of the Business** Personnel availability and plant assessment Assets and services Personnel call-back diagram Data network and communication
C. Preparedness for Disaster and Emergency Organization/structure Mitigation of hazards Infrastructural services/connections, records and basic services Raising awareness and training of the employees and methods Assets and resources	

Step 3

Take Action

General Information

According to a study conducted by Business Insider between 2000 and 2015, natural disasters cost the global economy $2.5 trillion, while one in three small business owners reports being directly affected by storms or extreme weather conditions. The Institute for Business and Home Safety (IBHS) also predicts that 25% of businesses will close and never reopen after a natural disaster.

This is why preparing and implementing a Disaster and Emergency Plan is so important, because its success rate determines how well a business can respond to and recover from a disaster or emergency and how quickly it can get back on track. This Guide summarises the steps a workplace should take to achieve this. With a Disaster and Emergency Plan, a company can use its business risk analysis to define recovery strategies and the resources and actions needed to maintain business continuity. To ensure this continuity, part of its plan should include temporary manual solutions for automated processes, such as taking customer orders or collecting data.

When it comes to disaster and emergency planning, employers should recognise that they must first "expect the unexpected" and "prepare for the worst". Today, it is increasingly challenging for businesses to prepare for an expanding scope of risks, together with increasingly complex threats and hazards. Undoubtedly, traditional threats such as severe weather and armed attacks still take precedence, but unconventional scenarios such as advanced cyber security attacks or misinformation campaigns on social media must also be considered, planned for and, where necessary, implemented.

Disasters and emergencies are unpredictable and costly events. Earthquake and similar threats are realities that our country cannot avoid. In addition to the potential for a major earthquake in the Marmara Region, even a power failure which only cuts off telephone systems or prevents order processing for a single day can lead to major revenue loss. However, by taking the proactive steps discussed in this Guide, you can minimise the adverse impacts of such disasters and emergencies on your business.

10 Steps to Consider in Disaster and Emergency

If we summarise the topics addressed throughout the Guide for all these disasters and emergencies, as well as the targets not yet mentioned, you should consider the following 10 steps:

1. Remember Safety Comes First

Make sure that employees and customers will be safe in the event of a disaster or emergency, and take the actions recommended in this Guide before a disaster or emergency occurs. After any incident that endangers people's lives, your number one priority is to make sure that no one in and around your facilities is harmed. In the aftermath of disasters and emergencies, be sure to keep an accurate count of employees and visitors so that you can immediately report injuries or missing persons to emergency personnel.

2. Determine Whether You Need a Temporary Facility If Your Business is Disrupted

When your facility encounters hazard, it can be difficult or even impossible to resume operations. You may therefore need to quickly answer

the following questions:

- Where will important equipment and documents be stored?
- Will your employees need to work from home?
- Can a facility/office etc. be used temporarily? For instance, you may need to use a mobile office or tent, or a secure building that you have identified in advance.

3. Form a Telephone Chain for Quick Access to Key Contacts

You should have at least a contact list of first responders, local hospitals, your insurance broker, your emergency material supplier and similar key contacts. You should also be able to assess the availability of resources to get logistical support. For this purpose, stay in contact with your logistics stakeholders that you have included in the disaster and emergency plan before the disaster.

4. Activate the Disaster and Emergency Plan

The activation of your disaster and emergency plan under these conditions, which you have previously prepared and trained your employees about it, is the key to assure the safety of life and property at every possible level in the workplace and to keep your business operational. Thanks to this plan, you can:

- Communicate with your key personnel and their areas of responsibility.
- Set up a telephone chain to inform those on and off duty.
- Notify about temporary work location and changes in procedure.
- Bring your employees together and ensure continuity of work.
- Ensure the participation of employees in disaster and emergency response and recovery efforts and instil confidence in them and the future.

5. Work with Disaster and Emergency Experts

Carry out your disaster and emergency activities with expert disaster and emergency managers from the beginning to the end. Pay attention to the following issues for this purpose:

- Security record: The records of trainings the expert has participated about his/her field of speciality and certificates obtained by him may give an idea about the disaster management culture and his/her competence in his/her field.
- Level of experience: The more incidents a disaster and emergency manager has experienced, the more quickly and effectively he/she can help you manage a crisis.
- Reliable references: Don't forget to ask for

references from the people who will help you in disasters and emergencies. Since this disaster and emergency expert will be an important part of your team for a crucial period of time, it is important that he/she is good at his/her job.

6. Configure Your Accounting and Procurement System

When you address concerns about loss of life and property, you should also start to take a broader view and consider the accounts receivable, accounts payable and similar accounting items that will directly and indirectly affect business/production/service continuity. Hence one of the things that should be at the top of your disaster preparedness to-do list should be to organise your accounting and procurement systems in such a way that you can continue to keep track of dealers, suppliers and the like to calculate damage costs after a disaster or emergency.

7. Check Your Supply Chain

For production after disaster and emergency, inform the organizations in your supply chain that you have experienced a disaster and determine whether their ability to provide you with what you need to run your business efficiently after the disaster is affected. Consequently, decide how to organise temporary work to support parts of your organization to continue business as usual.

Likewise, you should inform your customers along with the group that covers your post-production activities such as transport, storage and distribution that you have experienced a disaster and that you will resume regular production and service as soon as you are able. As a sign of loyalty and trust, let them know whether your doors will be fully or partially open through the recovery process after disaster and emergency.

8. Make Sure Key Personnel Fulfil Their Duties during a Disaster and Emergency Properly

The duties and responsibilities of key personnel in the workplace for response during disasters and emergencies must be defined in the plan very well. For this purpose, you should definitely see with your own eyes that each person fulfils his/her intervention duty in the crisis safely and effectively with different levels of drills and repetitions as if a disaster has occurred, i.e. in disaster mode. Personnel should understand what to do before, during and after a disaster and emergency and should be able to fulfil their responsibilities without any problems.

9. Consult Your Insurance Company

It is very important to be able to communicate directly with your insurance company so that you can recover your losses quickly and to a large extent. If you fail to apply and document properly and/or delay too long, your claim may be delayed or rejected altogether. To avoid potential problems with your claim, inform your insurer and/or intermediary about your losses as soon as possible and in as much detail as possible (including, but not limited to, the following):

- What was damaged and how much?
- What day and time did the incident occur?
- Which insurer will be contacted first?
- What is your new plan to make the area safe?

10. Implement Your External Communication Procedure

After a disaster and emergency, you need to convey information about your situation to both your sector and the society correctly. The most appropriate solution would be to appoint an external communication team consisting of your public relations, media and similar units in advance and to draft the press releases to be issued by this team and attach them to the plan. This team will also be able to follow the news and rumours about your company from all press and media institutions, including social media, and contact and correct them when necessary.

Knowing what to do before, during and after a disaster or emergency can make a big difference to your business life. But as this Guide shows and as summarised in the 10 steps above, disasters and emergencies require multi-faceted planning. The more risk mitigation, preparedness, training, drills and similar activities you carry out beforehand, the more competent you and your team will perform under the stress of a disaster and emergency. There is no other way and especially no shortcut!

However, there are some difficulties that prevent workplaces from carrying out these activities. Developing a good Disaster and Emergency Plan for your workplace can minimise potential disruption of business while protecting your employees, key business interests, relationships and assets. Unfortunately, some companies are not able to survive disasters because they do not pay enough attention to planning in this regard.

You may encounter some challenges when developing a Disaster and Emergency Plan for your workplace. In order to overcome these challenges, it is useful to know them in advance and be prepared.

Possible Barriers Against Disaster and Emergency Planning in Workplaces and Their Solutions

1. Lack of Management Support

It is difficult to make a cost/benefit analysis for business continuity in disasters and emergencies. Unless there are legal sanctions, employers and company managers may not consider "what happens in a disaster or emergency" scenarios. Managerial decisions are usually made based on concrete financial criteria and priorities that benefit shareholders and the company. Question marks may arise as to how useful the measures in the Disaster and Emergency Plan will be. The benefits arising from the risk identification and mitigation activities linked to the Disaster and Emergency Plan are dynamic and not limited to a single structure, department or process.

Providing executives and other organizational decision-makers with concrete financial statistics, detailed vulnerability data and hazard

analyses on the impact of disasters and emergencies can yield positive results. Professional reports and documents that highlight increasing threats and vulnerabilities, such as the Global Risks Report published by the World Economic Forum (WEF), can help guide and inspire executives to implement sustainability efforts such as disaster and emergency preparedness.

2. Budget Constraints

Since companies are profit-driven, they may ignore risk mitigation measures within the scope of the Disaster and Emergency Plan due to other priorities. Therefore, it may be useful to calculate the cost of measures to be taken for each critical process against the cost of interrupting a critical process. Such a comparison may make your budget requirement more convincing.

In addition, you can show the steps to be taken for the implementation and completion of your critical work in the Disaster and Emergency Plan together with other priorities with the help of a timeline. In this way, companies can identify and rank the most critical business processes and implement the risk mitigation measures in the Disaster and Emergency Plan, taking into account the priorities therein. Since most processes are intertwined, small steps towards ensuring continuity are also steps towards overall disaster and emergency preparedness and business continuity.

3. Maintaining a Culture of Preparedness

Employees trained in disaster and emergency management procedures will also be prepared for an operational failure. Managers who emphasise and adopt safety and continuity measures ensure that a working environment reflecting these principles is created and a general culture of preparedness is maintained.

4. Lack of Training and Disaster Awareness

Managers and employees can determine the contribution limits of disaster and emergency specialists according to the company and process vulnerabilities they identify. Planning and training should address general disaster and emergency preparedness and detailed standard operating procedures for activating the Disaster and Emergency Plan. The training content should be based on a flexible procedure that allows continuous assessment of disaster and emergency requirements and provide options for each scenario. If it is not possible to conduct disaster and emergency preparedness activities under the responsibility of managers, companies should consider working with consultants specialised in disaster and emergency preparedness and business continuity planning.

5. Employee Turnover Rate

The review of the duties and responsibilities in the Disaster and Emergency Plan should also include the training of new recruits. Such a practice will ensure the continuity and development of knowledge, standard operating procedures, emergency and business continuity procedures and plan operability. Companies can also benefit from the personnel change process. New recruits may have experience or knowledge on disaster and emergency and business continuity.

6. Continuous Preparedness

In the context of disaster and emergency management, business continuity processes can be

implemented as part of Standard Operating Procedures (SOPs). With the help of good practices such as backup procedures, mobile or flexible working environments and alternative supply chains, a reasonable level of continuity in workflow can be ensured in case a facility or personnel or process is unavailable.

7. Coordination with External Responders/ Suppliers

AFAD's method of response to disasters and emergencies and the terminology it uses can also be adopted by workplaces. In a chaotic environment such as disasters and emergencies, coordination and two-way communication are important factors for workplaces in terms of disaster preparedness and business continuity. Therefore, one of the most important issues in disaster and emergency preparedness is to establish continuous and healthy communication with AFAD and similar institutions and organizations. In order to keep the plan up to date and functional, a cycle of control and verification of the work to be performed should be established by assigning special tasks to the employees and providing for working hours.

By coordinating with the related aid and response institutions and integrating the plan officers in different units with the web-based database, both time-consuming plan updating activities can be reduced and possible errors in disaster and emergency preparedness activities can be eliminated.

Regular updating of contact information and existing protocols with partner organizations is very important. Problems in communicating with external and business stakeholders and delays in verifying their participation may lead to secondary disasters and business disruptions.

8. Identification of Critical Processes

Being able to identify and quantify critical business processes whose loss of functionality could damage a company's prestige, production or operational capacity is a critical stage in the business continuity and disaster planning process. You should prioritise your overall coping capabilities to prevent potential disruptions. Understanding response procedures and the intricacies of "Plan B" can make the difference between survival or failure of an organization. Crisis and disaster situations often result in the loss or temporary disruption of one or more of the following key business resources: People, Facility, Infrastructure, IT Applications/Systems, and Supply Chain.

9. Uncertain Threats and Security Gaps

Threats and vulnerabilities must be fully identified so that potential impacts can be analysed and countermeasures developed. Threat and risk analysis shows the likelihood of occurrence of identified threats, taking into account existing capabilities, mitigation measures and history. Threats and vulnerabilities can result from both internal and external actions. Companies should analyse a variety of potential threats ranging from daily weather, geographical influences, security studies, operational hazards and natural disasters as well as facility design and potential maintenance issues.

10. Ensuring Suppliers Security for Business Continuity

In addition, the impact of often overlooked but known threats can be minimised by making alternative supplier arrangements. In some cases, companies may be unable to control interruptions in supply of raw materials, etc., which can severely impact their ability to conduct "business as usual". The factors to be considered in identifying critical suppliers are complex and can be difficult to analyse at first glance, but may include those that provide specific and unique business products, Single source services or products, Electricity, Water, Gas and Sewerage, Fuel, Telecommunications, Transport, Personnel, Waste management, Plant or Facilities.

In short, no business sector is exempt from disasters and emergencies. Every year organizations close temporarily or completely due to disasters such as earthquakes, floods, fires or storms. According to the US Federal Emergency Management Agency (FEMA), 40% of organizations do not reopen after a disaster, while 25% fail within a year. For this reason, the precautions and recommendations given throughout the Guide should be taken into consideration and action should be taken immediately and disaster and emergency planning should be completed together with the ones described in this chapter.

Renewal of Risk Assessment and Monitoring of Implementation

Now that we have identified our risks and developed a risk/loss minimisation project plan in the previous sections, it is time to take action. As stated in Chapters 1 and 2, the employer is expected by the relevant regulations to make a risk control documentation under the names of Workplace Mitigation Measures and Harm/Risk Mitigation Plan and similar names for the control of the measures in the Hazard Profile Form and each hazard/risks marked as NO or missing in the Hazard Hunt Forms. In addition, it is recommended that other structural and non-structural hazards not included in these forms, but important for the relevant building and/or office, should be included in these forms and a complete risk control application should be made.

Our relevant laws and regulations stipulate that risk control should be planned; risk control measures should be decided; hazards and hazard sources should be eliminated or replaced with less hazardous ones; risks should be tackled at their source; practices should be monitored and all these processes should be repeated from the beginning and risk assessment should be renewed. All these are summarised in Figure 29.

In summary, control measures determined for the fulfilment of risk control measures are applied. However, changes related to the identified risk mitigation and control measures should be tested before implementation. Control measures should primarily reflect the principle of eliminating hazards and risk. If the risk cannot be eliminated, it is mitigated. The use of Personal Protection Equipment by personnel to mitigate the risk should be considered. The intended measures are prevention or minimisation of the probability of risk occurrence or mitigation of the potential severity of damage respectively.

..... Mitigation Implementation Plan

UNIT/FACILITY : .....

FACILITY/DEPARTMENT : .....

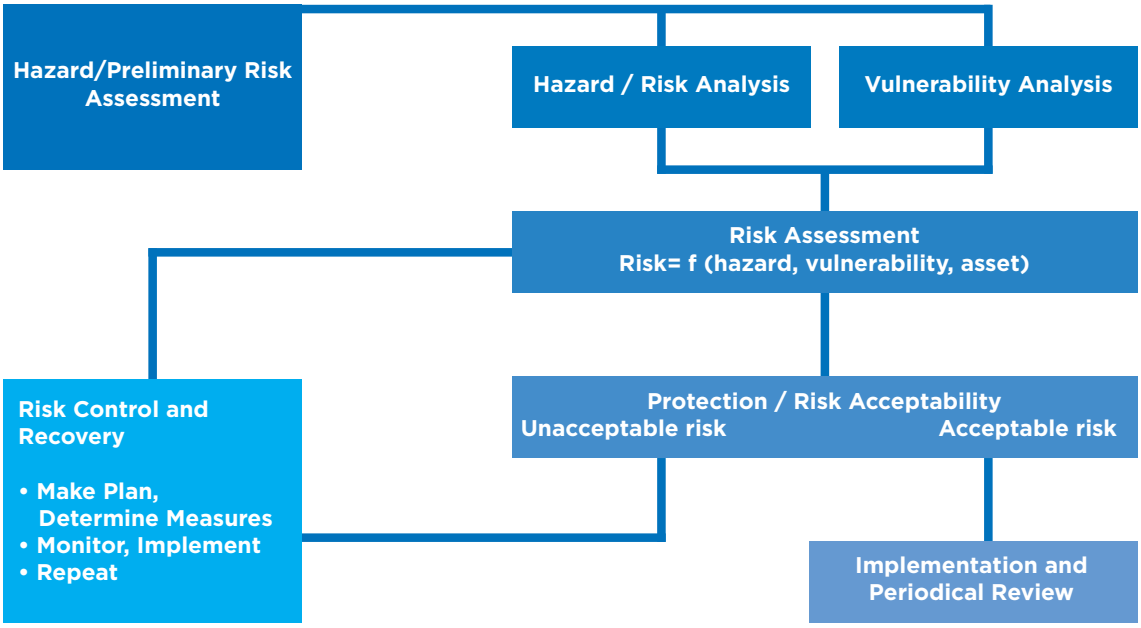
Work to Be Done for Mitigation*	Budget (TL*)	Scheduled Date of Start	Schedule Date of Completion	Approval
		.... / .... / 20....	.... / .... / 20....	
		.... / .... / 20....	.... / .... / 20....	
		.... / .... / 20....	.... / .... / 20....	
TOTAL BUDGET:		**BUDGET APPROVED:**		

*Scheduled works are listed by the specified date of start.

Completed by: ..... Date: .../ .../ 20...

Approved by: ..... Date: .../ .../ 20...

Signed by: .....



***TL:** Turkish Lira

Figure 29. Schematic representation of risk assessment steps in scope of the risk management at workplaces.

Mobilize Employees

Employees are the most important asset of workplaces and similar organizations. However, managers in workplaces are generally better prepared for disasters and emergencies than their employees. Ideally, both management and employees should be aware of and prepared for disasters and emergencies that may occur in the workplace. Proper planning and widespread training can help reduce overall stress, anxiety, fear and loss of life and property among employees during a disaster or crisis. **Making a good disaster and emergency plan and training employees on how to fulfil the procedures and all the steps in the plan is the real insurance of the workplace.** For this reason, the Disaster and Emergency Plan should specify in detail who will and how provide support to the company's personnel before, during and after an incident. Support can take the form of providing employees and their families with access to mental health centres, helping them access to social benefits, opening a family support centre or referring employees to disaster relief organizations. Employees supported in this way by the workplace should also be trained in the correct basic behaviour at work in disasters and emergencies.

Regulations set out plans and timetables for the trainings and related programmes that personnel and emergency response teams should receive. However, depending on the type of the organization and the activities in scope of the plan, there may be a need for different trainings than those stipulated in the regulations on disaster and emergency preparedness, fire, first aid, search and rescue, team organization and evacuation. One of the important subjects that should be taught and reinforced with drills together with these special trainings is how to behave in case of danger. If there are enough drills on this subject, people's reflexes will automatically lead them to the right behaviour when danger starts.

As we have mentioned on page 119, we should first of all memorise six basic behaviours as reflexes for disasters and emergencies. If this is not done, people may freeze or run around unconsciously due to the trauma experienced during the disaster. The six basic behaviours to be performed in disasters and emergencies are as follows:

1. Drop-Cover-Hold On
2. Stop-Drop-Roll
3. Lockdown-Lie Down
4. Build a Shelter in Place
5. Evacuate (Outward/Inward)
6. Run-Hide-Report

Trainings should be taken and implemented accordingly.

Make Drills and Practices

Having a written Disaster and Emergency Plan is not sufficient for a successful disaster and emergency management. This plan must be learnt very well by employers, officials and employees and must be updated continuously in accordance with the conditions of the day. During a disaster and emergency, there is no time to read the plan or even to reach the plan itself. For this reason, different parts of the Disaster and Emergency Plan must be tested and learnt at least twice a year with drills carried out with all employees. Each organized evacuation drill will contribute to significantly reduce the panic of the employees during a disaster and emergency and to act regularly.

The general benefits of a disaster and emergency plan drill are as follows:

1. Enables the deficiencies in the plan to be revealed and updated with new data.
2. Improves self-confidence.
3. Clarifies duties and responsibilities.
4. Improves performance.
5. Improves the relationship between organizations and personnel.
6. Builds trust and respectability.

Things to Be Done for the Drill:

- Choose the right type and sequence of drill or exercise (see Figure 30).
- Clearly define the aims and objectives of the drill.
- Write a scenario together with ICS officers and responsible persons in accordance with the Disaster and Emergency Plan. Choose content suitable for the purpose according to the type of the drill. Be creative in simulating the events; it is very useful to add out-of-the-box facts to the scenario.
- The drill can be conducted for a few hours and with a few people, but the employer must be present and evaluate the performance of the personnel while they are in the drill.
- After the scenario is written, it is time to prepare the staff. Assign the groups that will prepare the drill area or office one by one and make announcements or deliver messages during the drill. Determine who will be a participant, who will be an assistant and who will be an observer.

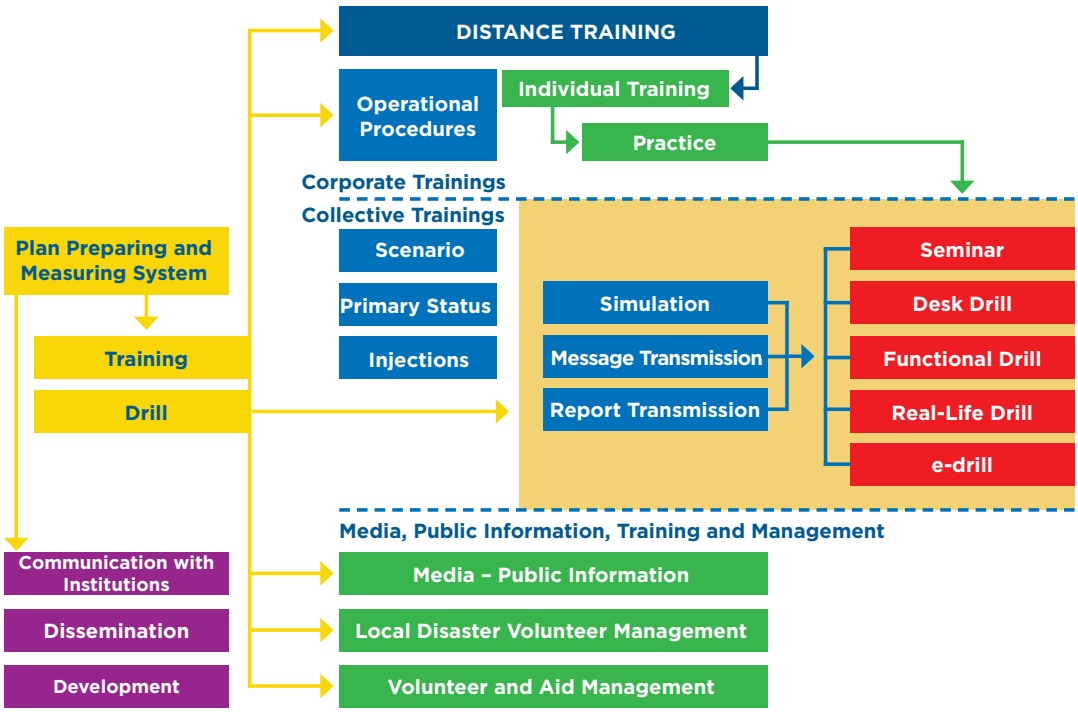


Figure 30. Schematic representation of trainings and drills required to be dame for updating plan information and the plan itself.

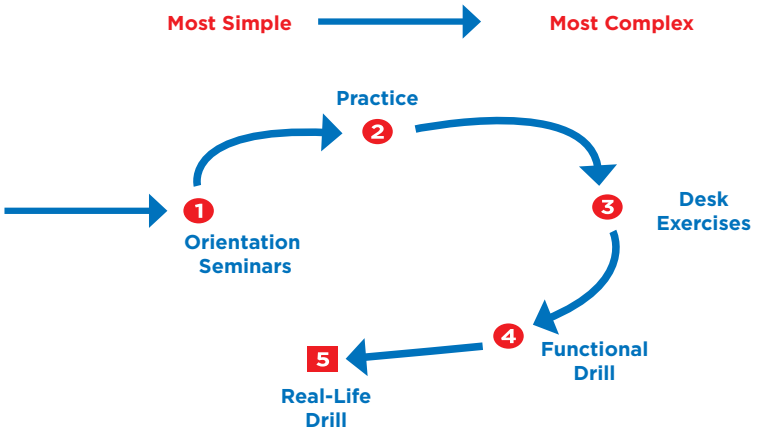


Figure 31. Order of drills and practices when preparing for disasters and the fundamental philosophy to be taken into consideration when designing the drills.

Drill: Ensure the appropriateness, adequacy and timeliness of the actions in the response process planned to be carried out in a disaster or emergency as close to the reality as possible.
It is the general name given to the practice carried out for the purpose of testing under conditions and adhering to a scenario.

Drills can be carried out at different levels as desk drill, practical drill and general drill. Disaster and emergency exercises and drills should be carried out in order from the simplest to the most complex to reinforce the trainings given and to test the functionality of the plans (see Figure 31):

1. Awareness and Orientation Seminar
2. Exercises
3. Desk Drill
4. Functional Drill
5. Real-Life Drills (On-Site Drills)

Desk drills can be used in particular to both train personnel who will use the Emergency Plan (EP) and update the roles and responsibilities in the plan. After each drill, the plan and processes should be criticised (see Figure 32). Thus, the plan should be revised according to the experiences gained during the drill.

Different levels of drills can be conducted to test the plan:

- **Desk Drill:** An independent person reviews the plan and ensures all parts of the plan are evaluated in detail, its requirements are met, and it is consistent and harmonised in its entirety.
- **Scenario Test:** One or more of the teams defined in the plan can meet in a room and work on the stages in a scenario.

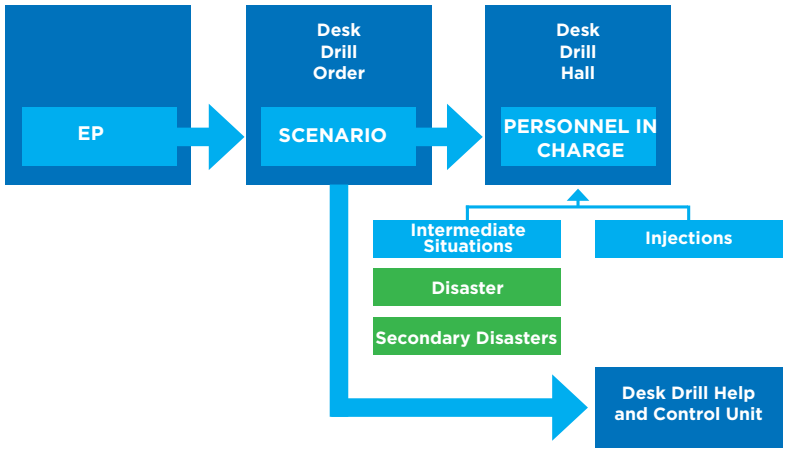


Figure 32. Diagram of a desk drill design and implementation for Emergency Plan (EP).

As a result of these studies, it is evaluated whether the service in the workplace will be put into operation in accordance with the current requirements.

- **Rehearsal:** All or part of the plan is tested by following documented processes before the replacement service is provided. For example, if one step in the plan is to order replacement equipment, the supplier is contacted and asked if and how long the equipment is available. In another example, it is tested whether restoring computer backups and live data processing for an off-site system can be used without moving to the backup system.
- **Simulated Emergency Test:** The plan is implemented as if a real emergency had occurred. The building is closed as if damaged by fire, and tested by applying how long it takes to provide the emergency services stipulated in the plan.

Training and Drills are supportive activities for the implementation of the processes prepared in the plans.

Trainings ensure that people know what is written in the plans, understand what the processes in the plans really mean and reach the necessary level of knowledge and skills to perform their duties in scope of the plan. Drills help apply what has been learnt and thus to see what is working correctly and what is working incorrectly. In this respect, drills can also be seen as a kind of practical training.

One of the issues that must be known about drills is **Evacuation**. Evacuation works are of very critical importance in case of danger. In this context while planning, issues such as behaviours to be considered during evacuation, assembly area, buddy system and floor and layout plans must be covered.

In normal times, i.e. before the disaster, the safest and risky places are determined for each office/workshop/laboratory/warehouse. These places are marked on the sketch of the building/workplace and posted in the relevant places for everyone to see. According to the determined safe and risky places, alternative emergency exit, i.e. evacuation routes from the office/workshop/laboratory/warehouse and building are determined. Floor and site plans of the building/workplace should be prepared and posted in

visible places, response plans should be made for open and closed areas and trainings should be scheduled and communicated to all personnel.

It should be tested whether the plan itself will work, i.e. whether the processes and procedures documented in the plan can restore services at the required timescales. A section of the plan should include topics related to testing the plan, such as possible test scenarios, test contents and test frequency. Different parts of the plan may need to be tested at different frequencies depending on the nature of the service and the type of activity in the plan.

In order to regularly monitor and check the applicability of the implementation steps of the Disaster and Emergency Plan prepared according to the regulations, drills are carried out, audited and reviewed , and corrective and preventive actions are determined within the following periods:

- **Once a year for workplaces classified as very dangerous.**
- **Once in two years for workplaces classified as hazardous.**
- **At least once every three years for workplaces classified as less dangerous.**

A drill report is prepared including the date of the drill, the deficiencies observed and the arrangements to be made in line with these deficiencies.

Regardless of the hazard class, it is strongly recommended that all workplaces should make drills at least twice a year for the disasters and emergencies they determine in terms of preparedness for disasters and emergencies, for the future of the business and the safety of employees and employers.

During the drills, employees rehearse possible disasters and emergencies and prepare for what will happen. Drills can be carried out with or without notice within the framework of a scenario. Video-shooting is recommended in drills in order to eliminate deficiencies. The scenario of each drill should be different and as detailed as possible. During the drills, it should be seriously observed whether everyone performs his/her duties fully or not and trainings should be repeated when necessary to eliminate the deficiencies identified.

In summary, when designing an exercise to test a Disaster and Emergency Plan, firstly:

- The scope, purpose and format of the exercise should be determined,
- The type of exercise should be determined,
- The time and duration of the exercise should be determined,
- It must be decided whether to be informed or unannounced,
- Participants must be identified,
- Reporting and evaluation process should be determined,
- The outputs expected from the exercise should be determined.

Disaster and Emergency Plans Drills prepared by the employer or Occupational Health and Safety Directorates for secondary disasters such as fire, injuries, collapse, leakage and similar secondary disasters at workplaces, such as **Preparedness for Earthquake,** can be carried out with or without notice.

For example, the steps of Earthquake Emergency Drill in the Workplace may be as follows:

1. The Emergency Plan should be **updated** in all aspects and **plan trainings** should be given to

both those in charge of the plan and other personnel for the general introduction of the plan.

2. **Fire, First Aid, Search and Rescue, Evacuation and Maintenance Teams and Team Leaders** in the Emergency Plan should be established in sufficient number, trained separately in their own subjects and certified if possible.
3. In order to prevent non-structural hazards in buildings from causing loss of life and property during an earthquake, **Workplace Hazard Hunt** (Administrative Floor/Warehouse /Workshop) should be carried out and the deficiencies identified should be eliminated as soon as possible with measures such as fixing or strengthening.
4. In case of an earthquake, at least **two Command Centres** must be designated in the building to be used in disaster response within the scope of the Emergency Plan. These centres must be selected from safe locations overlooking Emergency Assembly Areas and Entrance-Exit of the building. **One Command Centre** must be planned to be established in the Emergency Assembly Area considering the possibility of the building becoming unusable. In the places selected as Command Centres, the Emergency Plan and the relevant Forms, Tables and Tables of the plan should be copied and kept in sufficient number. In addition, **Equipment and Material List** should be kept in a special cabinet.
5. **Announcement and/or Siren Systems** should be made operable from at least 3 places (including the places that can be used as Command Centre in the building) to direct the masses and announce the drills when necessary. In addition, the **Equipment and Material List** must be provided according to the Teams and Squads created in the Emergency Plan and kept in the special Building Emergency Material Cabinet.
6. In order that the drills are standardised and systematic, the **Standard Operation Procedure (SOP) to be applied in the first 30 minutes of the earthquake** must be applied in the drills. Information about SOP to be exercised must be distributed to all personnel days before the exercise. In addition, all personnel should be trained on the correct behavioural patterns during earthquakes such as DROP-COVER-HOLD ON, not leaving before evacuation permission is given, buddy system in evacuation, not running, ensuring regular exit without panic, sitting in the assembly area for roll call and waiting quietly, responding to small fires and similar behaviours.
7. Drills should be conducted in 3 separate groups:

   a) Drill Managers, b) Drill Performers, c) Drill Assessors. The first drills should be assessed according to the **Disaster and Emergency Drill Checklist.** This checklist can be modified in time to evaluate different topics and can be done by the people who manage the exercise in the form of unannounced drills in the workplace.

For such a drill, a checklist like the one on the next page including the whole disaster and emergency plan, teams and employees should be prepared and used by the officials evaluating the exercise:

Disaster and Emergency Plan Drill Checklist ..../ ..../ 20.... DROP-COVER-HOLD ON (Earthquake Scenario Including Fire and Similar Secondary Disasters):	
	❑ Drill announcement or siren ❑ In good order ❑ Perceived ❑ Heard by everybody and ❑ In place
	❑At a suitable place everybody: ❑ **DROPPED/CROUCHED** ❑ **COVERED/HIDDEN** ❑ **HELD ON**
	❑ Everybody waited for the shaking to finish with their back to the window, covering heads and faces with their arms.
	❑ Once the shaking finished, everybody first checked himself/herself and then other people.
	❑ Everybody checked his/her office partner/buddy and the person with disability for whom he/she is responsible to support.
	❑ Small fires were intervened properly by all people near to them.
	❑ Special situations: How people behaved in a special situation, planned or not planned.

Command (Disaster and Emergency Officer):	
	❑ Was constantly present at the Command Centre and ensured communication during the disaster.
	❑ Assessed the condition of corridors, stairs, emergency exits and similar structural and non-structural hazards and waited for everyone to calm down before making an evacuation decision.
	❑ Announced the Evacuation Decision after preparing the evacuation team and opening the exits when necessary and safe.
	❑ Monitored the Building Command Centre the personnel assembly points and the building perimeter (exits, etc.).
	❑ Operated the Building Emergency Plan, set up all Teams and kept Records. Acted according to the plan.
	❑ Stayed in contact with Team Heads and received information and reports, took action according to new situations.
	❑ Filled in the Report/Form and reported the situation to the Employer regularly.

Evacuation and Counting (Evacuation Team):	Number of Team/Persons Assigned: ....
	❑ After the permission for evacuation, evacuation was initiated in the building according to the plan (without running, talking, locking doors).
	❑ In the absence of any serious "injury", Staff and Co-Staff (for employees with disabilities or special needs) vacated their rooms.
	❑ In case of any serious "injury", Staff and Co-Staff (for employees with disabilities or special needs) went to call for help.
	❑ At the Assembly Centre, all staff sat quietly and waited while the Evacuation Team took roll call.
	❑ The Staff Attendance Sheet was sent by the Evacuation Team to the Building Command Centre.

Search and Rescue Team Leader:	Number of Team/Persons Assigned: ....
	❑ He/she set up and assigned his/her teams by identifying the priority areas of need.
	❑The team leader checked the settings of his/her teams' watches, radios and similar devices.
	❑ Each team member was dressed appropriately (with the right footwear, vest of appropriate colour, helmet, dust mask, gloves, goggles, whistle, and flashlight) and equipped with the right equipment.
	❑ Search and rescue teams thoroughly scanned, marked and reported the areas they were assigned.

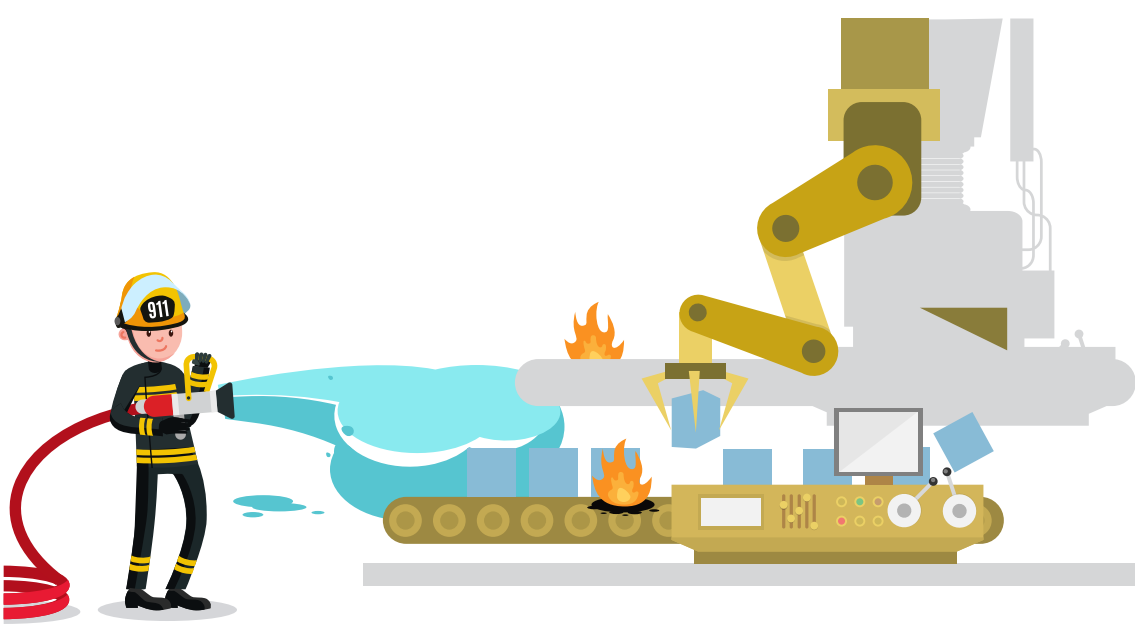
First Aid Team Leader:	Number of Team/Persons Assigned: ....
	❑ Established the emergency health response centre in a location that is not visible to staff.
	❑ Sufficient amount of emergency aid material with valid expire date was brought to the emergency health response centre.
	❑ Portable cots and stretchers were set up or chairs etc. were used correctly.
	❑ The injured people were recorded one by one using the Triage Form and treated according to their priorities.
	❑ A printed form was filled out to prevent loss of the wounded sent to the hospital by ambulance.

Fire Team Leader:	Number of Team/Persons Assigned: ....
	❑ Firstly, took necessary preventive measures against the spread of fire (intervention to infrastructure, etc.).
	❑ Organized teams to intervene in small fires and directed them to appropriate places.
	❑ Prepared the report, building floor plan and the place where the fire-extinguishing vehicle will pass to help the fire brigade.
	❑ Regularly reported the fire situation, what has been done and what needs to be done to the Building Command Centre.

Protection Team Leader:	Number of Team/Persons Assigned: ....
	❑ Fulfilled the duties assigned to them in the Emergency Plan completely.

Completed by: .....

Suggestions: .....



During Disaster and Emergency: Response

The main purpose of the response chapter in the Disaster and Emergency Plan should be to provide basic information for emergency response and preliminary recovery activities to its users. This basic information includes timely and reliable warnings, rescue of life and property, health, nutrition, shelter, security, property and environmental protection, and social and psychological support services.

For this reason, the response section of the plan should include the processes, duties and responsibilities expected to be fulfilled by the relevant responsible persons, institutions and organizations after a disaster and emergency; saving the lives of a large number of people in the shortest possible time; providing treatment for the injured; meeting the vital needs of the exposed people such as water, food, clothing, heating, shelter and protection with the most appropriate methods in the shortest possible time in the most accurate and clearest way.

Response to disasters covers the activities carried out within a period of 3 days to 1-2months depending on the magnitude of the disaster, starting immediately after the occurrence of the disaster. According to the Regulation Regarding Disaster and Emergency Response Services in Turkiye, the emergency response phase is determined as the first 15 days. The period starting with the occurrence of the disaster and lasting for 15 days after the end of the disaster and which can be extended by the Presidency when necessary and the period during which the emergency aids and related expenditures are made is called **Emergency Aid Period.**

In the earthquakes that have occurred in our country in recent years, it is seen that people generally try to escape and go outside as soon as they feel the earthquake. Thus, it is seen that a false perception is formed as if the first step of response and self-protection is to escape in an uncontrolled way and unconsciously. For this reason, it is very important that employees are trained not to go out as soon as the shaking is over and to wait calmly. Stairs and lifts should not be used until they are declared safe. Evacuation orders should be awaited.

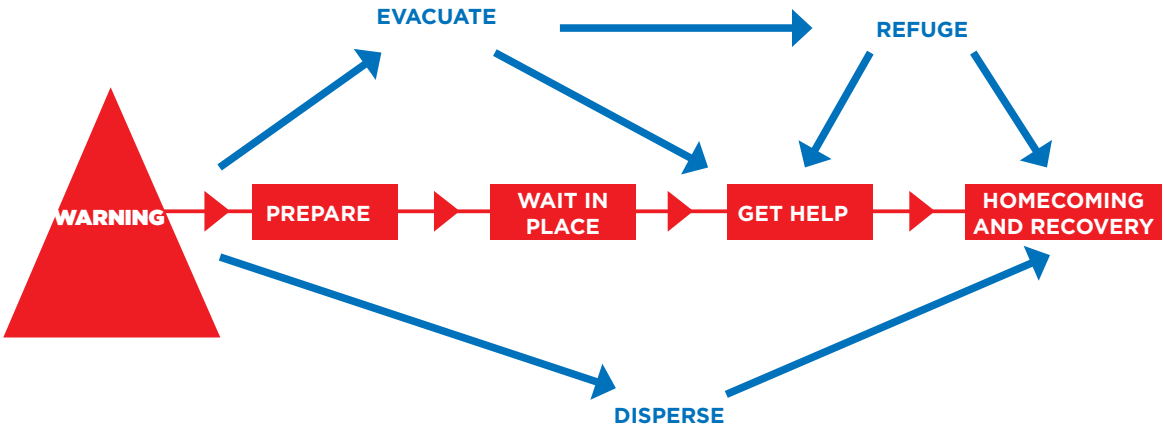


Figure 33. Options and steps of evacuation and shelter in practice.

Evacuation in workplaces is implemented as supervised/unsupervised and temporary/permanent in different ways (see Figure 33). In the response section of emergency plans, only temporary and supervised evacuation is addressed. Permanent evacuation may be required, for example, when sheltering in collective accommodation is necessary after a disaster or emergency. Evacuation without supervision should only be carried out when the life safety of employees is at risk and there is not enough time to wait for the response of disaster and emergency personnel.

After analysing the information received from the Emergency Officer teams, the Incident Commander shall permit evacuation if the evacuation routes are safe. Starting an evacuation without this permission is dangerous and, therefore, not recommended.

The Incident Commander or person in charge of the operations should direct teams and workers to the following steps:

- Conduct a situation assessment and hazard check.
- Check for casualties and provide first aid if ne cessary. (Note: Severely injured persons should not be moved unless their location causes more serious injury.)
- If evacuation routes are safe, ensure safe, not rapid, evacuation of those who can move.

Also the risks which transport and communication infrastructure encounter should be addressed in terms of their impacts on the city in general and their implications for evacuation. In areas with poor transport infrastructure, a part of the roads may be flooded, existing roads may be damaged and transport may be disrupted due to the disaster. Inadequacies in transport and communication infrastructure, which constitute the main problem in the city in general, and the overlapping of these inadequacies with disaster risks may affect many settlements and workplaces. In such a case, employees in the workplace can leave the facility, but they cannot leave the vicinity of the facility and go home. For this reason, the safety and care of the employees should be provided in the workplace and this situation should be provided in the Disaster and Emergency Plan.

As explained earlier, the most important issues related to evacuation are to carry out evacuation in an organized and safe manner, implement the buddy system and keep records. Those who evacuate and go to the assembly area should sit calmly and wait for roll call. Roll call and similar records should be constantly compared with the number of employees in the workplace to determine whether anyone is left behind in the facility, whether everyone has safely reached the shelter centre, and whether there are any people who did not obey the evacuation order and are trapped in the office/workshop/laboratory/laboratory/warehouse or under debris.

The person who is usually responsible for the daily routine of your business will most likely be responsible for the disaster and emergency operation. But what if this person is unreachable in case of disaster and emergency? If the responsible and trained person is surprised at the moment of trauma, the appropriate employees should start the response by implementing the relevant standard operating procedure. For this reason, the relevant regulation provides: *"The employer shall ensure that employees are able to respond within the framework of their knowledge and available technical equipment to prevent undesirable consequences in cases where they encounter a serious and imminent danger to the*

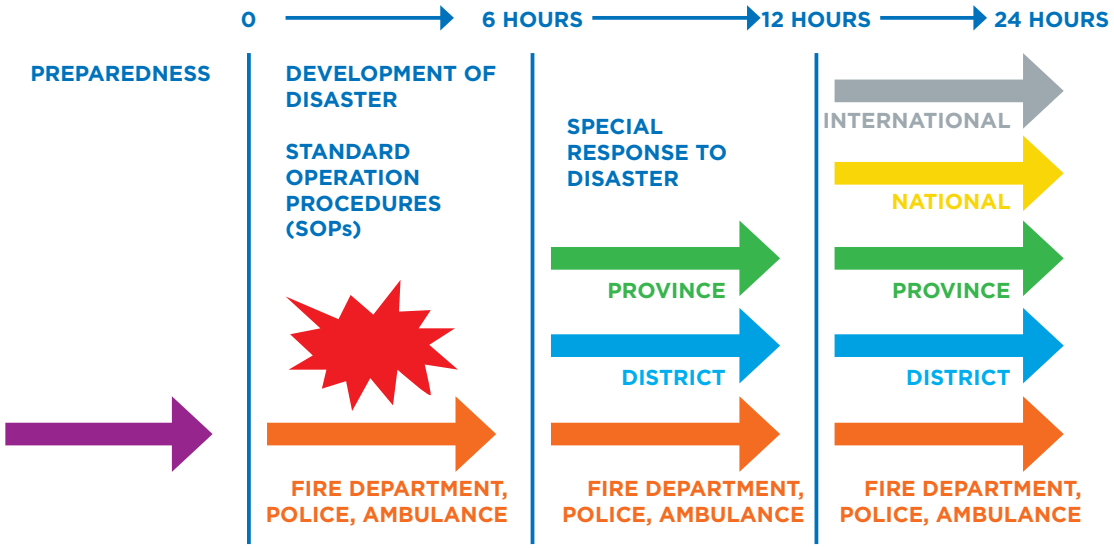


Figure 34. Standard Operating Procedures (SOPs) should be developed that everyone can follow for the first six hours until experts arrive on the scene after a disaster or emergency.

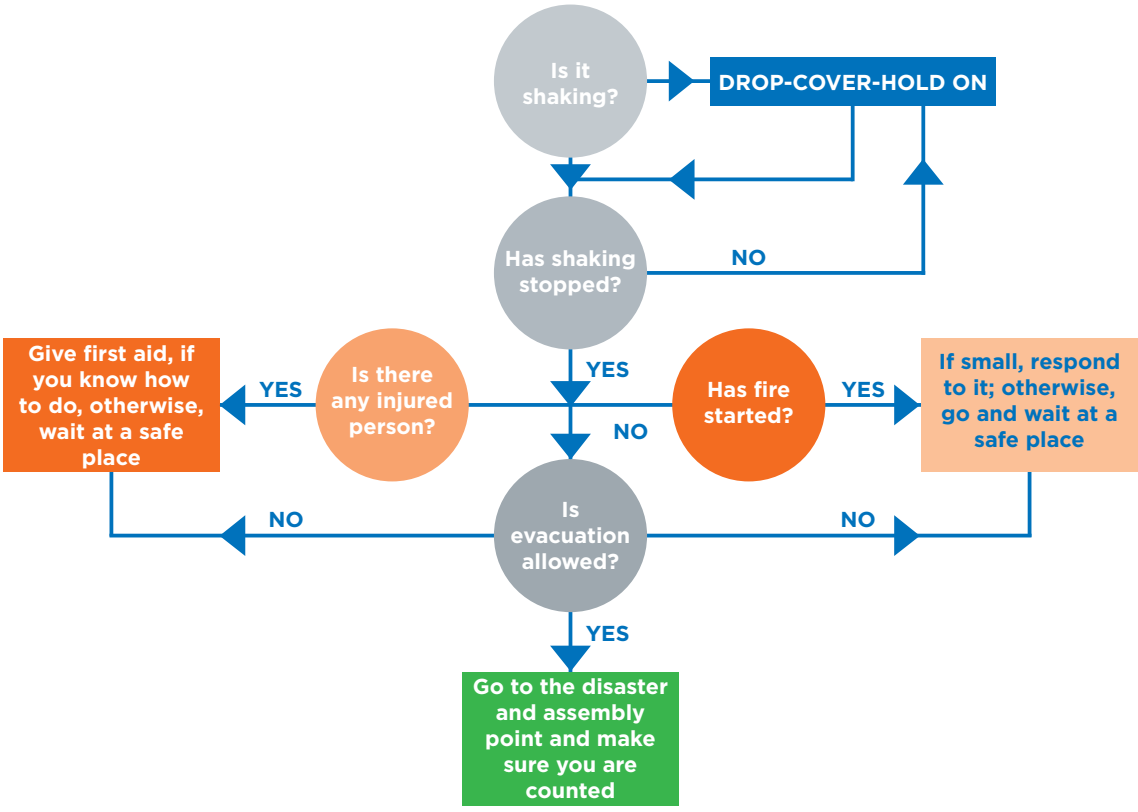


Figure 35. A schematic representation of the standard operating procedure that employees in the workplace shall follow as soon as the shaking is felt in the case of an earthquake. Attention! Evacuation is dangerous unless the Emergency Officer checks the safety of the evacuation routes and gives the order to evacuate.

safety of themselves or other persons and cannot immediately notify their supervisor. In such a case, employees shall not be held responsible for their response unless they are negligent or careless."

Standard Operation Procedures (SOPs) should be prepared in advance and adopted as reflexive behaviour through trainings and drills in order to prevent undesirable results in case of chaos in disasters and emergencies, i.e. to intervene to the incident correctly. Generally, SOP is developed and added to the Disaster and Emergency Plan to be implemented by trained or untrained people until experts such as fire brigade and health team arrive at the scene (see Figure 34).

A schematic example of a Standard Operation Procedure for earthquake that can also be applied by the employees not assigned in the Disaster and Emergency Plan is given in Figure 35. Similarly, such schemes should be prepared and used correctly for other risks that are found to be high in the risk analyses made during the planning process. Commonly used incorrect schemes should be avoided.

Such diagrams are not an "emergency response method". These diagrams contain standardised procedures prepared by experts and to be applied in case of a disaster and emergency by groups identified from the target group. **They are prepared for different groups and hazards and should be added to the Disaster and Emergency Plan of the workplace as Standard Operating Procedures.**

In the event of a disaster and emergency, be sure to check for significant structural damage and the hazards they pose such as fire, natural gas leaks, open/sparking electrical components/cables, sewerage leaks, broken water pipes, dangling fixtures/furniture and similar hazards. Determine together with a civil engineer or similar experts how safe it is to enter into offices and buildings or to continue work inside after the disaster.

Important points to be considered while responding to the infrastructure within the framework of preliminary infrastructure assessment:

1. Natural Gas

If there is no fire hazard and there is no odour of natural gas leakage, you may prefer to keep the natural gas supply open, as this may be the only source of energy available to you for a certain period of time. If the odour of natural gas inside the building is very strong or is present both inside and outside the building, take the following steps:

- If you smell natural gas, immediately notify the natural gas service or the fire brigade.
- Evacuate everyone at least 100 metres away from the building; if a large number of people need to be evacuated, try to get as much help as possible from the police and fire brigade.
- Extinguish cigarettes and all other potentially flammable materials.
- **DO NOT USE** any electrical switches; leave them as you found them.
- **DO NOT PLUG/UNPLUG** any electrical cables/devices.
- Cut off the natural gas inlet at the building's natural gas meter using a 30 cm long crescent wrench.
- Leave switches and valves as you found them unless they pose a hazard.

Never Open the Natural Gas Valve after a Temporary Outage!

If it is possible to safely restart the natural gas supply, only a trained professional should do this.

2. Electricity

Stay away from all broken electrical cables unless the electrical service says it is safe to do so. Notify the electrical service of any broken power cables. Secure the areas where broken power cables are located; ensure that there is a distance of at least 10 metres between the barriers and broken power cables. Cut off the electricity in the damaged parts of the building using circuit breakers.

3. Telephone

Ensure that telephones are not used except for emergency calls to get assistance. Replace any telephone receivers that may have become dislodged.

4. Water and Sewerage

If you suspect that water and sewerage pipes have broken close to your location, cut off the water supply to the building to prevent the stored water from flowing back into the mains and prevent contamination.

Furthermore:

- Conserve water as much as possible.
- Water tanks and toilet cisterns are sources of stored water, but should be treated with iodine tablets before use.
- If water continues to flow, store water by filling existing containers. Aftershocks can damage the mains and cause water to be cut off. (NOTE: Even if water flows, be aware that the mains may be contaminated by broken sewerage pipes and other water lines.)
- Do not use the toilets if the water and sewerage lines are noticeably damaged. Establish other options for disposal of human waste.

Find below an example of SOP to be implemented in the first 30 minutes for employees in an earthquake affecting the workplace during working hours. It should be noted that this SOP does not only address evacuation, escape, etc. during an earthquake, but requires the full operation of a Disaster and Emergency Plan. It is very important that the drill is conducted and evaluated accordingly. The duties and responsibilities of the teams can be tested and improved by individual drills, but the system must be operated as a whole with the employees as follows.

Standard Operation Procedure to Be Implemented in the First 30 Minutes for Employees in an Earthquake Affecting the Workplace during Working Hours

At Second 0: Earthquake

At Second 3 (at the moment of shaking):

- Everyone does **DROP-COVER-HOLD ON** in a safe place such as the bottom of the column/ under the table until the shaking caused by the earthquake is over.

At Minute 3 (when shaking is over):

- Everyone first checks himself/herself and then the person next to him/her, if any, to see if he/she is injured.
- Everyone first checks their surroundings to see **if there is a fire** in their own location.
- Everyone first checks other structural and non-structural hazards in their own location.
- If there is no danger, those in the **next and opposite rooms** go and check each other.
- In case of **small fires,** everyone responds immediately or moves to a safer place.
- Everyone who has received **first aid** training gives first aid to those around them when necessary.
- The **buddy/support personnel** to be determined in advance for **people with disabilities** in the building reaches the person with special needs for whom he/she is responsible.

- Everyone waits for the instructions of the Fully Authorized Disaster and Emergency Officer for **Evacuation Decisio**n and other instructions if there is no fire. (Attention! Corridors and stairs may be damaged or more dangerous outside. No one should attempt to evacuate without waiting for instructions).

At and after Minute 30:

- As soon as the Emergency Officer and Team Leaders notice/receive the earthquake without waiting for an invitation/call: If there is no damage, he/she goes to the **Emergency Assembly Centre** inside the building; if there is damage, he/she goes to the Emergency Assembly Centre outside the building (wearing his/her vest) with his/her disaster and emergency kit.
- The Emergency Officer and Team Heads who cannot immediately arrive at the Disaster Management Centre or Emergency Assembly Centre inform other teams about their situation and send their r**epresentatives/substitutes** to the relevant places.
- The Emergency Officer collects and evaluates the first information about the situation of the building and personnel.
- As a result of the **impact analysis and situation assessment,** the Emergency Officer decides whether to evacuate individual buildings or the entire facility after an earthquake.
- Emergency Officer assesses **which resources are available** and *which personnel in charge* can be assigned according to the Emergency Plan. If necessary, he/she activates the plan after forming new teams and squads with the existing personnel.
- If the Emergency Officer decides to evacuate, he/she first notifies the **Evacuation Team** and ensures that the turnstiles are unlocked and the locked emergency exit doors, if any, are opened by pressing the earthquake button or instructing the responsible persons in buildings without automatic earthquake sensors.
- When the Emergency Officer is sure that the corridors and stairs are safe for evacuation and the emergency exit doors and turnstiles are open, he/she announces the **Evacuation Decision** to everyone in the building by megaphone or internal public announcement or voice alarm system.
- **Team Leaders** start to perform the tasks assigned in the plan for fire extinguishing, first aid, search and rescue, protection, evacuation and similar works.
- Dead, injured, very anxious, panicking and abnormally reacting personnel are gathered in different Emergency Assembly Areas/Places if possible. The **Assembly Area** shall not be abandoned without taking roll call.
- Emergency Officer submits his/her report about the building to the employer or the employer's representative every 3 hours or immediately when necessary and **fulfils the instructions received from the employer or the employer's representative.**

For more information on earthquake/ disaster preparedness, contact local authorities such as AFAD, Red Crescent, fire brigade, etc. and consult their resources.

SHORTAGES ARE MADE UP AND DISTRIBUTED TO ALL PERSONNEL FOR THIS SOP.
IN ADDITION TO OTHER DRILLS, THIS SOP IS IMPLEMENTED ONCE IN THREE MONTHS AS AN EARTHQUAKE DRILL UPON AN EARTHQUAKE SIREN CALL WITHOUT PRIOR NOTICE.

In summary:

1. Create a disaster and emergency planning committee with relevant members of your workplace. Ensure that at least one member has decision-making and implementation authority.
2. Scan the Control and Standard Operating Procedure lists to identify where more work is needed.
3. Segregate and delegate what needs to be done as much as possible.
4. Organise periodic meetings to regroup, discuss challenges and share successes.
5. Attend relevant workshops/trainings/seminars to get help in finalising your plans and to find answers to specific questions.
6. Stick to your plan. Remember that every mistake or deficiency you correct reduces vulnerability of your company to earthquakes and similar disasters and emergencies!

After Disaster and Emergency: Recovery-Return to Right Order

As explained before, the four phases of disaster and emergency management must be handled in integrity and implemented effectively before, during and after the disaster. The phases of disaster and emergency management are parts of a whole; disaster and emergency management cannot be successful by selecting some of them and eliminating others.

Remember that the four phases of disaster and emergency described in the first chapter show a cyclic relationship structure rather than a linear one.

Before the disaster, mitigation and preparedness activities should be implemented effectively; following the response operations during the disaster and recovery activities after the disaster, the mitigation and preparedness phases should be resumed by going back to the beginning basing on the experiences gained.

In this cycle, the Recovery Phase of disasters and emergencies is a medium and long term process that takes into account the opportunities for mitigating the risks that may be effective in the future together with the recovery of basic services, environment, means of livelihood and living standards of the community affected by the disaster. The Disaster and Emergency Plan should clearly include a road map and standard operating procedure for these processes listed below (see Figure 36). As recovery is mostly carried out by the institutions and organizations authorised and expert in different fields, it is not addressed in detail in this Guide and its planning.

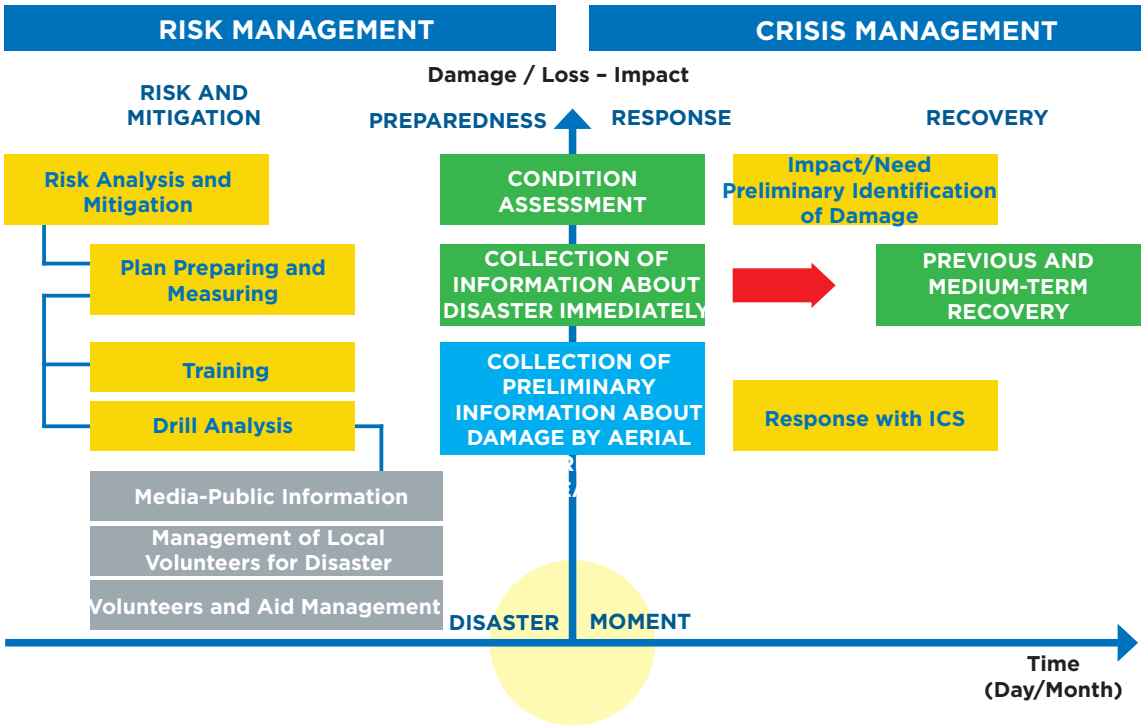


Figure 36. Schematic representation of the place of initial-, medium- and long-term recovery in the cyclical disaster management.

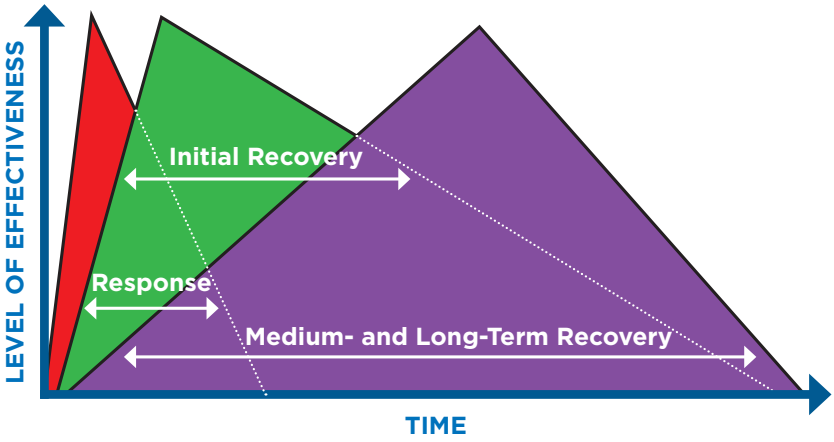


Figure 37. The intensification phases of the recovery stages and works starting from the response stage and extending over a long period of time (Kadıoğlu, 2013).

The main objective of the activities carried out for pre-disaster risk mitigation and post-disaster response and recovery is to ensure that the vital critical infrastructure such as food, clothing, shelter, communication, transportation, water, electricity, sewerage, natural gas, etc. of the communities, workplaces and institutions affected by the disaster are made operational and that they are able to return to the correct order as soon as possible with the help of recovery activities such as temporary settlement. Therefore, recovery efforts start with pre-rehabilitation during the response and continue with medium- and long-term recovery efforts (see Figure 37). Some scholars include the reconstruction phase in this phase and envisage this phase to continue until the needs of the affected communities are met at least at the pre-disaster level or, if possible, at a higher level.

Recovery; includes efforts to return the infrastructure, sector, facility and the social and economic life of workers back to functioning. Mitigation of the disaster damage is also a part of the recovery phase.

In the short term, basic human needs (e.g. food, clothing and shelter) and social needs (legal, psychological) are met and the necessary infrastructure systems are established (energy, communication, water, sewerage and transport). Once stabilised, the recovery phase also includes long-term efforts to consider long-term mitigation needs, such as the creation of economic mobility and the reconstruction of facilities and housing. The Disaster and Emergency Plan should also be restructured in a way to ensure that the individuals of the society, together with their workplaces and governmental institutions, can work on their own, return to the new normal life called the right order and be protected against possible hazards in the future.

The main recovery phases and activities to be considered in the medium and long term for disasters and emergencies:

Stage 1: Preliminary Recovery Phase – Short Term

The early phase of recovery immediately after a disaster and emergency consists of emergency response activities and pre-recovery operations.

After the completion of this phase, recovery efforts focus on medium and long-term recovery and reconstruction objectives.

After the completion of this phase, recovery efforts focus on medium and long-term recovery and reconstruction objectives.

Preliminary recovery activities include search and rescue and similar response activities in the immediate aftermath of the disaster, debris removal, psychosocial care, partial restoration of critical and vital activities and facilities such as hospitals, schools, temporary shelters and dwellings, and damage and loss assessment (see Figure 38).

Stage 2: Recovery and Reconstruction Phase – Medium Term

This phase involves the deployment of resources and services and addressing functional activities to recover and reconstruct workplaces affected from disaster and emergency. In this phase, initiatives and strategies are developed and implemented to increase the resistance of the disaster area to future disaster and emergency risks:

- Utilities and critical public services (electricity, water, gas, sewerage, etc.)
- Improvement and maintenance of transport network/infrastructure (road, railway, etc.)
- Debris removal and identification/management of debris areas
- Repair and reconstruction of buildings
- Continuity of business and services
- Site selection for emergency relief and temporary settlement/production/facility

Stage 3: Transition to the Right Order Phase – Long Term

It is the last stage of the recovery works within the Disaster and Emergency Plan. It includes the completion of important and prioritised recovery tasks, resumption of the right order and transfer of further recovery responsibilities to local administrations and related institutions:

- Assessment and revision of land use/habitat suitability/architectural plans for permanent settlement/facility construction
- Determination of new settlement/facility locations/site selection and survey project
- Protection of historical sites/artefacts
- Environmental impact/regulation
- Damage assessment, entitlement and charge
- Repair and reconstruction of dwellings and workplaces
- Public relations, follow-up, monitoring and evaluation
- Improvement of business and services
- Protection of critical facilities, equipment, documents and records
- Management of national and foreign aid
- Coordination of volunteer institutions/organizations

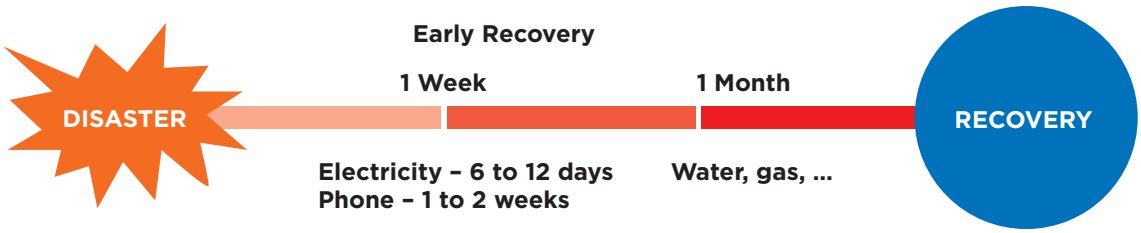


Figure 38. Initial Recovery works which start together with emergency response works after the disaster.

- Achievement of social consensus
- Identification of stakeholders, groups that require special services and attention, and community involvement
- Recovery of communication systems
- Provision of information and steering for the employees.

After the fulfilment of the tasks related to the emergency situation (search and rescue operations, temporary shelter, health and daily needs, etc.), the next step is to restore local communities and workers to pre-disaster living conditions as soon as possible. The main objective of the recovery efforts is to shorten the "return to normal" period as much as possible, which is safer than the previous situation. The task of recovery should be defined by a rated chain of responsibilities.

Although the primary objective of the recovery works is to reduce the damages of disaster victims by sharing them; recovery is now understood as making the society more resilient against a possible new disaster by restoring local economic vitality, developing infrastructure, supporting industry and trade, increasing the added value of training and labour force of the society and providing social and psychological support services.

For these reasons, the purpose of the disaster and emergency plan is to ensure that the disaster-affected workplace is returned to better than normal conditions as soon as possible and to guarantee the effective and efficient allocation of limited resources. Disaster Recovery Coordinators may be appointed to carry out this part of the plan.

Sample of Workplace Recovery Checklist

IMPACT	YES	NO
Does it include improvement of your company's emergency plans?		
Is there an alternative location where your company can carry out its activities?		
Have you identified the personnel who will carry it out the critical functions of each of your departments that need to continue operations?		
Does your company have a staff succession plan? Is there a substitute staff to replace your main staff in case of injury or unavailability?		
Does your company have a plan to ensure that key personnel remain at the workplace and that other employees leave in an orderly manner?		
Does your company have a transport plan for main personnel?		
Does your company have sufficient stocks of food and other necessary supplies to ensure that the main personnel who have to stay at the workplace or return to the workplace to activate computers and other vital systems after the disaster can continue their work?		
Is there a plan to ensure the regular return of different work groups to the business?		
Do your employees have appropriate company ID cards that allow access to the offices?		
If you are located in a branch facility or office, has a method been established for collecting, analysing and reporting to headquarters data on the effects of the earthquake (effects such as injuries to employees, damage to facilities, shareholder losses, etc.)?		
Have responsible persons been identified to report injuries, losses, damages and necessary assistance to relevant authorities, emergency services and employees' families?		
Is there a priority list for replacement and/or repair of company facilities and equipment?		
Does your company have an established Stress Management in Critical Situations and a plan for obtaining professional support?		
Does your company have a plan or pre-agreement with suppliers outside the earthquake zone to provide key parts of your damaged equipment?		
Are your company's main vehicles parked in seismically safe locations rather than in/under unreinforced structures that could collapse?		
Does your plan provide the transportation of your employees and/or working teams within the disaster area?		

IMPACT	YES	NO
Does your company have an auxiliary communication system, such as a radio transmitter and receiver, which can operate independently of normal power supplies?		
Have portable radio units been provided in company vehicles to maintain operations when necessary?		
Have other communication systems other than telephones been specified so that employees can contact their families and find out their status?		
Is there sufficient cash on hand to purchase food and consumables if necessary?		
Is a security unit in place to control access to facilities in the event of damage to your building?		
Does your business rescue/recovery plan include periodic drills?		

The duties of Disaster Recovery Coordinators include coordinating Disaster Recovery Operations, reporting regularly to management on disaster recovery operations and ensuring that strategic decisions taken in relation to them are implemented.

Some scholars include the reconstruction phase in the recovery phase and claim that the reconstruction works should continue until the condition of the workplace affected by the disaster is improved to a higher level than before the disaster.

For this reason, the recovery works that start immediately after the disaster may take 1-2 years depending on the magnitude of the disaster. Disaster activities performed in the subsequent reconstruction process may extend from 2 years to 7 years in terms of implementation time. In general, it takes at least 3 years for recovery activities for all major disasters.

After the disaster, the main objective of all organizations carrying out activities in both investment and service sectors is to recover the disaster area as fast as possible. For this purpose, the state, NGOs, private sector and citizens should fulfil all actions to be taken after the disaster by forming a comprehensive coordination, strong co-operation and great solidarity. The goal is to settle the disaster victims in their permanent residences as soon as possible with the mobilisation of our relevant institutions and organizations; take urgent steps to revive the commercial life in the economically adversely affected region; complete the construction of the destroyed and damaged workplaces and trade centres as soon as possible; provide loans to the farmers and tradesmen who have economic difficulties; and rebuild the cities and industrial zones in a way to set an example in cultural, social and economic terms.

You can assess your current situation for your business with the sample **Workplace Recovery Checklist** given below. Having a business recovery plan after earthquakes and similar

disasters can be a matter of survival for your business. As soon as life-saving concerns and initial damage assessment are over, back to work activities should be started. It is estimated that 25% of small and medium-sized businesses cannot be rescued after a disaster. Therefore, importance should be given to all phases of the disaster management cycle, including recovery.

By following the checklists, you have identified your risks, assessed your level of preparedness and learnt about recovery/ business rescue after disasters such as earthquakes. You are now ready to start a more comprehensive programme of preparedness, training, drills and exercises to ensure that your business will be among the survivors in the next major earthquake.

Keep the Plan Updated and Functional

Disaster and emergency management is a "living" form of management and Disaster and Emergency Plan is a "living" document. For this reason, after the plan is prepared, activities should be monitored, developments should be observed, contents should be tested by conducting drills at certain periods, hazard and risk analyses should be performed when necessary and updates should be made in line with the new data obtained. All activities carried out in this context should be shared with all stakeholders. This cyclical and systematic planning approach includes the following steps in summary (see Figure 39):

- Identification of current hazards, risks, hot spots and similar to be exposed to disaster.
- Assessment of current vulnerability and preparedness levels.
- Writing the plan, and testing and improving it through trainings and drills.

According to the relevant regulations, the emergency plan must be fully or partially renewed if changes occur in the workplace or its immediate

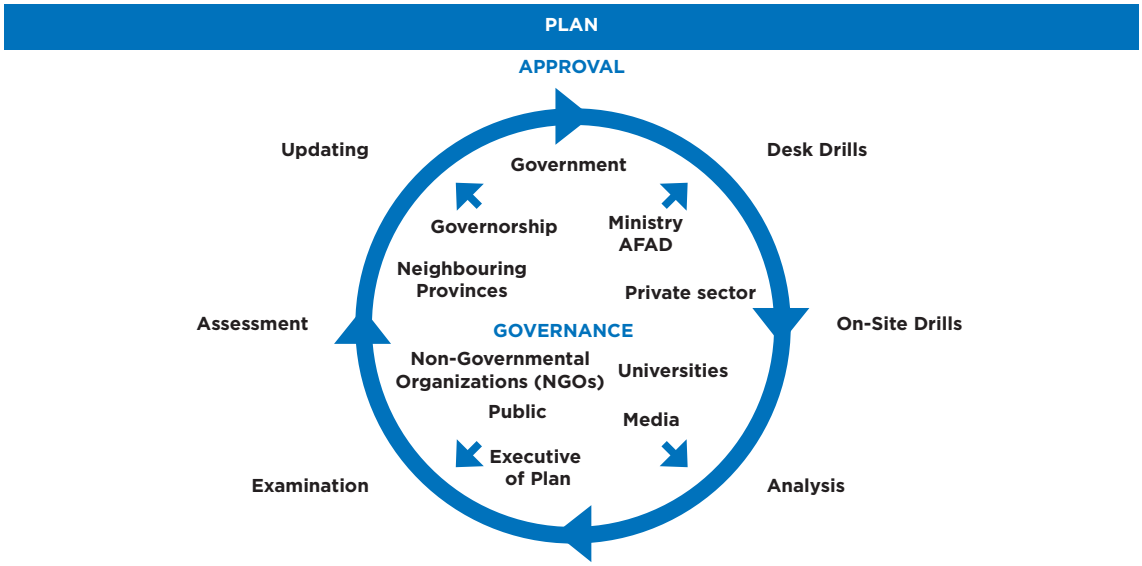


Figure 39. Cyclical Approach in monitoring and development of the plan through participation of the stakeholders.

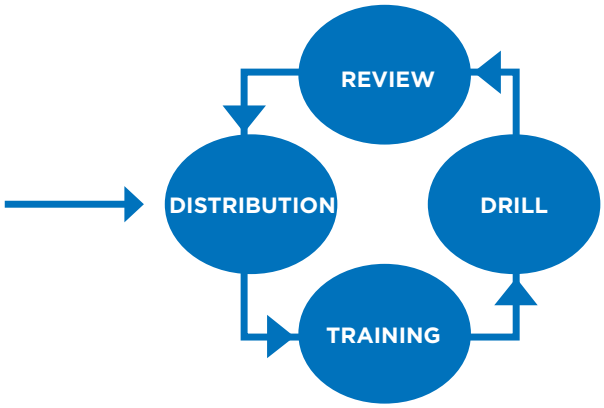


Figure 40. After the plan is written and approved, it should be distributed for information and action and training should be given at the place it is distributed and drills should be tested and developed.

surroundings that may affect the identified emergencies or cause new emergencies to arise. Regardless of this: *"Emergency plans shall be renewed at the latest every two, four and six years in very dangerous, dangerous and less dangerous workplaces, respectively, according to the hazard class."*

Literature and practices of universal disaster and emergency management stipulate that emergency plans of all scales should be renewed every year according to a business plan.

When the plan is developed in draft form, it should be sent to the relevant units, institutions and organizations inside and outside the business for examination and control. According to the opinions and suggestions received, the plan should be further developed and distributed to the units after it is finalised (Figure 40). In order to implement the plan successfully, the responsible units should definitely be trained and the plan must be adopted and developed through exercises at different levels after the trainings.

As shown in the diagram in Figure 40, the Disaster and Emergency Plan must be prepared accurately and completely for distribution, training, monitoring, observation and updating and development of it by means of practices. A workplace should examine one by one what it should do in the Disaster and Emergency Plan prepared within the scope of Disaster and Emergency Management Presidency Disaster-Prepared Workplace through the sample items in the checklist on page 173 and should complete the deficiencies if any.

Increase of the implementation level and success of this plan is possible by adopting the activities specified in the annual programmes of the responsible units and including them in their activities. In this context, feasibility studies to be carried out for the implementation of disaster and emergency measures, inclusion of activities within the scope of action plans, designing projects and similar studies should be carried out within the framework of internal regulations of responsible institutions. When preparing their budgets and work programmes, the relevant departments should give priority to the activities for which they are responsible in the Disaster and Emergency Plan.

The essential subject of monitoring and evaluation of the Disaster and Emergency Plan is to monitor whether the workplace's vulnerability to all hazards has decreased as a result of this plan. At the points where the sensitivity decreases, the units should determine the reason for this and implement similar risk management measures in other regions. Where vulnerability increases or remains constant, disaster boards should decide which additional measures would be more successful and consider revisions to existing measures.

A complete, up to date and sustainable plan needs to change, sometimes immediately and sometimes on an annual business plan basis, depending on the following reasons:

- For reflecting the changing circumstances.
- As a result of a review of the organizational assessment.
- Because of changes in technology/market that alter costs and new impact analyses.
- As a result of changes in organizational structure and scope.
- Due to turnover in employees, systems used, etc.
- As a result of notifications from tests and drills.

In addition, in order to update and improve the plan after each disaster and emergency, a detailed examination and evaluation of what happened should be made after the situation has completely calmed down. All teams responding to the incident or everyone who is responsible for the response should participate in the assessment and explain their opinion objectively. Individuals should never be targeted during the investigation and assessment of the situation.

The purpose of all this examination and evaluation is to find answers to the question: *"What can we do to prevent such an incident from occurring again?"* Necessary changes must be made in the plan in line with the answers found. Standard Operating Procedures (SOPs) for earthquakes, floods and similar disasters are based on the principle that the safest place for employees is the workplace in case of a disaster or emergency on a working day. Most injuries during disasters and emergencies are caused by structural and non-structural damages to the building. This situation imposes a heavy responsibility on the employer or employer's representative, emergency officials and employees. During a disaster or emergency, not only the team on duty but also the building manager is responsible for the safety and care of employees, visitors and others. The employees of the workplace are also responsible to the emergency team members, to each other and to themselves.

As mentioned earlier, after risk identification, risk assessment and control measures; the timely completion of activities to eliminate/reduce the risk should be monitored and reviewed. Since there may be changes in risk control processes as a result of the measures taken, risk assessments may be carried out again to determine the new status of the remaining risks. In particular, risks should be reassessed after countermeasures/measures have been taken. Reassessment of risks may also change the priorities of the plan.

It is also decided whether the control measures create new hazards and reduce the performance of the system. If the performance of the system is affected or new hazards are identified, new countermeasures/measures are decided and the plan is evaluated again.

In summary, the risk analysis and plan are renewed when:

- The system develops and new information about the system is obtained;
- The equipment of the system changes;
- Procedures for protection/maintenance or operation change;
- An undesired event occurs or a near accident occurs;
- Environmental conditions change;
- Operating parameters change.

In order to keep the Disaster and Emergency Plan updated, the following methods should be recommended by the employer to the relevant team, responsible and units:

- Test, development and renewal of the plan through drills;
- Change in policies and procedures;
- Revision of the incident command team;
- Revision of facilities and settlement areas;
- Monitoring/assessment of risk management needs;
- Review of insurance needs;
- In-service training of personnel and implementation of drills.

In order to implement the Disaster and Emergency Plan in accordance with the following points and the work plan, it is useful to present them in writing again to the attention of the users:

- The implementation of the Disaster and Emergency Plan will be mainly carried out by the representative of the unit responsible for the actions. He/she will execute the strategy and actions by ensuring the necessary coordination with other relevant units.
- Relevant units will be able to realise the necessary implementations on their own in other activity subjects which are compatible with the measures in the plan and the related communiqué, but which are not specified.
- The responsible unit will carry out the activities by inviting the relevant units to the meeting at the times specified in the communiqué. If necessary, more than one meeting may be organized by the relevant units.
- Relevant units will send to the responsible unit the reports they will prepare about the work they will carry out during the working periods.
- Institutions designated as related units will support the studies and direct the implementations together with the main responsible institution.
- The main responsible institution will determine which of the relevant units will participate in the studies.
- General follow-up and evaluation of the implementation of the plan will be carried out by the Employer or the Employer's Representative. The responsible unit shall evaluate the reports received from the relevant units and prepare general reports on the implementation status of the plan in annual periods and submit them to the Employer or the Employer's Representative.
- The Employer or the Employer's Representative will be responsible for reviewing the strategies and actions of the Disaster and Emergency Plan, changing the strategies and actions or developing new strategies and actions when necessary.
- In order to ensure effective implementation of the Disaster and Emergency Plan

Disaster and Emergency Plan Checklist for Disaster-Prepared Workplace

IMPACT	YES	NO
Are copies of important documents/inventories backed up in other branches of the organization/company/facility or in a safe place?		
Is there a mitigation plan for hazards that may occur in the organization/workplace?		
Are the structural elements of the organization/workplace regularly checked for any weaknesses?		
Are tools, machines, furniture and heavy items on the table top fixed?		
Are items above head level or suspended from the ceiling secured?		
Are electrical appliances secured?		
Are electrical appliances supported by an uninterruptible power supply or generator?		
Are all toxic, flammable and hazardous materials kept in closed and sturdy boxes in accordance with the “Limit, Isolate, Destroy, Separate” rule so that they will not spill during earthquakes and similar disasters?		
Has the personnel received adequate training on disaster and emergency procedures?		
Is the Disaster and Emergency Plan implemented frequently enough? Are necessary changes made on the plan?		
Do the responsible and assigned personnel know where the Emergency Plan is located?		
Do newly recruited personnel receive necessary training on the Emergency Plan?		
Do administrative staff know how long will it take until aid arrives after the emergency occurs and the necessary unit is contacted by phone?		
Are staff trained to deal with emergencies until help arrives?		
Are training and awareness-raising programmes organized for employees and their families?		
Is there anyone among the personnel who has received special training for emergency purposes?		
Are the floor and site plans of the organization/facility easily accessible?		
Are the floor and site plans of the organization/facility easy to understand?		
Are the communication systems determined for use in and out of working hours in case of any disaster or emergency?		

IMPACT	YES	NO
Are the emergency phones set to one-touch auto-dial?		
Are emergency numbers (fire brigade, ambulance, police) easily visible to all employees?		
Have separate response plans been developed for the indoor and outdoor areas of the organization/facility?		
Has the necessary Incident Command System (ICS) been established for the response phase?		
Have the necessary teams been formed? Are the job definitions of team leaders and team members clear?		
Are there evacuation plans?		
Do all personnel know their duties according to the evacuation plan?		
Are there enough vehicles to transport personnel to a safe area during evacuation?		
Do local security units and fire brigade have a general site plan of the organization/facility?		
Do supervisors invite security units and fire brigade to the facility annually for familiarisation visits?		
Are fire, evacuation and rescue drills conducted in the organization/facility during times of heavy human and/or vehicle traffic?		
Is there a plan for what to do if an emergency occurs when staff/employees are in service vehicles?		
With whom or where are the keys kept for the locked up doors at normal times and out of working hours? Is accessibility provided in case of disaster and emergency?		

throughout the workplace, the responsible unit shall issue directives and circulars and send them to the relevant units.

- Increase of the level of implementation of the plan is possible by adopting and implementing the activities specified in the annual programmes of the units responsible for disaster and emergency mitigation works in general. While preparing their budgets and annual work programmes, the responsible and related units shall primarily include and implement the activities for which they are responsible in the plan document.

All the activities in this Guide and in this chapter should be planned and implemented sequentially during the year. For this reason, it is useful to make and follow a work plan similar to the example on the right for each unit of the disaster board.

..... Annual Work Plan

WORKPLACE::			
DATE	**WORK TO BE PERFORMED**	**BY**	**ON THE DAY REALIZED**
SEPTEMBER	Hazard and risk analysis of spaces/facilities		
SEPTEMBER	Hazard analysis of evacuation routes		
SEPTEMBER	Updating building sketch/plans		
SEPTEMBER	Renewal of emergency telephone numbers and related resources		
SEPTEMBER	Identification of staff and volunteers with appropriate qualifications		
SEPTEMBER	Exploration of neighbouring resources and renewal of bilateral agreements		
SEPTEMBER	Sending messages to families		
SEPTEMBER	Making assignments for disaster management		
SEPTEMBER	Determination of transport routes according to potential hazards		
OCTOBER	Giving training to staff and subcontractors on disaster management and planning		
JANUARY	Review of the plan and preparations		
FEBRUARY	Disaster management and planning training to staff and subcontractors		
JUNE	Review of plans and preparations		
Prepared by: Date:			

Appendix

APPENDIX A

Occupational Health and Safety Law No. 6331 regulating the issues related to Emergency Planning in Workplaces:

İŞ SAĞLIĞI VE GÜVENLİĞİ KANUNU

Kanun Numarası : 6331
Kabul Tarihi : 20/6/2012
Yayımlandığı Resmî Gazete : Tarih : 30/6/2012 Sayı : 28339
Yayımlandığı Düstur : Tertip : 5 Cilt : 52

BİRİNCİ BÖLÜM
Amaç, Kapsam ve Tanımlar

Amaç

MADDE 1 – (1) Bu Kanunun amacı; işyerlerinde iş sağlığı ve güvenliğinin sağlanması ve mevcut sağlık ve güvenlik şartlarının iyileştirilmesi için işveren ve çalışanların görev, yetki, sorumluluk, hak ve yükümlülüklerini düzenlemektir.

Kapsam ve istisnalar

MADDE 2 – (1) Bu Kanun; kamu ve özel sektöre ait bütün işlere ve işyerlerine, bu işyerlerinin işverenleri ile işveren vekillerine, çırak ve stajyerler de dâhil olmak üzere tüm çalışanlarına faaliyet konularına bakılmaksızın uygulanır.

(2) Ancak aşağıda belirtilen faaliyetler ve kişiler hakkında bu Kanun hükümleri uygulanmaz:

a) Fabrika, bakım merkezi, dikimevi ve benzeri işyerlerindekiler hariç Türk Silahlı Kuvvetleri, genel kolluk kuvvetleri ve Milli İstihbarat Teşkilatı Müsteşarlığının faaliyetleri.

b) Afet ve acil durum birimlerinin müdahale faaliyetleri.

c) Ev hizmetleri.

ç) Çalışan istihdam etmeksizin kendi nam ve hesabına mal ve hizmet üretimi yapanlar.

d) Hükümlü ve tutuklulara yönelik infaz hizmetleri sırasında, iyileştirme kapsamında yapılan işyurdu, eğitim, güvenlik ve meslek edindirme faaliyetleri.

e) **(Ek: 10/9/2014-6552/15 md.; İptal: Anayasa Mahkemesi'nin 14/5/2015 tarihli ve E.: 2014/177, K.: 2015/49 sayılı Kararı ile.)**

Tanımlar

MADDE 3 – (1) Bu Kanunun uygulanmasında;

a) Bakanlık: Çalışma ve Sosyal Güvenlik Bakanlığını,

APPENDIX B

Occupational Health and Safety Risk Assessment Regulation, which determines the risk assessment procedures in workplaces on occupational health and safety:

29 Aralık 2012 CUMARTESİ **Resmî Gazete** Sayı : 28512

YÖNETMELİK

Çalışma ve Sosyal Güvenlik Bakanlığından:

İŞ SAĞLIĞI VE GÜVENLİĞİ RİSK DEĞERLENDİRMESİ YÖNETMELİĞİ

BİRİNCİ BÖLÜM

Amaç, Kapsam, Dayanak ve Tanımlar

Amaç

MADDE 1 – (1) Bu Yönetmeliğin amacı, işyerlerinde iş sağlığı ve güvenliği yönünden yapılacak risk değerlendirmesinin usul ve esaslarını düzenlemektir.

Kapsam

MADDE 2 – (1) Bu Yönetmelik, 20/6/2012 tarihli ve 6331 sayılı İş Sağlığı ve Güvenliği Kanunu kapsamındaki işyerlerini kapsar.

Dayanak

MADDE 3 – (1) Bu Yönetmelik, İş Sağlığı ve Güvenliği Kanununun 10 uncu ve 30 uncu maddelerine dayanılarak hazırlanmıştır.

APPENDIX C

Articles on Emergency Plans and Evacuation in Occupational Health and Safety Law No. 6331, which entered into force in 2012:

Acil durum planları, yangınla mücadele ve ilk yardım

MADDE 11 – (1) İşveren;

a) Çalışma ortamı, kullanılan maddeler, iş ekipmanı ile çevre şartlarını dikkate alarak meydana gelebilecek acil durumları önceden değerlendirerek, çalışanları ve çalışma çevresini etkilemesi mümkün ve muhtemel acil durumları belirler ve bunların olumsuz etkilerini önleyici ve sınırlandırıcı tedbirleri alır.

b) Acil durumların olumsuz etkilerinden korunmak üzere gerekli ölçüm ve değerlendirmeleri yapar, acil durum planlarını hazırlar.

c) Acil durumlarla mücadele için işyerinin büyüklüğü ve taşıdığı özel tehlikeler, yapılan işin niteliği, çalışan sayısı ile işyerinde bulunan diğer kişileri dikkate alarak; önleme, koruma, tahliye, yangınla mücadele, ilk yardım ve benzeri konularda uygun donanıma sahip ve bu konularda eğitimli yeterli sayıda kişiyi görevlendirir, araç ve gereçleri sağlayarak eğitim ve tatbikatları yaptırır ve ekiplerin her zaman hazır bulunmalarını sağlar.

ç) Özellikle ilk yardım, acil tıbbi müdahale, kurtarma ve yangınla mücadele konularında, işyeri dışındaki kuruluşlarla irtibatı sağlayacak gerekli düzenlemeleri yapar.

Tahliye

MADDE 12 – (1) Ciddi, yakın ve önlenemeyen tehlikenin meydana gelmesi durumunda işveren;

a) Çalışanların işi bırakarak derhal çalışma yerlerinden ayrılıp güvenli bir yere gidebilmeleri için, önceden gerekli düzenlemeleri yapar ve çalışanlara gerekli talimatları verir.

b) Durumun devam etmesi hâlinde, zorunluluk olmadıkça, gerekli donanıma sahip ve özel olarak görevlendirilenler dışındaki çalışanlardan işlerine devam etmelerini isteyemez.

(2) İşveren, çalışanların kendileri veya diğer kişilerin güvenliği için ciddi ve yakın bir tehlike ile karşılaştıkları ve amirine hemen haber veremedikleri durumlarda; istenmeyen sonuçların önlenmesi için, bilgileri ve mevcut teknik donanımları çerçevesinde müdahale edebilmelerine imkân sağlar. Böyle bir durumda çalışanlar, ihmal veya dikkatsiz davranışları olmadıkça yaptıkları müdahaleden dolayı sorumlu tutulamaz.

APPENDIX D

Articles defining the Emergency Teams that must be established in the buildings in accordance with the Regulation on Fire Protection of Buildings, which entered into force in 2007:

İKİNCİ BÖLÜM

Ekiplerin Kuruluşu, Görevleri ve Çalışma Esasları

Ekiplerin kuruluşu

MADDE 126- (1) Yapı yüksekliği 30.50 m.'den fazla olan konut binaları ile içinde 50 kişiden fazla insan bulunan konut dışı her türlü yapıda, binada, tesiste, işletmede ve içinde 200'den fazla kişinin barındığı sitelerde aşağıdaki acil durum ekipleri oluşturulur.

a) Söndürme ekibi,

b) Kurtarma ekibi,

c) Koruma ekibi,

ç) İlk yardım ekibi.

(2) Birinci fıkrada belirtilenler dışındaki yapı, bina, tesis ve işletmelerde ise; bina sahibinin, yöneticisinin veya amirinin uygun göreceği tedbirler alınır.

(3) Ekipler, 136 ncı madde uyarınca çıkarılan iç düzenlemeleri yürütmekle görevlendirilen amirin belirleyeceği ihtiyaca göre, en büyük amirin onayıyla kurulur. Söndürme ve kurtarma ekipleri en az 3'er kişiden; koruma ve ilk yardım ekipleri ise, en az 2'şer kişiden oluşur. Kurumda sivil savunma servisleri kurulmuş ise, söz konusu ekiplerin görevleri bu servislerce yürütülür.

(4) Her ekipte bir ekip başı bulunur. Ekip başı, aynı zamanda iç düzenlemeleri uygulamakla görevli amirin yardımcısıdır.

(5) Acil durum ekiplerinin görevleri ile isim ve adres listeleri bina içinde kolayca görülebilecek yerlerde asılı olarak bulundurulur.

Ekiplerin görevleri

MADDE 127- (1) Ekiplerin görevleri aşağıda belirtilmiştir.

a) Söndürme ekibi; binada çıkacak yangına derhal müdahale ederek yangının genişlemesine mani olmak ve söndürmek,

b) Kurtarma ekibi; yangın ve diğer acil durumlarda can ve mal kurtarma işlerini yapmak,

c) Koruma ekibi; kurtarma ekibince kurtarılan eşya ve evrakı korumak, yangın nedeniyle ortaya çıkması muhtemel panik ve kargaşayı önlemek,

ç) İlk Yardım ekibi; yangın sebebiyle yaralanan veya hastalanan kişilere ilk yardım yapmak.

Ekiplerin çalışma esasları

MADDE 128- (1) Acil durum ekiplerinin birbirleriyle işbirliği yapmaları ve karşılıklı yardımlaşmada bulunmaları esastır.

(2) Ekiplerin yangın anında sevk ve idaresi, itfaiye gelinceye kadar iç düzenlemeyi uygulamakla görevli amir veya yardımcılarına aittir. Bu süre içinde ekipler amirlerinden emir alırlar. İtfaiye gelince, bu ekipler derhal itfaiye amirinin emrine girerler.

Glossary

Area Exposed to Disaster Zone: A zone with the boundaries determined and mapped by AFAD or technical staff of relevant institutions which to be affected or likely to be affected by disasters that have occurred or are likely to occur according to the in disaster survey reports, which cannot be technically or economically restored by recovery works, and prohibited for construction and/or residence is decided by the Council of Ministers upon the proposal of the Presidency.

Assembly Point: It is the area where the personnel will be counted and the necessary instructions will be given in case of an emergency.

Disaster Preparedness: The process in which activities such as planning, training, drills, establishment of early warning systems, emergency aid material stocks, informing and raising awareness of the public are carried out continuously and sustainably to respond to disasters in a timely, fast and effective manner.

Disaster Response: The general name given to all activities starting immediately after the occurrence of the disaster and carried out within a period of 1-2 months depending on the magnitude of the losses and damages caused by the disaster.

Disaster: An event caused by nature, technology or human that causes physical, economic and social loss for the whole or certain segments of the society, which stops or interrupts normal life and human activities and requires urgent response. Disaster is not the event itself, but the result of it.

Emergency Implementation Documents: It ensures the responsibilities within the framework of the project/ business emergency plan are fulfilled in a short time, the employees follow and perform the given tasks, the personnel training is developed and the emergency response is accelerated.

Emergency Management Centre: These are temporary established centres to manage the events leading to an emergency.

Emergency Management: It is the management process that aims at meeting all the needs of the affected communities in a timely, fast and effective manner, starting immediately after the occurrence of an emergency. It is a form of management that is not continuous and starts with the occurrence of an event considered as an emergency and ends when the causes of the emergency are eliminated.

Emergency Plan: The plan that includes the works and procedures to be performed in emergency that may occur in the workplaces and the actions for implementation of them.

Emergency Preparedness: It refers to the process in which activities such as planning, training, drills, establishment of early warning systems, storage of emergency aid materials, information and awareness of employees are carried out continuously and sustainably in order to respond to emergency situations in a timely, fast and effective manner.

Emergency Response Documents: These are the documents that specify in detail the correct behaviours to be adopted in the management of possible emergencies that may affect the facility/business after risk assessment.

Emergency: All situations and circumstances which require urgency on a large scale, but generally can be handled by local means. Law No. 5902 defines it as: "Events and the state of crisis created by these events that stop or interrupt the normal life and activities of the whole or certain segments of the society and require urgent response."

Evacuation: It is the name given to the process of evacuating buildings or a region using predetermined roads in a fast and orderly manner and moving people and other living creatures to safe places.

Evacuation Plan: It is the name given to the detailed plans showing the ways and means by which the evacuation process will be carried out before (tsunami, flood, etc.), during (flash flood, fire, etc.) or after (earthquake, etc.) an emergency and the places where these people will be transported.

Evacuation Route/Path: It refers to the pre-determined and marked transport route in order to safely remove people from dangerous areas in case of danger.

Incident Command System (ICS): A modular emergency management system for all hazards and all levels of emergency response.

Incident: Everyday events with localised and limited impact.

Lockdown: It is a security practice used when there is a threat or danger within the facility/business area. Lockdown is used in area security to protect personnel from threats, including intruders or threats posed by a person using a weapon.

Lockout: It is a security application that prevents unauthorised persons from entering the facility/business and is used in cases where the general threat or an event is outside the facility/business.

Recovery: All of the legal, institutional, physical, social and economic activities required to be carried out in order to meet the needs of the communities affected by the emergency with the most rational ways and methods, to return them to normal life as soon as possible, to improve their ability to cope with possible disasters and to create a safer living environment that will ensure that they are minimally damaged.

Response: Responding to and assisting affected people during or immediately after an emergency to protect their lives and meet their basic needs and livelihoods.

Safe Place: A place designated at a distance or shelter where employees will not be affected by the negative consequences of emergencies.

Shelter-Inside Evacuation: Applied in cases such as adverse weather conditions, a chemical incident or terrorist attack occurring outside the facility/business that will hinder employees from working normally outside.

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