



Review Article

Actions to be taken to prevent negative consequences in the workplace during emergencies

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ABSTRACT

Occupational health and safety related to the work done in workplaces in general people full body health and safety provision. In our country, the occupational health and safety risk assessment analysis moral, legal, and indirect costs has become crucial. Located in the workplace or identification of hazards from outside intrusion, it turned into a risk of danger that led to the factors analyzed by ranking of the risks arising from the dangers with and control measures will be utilized for the purposes of risk assessment and analysis work required. These occupational accidents are a problem that must be resolved as a country reality. Any work that does not have security and supervision issues an accident invitation. Today, worker health and work safety remain a problem that needs to be resolved. In this study, occupational health and safety measures and interventions to be taken against emergencies are described. Emergency action plans will identify emergency situations, such as risk assessments, the likelihood of fires, the probability of explosion from hazardous chemical substances, situations requiring first aid and evacuation, natural disasters and sabotage probabilities, starting from the installation phase for all workplaces. It is prepared by following the revision stages of the contingency plans by taking the many preventive and limiting measures to prevent their adverse effects, determining the teams to be assigned, setting up the intervention to be urgently urgent and establishing the evacuation methods of employees, documentation, exercises and omissions.

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1. Introduction

Emergency means that the employees of the enterprise, employees of another company in the business are not liable for any loss or damage to the premises of the enterprise or of any other facility or residential property near the premises [1-4]. It halts the production of the workplace in whole or in part, harms the workplace or the natural environment, unplanned events which give harms [5-8]. These are caused by damage. They are fire, earthquake, flood or flood, storm, earthquake, heavy rain-snowfall, extreme heat-cold, epidemic disease, work accident, production accident, chemical accident, explosive and explosive accident, system collapse, computer system collapse, mass food poisoning, traffic accidents, anarchy and terrorism, sabotage, mobilization and radiation accidents [9-12]. In these emergencies, information on the actions and actions to be taken in order to avoid negative consequences and Emergency Action Plans for all actions taken and emergency action

plans for the actions taken are called [13-16]. It is expressed what needs to be done in emergency action plans. These are save and protect equipment and records for similar processes. That can cause emergency situations and to prevent the accident and damage caused by accidents and injuries, to save and recover accident victims, to salvage employees, to reduce damage to goods and materials, to prevent spreading and control events, experts to provide the necessary information [17-20]. The following situations require immediate intervention by the management and intervention including the necessary resources to control and end the incident [21-24]. These are; fire, bombing, sabotage, terrorism, war, as serious incidents and deaths, major damage to property, serious damage outside the field, threats to business continuity, company safety measures, serious environmental damage. The consequences of the potential hazards described above, earthquake, flood and flood, storm, explosion, equipment breakdown or becoming unusable which can occur in case of work accidents [25-28].

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There is not enough study in the literature about preparing emergency plans. In this study, it is proposed how to prepare the contingency plans by filling this gap in the literature.

2. Preparation of Emergency Plans and Transferred To Employees

Emergency action plans consist of the creation of a team of experts for planning, the analysis and evaluation of the possible hazards and risks, the preparation of the obtained Emergency Plans and the testing and putting into force the prepared plans [29-31]. In Figure 1, emergency planning is shown.

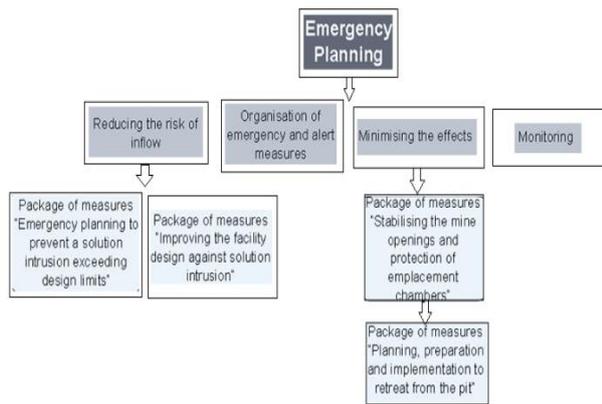


Figure 1. Emergency planning [32].

Emergency action plans will identify emergency situations, such as risk assessments, the likelihood of fires, the probability of explosion from hazardous chemical substances, situations requiring first aid and evacuation, natural disasters and sabotage probabilities, starting from the installation phase for all workplaces [33-36]. They are prepared by following the revision stages of the contingency plans by taking many precautions and limiting measures to prevent their adverse effects [37]. They are also determining the teams to be assigned, setting up the intervention to be urgently urgent and establishing the evacuation methods of employees, documentation, exercises and omissions [38-40]. What are the risks in the workplace with emergency plans [41]. What are the prospects of explosion from dangerous chemical substances, situations requiring first aid and evacuation, natural disasters and sabotage probabilities [42]. What are the preventive and limiting measures for their adverse effects, search, rescue and evacuation, all employees of the workplace should be informed about who is assigned to them [43]. In addition, employees newly recruited should be provided with information on emergency plans in addition to occupational health and safety trainings [44]. Employees specially trained in the topics of the emergency actions should be trained in the tasks with special training to be carried out by the occupational safety specialist or the workplace physician. In enterprises, periodical annual training programs should be prepared and trainings should be repeated and new information about incomplete

situations should be informed. Emergency plans should be updated every six years in low-risk businesses, every four years in hazardous businesses, and every two years in very hazardous businesses.

3. Measures and Exercises

The employer, the workplace specialist and the workplace physician should take all necessary precautions to prevent or mitigate any material or moral damages that may be caused by all identified risks and emergencies. The employer, the workplace specialist and the workplace physician must make measurements in order to avoid the material and moral adverse effects of all these risks and emergencies and these measurements should be made together with experts based on risk protection principles and collective protection. In Figure 2, preparedness cycle is shown.

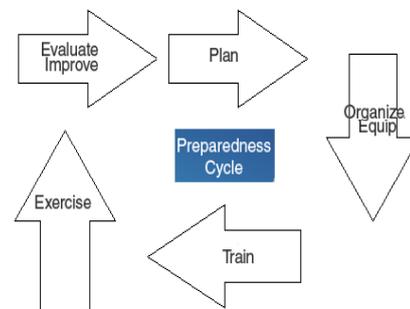


Figure 2. Preparedness cycle [45].

Exercises should be carried out in the workplace to ensure that the emergency plan prepared by the employer, the workplace specialist and the workplace physician is followed by individual steps and is feasible and that all personnel will know what to do [46]. As far as possible, the reality of life should be recreated with the necessary corrective and preventive action, with the implementation steps of the emergency plan passing through the supervised eye, creating a near-immediate emergency [47]. Involvement in these exercises should be encouraged in other institutions, apart from the operation. In these exercises, the corrective actions to be made in accordance with the experiences gained in terms of missing deficiencies should be reported with a date and should be repeated periodically every year [48].

4. Education of Emergency Equipment and Employees

The employer, workplace specialist and workplace physician in the workplace;

- The fire intervention team in charge of interfering with the fire to prevent the growth of the fire and putting it out,
- Rescue team in charge of rescue of life and property in fire and other emergency situations,
- First aid and treatment team assigned to first aid to those who are injured or ill in the fire,

- The security team in charge of protecting the recovered goods and documents to prevent panic and confusion arising in the fire,
- A gas leak and electrical control team with the task of preventing gas leakage and electrical leakage,
- A team of helpers and escorts to assist and assist the saved,

at least six teams must be established. Figure 3 shows an emergency team.



Figure 3. Emergency team [49].

Each team must have a team leader who is the deputy assistant to implement internal regulations. All emergency crews and employees;

- What are the risks in the workplace with emergency plans,
- Fire and explosion possibilities arising from chemical substances,
- Situations requiring first aid and evacuation,
- The possibility of natural disasters and sabotage is to prevent and limit the adverse effects of these,
- Search, rescue and evacuation,
- Fire fighting,
- Who are the people assigned to first aid

information training should be given. Employees specifically involved in emergency actions should be trained with special training to be carried out by a work safety specialist or workplace physician. Periodic annual training programs should be prepared in the enterprises and the trainings given to the employees should be repeated.

5. Emergency Equipment

Nothing is stated in the law or in the regulation as to what the emergency equipment is. The assignment and responsibility for selecting the appropriate equipment is left to the employer. The employer needs to be very different in the equipment to be provided that the chemical and physical conditions are different in the different business lines carried out by the employer. The employer is obliged to determine the appropriate equipment according to the chemical and physical conditions of the workplace together with the experts and to provide them to the support staff. These are generally;

body protectors, foot protectors, traffic equipments, environmental safety and warning signs, electrical equipments, fire protection equipments, fire protection equipments, fire protection equipments, fire extinguishers, fire extinguishers, fire extinguishers, fire extinguishers, fire extinguishers, fire protection equipment, emergency lighting, emergency lighting, power supply, escape route plans, shelters, critical isolation valves, switches, circuit breakers, fire extinguishing equipment, communication systems, work glove, ax, hammer, bobbin, business glove, dried food, water, clothes, walking shoes, shovel, shovel, hammer, nail, screwdriver, jack, plastic coating roll, rope coil, wire coil, tent, tarpaulin, sock, space map, fire extinguisher, whistle, compass, cap, torch, battery, light bar, match, small It can be expressed as small radio, wound band, surgical glove, mask, single bandage, butterfly bandage, gauze, cotton, adhesive tape, sterilized bandage, broken material, bleach, thermometer, first aid handbook and others.

6. Preventing Great Industrial Injuries

Relevant legislation is about Emergency Plans in Articles 13 and 14 of the Fourth Section of Regulation on the Prevention and Reduction of Major Industrial Accidents published in the Official Gazette dated 30.12.2013 and numbered 28867 [50]. These;

Article 13: (1) The operator of a higher-level entity shall prepare or prepare an internal emergency plan, taking into account the information in the form and the form in the notification to be issued pursuant to paragraph 12 of this Article, provided that it contains at least the information specified in Annex 4, Part 1 and Part 2.

(2) The operator shall send the internal emergency plan to the Ministry of Environment and Urban Planning within thirty (30) business days of notification of the safety report regarding the content and sufficiency of the safety report. If the emergency plan of the organization is not available to the Ministry of Environment and Urbanization for the period specified, it is assumed that there is no internal emergency plan.

(3) The operator shall be responsible for the establishment of the internal emergency plan in the first paragraph of the 17th Article, the units in charge of the emergency service, the relevant Governorate, the Organized Industrial Zone Directorate in case the organization is located in the Organized Industrial Zone, he exchanges information and opinions with the Industrial Zone Directorate of Business.

(4) If the possibility of coastal and / or marine pollution is foreseen after a possible loss of control in the establishment, the Law on Compensation Principles of Intervention and Losses in Emergency Situations in the Contamination of Oil and Other Harmful Matters of the Sea Environment published in the Official Gazette dated 21/10/2006 and numbered 26326 Coastal emergency response plans approved in accordance with paragraph 3

of Article 23 of the Implementing Regulation are only valid for interfering with coastal and marine pollution. Establishments specify the subject matter in their internal emergency plans.

(5) Internal emergency plans are examined by the Ministry of Environment and Urban Planning in terms of content and competence. Examination of contingency plans in terms of content and sufficiency; a) An examination of the adequacy of the emergency measures, whether the internal emergency plan is in conformity with the form to be issued pursuant to paragraph 12 of this Article, and whether there is at least the minimum information required in the internal emergency plan for the establishment according to the said notification, b) Performed without supervision.

(6) It is essential that the information specified in the internal emergency plan reflects the established situation and the operator is responsible for the correctness of this information. The examination of the content and adequacy of the internal emergency plan is made assuming that the information provided by the operator is correct.

(7) Operator: a) If incomplete information is found in the internal emergency plan, the updated internal emergency plan or the internal emergency plan, it shall send the missing information to the Ministry of Environment and Urbanization in writing and in wet signed form and as four digital copies of this copy. b) Notify the fact that the internal emergency plan is sufficient by the Ministry of Environment and Urban Planning and then load it on the notification and registration system within ten business days.

(8) Ministry of Environment and Urban Planning; in the case where the whole of the internal emergency plan has been examined, within four months of the arrival of this review by the plan itself. The reviewer completes the examination of the missing information on the contingency plan, which is not sufficient, within one month of the arrival of the missing information.

(9) The operator shall provide the necessary information in the case that additional information is requested in writing by the Ministry of Environment and Urban Planning at the stage of examining the internal emergency plan.

(10) As a result of examining the content and sufficiency of the internal emergency plan, the Ministry of Environment and Urbanism shall; The result of the investigation shall be in accordance with the internal emergency plan format specified in the communiqué to be issued pursuant to the twelfth paragraph of this article, and according to the said communiqué, the internal emergency plan with the full information required in the internal emergency plan is sufficient. This shall be notified to the operator and shall be deemed to be sufficient for the internal emergency plan; To the Ministry of Labor and Social Security, to the Provincial Disaster and Emergency Directorate, to the Organized Industrial Zone Directorate in the Organization Organized Industrial Zone, to the Industrial Zone

Directorate in case the organization is located in the Industrial Zone. If the result of the investigation is not in accordance with the internal emergency plan format specified in the notification to be issued pursuant to the twelfth item of this Article and if the information requested in the contingency plan is not complete according to the said notification, the format incompatibility and the operator shall be granted a maximum of two times, including sixty working days. Within sixty working days of each business day, the operator is obliged to remedy the format inconvenience and the missing information in the internal emergency plan, to deliver the whole of the final emergency plan including the missing or incomplete information to the Ministry of Environment and Urban Planning. These sixty business days shall commence on the day following the notification date of the declaration made by the Ministry of Environment and Urbanization to the enterprise. At the end of the period given to the operator; As a result of the examination of the internal emergency plan, the internal emergency plan is sufficient if it is determined that the operator has addressed format incompatibility and lack of information. This situation is informed to the operator and the sufficient internal contingency plan is sent to the Ministry of Labor and Social Security, the Provincial Disaster and Emergency Directorate, the Organized Industrial Zone, the Organized Industrial Zone Directorate, and the Enterprise Zone, the Industrial Zone Operation Directorate. Even though the Ministry of Environment and Urbanism has given a maximum of two times, the provisions of the Environmental Law dated 09/08/1983 and numbered 2872 shall apply in case the format inconvenience in the contingency plan is not remedied, missing information is not sent or information is missing.

(11) In case the operator does not send the internal emergency plan belonging to the organization or if there is no internal emergency plan, provisions of Environmental Law No. 2872 apply.

(12) The Ministry of Environment and Urbanization issues a communiqué with the opinion of Prime Ministry Disaster and Emergency Management Presidency regarding emergency plans.

Article 14: (1) Regarding the higher level institutions within the scope of this Regulation, the Provincial Disaster and Emergency Directorates shall provide an external emergency, taking into account the notification specified in the twelfth paragraph of Article 13, provided that it is not less than the information specified in Annex-4, prepare or prepare a situation plan.

(2) The Provincial Disaster and Emergency Directorates shall prepare an external emergency plan or plans within 6 months.

(3) The operator shall provide any additional information requested by the Provincial Disaster and Emergency Directorate for the preparation of the external contingency plan within the requested period.

(4) The Provincial Disaster and Emergency Directorate is responsible for the preparation of the external

emergency plan; to exchange views with the operators. If necessary, information is obtained from the units carrying out the emergency service, from the Organized Industrial Zone Directorates, the Industrial Zone Management Directorates, the Provincial Disaster and Emergency Directorates of the neighboring provinces and the institutions and organizations which are covered by the external emergency plan.

(5) The external emergency plan shall be made accessible to the public by the Provincial Disaster and Emergency Directorate for at least 30 days in order to be able to provide information and opinions of the draft school.

(6) The Provincial Disaster and Emergency Directorate shall finalize the external emergency plan taking into consideration the views taken in accordance with the fourth and fifth paragraphs of this article and send one copy of this plan to the Prime Ministry Disaster and Emergency Management Authority and the Ministry of Environment and Urbanism.

Article 15: (1) The operator reviews the internal emergency plan at intervals not exceeding three years, revises it when necessary, updates it, applies the plan, and conducts the necessary work to ensure that the units performing the emergency service services participate adequately.

(2) The Provincial Disaster and Emergency Directorate, in intervals not exceeding three years, audits the external emergency plan and updates it if necessary, and cooperates with the units which execute the plan, the operators and emergency services.

Article 16: The operator who prepares the internal emergency plan in accordance with this Regulation applies this plan without delay when it comes to an uncontrolled event that could be expected to lead to a major accident or a major accident. In such a case, the Provincial Disaster and Emergency Directorate shall apply the prepared external emergency plan without delay, provided that the internal emergency plan is inadequate or inadequate. is expressed [50]. (Regulation on the Prevention and Reduction of Major Industrial Accidents Published in the Official Gazette dated 30.12.2013 numbered 28867).

7. Danger Communication

Hazard communication is used for communication purposes at the time of danger when procedures are prepared in advance about how to make communication in case of emergency using different visuals and signs (pictograms) for informing, warning, reminding, giving instructions about hazards and possible risks while preparing emergency plans in occupational health and safety [51,52].



Figure 4. The hazard communication signs [53].

Figure 4 shows some of the hazard communication signs. Communication is vital for prompt reporting of emergency situations, dangerous notification of personnel, immediate referral of emergency response teams and coordination between teams, informing employees and their families about the event, and providing information to supply and demand units [54]. Communication methods can be expressed as warning signs, messenger, telephone, radio, satellite systems, dial-up modem network, hand signals and communication systems [55, 56].

8. Related Legislation

Regarding the Regulations Emergency Plans for Emergency Situations in Establishments published in the Official Gazette dated 18.06.2013 and numbered 28681 as related legislation [57]. These;

Article 1- The purpose of this Regulation shall be the procedures and principles concerning the preparation of emergency plans in the workplaces, the work to be done in prevention, protection, evacuation, fighting against fire, first aid and similar matters and the management of these situations in a safe manner and determination of the employees to be assigned to these matters to regulate.

Article 2- This Regulation covers the establishments covered by the Law on Occupational Health and Safety No: 6331 of 20/6/2012.

Article 3- This Regulation has been prepared based on the 11th, 12th and 30th articles of the Occupational Health and Safety Law.

Article 4- In this Regulation; Emergency: emergency, such as fire, explosion, spread from dangerous chemical substances, natural disaster, struggle, first aid or evacuation, which may occur in all or part of the workplace. Emergency plan: The plan, including the work to be done in emergency situations that may occur in the workplace. Safe place: The place where the employees will not be affected by the negative consequences of the emergency or at the shelter.

Article 5- The obligations of the employer regarding the emergency situations are stated below: Identifies possible emergency situations by preliminarily evaluating

the emergency situations that will affect the working environment, the materials used, the work equipment and environmental conditions, and affect the working environment. Take measures to prevent and limit the adverse effects of emergency situations. Make necessary measurements and evaluations to avoid adverse effects of emergencies. Prepare emergency plans and provide exercises. Taking into account the size of the workplace and the specific hazards it carries, the nature of the work done, the number of employees and other persons in the workplace in order to combat emergencies; It has a sufficient number of trained and qualified personnel in the fields of prevention, protection, evacuation, fire fighting, first aid and similar matters, and ensures that they are always available. Make necessary arrangements to provide contact with out-of-work organizations, especially in the areas of first aid, emergency medical intervention, rescue and fire fighting. Arranges necessary arrangements for emergency dismantling of energy sources and dangerous systems don't create adverse conditions and not to affect the protective systems. Informs the employer established the temporary business relationship and other persons in the workplace such as customers [57].

9. Conclusion

Occupational safety and health risks should be seen in relation to internal and external factors. The working environment may include one or a combination of cold, wind, ice, wildlife encounters, extended periods of darkness and light, noise, dust, biological hazards, etc [58-60]. These conditions, if not mitigated or controlled, can potentially cause or exacerbate illnesses and injuries such as carbon monoxide poisoning, frostbite, frostnip, hypothermia and seasonal affective disorder. The different factors involved may compound each other, making health issues more urgent to treat and safety issues more difficult to resolve. Working patterns may adversely affect workers' work-life balance. Excessive working hours and inadequate rest times may affect the health and well-being of workers. Strategies and tripartite commitments on prevention are essential in occupational safety and health. Policies should prioritize the most urgent challenges, consider the safety and health of workers, and recognize their rights to know the risks and to participate in mitigating the risks. The workers should have the right to refuse or stop unsafe work if there is a possibility of accident or injury. Governments and employers' and workers' organizations have shared responsibilities in the design and implementation of policies, actions and tools. Industry-wide programmes, such as "safety passport" schemes, may facilitate the prevention of accidents and illness and the promotion of workers' health and well-being, particularly among contractors and subcontractors. Care must be taken that the safety passport is not used as a substitute for job-specific education, training and skills. Other standardized systems, like personal protective equipment specifications and accredited training systems, may also be helpful. Elected worker health and safety representatives and/or members of Joint Health and Safety Committees should receive additional training

specific to their responsibilities. All parties, such as authorities, and employers' and workers' representatives, should be involved in developing specific training tools. Multiple skills sets need to be taken into consideration in their design, development and implementation. Appropriate safety, apprenticeship and recruitment programmes, as well as emergency communication and response preparedness, can help workers and enterprises manage risks that affect work in working environment.

As a result, the employer is obliged to prepare the emergency action plans in the workplace in order to avoid negative consequences in the above-mentioned emergencies. In the study, occupational health and safety measures and interventions to be taken against emergencies are described. Emergency action plans will identify emergency situations, such as risk assessments, the likelihood of fires, the probability of explosion from hazardous chemical substances, situations requiring first aid and evacuation, natural disasters and sabotage probabilities, starting from the installation phase for all workplaces. It is prepared by following the revision stages of the contingency plans by taking the many preventive and limiting measures to prevent their adverse effects, determining the teams to be assigned, setting up the intervention to be urgently urgent and establishing the evacuation methods of employees, documentation, exercises. There is no enough study in the literature about preparing emergency plans. In this study, it is proposed how to prepare the contingency plans by filling this gap in the literature.

10. Discussions

There are many emergency situations in public institutions such as sabotage, fire, explosion, food poisoning and natural disasters. In this study, the stages of preparation of the emergency plan have been dealt with in order to prepare the institutions for emergencies. Emergency plan studies of leading institutions and organizations that conduct research and development in the field of occupational health and safety and support these studies with documents and guides are available. Compared to the Emergency Plan headings to be prepared in accordance with the provisions of the Occupational Safety and Health Administration (OSHA) and Emergency Situations in the Workplace, the content headings of Occupational Safety and Health Administration appear to be more generic. According to Occupational Health and Safety legislation, the contingency plan items are specified in more detail and subordinate items. Unlike Occupational Safety and Health Administration, an emergency plan prepared under the Regulation on Emergency Situations in the Workplace states that "the identification of preventive and restrictive measures", the detailed information of the evacuation plan (places where emergency equipment is located, places where first aid equipment is located, escape routes, emergency evacuation plans, emergency contact numbers, emergency contact numbers). Preparing an emergency plan as well as occupational health and safety work is a product of a continuing process. Some of the hurdles in the process of preparing an emergency plan for public institutions in particular are:

- Difficulty in carrying out a systematic work due to the fact that it is not directly related to occupational health and safety,
- Public institutions performing office-based work are less concerned with emergencies and emergency equipment than industrial enterprises,
- Difficulty in finding a safe location because most public institutions operate in more restricted areas than large enterprises in the industry,
- Problems arise due to the bureaucratic problems in public institutions related to the emergency plan.

The General Directorate of Occupational Health and Safety should publish the Emergency Plan Preparation Guide for Workplaces. Emergency preparedness and emergency plan preparation trainings should be given in public institutions. For each emergency, brochures should be prepared which include identification, preventive limitative measures and intervention methods. In case of emergency such as fire, explosion, earthquake, banners should be prepared in such a way that important information will appeal to the subconscious. Public spots for emergencies of each sector should be drawn up by cooperating with the unions in different sectors and must be transferred to employers and employees through unions.

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