

EMMERGENCY SITUATIONS. RISK OF INJURY BY FIRE OR EARTHQUAKE AT WORK. CASE STUDY

BOBOCEA Giulia, SZABO Loredana Florentina și CHIVU Oana

Facultatea: Inginerie Industrială și Robotica, Specializarea: Ingineria Securității și Sănătății în Muncă, Anul de studii: I, e-mail: giu.bobocea@yahoo.com, loredanaszabo16@yahoo.com

Conducător științific: Prof.dr.ing. **Oana CHIVU**

SUMMARY: Within this paper will be presented prevention and protection measures applied in case of a fire inside the Faculty of Industrial and Robotic Engineering according to the regulations in force. The presentation of the application of the protection measures to be taken in the event of a fire, the simulation of the evacuation in case of fire, as well as the first aid measures to be applied until the intervention of specialized medical staff is considered.

CUVINTE CHEIE: prevenire, protective, incendiu, reglementari, prim-ajutor

1. Introduction

Occupational protection is the set of actions and measures to prevent occupational risks, to protect the health and safety of workers, to eliminate risk and injury factors by informing, consulting, training, protecting workers and their representatives.

Occupational safety and health is the set of institutionalized activities aimed at ensuring the best conditions in the work process, defending life, physical and mental integrity, the health of workers and other persons participating in the work process

Serious and imminent danger of injury is the concrete, real and current situation that lacks only the triggering opportunity to produce an accident at any time.

Occupational risk is the likelihood and severity of an injury or illness that occurs as a result of exposure to a hazard.

Fire refers to a self-sustaining combustion process, which is carried out without control in time and space, which causes loss of life and/or material damage and which requires an organized intervention in order to interrupt the combustion process (see Fig. 1.).

To break out a fire, 3 elements are needed: heat, oxygen and combustible material, the fire most often starting from a small fire.

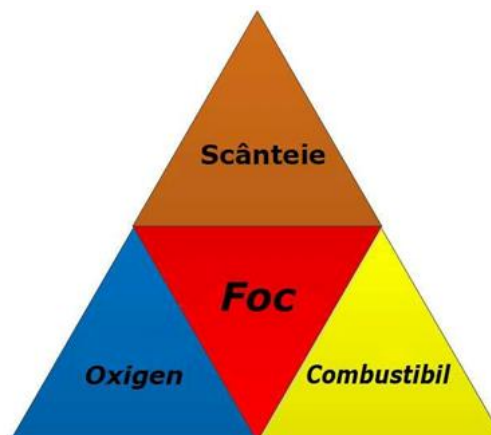


Fig. 1 Fire diagram

2. State

Inside the Faculty of Industrial Engineering and Robotics, the alarm is activated in order to produce a fire on the first floor of the main body in the laboratory room containing several electrical equipment (computers, laptops, video projector, extension cords).

Due to the overloading of an extension cord supplying more than three work equipment, a short circuit occurred that led to the melting of the plastic material and its ignition (see Fig. 2). Near the electrical equipment was improperly positioned combustible material (backpack), which led to the outbreak of the fire.



Fig. 1. Electrical equipment the cause of the fire

Number of people present in the classroom at the time and time of the fire:

- 15 students;
- Teacher;
- Laboratory assistant;

Affected areas:

- Classroom;
- Hallway;
- The teacher's office;

Regarding the way of carrying out the actions, the specifications below are made. At the time of the fire alarm, the students were directed by the teacher participating in the course to the escape routes, maintaining a calm atmosphere, avoiding panic. After evacuating the laboratory room, the professor checked the possibility of the presence of trapped persons inside.

With the onset of the fire alarm within the faculty, all the classrooms were evacuated by the responsible teachers, the evacuation being organized, one by one, on the stairs (the elevator is not used), the students being guided to evacuate by holding on to the railing.

Once the students gather at the meeting place, the presence is carried out by the teachers.

The guide for organizing and conducting the evacuation in case of an emergency situation generated by the occurrence of a fire [4] provides measures, such as those listed below:

- All persons who are visitors or work in the faculty must be trained on how to behave correctly in the event of a fire (e.g. to move as close as possible to the floor in rooms where there is already smoke);

- Establishing the responsible persons, for each level, by checking the evacuation of all persons from all spaces related to that level;

- The unique emergency number 112 must be displayed in visible places inside the faculty;

- The fire alarm system must be functional;

- The alarm system to be known by all users of the faculty;
- The evacuation plan must be drawn up on the basis of the outline of the level. The evacuation plan is recommended for displaying information specific to emergency situations (escape routes, materials for interventions). (see Fig. 3);



Fig. 3. Evacuation plan

- The escape and rescue paths from the faculty (corridors, stairs, exits) leading to the established assembly place must be permanently usable [2]
- The assembly places established by the management of the school must be located in a safe area, at safety distances from possible sources of danger; (see Fig. 4))



Fig. 4. Loc de adunare

- The person who will notice the fire will immediately call 112 and announce the incident. (In the event that the person who will notice the fire is a child, they will notify the first adult they meet about the event).
- All the windows of the rooms will be closed.
- The evacuation of all users to the outside of the building will be made according to the evacuation plans drawn up at the faculty level.

-Students and auxiliary persons leave the building under the supervision and guidance of the responsible persons, who will position themselves so that they can easily observe the evacuation action, closing the door of the room. They will follow them to the pre-established and properly marked meeting place where the presence will be urgently made [3].

- The staff responsible for checking the evacuation of all persons will check all the spaces related to each level of the faculty to ensure that there are no people left in those locations and that all students have left the rooms and announce the result of the officer throughout the faculty.

-The persons in charge make the presence of all persons, including those with disabilities and/or locomotor disabilities (non-displaced) who are accompanied by the persons nominated by written decision to help them and ensure their safe evacuation and announce the result of the faculty representative.

-The access ways to the faculty are opened and the traffic and access routes for the intervention vehicles of the specialized forces are issued;

- Enter the building only after the intervention and with the consent of the professional emergency services.

- If the fire is of small scale, it will be acted with the means of first intervention (extinguishers).

3. First aid

The steps for providing first aid (see fig. 5) must be observed with great strictness in order to obtain the expected effect.



Fig. 5. First aid steps

Below are the steps to be taken to provide first aid:

- The person who suffers an injury or other ascertainment immediately notifies a responsible person;

- Immediate steps are taken for the provision of first aid by trained personnel;

-If specialised medical help is required, a person in charge requests help by calling the unique emergency number 112;

-Provide first aid only to specially trained persons in this regard (thus avoiding possible aggravations of the situation);

4. Own evacuation instructions and informative material

In case of a fire, the persons responsible for evacuation in case of a fire within the faculty will carry out the following activities, based on their own evacuation instructions and information materials [4].

- Immediately identifies the burned-out room;
- Alarms the users of the building;
- Announces to the head of the faculty;
- Evacuates people from the faculty, materials and values threatened by fire;
- Interrupts the supply of electricity in the faculty;
- Checks the accessible rooms in the area of responsibility;
- Directs users to the nearest emergency route for the evacuation of the faculty;
- Maintain calm during evacuation;
- Takes control over the assembly place;
- Apply measures to protect people against smoke poisoning;
- Insulates the firebox by closing doors, windows and other constructive voids;
- It is actuated with the extinguishing means provided;
- Material goods are not evicted.

When a fire is discovered, any person has the following obligations:

- Immediate announcement of the fire;
- Trying to put out the fire, if it is not risky, using the nearest extinguisher, only if the fire does not exceed the level of the basin [7];
- Announcement by Telefonica 112;
- Communicate details of the location and extent of the fire. [7];
- Equipment from the endowment of the Faculty of Industrial Engineering and Robotics in case of fire: (see fig. 6 and 7)
- Fire alarm [7];
- Beacons of escape routes (see fig.8);



Fig. 6. Fire extinguisher



Fig. 7. Hydrant



Fig. 8. Light box for highlighting the escape path

5. Legislation

Teachers, students and other staff must comply with the legislative norms in force.

Art. 1.39. Pupils, students and teachers are obliged to know and comply with the rules and measures of fire prevention and extinguishing in the respective unit (education and, as the case may be, dormitory).

Art. 1.40. If they become aware of fire protection irregularities in the unit, they will immediately notify the management.

Art. 1.41. To know the fire signal and how to evacuate under orderly conditions in case of fire or natural disasters.

Regarding the alarm and alerting in case of incensium, the legislative norms in force must also be observed.

Art. 2.115. For fire alarm, appropriate means of signalling (acoustic and optical) will be provided to ensure the announcement (alarm) of the staff and the alerting of the civil fire service (when any). At the same time, it will be ensured the possibility of alerting in the shortest time the intervention forces provided in the intervention plans (by telephone, radiotelephone, courier, etc.).

Art. 2.116. Staff will be trained to know the means of alarming and alerting in case of fire, as well as the established signal code.

Art. 2.117. The important and vulnerable units to fire will have maintained the direct connection with the nearest military firefighting subunit, the respective alerting system being established by mutual agreement (telephone, radiotelephone, automatic alerting from the fire signaling installation, etc.)

In case of a fire, the persons responsible for evacuation in case of a fire within the faculty will carry out the following activities, based on their own evacuation instructions and information materials [4].

Regarding the lecture halls, libraries, design workshops, festivities halls, amphitheatres, auditoriums, exhibitions, the legislative norms in the fields must also be observed. Art. 3.1.

In classrooms, libraries, design workshops, clubs and performance halls, exhibitions are not allowed access to a larger number of users (persons) than established by the project, depending on the destination of the buildings in which they are located (kindergartens, primary schools, middle schools, high schools, vocational and post-secondary schools, higher education institutions or other categories of public buildings).

Article 3.2. It is forbidden to smoke and use open fires in such rooms, as well as open flame lighting (candles, matches, torches, etc.) in attics, archives, warehouses, other rooms, spaces and places with fire risk in the buildings in which they are located.

Article 3.3. In rooms and rooms where heating is done with stoves, their fuel supply will usually be interrupted before users enter them. For those rooms that are intended for preschool children (nurseries, kindergartens, dormitories, etc.) the fuel stoves are supplied only from outside the rooms.

6. Conclusions

The safety of the evacuation of a faculty must be ensured, mainly, by the following elements: the escape routes must be sufficient in number, safe, light, accessible and sufficiently protected from the effects of fire, the escape routes must be correctly signaled and be visible in case of clearance. smoke, smoke extraction systems and all extinguishing systems in the equipment of the objective must be in working order at the parameters at which they were designed and built. In the event of a fire, once the alarm system has been put into operation, all users must be able to reach safe places, at the meeting place, outside the faculty where it occurred.

7. Bibliografie

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