

M9-EN.7 FIRE AND EXPLOSION

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Short description of the chapter

This chapter covers and analyses **fire and explosion risk factors** that employees working in hotel and restaurant sector are exposed to.

Taking into consideration type of activities and tools and equipment used, we may see that **restaurant kitchen staff** are most often exposed to fire and explosion risk.

Goals of this chapter:

- Explain the notions of fire and explosion risk factors
- Discuss their influence and effect on human health
- Present available methods and measures preventing fire and explosion
- Introduce fire safety labels

The information given in this chapter will help managers to determine fire and explosion risk factors in hotel and restaurant sector, to evaluate the situation individually and, on the basis of given recommendations, to take appropriate preventive measures to minimize this risk.

M9-EN.7.1 Fire risk and impact on human health

Fire is a complicated physical and chemical phenomenon that often results not only in material damage but also may cause harm for human health or life. (M9.7.1.jpg)

The following should be considered during the assessment of fire risk:

- Is fire safety of the buildings sufficient enough?
- Are natural gas equipment installed in the building?
- Does air ventilation system comply with safety requirements?
- Are ventilation equipment maintained on a regular and timely basis?
- Are ventilation system filters changed in time?
- Is electrical equipment operation and maintenance safety ensured (M9-EN.2)?
- Is open fire used in cooking process? Are there any other sources of open fire: oil lamps, candles?
- Is oil used for cooking continuously heated?

- Do people smoke in specially arranged places?
- Are suitable ashtrays provided?

Possible consequences of fire include:

- Burns of different degrees
- Smoke poisoning. Smoke contains a wide variety of poisonous gases that make up different mixtures during fire. Those mixtures are much more dangerous than each type of gas taken separately. Those mixtures may spread long distances from the fire place
- Material losses
- Possible death of people

M9-EN.7.2 Gas related explosion risk, safety measures

Natural gas is one type of fuel used in food preparation process. Gas itself is not toxic. When gas is on, it does not emit any dust, soot or smoke. Explosion can occur only in the event of fire leak when gas and oxygen mixture present in confined environment is in contact with a sparks or flame. (M9.7.2.jpg)

The following should be determined in the assessment of gas related explosion risk:

- Is gas equipment maintained regularly?
- Is technical maintenance of gas equipment performed by qualified specialists?
- Are gas appliances used properly? Do the people operating gas appliances comply with all safety requirements?
- Are old and worn-out components of gas appliances replaced in a timely manner?
- Are employees aware of safety procedures in the event of gas leak?
- Are employees instructed regularly on emergency and first aid procedures?
- Is air ventilation system installed?

Safety measures ensuring safe work environment include:

- Regular leakage test of gas supply pipes and control of their technical condition
- Installation of gas detectors in the kitchen area
- Installation and acceptance of equipment performed by certified specialists
- Regular technical maintenance of operated equipment and timely replacement of worn-out components
- Sufficient air ventilation system
- Initial and periodical instruction of employees and on site training
- Emergency action plan

##W20##

M9-EN.7.3 Fire prevention measures

Different fire prevention measures are used to prevent fire in buildings:

- Obstructions for fire spreading
- Means enhancing the resistance of constructions to flame (covers, fire panels, etc.)
- Means reducing combustibility of materials
- Stationary fire detection systems (complex systems where combined detectors of smoke, heat, flame are used)
- Stationary fire fighting systems (complex systems designed for automatic or manual fire detection and extinguishing)
- Primary fire fighting means (designed to fight small fire in its primary stage: fire-extinguishers, fire-cocks, flameproof cloths, etc)
- Fire emergency action plan
- Safe, unlocked and unobstructed evacuation exits
- Evacuation exits mark-out signs
- Pursuant to EU requirements in addition to all safety measures related with firefighting risk assessment and management of emergency situations in working environment each entity must have a **rescue team** made of persons appointed by the employer

This team must be equipped with appropriate equipment and trained to respond to fire emergencies, attempt to kill the fire and arrange evacuation of people. Persons in charge shall be appointed with respect to the size of the enterprise or specific fire risk factors determined during risk assessment. In other words, persons in charge must be responsible for the following:

- Implementation of fire prevention measures,
- Evacuation of employees in the event of direct hazard,
- Emergency management procedures,
- **First aid** - Persons responsible for providing first aid must also be appointed by the employer with respect to the size of the company and type of the company's activity. A first-aider should have undergone a training course in administering first aid at work and hold a current first aid at work certificate. They can assume duties of a person in charge: 1) take care of someone injured, including calling an ambulance if required; 2) look after first- aid equipment, e.g. restocking the first – aid box.

M9-EN.7.3.1 Primary fire fighting means

- Fire-extinguishers (water scum, carbon dioxide, powder) ([##W4##](#)) (**M9.7.3.1.jpg**)
- Flameproof cloth (for fighting small fire and such substances that inflame without air, e.g. burning fat. Fireproof cloth is made of fibreglass)
- Fire-cocks

- Fire hoses

M9-EN.7.3.2 Evacuation routes and emergency exits (M9.7.3.2.jpg)

Requirements for safe evacuation of people from the building:

- Evacuation routes and exits should be unobstructed
- Door of the emergency exit must open outwards; it should not be locked
- If automatic door is installed in workplaces, a manual door opening mechanism has to be arranged
- Transparent door should be marked at a clearly visible height
- Appropriate clearly seen signs should mark out evacuation routes and exits. In case of electric system failure, back-up lighting system should operate
- If there is no possibility to arrange evacuation routes in existing buildings, adequate measures should be implemented
- Doors of premises must open and close easily, ensuring quick evacuation of people outside the building or to safe places marked on the plans

M9-EN.7.4 Fire safety signs

Fire safety signs should be arranged in compliance with the requirements of laws and regulations. The number of safety signs must be sufficient.

The signs should be maintained and used properly (**##W6##**):

- Escape route (safe escape) signs
- Fire fighting equipment signs
- Informing signs
- Prohibiting signs
- Warning signs

M9-EN.7.5 Self-assessment test

Having analysed the aforementioned explosion risk factors, try to name hazards that you are exposed to in your workplace. Fill in the form given below using the template. You can check your knowledge: **##D8##**.

Fire and explosion risk factors		Employee	Harm	Essential safety measures
Activity/source	Hazard description			

