

Red Vest LLP Training Center
Fire Safety Basics Training Program

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INTRODUCTION

Providing fire safety is one of the most important functions of the state.

The first and certainly important goal, which must be achieved at any material cost, is to ensure the safety of workers, engineers and employees in the event of a fire.

The second goal is to preserve the property of enterprises from destruction and damage by various hazardous factors of fire and fire extinguishing agents (water, foam).

In order to be able to act correctly in the event of a fire, it is necessary to have minimal knowledge in the field of fire safety, which can be gleaned from the proposed training material.

1. Basic concepts related to combustion and explosion processes

Combustion is a rapidly occurring chemical reaction of a substance combining with atmospheric oxygen, accompanied by the release of a large amount of heat and the emission of light.

A fire is an uncontrolled combustion outside a special hearth, as a result of which material damage can be caused.

In order for combustion to occur and proceed, it is necessary to have a combustible substance, oxygen (or other appropriate reagent) and a source of thermal energy for ignition, which must heat the reacting substances to a certain temperature. Ignition sources can be flames, electric sparks, incandescent solids, etc. Any ignition source must have a supply of thermal energy transferred to the reacting substances.

After the start of the combustion process, a constant source of ignition is the combustion zone itself, from which heat and light are emitted.

For the possibility of combustion in air, a certain quantitative ratio of the combustible substance and air is necessary, and the air must have a certain oxygen content.

Mixtures of a combustible substance and air are called flammable or combustible. Various solids (coal, peat, wood, paper, etc.), liquids (oil, kerosene, gasoline, benzene, etc.) and gases (hydrogen, propane, methane, etc.) can be used as fuels.

Some solid combustible substances melt when heated, evaporate (sulfur, stearin, rubber) and burn in a vapor state.

Most combustible substances burn in the gas and vapor phase. Therefore, the ignition of a substance, as a rule, begins with a flash phenomenon.

A flash is a rapid combustion of a gas mixture, which is not accompanied by the formation of compressed gases. In this case, the amount of heat that is formed during the short-term process of the outbreak is not enough to continue combustion.

Ignition - a phenomenon of occurrence of combustion under the influence of an ignition source.

Ignition is a fire accompanied by the appearance of a flame. In this case, the entire remaining mass of the combustible substance remains relatively cold.

The readiness of a combustible mixture for ignition is generally determined by the concentration of vapors, dust or gaseous products in it.

The flash point of a combustible substance is its lowest temperature at which vapors and gases are formed above its surface that can flash in the air from an ignition source, but the rate of their formation is still insufficient for subsequent combustion.

Ignition temperature is the temperature of a combustible substance at which it emits combustible vapors and gases at such a rate that after they are ignited from the ignition source, stable combustion occurs.

Under certain conditions, spontaneous combustion and spontaneous ignition of combustible substances can take place.

Spontaneous combustion is a phenomenon of a sharp increase in the rate of exothermic reactions in a substance, leading to the occurrence of its combustion in the absence of an ignition source. If a flame forms during spontaneous combustion, then this phenomenon is called spontaneous ignition.

Autoignition temperature is the lowest temperature of a combustible substance at which there is a sharp increase in the rate of exothermic reactions, resulting in the occurrence of flame combustion.

Sustained combustion proceeds as the combustible gas or vapor gradually mixes with air. Such combustion occurs, for example, in a gas burner flare. If the combustible gas-vapor-air mixture is prepared in advance and is in some closed reservoir (space), then in the presence of an ignition source, combustion proceeds in the form of an explosion.

Fires have always been and remain a terrible disaster. The most dangerous among them are domestic fires, which often lead to human casualties. It is in them that the victims receive severe burns and injuries, remain homeless and livelihood.

Hazardous factors of fire (OFP) are factors, the impact of which leads to injury, poisoning or death of a person, as well as to property damage.

Dangerous factors of fire are flames and sparks, high ambient temperature, toxic products of combustion and thermal decomposition, smoke, low oxygen concentration, fragments and parts of destroyed apparatus, installations, structures; radioactive and toxic substances and materials released from destroyed devices and installations; electric current resulting from the transfer of high voltage to the conductive parts of structures, apparatus, fire extinguishing substances.

In addition, there may be hazardous factors associated with an explosion that occurred due to a fire (shock wave, flame, collapse of structures and the scattering of fragments, the formation of harmful substances with a concentration in the air significantly higher than the MPC).

Exposure of human skin to flame or thermal flux of its infrared radiation can cause thermal burns. In addition, heat accumulation in the body is dangerous for humans, resulting in "heatstroke". In an open fire, elements of

buildings and structures made of combustible materials burn or carbonize, burnout, deformation and collapse of metal trusses, floor beams and other structural details of the structure occur.

Elevated ambient temperatures can cause varying degrees of burn injuries to the respiratory tract, skin and eyes. The permissible temperature for heating the skin is 45 ° C, after which pain appears. A person can withstand an ambient temperature of 95–120 ° C for 35–20 minutes, 60–70 ° C for 80–40 minutes. At an air temperature of about 150 ° C, an almost instantaneous burn of the respiratory tract occurs.

These are toxic combustion products and smoke.

Incomplete combustion of substances produces smoke. In the smoke, a person loses orientation in space. Evacuation in such conditions is difficult or impossible. In addition, smoke is a mixture of combustion products, including poisonous compounds: carbon monoxide, hydrocyanic acid, phosgene, aldehydes, etc.

Carbon monoxide is a poisonous gas that is invisible and odorless. A person can die from it within a few minutes. The toxic effect of carbon monoxide is based on the fact that, when it enters the human body, it binds to blood hemoglobin more firmly and 200-300 times faster than oxygen, blocking the transport and transfer of oxygen to tissue cells, which leads to oxygen starvation. Symptoms of carbon monoxide poisoning are: headache, choking, pounding in the temples, dizziness, chest pains, dry cough, nausea, vomiting, visual and auditory hallucinations, increased blood pressure, motor paralysis, loss of consciousness, convulsions.

That is why not only and even not so much fire is dangerous, but smoke and fumes from it.

To protect yourself from smoke in case of fire, it is advisable to breathe through a damp cloth. You need to move in the smoke bent over or on all fours. At 30-40 centimeters from the floor, it is easiest to breathe in a fire. Smoke concentration and temperature are lower there than in the rest of the room.

Reduced oxygen concentration

Lack of oxygen has a significant impact on people during fires. Its reduced content in the inhaled air, even in the absence of toxic gases, can impede evacuation and lead to death. The oxygen content in the initial stage of the fire decreases to 16%, while already at 17% there is a deterioration in motor functions, impaired muscular coordination, difficulty thinking and dulling attention.

Explosion hazard

In the event of a fire, an explosion of flammable substances and the formation of a blast wave are possible, causing the destruction of structures and injury to a person.

Clean atmospheric air at the Earth's surface has the following chemical composition: **oxygen** - 20.93%, carbon dioxide - 0.03-0.04%, nitrogen - 78.1%, argon, helium, krypton 1%. The exhaled air contains 25% less oxygen and 100 times more carbon dioxide.

2. Fire hazard of technological processes and preventive measures

At industrial enterprises, a fire hazard is posed by the storage, processing and transportation of various combustible materials (fuel, lubricating oils, bitumen, varnishes, paints, solvents, paper, etc.).

Chemical and oil refineries, gas welding and electric welding installations, boiler houses, etc. are especially dangerous in relation to explosion and fire.

According to the explosion and fire hazard, premises and buildings are divided into categories A, B, B1-B4, G and D.

Categories of explosion and fire hazard of premises and buildings are determined for the most unfavorable period in relation to fire or explosion, based on the type of combustible substances and materials in the apparatus and premises, their quantity and fire hazard properties, and the characteristics of technological processes.

Categories of premises for explosion and fire hazard are accepted in accordance with the table:

Table

Category premises	Characterization of substances and materials, located (circulating in the room)
BUT increased explosive	Combustible gases (HG), explosive inflammable liquid (HIL) with those mperaturoy flash is not more than 28 °C in such an amount that can form explosive parogazovozdushnye mixture which when ignited develops rated overpressure explosion in the room of more than 5 kPa. Substances and materials that can explode and burn when interacting with water, atmospheric oxygen or with each other in such an amount that the calculated excess explosion pressure in the room e9xceeds 5 kPa
B explosive	Combustible dust or fibers, explosive flammable liquids with a flash point of more than 28 °C , flammable liquids (FL) in such an amount that they can form explosive dust-air or vapor-air mixtures, when ignited, the calculated excess pressure of the explosion in the room, exceeding 5 kPa
B1-B4 fire hazardous	GZh and hardly combustible liquids, solid flammable and hardly combustible substances and materials (including dust and fibers), substances and materials that can only burn when interacting with water, air oxygen or with each other, provided that the premises in which they are in stock or in circulation, do not belong to categories A or B
D Moderate fire hazard	Non-combustible substances and materials in a hot, incandescent or molten state, the processing of which is accompanied by the release of radiant heat, sparks and flame; GG, GZ and solids that are burned or disposed of as fuel

D reduced fire hazard	Non-combustible substances and materials in a cold state
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In electrical installations, the causes of fires and explosions can be electrical and non-electrical in nature.

The reasons are electrical in nature:

- a) sparking in electrical devices and machines, as well as sparking as a result of electrostatic discharges and lightning strikes;
- b) short-circuit currents and current overloads of conductors, causing them to overheat to high temperatures, which can lead to ignition of their insulation;
- c) unsatisfactory contacts at the junction of the wires, when, due to the large transient resistance during the flow of electric current, a significant amount of heat is released and the temperature of the contacts rises sharply;
- d) an electric arc arising between the contacts of switching devices, as well as during electric arc welding;
- e) overload and malfunction of the windings of electrical machines and transformers in the absence of reliable protection.

The causes of fires and explosions of a non-electrical nature include:

- a) careless handling of fire during gas welding;
- b) improper handling of gas welding equipment, blowtorches, etc.;
- c) malfunction of electric heating devices;
- d) malfunction of production equipment (overheating of bearings, etc.), disruption of the production process, as a result of which flammable gases, vapors, dust may be released into the air;
- e) smoking in fire-hazardous and explosive rooms and installations;
- f) spontaneous combustion of some materials.

To eliminate the causes of fires and explosions in production, various preventive measures are carried out - technical, operational, organizational and regime.

For technical measures refers fire regulations compliance with the design and construction of buildings, heating and ventilation apparatus, selection and installation of electrical equipment, as well as protection of devices against electrostatic discharge, lightning and others.

Operational measures provide for the correct technical operation of production units, boilers, compressor and other power plants and electrical equipment, the correct maintenance of buildings and the territory of the enterprise.

Organizational measures include training of production personnel in fire-fighting rules, the creation of voluntary fire brigades at the enterprise, the publication of the necessary instructions and posters on fire-prevention topics.

Regime measures are restriction or prohibition in fire hazardous places of the use of open fire, smoking, production of electric and gas welding works.

3. Methods of extinguishing fires and extinguishing agents.

To stop the combustion process, the following main methods are used:

1. **Cooling** of burning substances by applying heat-intensive extinguishing agents (water, foam, etc.) to their surface or mixing layers of burning liquid.
2. **Dilution of the concentration** of flammable vapors, dust and gases by introducing inert gases (nitrogen, carbon dioxide) into the combustion zone.
3. **Isolation** of burning substances from the combustion zone by applying insulating fire - extinguishing agents on their surface: foam, sand, felt.
4. **Chemical inhibition** of the combustion reaction by sprinkling the surface of burning materials or volumetric dilution of a combustible dust, gas and vapor-air system with phlegmatizing substances and compositions.

Water has three fire extinguishing properties: it cools the combustion zone, dilutes the reactants in the combustion zone, and insulates the combustible substances from the combustion zone.

Water is the cheapest and most widely used fire extinguishing agent. However, there are certain limitations of its use. Water is heavier than many flammable liquids (gasoline, kerosene, ether, acetone, etc.), so they float to its surface, continue to burn and, spreading, increase the combustion area.

Natural water contains various dissolved salts and has significant electrical conductivity. In this regard, water should not be used to extinguish fires in electrical installations under voltage.

Water must not be used to extinguish objects containing substances (for example, alkali metals, calcium carbide, quicklime), which reacting with it, contribute to the spread of fire, create an explosion hazard, emit explosive poisonous gases, and other harmful substances.

Water-chemical solutions. Due to the high surface tension, water has a low penetrating ability deep into poorly wetted materials (wood, wool, wool). Therefore, its losses during extinguishing fires are very high. To increase the efficiency of extinguishing, various wetting agents are added to the water in the form of surfactants such as foaming agents.

Fire extinguishing efficiency of water can also be increased by increasing its viscosity by adding thickeners: sodium salt of polyacrylic acid, methylcellulose, etc. The effect of "viscous" water is its ability to cover a burning surface with a thin film and stay on it.

Fire extinguishing foams are systems in which the dispersed phase is always gas. Gas bubbles can form inside a liquid as a result of chemical processes or mechanical mixing of air with liquid.

When extinguishing a fire, foam, covering the burning substance, isolates it from the environment, prevents the penetration of flammable gases and vapors into the combustion zone and the transfer of heat from the combustion sphere to the burning substance. In the process of foam destruction, a liquid film is formed, wetting and cooling the combustion surface.

Two types of fire-extinguishing foams are widely used: chemical and air-mechanical.

Fire extinguishing foams are widely used to extinguish fires when combustible and flammable liquids, as well as solid combustible substances and materials are ignited.

Inert gases (nitrogen, argon, helium, carbon dioxide) have the ability to quickly mix with combustible vapors and gases, lowering the oxygen concentration in the combustion zone to such a limit at which combustion stops.

Inhibitors or phlegmatizers (freon (freon), fire extinguishing compositions based on saturated hydrocarbons) act on the principle of inhibition of chemical combustion reactions.

Fire extinguishing powder compositions are finely ground mineral salts with various additives that serve to reduce caking and clumping. Powder compositions have a very high fire extinguishing ability (extinguishing fires of most substances and materials is achieved in 5-7 seconds), they are universal, i.e. are able to extinguish any materials, including those not extinguished by all other means, for example, termites, alkali metals.

The fire extinguishing effect of powder compositions is complex in nature: inhibition (inhibition) of chemical reactions in the combustion zone; cooling of the combustion zone due to the consumption of heat for heating and thermal decomposition of the powder particles; dilution of the combustible medium both with powder particles and products of its decomposition; the effect of fire protection when extinguishing on the surface.

Powder compositions have dielectric properties, are practically non-toxic, do not have a corrosive effect on metals. The disadvantage of most powder formulations is their high hygroscopicity, which leads to caking and the formation of lumps.

4. Primary fire extinguishing equipment.

To eliminate fires at the initial stage, primary fire extinguishing means are used: internal fire water pipes, hand and mobile fire extinguishers, dry sand, asbestos blankets, felt felt, etc.

In buildings, internal fire hydrants (PCs) are installed in corridors, on stairwells, in the foyer, at the entrances, i.e. in accessible and conspicuous places. Fire hydrants are located in special cabinets, where there is also a fire nozzle with a pressure hose made of fabric material 10-20 m long. The pressure of the jet should ensure the radius of action of the compact part of the jet of water, sufficient to reach the most remote and elevated part of the building, but not less than 6 m. In case of insufficient pressure in the external water supply network, it is envisaged to install a booster pump.

Chemically foam fire extinguishers of the OHP-10 type consist of a body into which an alkaline part is poured, a glass with an acid part and a shut-off device. In the initial state, the rubber valve tightly closes the acid cup.

To activate the fire extinguisher, turn the handle by 180° (in this case, the valve rises and opens the opening of the acid glass) and turn the fire extinguisher upside down. It must be remembered that in order to avoid electric shock, chemical foam fire extinguishers **must not** be used to extinguish electrical installations that are energized.

Carbon dioxide fire extinguishers are produced as manual (OU-2, OU-5, OU-8) and mobile (OU-25, OU-80). Hand-held fire extinguishers are the same in design and consist of a high-strength steel cylinder, into the neck of which a valve or pistol-type shut-off and trigger device is screwed into the neck on a tapered thread, a siphon tube, which serves to supply carbon dioxide from the cylinder to the shut-off and trigger device, and a snowmaker. A fire extinguisher is filled with liquid carbon dioxide at a pressure 6-7 MPa at 20°C. With increasing pressure and increasing temperature at a temperature of 31 °C at any pressure carbon dioxide passes into the gaseous state with a sharp increase in tank pressure, which leads to a circuit breaker to trip and discharging extinguisher ...

To activate the carbon dioxide fire extinguisher, it is necessary to direct the foaming bell to the fire site and unscrew the handwheel to failure or press the lever of the locking and starting device. The transition of liquid carbon dioxide into carbon dioxide is accompanied by a sharp cooling and part of it turns into snow in the form of tiny crystalline particles.

Powder fire extinguishers of the OP-5 type consist of a body in which the extinguishing agent (powder) is stored, a cylinder for compressed working gas (air or nitrogen), a trigger mechanism and a device for releasing a charge.

To activate the fire extinguisher, it is necessary to press the trigger lever located on the fire extinguisher cover, which leads to the piercing of the membrane that closes the outlet of the working gas from the cylinder. As a result, the working gas enters the siphon tube and loosens the powder, pushing it through the sleeve into the fire extinguisher barrel. When you press the handle of the barrel, the shut-off valve opens, and the powder jet goes out to the fire.

5. Fire automatics.

In buildings and structures of categories A, B, V1-V4, where production facilities that are especially dangerous in terms of fire are located, automatically operating installations for extinguishing fires are installed - sprinkler and deluge installations, which are activated by special detectors.

A sprinkler installation, used only in heated rooms, consists of a network of water pipes laid along the ceiling, with special sprinkler heads screwed into them at a certain distance from each other. These heads have locks

in the form of plates, soldered with light-weeping solder. When the temperature of the ambient air due to ignition rises to the calculated limit, the solder melts, the plates disintegrate and water begins to pour out of the sprinkler head, extinguishing the ignition source. At the same time, a fire signal is given.

Deluge installation, used for unheated rooms, also consists of a system of pipes, not filled with water and equipped with Deluge heads that do not have locks, and the outlets are open. Water for extinguishing fires is supplied to the deluge system automatically through valves that open when the ambient temperature rises.

System of **automatic fire alarm** (LAS) are designed to detect fires at their initial stage and fire protection service alerts about time and location of a fire. In addition, they generate signals to turn on the emergency ventilation system, smoke exhaust, and other devices.

The APS system consists of fire **detectors, communication lines and receiving devices** (fire alarm stations).

There are heat and smoke detectors and are installed directly in rooms protected from fire (at least 2 detectors per room).

The detectors convert the monitored fire sign (temperature, smoke) into an electrical signal, which is transmitted through the communication line to the receiving station or interrupts the flow of the control electric current through the communication line (loop).

Fire alarm stations are designed to receive signals from fire detectors, continuously monitor the status of communication lines along the entire length, light and sound alarms about incoming alarms, automatically switch to backup power when the main power is lost, with the corresponding alarm turned on.

The stations are installed in places where people stay around the clock.

Along with the APS, rooms with increased fire hazard or with especially valuable equipment (for example, with electronics) must be provided with automatic fire extinguishing installations (AUP). In addition, these installations protect spaces under technological floors, in impassable tunnels, communication mines, where the use of primary fire extinguishing means is practically impossible.

Depending on the fire extinguishing agents used, they are distinguished: water (see above), water-chemical, foam, gas, steam and powder AUP.

To protect electronics, gas fire extinguishing installations are used, which are subdivided into volumetric and local fire extinguishing installations with electric or pneumatic start.

Volumetric gas fire extinguishing installations are used in rooms with an area of permanently open openings not exceeding 10% of the total area of enclosing structures. Local fire extinguishing installations are designed to extinguish the fire of individual units or equipment in cases where the use of volumetric fire extinguishing installations is technically impossible or economically impractical.

Gas AUP are supplied with sound and light warning alarms, notifying of the need to evacuate people from the protected area. At the same time, interlocking devices are triggered to turn off the power supply to the equipment and turn off the ventilation (to prevent the release of fire extinguishing agent from the room).

For gas AUP, mandatory duplication of automatic start by manual and remote is provided. During the period when people are in the protected room, the start-up of the installation is transferred to the manual control mode.

6. Organization of fire safety basics

The fire safety basics is carried out in order to increase the knowledge of fire safety rules arising from the features of the production process, as well as more detailed training in how to use the available fire extinguishing means.

Typically, the TMP is carried out by certain categories of professionals working on production sites with high fire danger: welders, electricians, painters, warehouse workers, etc.

The order and timing of training in PTM, as well as a list of workshops or professions of workers, engineers and employees who must undergo training, are announced by order of the head of the enterprise. Training programs for PTM are developed by the technical training departments in conjunction with the fire brigade and approved by the head of the enterprise.

It is advisable to conduct training under the PTM program directly in workshops, at installations, production sites, etc.

Classes on certain topics of PTM, in agreement with the administration of the facilities, can be conducted by firemen. On topics that deal with issues related to the characteristics of the fire hazard of production processes, the characteristics of substances and materials, fire safety measures during the operation of electrical equipment and electric heating devices, etc., classes should be conducted by the engineering and technical workers of the enterprise.

At the end of the PTM program, workers, engineers and employees must take offsets. At the same time, persons who have successfully passed the PTM are considered to be those who know the necessary actions in the event of a fire and methods of using fire extinguishing means, the fire hazard of production plants and units, facility and workshop rules (instructions) for fire safety.

The program of training on PTM provides for the study of the following topics:

1. Fire safety measures at the facility.
2. Fire safety measures in workshops and at the workplace.
3. Calling the fire department.
4. Fire-fighting equipment and inventory, the procedure for their use in case of fire.
5. Actions in case of fire

When studying the topics of PTM, it is advisable to talk about the most typical cases of fires at the facility. To improve the assimilation of the material, it is desirable to use various visual aids as widely as possible for educational purposes.

At the heart of PTM classes, regardless of the topic, there should be an intelligible interesting story, a practical demonstration, confirmation of what has been shown by examples from practical work.

7. Fire protection mode

In each organization, the administrative document must establish a fire safety regime corresponding to the fire hazard of the organization, including:

- designated and equipped smoking areas;
- calculated the permissible amount of raw materials, semi-finished products and finished products simultaneously located in the premises;
- a procedure has been established for cleaning combustible waste and dust, storing oiled rags;
- the procedure for de-energizing electrical equipment in the event of a fire and at the end of the working day has been determined;

regulated by:

- the procedure for carrying out temporary hot and other fire hazardous works;
- the order of inspection and closing of premises after the end of work;
- actions in case of fire detection;
- the procedure and terms for passing fire-prevention briefing and training on the fire safety basics, as well as those responsible for their implementation have been appointed.

8. Timing and procedure for conducting fire safety briefings

Depending on the nature and time of carrying out, fire safety briefing of workers is introductory, primary at the workplace, planned, unscheduled and targeted.

8.1. Introductory firefighting briefing at those facilities where there is no militarized or professional fire brigade is carried out by an occupational safety engineer or a person entrusted with the duties of an occupational safety engineer.

It is carried out with all those recruited, regardless of their education and professional experience, as well as with business travelers, pupils and students who have arrived for practice.

The venue is the labor protection office.

A note is made in the journal with the obligatory signature of the instructor and instructor on the conduct of an introductory firefighting briefing.

8.2. Primary firefighting instruction at the workplace is an addition to the introductory firefighting instruction and aims to instill in the instructed the knowledge of safe working methods, taking into account their specialty and the fire hazard of raw materials and materials used in the production process, to familiarize with the fire extinguishing and fire extinguishing equipment available at the workplace. connections and rules for putting them into effect.

The primary fire safety briefing at the workplace is carried out by the head of the unit or the foreman.

After initial fire-prevention briefing at the workplace and knowledge testing during the first 2-5 shifts (depending on length of service, experience and nature of work), all employees perform work under the supervision of a foreman or a foreman, after which admission to independent work is issued.

Admission to independent work is recorded by the date and signature of the instructor in the register of instruction at the workplace.

Registration of the fire safety briefing log at the workplace is carried out by a responsible person from among the engineering and technical personnel of the shop (department).

8.3. Scheduled fire safety briefing. Every 6 months, all employees of fire hazardous professions undergo planned fire safety training. This type of briefing is carried out directly by the head of the unit and can be combined with repeated briefing on safety.

8.4. Unscheduled fire safety briefing is carried out with workers of fire hazardous professions in the following cases:

- when changing the scheme or mode of the technological process;
 - when introducing new or revised instructions for the safe conduct of work;
 - after an accident or fire occurred at the enterprise due to violation of safety regulations or fire safety;
 - upon receipt of information materials about accidents, fires that have occurred in similar industries.
- Unscheduled fire safety briefing is also carried out:
- when establishing the facts of unsatisfactory knowledge of the employees of safety instructions and fire safety;
 - at the request of the inspecting authorities or a higher organization.

Unscheduled briefing is carried out directly by the manager, in whose subordination the employee is. Combination with safety training is possible.

The scope and content of an unscheduled fire-fighting briefing is determined in each specific case, depending on the reasons and circumstances that caused the need for it.

8.5. Workers undergo targeted fire safety briefing for electric gas welding and other hot work performed under the permit, permit.

It is carried out to familiarize employees with fire safety measures that must be observed when performing the work received.

Targeted fire safety briefing is carried out by the employee responsible for conducting it. The briefing is recorded in the work permit and permit for the production of welding and other hot work.

9. Requirements of fire safety in the workplace.

9.1. General requirements for fire safety.

9.1.1. The responsibility for ensuring fire safety of workshops, departments, warehouses and other facilities of the enterprise is borne by the managers of these facilities.

9.1.2. The establishment of a strict fire safety regime pursues the main goal of preventing fires and ignitions from careless handling of fire, smoking, from careless hot work, from unattended electric heating devices connected to the power grid.

9.1.3. Smoking at the enterprise is allowed in strictly defined places, appropriately equipped and provided with fire extinguishing means: in the smoking room of the basement floor, on the staircase between the 4th floor and the exit to the roof, on the porch.

9.1.4. Campfires are strictly prohibited on site.

9.1.5. Each worker and employee must strictly comply with the established fire regime, be able to use primary fire extinguishing equipment and know the procedure and escape routes in case of fire.

9.1.6. Persons who have not passed the initial fire safety briefing are not allowed to work.

9.1.8. Persons who violate fire safety requirements are brought to administrative responsibility.

9.2. Fire safety requirements before starting work.

9.2.1. Each employee should check:

- availability and condition of primary fire extinguishing equipment;
- fire-fighting condition of electrical equipment in accordance with the requirements of the current instructions;
- performance of the ventilation system;
- serviceability of telephone communication;
- condition of evacuation exits, passages.

9.3. Fire safety requirements during work.

9.3.1 During working hours, every worker and employee must:

- constantly keep your workplace clean and tidy;
- passages, exits should not be cluttered with various objects and equipment;
- strictly observe the established standards for storage of production materials and finished products at the workplace;
 - to prevent violation of fire safety by unauthorized persons;
 - store oiled clothes, rags and combustible waste only in metal boxes with tightly closed lids;
 - it is prohibited to wipe floors, walls and equipment with flammable solutions;
 - store flammable liquids, flammable liquids (combustible liquids, flammable liquids) in strictly designated places, observing fire safety requirements;
 - transport combustible liquids and flammable liquids only in a special container with tightly closed lids; in case of spillage, it must be removed immediately;
- do not unauthorizedly connect electrical appliances, fix the electrical network and fuses;
- do not use open fire in service and work premises;
- do not smoke, do not throw cigarette butts and matches in office and work premises;
- do not accumulate or scatter paper and other flammable materials and debris;
- do not store in tables, cabinets and rooms with flammable liquids (gasoline, kerosene, etc.);
- do not use electric heating devices for personal purposes with open spirals;
- do not leave electrical appliances and lighting on unattended;
- do not hang posters, clothing and other objects on electrical outlets, switches and other electrical appliances.

9.4. Safety requirements at the end of work.

9.4.1. Clean your work area thoroughly.

9.4.2. Check the condition of the primary extinguishing equipment.

9.4.3. Store (store) finished products, semi-finished products only in specially designated places, observing storage standards.

9.4.4. Evacuation passages, exits should be left free.

9.4.5. It is forbidden to leave oiled overalls, rags and other flammable items, substances at the workplace.

9.5. Fire procedure.

Every employee, upon detecting a fire or signs of burning (smoke, burning smell, temperature rise, etc.) is obliged to:

- immediately inform the fire brigade about it by phone **101** (in this case it is necessary to give the address of the object, the place where the fire occurred, and also give your last name);
- to take, if possible, measures to evacuate people, extinguish the fire and preserve material values;
- report the incident to the management of the enterprise, department, site.

10. Organization of fire safety at the enterprise

The organization of work on fire safety includes:

1. Development and implementation of the fire safety management system in accordance with the requirements of the governing documents.

The enterprise must develop fire safety requirements, including requirements for the safety of people, requirements for production, office and other premises, requirements for the maintenance and operation of heating, ventilation, machinery and equipment, storage of goods and materials, electrical safety, requirements for the maintenance of vehicles and others, as well as the procedure for joint actions of the administration of the enterprise and the fire brigade in the elimination of fires.

2. General management and control over the state of fire safety at the enterprise, control over compliance with legislative and other regulatory legal acts, requirements, rules and instructions for fire safety. Control over the performance of official duties by subordinates. The head of the enterprise is responsible for organizing fire safety. Responsibility for organizing fire safety in workshops and subdivisions is borne by the heads of workshops and heads of subdivisions. Their job descriptions should spell out the rights, duties and responsibilities for compliance with fire safety rules. The company must draw up fire safety documents (clause 9). Control over compliance with the requirements of governing documents and local acts on labor protection, as well as compliance with the fire regime at the enterprise is carried out by the person responsible for the fire safety of the enterprise.

3. Ensuring fire safety during technological processes, equipment operation, fire hazardous work. The current regulatory documents establish strict requirements for the technical condition of equipment (this includes machines, machine tools, mechanical and manual tools, elevators, conveyors and other equipment potentially dangerous to humans). There are also requirements for the fire-fighting state of the equipment, and the maintenance of the fire-fighting regime during its operation.

4. Installation and monitoring of the state of control, warning and fire extinguishing means. The enterprise must issue an order to check the fire extinguishing systems and automatic fire alarm systems, as well as the person responsible for their good condition. The number of primary fire extinguishing equipment in the premises is determined depending on the category of these premises, Determination of the categories of premises, buildings and outdoor installations for explosion and fire hazard ". According to this document, premises for explosion and fire hazard are subdivided into categories A, B, V1-V4, D and D, and buildings - into categories A, B, C, D and D. The premises are also classified by explosive zones according to the PUE, in accordance with which the choice of electrical equipment is made.

5. Organization of development and provision of allocation of funds for the implementation of measures to ensure fire safety. We must not forget that all the work to create and maintain the fire safety of an enterprise begins with drawing up an annual plan for fire safety measures. Based on the planned activities, a proposal is being prepared for the company's budget for the next financial year. And, of course, there can be no high-quality fire protection without funding.

6. Training on fire safety for specialists, employees and workers includes:

- conducting introductory, primary, repeated, unscheduled and targeted briefings;
- organization of training on fire safety basics;
- conducting exercises and fire-fighting drills.

Training in fire safety measures for specialists and employees of the enterprise is carried out in accordance with the order of the Ministry of Emergency Situations.

7. Ensuring electrical safety at the enterprise. Ensuring electrical safety at the enterprise is important not only from the point of view of protecting people from electric shock, but also for fire safety purposes. According to statistics, about half of the fires are due to electrical safety violations. To organize work to ensure electrical safety, by order of the head, a person responsible for the electrical equipment of the enterprise is appointed. He is entrusted with the following responsibilities: ensuring the safety of work in electrical installations, organizing the systematic measurement of insulation and grounding resistance, monitoring compliance by the company's employees with the requirements of rules, regulations, instructions for labor protection in the field of electrical safety, organizing the development and implementation of more advanced interlocking, disconnecting, protective devices ensuring the safety of installation, repair and maintenance of power equipment, and others.

8. Drawing up an evacuation plan in case of fire. To draw up a plan for the evacuation of people and material assets in the event of a fire, the administration of the enterprise appoints a special person or organizes a commission (for large enterprises). The composition of the commission includes: the chairman of the fire technical commission, the deputy head of the enterprise for the administrative and economic part and the head of the fire protection of the enterprise or DPD. The commission or a specially designated person is studying the layout of the building and territory to identify possible patterns of movement of people and vehicles during evacuation. Based on the study of the layout, routes are drawn up for the movement of people from various premises. Based on specific traffic routes, the commission appoints those responsible for the safe evacuation of people, warning of a fire and meeting fire departments, as well as the evacuation of material assets, vehicles and fire extinguishing by primary means. When establishing the procedure for the evacuation of transport units, the commission determines the order of duty at night, weekends and holidays, as well as the location of the ignition keys. When establishing the procedure for the evacuation of material assets, the commission specifies the storage locations for documentation and fire hazardous materials, as well as existing and spare entrances to the territory of the enterprise, suitable for the passage of fire trucks. The evacuation plan is approved by the head of the enterprise and an order is issued to put it into effect. The timing of the study and practical development of the evacuation plan with the workers of the enterprise is outlined. Control over the study of the evacuation plan and personnel training is assigned to the head of the enterprise. The head of the enterprise is obliged, as the situation changes, to make timely changes to the evacuation plan, replacing workers who left the enterprise. Newly assigned workers should be made aware of their responsibilities under the evacuation plan.

9. Development of documents on fire safety.

The enterprise must:

1. Orders issued:

- on the appointment of a person responsible for the fire safety of the enterprise;
 - on the approval of the Rules (instructions) on fire safety;
 - on the appointment of a person responsible for the electrical equipment;
 - on the appointment of a person responsible for fire extinguishing equipment;
 - on the appointment of those responsible for fire safety in departments and others;
 - on the creation of DPD;
 - on the procedure according to which employees should be given special training and briefings, to check their knowledge of fire safety issues;
- 9.2. To be developed:
- instructions on fire safety measures;
 - instructions for the maintenance and use of primary fire extinguishing equipment;
 - instructions on the procedure for the actions of employees of the enterprise in the event of a fire and evacuation;
 - instructions for fire safety when working in a production workshop (if there is such a workshop);
 - a program for conducting an introductory firefighting briefing;
 - a program for conducting primary fire safety briefing;
 - a list of questions to test knowledge of fire safety by which knowledge should be tested after initial, repeated and unscheduled fire safety briefings;
 - plan of fire-prevention measures.
- 9.3. Maintain:
- logbook for registering briefings on fire safety issues;
 - log for monitoring the state of primary fire extinguishing equipment;
 - log book of fire extinguishers;
 - log of testing and recharging fire extinguishers;
 - logbook of assignment of group I on electrical safety to non-electrical personnel;
 - logbook for checking knowledge of norms and rules of work in electrical installations and other documents;
 - work permit registration log.
4. To register:
- permits to start work of each newly created enterprise, to commission new and reconstructed facilities, to introduce new technologies, to launch new fire-hazardous machines, equipment and products into production, to rent any premises, buildings and structures;
 - plans (schemes) for the evacuation of people in case of fire;
 - work permits for hot work.
- 9.5. Have:
- certificates of conformity for all types of fire fighting equipment and fire fighting equipment;
 - Regulations for the maintenance of automatic fire alarm systems, fire alarms, fire extinguishers.