

Ministry of Health of Ukraine
Ukrainian Medical Stomatological Academy

APPROVED
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disaster medicine
and military medicine
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Head of Department

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**Methodical instructions
for independent work of students
during preparation for a practical (seminar) lesson
and in class**

Academic discipline	Training of reserve officers
Module № 2	Essentials of Civil and Combat Medical Support
Topic of the lesson	The basis of civil protection of the population. Notifications and informing of civil protection sub-objects.
Course	2
Faculty	foreign students training specialty "Medicine", "Stomatology".

1. Relevance of the topic:

Protection of the population and territories is a system of national measures implemented by central and local executive bodies, executive bodies of councils, emergency management bodies and civil defense, subordinate forces and means of enterprises, institutions, organizations regardless of ownership, voluntary formations. , ensuring the implementation of organizational, engineering, sanitary, anti-epidemic and other measures in the field of prevention and elimination of the consequences of emergencies.

The level of national security cannot be sufficient if the task of protecting the population, objects of the economy, national heritage from emergencies of man-made, natural or other nature is not solved on a national scale.

External threats are directly related to the security of life of the population and the state in case of modern war or local armed conflicts, global man-made environmental disasters outside Ukraine (on land, in the near-Earth space), which may cause negative impact on the population and territory states.

Internal threats are related to emergencies of man-made, natural nature or may be provoked by terrorist acts.

In the organization of protection of the population in peacetime and wartime emergencies, the main role is assigned to shelter in protective structures and evacuation.

2. Specific objectives:

-Deepen and consolidate students' knowledge of the system of notification and information in the field of civil protection.

-Study the correctness of the actions of the population in the case of notification and information about the forecast or the emergence of an emergency situation.

-Learn to organize and ensure evacuation measures.

-Study the purpose of radiation, chemical reconnaissance and dosimetric control devices and the procedure for working with them.

Competences and learning outcomes, the formation of which is facilitated by the discipline (the relationship with the normative content of training of higher education, formulated in terms of learning outcomes in the Standard).

In accordance with the requirements of the standard, the discipline provides students with the acquisition of competencies:

-integral: The ability to solve typical and complex specialized problems and practical problems in professional activities in the field of health care, or in the learning process, which involves research and / or innovation and is characterized by complexity and uncertainty of conditions and requirements. The ability of the individual to organize an integrated humanitarian educational space, the formation of a single image of culture or a holistic picture of the world.

-general: The ability to apply knowledge in practical situations. Ability to exercise self-regulation, lead a healthy lifestyle, ability to adapt and act in a new situation. Ability to choose a communication strategy; ability to work in a team;

interpersonal skills. Ability to abstract thinking, analysis and synthesis, the ability to learn and be modernly trained. Definiteness and perseverance in terms of tasks and responsibilities.

-special (professional, subject): Ability to carry out medical and evacuation measures. Ability to determine the tactics of emergency medical care. Emergency care skills. Skills to perform medical manipulations.

3. Basic knowledge, skills needed to study the topic (interdisciplinary integration):

Name of previous disciplines	Acquired skills
<p>1. The history of medicine.</p> <p>2. Civil protection.</p> <p>3. The basics of law.</p> <p>4. Human anatomy, normal physiology.</p> <p>5. General hygiene and ecology.</p> <p>6. Internal diseases.</p>	<p>1. Know the role of domestic scientists in the development and organization of emergency medicine.</p> <p>2. Basic measures to protect the population and territories in emergency situations.</p> <p>3. To be able to use general legal principles to explain the actions and actions of a doctor in emergency situations.</p> <p>4. The structure and physiological basis of the functioning of human organs and systems. Determine the severity and location of the lesion.</p> <p>5. To justify the need for optimal interaction between humans and the environment in order to maintain health.</p> <p>6. To be able to assess the general condition of the patient, to examine and sort the victims according to severity.</p>

4. Tasks for independent work in preparation for the lesson and in the lesson.

1. Alert and inform the subjects of protection.
2. Characteristic of the focus of radiation, chemical and biological damage.
3. Classification of dosimetric devices, their purpose and procedure for use.
4. Devices of radiation and chemical reconnaissance, work with them.

4.1 The list of basic terms, parameters, characteristics that a student must learn in preparation for the lesson:

Term	Definition
Protection of the population and territories	it is a system of national measures, which is implemented by Central and local Executive bodies, Executive bodies of councils, governing bodies for emergency situations and civil protection, their subordinate forces and means of the enterprises, establishments, the organizations irrespective of forms of ownership, voluntary groups, ensuring compliance with the organisational, technical, sanitary-hygienic, anti-epidemic and other activities in the field of prevention and liquidation of consequences of emergency situations.
Alert	bring the signals and messages of the management bodies of civil protection about the threat and appearance of emergencies, accidents, catastrophes, epidemics, fires, etc. in the Central and local Executive authorities, enterprises, institutions, organizations and population.
Civil Protection Alert System of Ukraine	it is a complex of organizational and technical measures, equipment alerts, tools and communication channels intended for timely transferring signals and information on civil protection issues in the Executive bodies of all levels, enterprises, institutions, organizations and population.
Chemical weapons	call warfare agents and means of their application - aerial bombs, artillery shells, rockets and the like.
Radio frequency weapon	it is a means of destruction, the effect of which is to use electromagnetic radiation of ultra-high or extremely low frequencies. Ranges of ultrahigh frequencies ranging from 300 MHz to 30 MHz, to extremely low frequencies include a frequency of oscillation which is less than 1000 Hz.

Beam weapon	this weapon lethality is based on the use of highly directional beams of electromagnetic energy or a concentrated beam of elementary particles accelerated to high speed.
Indicators	simple devices radiation survey, which is used to solve the problem of detecting radiation and their approximate assessment, dose rate, mainly β - and γ - radiation.
Roentgenometers	designed to measure the dose of x-or γ - radiation.
Radiometers (radioactivity meters)	designed to detect and determine the extent of radioactive contamination of surfaces and air, mainly α - and (β - radiation).
Dosimeters	used to determine the total radiation dose received by the population during the time spent in the contaminated area mainly γ - radiation.

4.2. Theoretical questions for the lesson:

1. Alert and inform the subjects of protection. 2. Characterization of the organization of radiation, chemical and biological damage.
3. Classification of dosimetric devices, their purpose and procedure for use.
4. Devices of radiation and chemical reconnaissance, work with them.
5. Surveillance and control: objects, forces and means, tasks in various modes of functioning of a unified protection system.

4.3. Practical work (tasks) that are performed in class:

1. Learns to conduct alerts and informing the public in various types of emergencies.
2. To characterize the organization of radiation, chemical and biological damage.
3. Practical skills in using radiation and chemical reconnaissance devices.
4. Rules for using dosimetric devices.

The contents of the topic:

WARNING AND INFORMING IN THE FIELD OF CIVIL PROTECTION. The main and integral element of the entire system of protection of population and territories from emergency situations of technogenic and natural character is information and alerts. Warning and informing in the field of civil protection include:

- operative informing the population on the occurrence or possible threat of occurrence of emergency situations, including through the national, territorial and local automated systems of centralized notice;
- the early establishment and organizational-technical Association of permanent local warning systems and informing the population with special systems of supervision and control in the areas of possible destruction;
- centralized use of communication networks, broadcasting, television and other technical means of information transfer regardless of the form of ownership and subordination in case of emergencies. The content of the information on civil protection should make information on emergency situations, predicted or have arisen with the determination of their classification, occurrence boundaries and consequences and responses to them.

Timely and reliable information about the state of protection of population and territories from emergency situations of technogenic and natural character, methods and ways of their protection, security measures must provide to the population through mass media Central and local Executive bodies and Executive bodies of councils.

NOTIFICATIONS IN THE FIELD OF CIVIL PROTECTION.

Alerts about a threat or emergency.

Alert - reporting signals and messages of civil protection authorities about the threat and emergencies, accidents, catastrophes, epidemics, fires, etc. in central and local executive bodies, enterprises, institutions, organizations and the population.

The Civil Protection Alert System of Ukraine is a set of organizational and technical measures, warning equipment, means and communication channels designed for the timely delivery of signals and information on civil protection issues to executive bodies of all levels, enterprises, institutions, organizations and the population.

Alerts about the threat or occurrence of emergency situations are provided by:

- 1) functioning of national, territorial and local automated systems of centralized warning about threat or emergency situations, special, local, and facility alarm systems;
- 2) centralized telecommunication networks, including mobile (mobile) communication, departmental telecommunications networks and telecommunications networks of economic entities in the order established by the Cabinet of Ministers of Ukraine, as well as networks of national, regional and local radio and television and other technical means of transmission (display);
- 3) automate the process of transferring signals and messages about threats or emergencies;
- 4) operation at high-risk of automated systems of early detection emergencies and notification;
- 5) organizational and technical integration of various systems of centralized warning about threat or emergency situations and the automated systems of early detection emergencies and notification;

6) functioning in the settlements and places of mass stay of people and signal-loud-speaking devices and electronic boards for the transmission of information on civil protection.

The alert system of civil protection is divided into:

- a) national;
- b) regional and local automated systems of centralized notice;
- c) local;
- d) the objects of the notification system;
- d) centralized call (hereinafter SCV).

Alert system of civil protection shall cover the territory inhabited by the population and the enterprises, institutions and organizations and be equipped with elektrolitami, outdoor speakers, networks of broadcasting and television.

Distribution of system alerts:

- a) in the event of threat or emergency, the state created a national system of centralized notification of Central and local bodies of Executive power and bodies of local self-government.
- b) in case of threat or occurrence of emergency situation at the regional level are regional and local system of the centralized alerting the local Executive authorities and the population.
- c) the local system alerts are generated in potentially dangerous objects, the affected area which, in the case of abnormal emergency, reaches populated areas or other enterprises, institutions and organizations.
- g) potentially hazardous enterprises, in which the affected area is not out their territory, are object warning system.
- d) to alert the duty services of the Central, regional and local Executive bodies, senior management of civil protection are created of circular call.

In accordance with the Code of civil protection in high risk to timely detect the risk of occurrence of emergency situations and implementation of alert personnel and the population within the zone of possible destruction, are established and operated automated systems for early detection of threats of emergencies and notification of population in case of their occurrence (further - the automated system).

Urgent information transmitted by the territorial authorities of civil protection, potentially dangerous enterprises should be preceded by the intermittent sound of sirens available in the relevant territory, which means "Attention all!" Installation signal-loud-speaking device and electronic information Board is vested in the local authorities, the economic entities. Places installing signal-loud-speaking devices and electronic display are determined by the local authorities, business entities.

Operators and providers of telecommunications, broadcasting institutions are obliged to provide a connection technical means of broadcasting to automated system of the centralized alerting installation of special equipment for the automated transmission of signals and messages about threats or emergencies.

The organization of alert about the threat or occurrence of emergencies and communications in the field of civil protection is determined by the regulations approved by the Decree of the Cabinet of Ministers of Ukraine № 192 of February

15, 1999 "On approval of the Regulations on the organization of notification and communication in emergencies".

Systems alert is provided by:

- organization of round-the-clock in the Central and territorial Executive authorities that ensures forming and realization of state policy in the sphere of civil protection;
- the establishment of direct telephone communication duty services of potentially dangerous enterprises, the affected area which may spread to populated areas and human settlements;
- prepare the staff duty services for emergency response;
- quality maintenance of equipment and technical means of warning and communication systems of civil protection.

INFORMATION IN THE FIELD OF CIVIL PROTECTION.

Information on civil protection issues is made up of information about emergencies that are forecasted or occurred with a definition of their classification, distribution boundaries and consequences, as well as methods and methods of protection against them. Civil protection management bodies are obliged to provide the population through the media with up-to-date and reliable information, as well as about their activities on civil protection issues, including those accessible to people with visual and hearing impairments. The heads of business entities operating potentially hazardous and hazardous facilities are required to systematically and promptly publish information about such facilities in official print media, on official websites, information stands and in any other acceptable way.

The information should contain information about the subject that provides it, the scope of its activity, the nature of the potential risk of accidents, including exposure to people and the environment, about how to inform the public in the event of a threat or occurrence of an accident and the behavior that should be observed. Disclosure of information on the consequences of an emergency is carried out in accordance with information legislation.

Пример.

1. In the event of the threat of catastrophic flooding by destroying dams novodnistrovska hydroelectric power station on the river Dniester or Ladyzhyn thermal power plant on the river the southern bug the appropriate on-duty service of hydroelectric power stations is carried out the notification of subjects of civil protection with the help of specialized systems of centralized warning created directly on the waterworks.

2. Notice of the occurrence of emergency situations at NPP is carried out with the help of special warning systems. These systems should provide the possibility of signal transmission "Attention all!" and messages in the plant and its industrial area, the railway settlements from the workplace shift supervisor station, as well as entities providing civil protection to local authorities.

Example.

In October 2014, 30 countries and operates 194 435 nuclear power plant units with a total capacity of 370 049 MW. 103 units located in USA, 59 - in France, 55 in Japan, 33 in Russia, 15 in Ukraine.

Now we construct a 64 unit, 140 - closed, 5 are not working, the decision to close them has not been made yet. The share of nuclear power plants now account for 16% of all electricity generated.

For individual countries these figures are very different in France the share of nuclear plants accounts for 78% of the total consumption of electricity;

- in Ukraine - 48%;

in China only 2%.

Set the following signals to transmit voice information using all means of warning the population and economic entities in case of occurrence or threat of an emergency:

- an accident at a nuclear power plant;

- an accident on chemically hazardous facilities;

- earthquake;

- flooding;

air danger;

- storm warning;

- the threat of chemical contamination;

- the threat of radiation contamination.

Thus, the tasks of civil protection of population and territories from emergency situations, as defined in particular in Chapter 6 of the Code "Warning and informing of subjects of civil protection", is possible only with high-quality development, the creation and reliable operation of warning systems, timely informing of management bodies of civil protection, civil protection, economic entities and the population may prevent the absolute or maximum mitigation of the predicted or occurred emergencies.

THE ACTIONS OF THE POPULATION AT NOTIFICATION AND INFORMING ABOUT FORECASTING OR EMERGENCY SITUATION.

To attract the attention of the population in extreme cases of occurrence or the possibility of an emergency before the transmission of voice information through the network of radio and television and other technical means of transmission (display) information include siren, signal - loud-speaking device and electronic information Board, which in the system of civil protection means "Attention all!".

The texts of addresses to the population should be transferred to the state language and the language used by the majority of the population in the region as well as in an accessible form for persons with impaired vision and hearing .The texts of addresses, the soundtrack, the texts are stored in sealed envelopes in the operations duty officer of Department of civil protection of the regional state administration, which, where appropriate, bring it to the population. The version of the message in case of accidents on chemically hazardous objects:

"Attention! Said the duty officer of the Department of civil protection of the Poltava regional state administration

Citizens! The accident occurred at (point venture) with the release (leakage) of hazardous chemicals - ammonia (or other).

In the area of chemical contamination are business entities (specify what exactly), as well as residents of the streets (indicate name). The population of the streets (indicate name) to be in the homes, to hold a tight seal of their apartments. The population of the streets (indicate name) to immediately leave homes, businesses, institutions and organizations to reach the area of the Central city stadium. Further act on the instructions of the representatives of civil protection Department of the city of Poltava".

The version of the message about the threat of earthquakes:

"Attention! Said the duty officer of the Department of civil protection of the Poltava regional state administration. Citizens! In connection with a possible earthquake, turn off gas, water, electricity, extinguish the fire in the furnace. Take the necessary clothes, documents, food, water, and go outside. Take place away from buildings and power lines. Notify the neighbors about the received message. Being in the room when you first push door or stand in the balcony doorway".

Affecting factors of nuclear weapons.

Modern weapons include weapons of mass destruction - nuclear, chemical, bacteriological and conventional means of attack. Called nuclear weapons, striking which is the energy released during the course of nuclear reactions fusion and fission. These weapons include a variety of nuclear ammunition, means of management and means of delivery of munitions to the target. It is a powerful weapon of mass destruction, intended for mass destruction of people, destruction or destruction of the administrative and industrial centres, various objects, structures, and technology.

Lethality of a nuclear explosion depends on the type of nuclear weapon, his power and explosion. The power of a nuclear weapon is characterized by a trotyl equivalent, that is, the mass of TNT, the explosion of which is formed the energy of the explosion of this nuclear weapon. Measured TNT equivalent in tons, kilotons, Megatons. Of power nuclear weapons are divided into small (less than 1 kt), low (1-10 kt), medium (10-100 kt), large (100-1 million tons) and the largest (more than 1 million tons).

Nuclear explosions can be carried out on the surface of the earth or water, under the ground or water and in the air at different heights. In this regard, there are terrestrial, underground, aerial and high-altitude explosions.

Above-ground nuclear explosions carried out to destroy the structures of great strength and also in those cases when a strong contamination of the area.

Air nuclear explosions carried out for the destruction of low-strength structures, the defeat of the people, equipment for large areas or when strong contamination is undesirable.

A huge amount of energy released in the explosion is expended in the creation of a shock wave, light radiation, penetrating radiation, radioactive contamination and environment of an electromagnetic pulse. All these indicators are referred to as amazing factors of nuclear explosion.

A chemical weapon and its lethality.

Chemical weapons referred to as chemical agents and means of their application - aerial bombs, artillery shells, spray tanks devices, rockets and the like.

Toxic substances can be classified according to different criteria, for example, in their physico-chemical properties and toxicity.

In physical-chemical properties of toxic substances are divided into stable, unstable and poisonous substances smoke.

Persistent toxic substances remain a damaging effect on the soil and local objects from several hours to several days. Typical representatives of this group of poisons is soman, V-gases, mustard gas.

Volatile toxic substances when combat use retain lethality from several minutes to several hours. Typical representatives are hydrocyanic acid, phosgene.

Smoke poisonous substance used in the aerosol state in the form of smoke to air pollution. Typical representatives of this group of toxic chemicals that are irritating poisonous substances. They are often used when performing police functions.

Toxicity toxic substances are divided into the following groups:

nerve agents (sarin, soman, V-gases);

skin-blister agents (mustard gas);

obscheyadovitym action (hydrocyanic acid, CYANOGEN chloride);

suffocating action (phosgene, diphosgene);

psihofizicheskoi action (BZ, LSD-25);

irritant (CS, chloroacetophenone, adamsite).

When the combat use of toxic substances can affect vulnerable people and animals and also contaminate the terrain, structures, equipment, food, water.

Poisonous substances nerve agents affect the nervous system, causing convulsions, constriction of the pupils, loss of consciousness and death.

toxic substances skin-blistering action is influenced through the skin and mucous membranes. Once in the blood, they spread throughout the body, causing poisoning.

toxic substances obscheyadovitym action enter the body through the respiratory organs and digestion. In severe poisoning observed dilated pupils, convulsions, paralysis and death.

toxic substances suffocating action enter the body by inhalation, through the lungs along with air. At deadly concentrations, severe pulmonary edema and the person dies from suffocation.

toxic substances psihofizicheskoi actions lead to a temporary disorder of mental activity of man. May appear hallucinations, deformation of time and space, detachment from reality. All of this can lead to unmotivated actions. Lethal lesions, as a rule, these toxic substances do not cause.

The nature of the possible impact of conventional weapons.

To conventional weapons accepted include ammunition, lethality based on the use of explosives, e.g. TNT, hydrocarbons and incendiary substances.

Lethality conventional weapons depends mainly on the amount of a substance that is used, its type, the thermophysical properties and design features of ammunition. Depending on the purpose and type of explosives, conventional weapons are divided into high-explosive, incendiary ammunition and ammunition of volume explosion. High-explosive ammunition designed primarily for the destruction of industrial and administrative facilities, equipment and casualties. Amazing properties of high-explosive munitions and their varieties due to the action of a shock wave which is formed by the action of an explosive, and scattering splinters in different directions.

The radius of destruction of objects and hitting people depends on the caliber of ammunition, the strength of the structures, protection of people and is generally tens of meters.

Concrete-piercing ammunition intended for destruction of landing strips, airfields, durable structures, and other objects that have concrete flooring. Warhead betonoboyynymi shells made in the form of a combination of two charges - cumulative and explosive. Shaped charge provides the fast layer of concrete up to 30 cm and the additional penetration into the soil up to 7 m high-Explosive charge ensures the destruction of the object. The effectiveness of the munition 10 times the efficiency of conventional explosive bombs of the same caliber. Cumulative ammunition designed to defeat armored targets. The principle of operation of these munitions based on the burning of the obstacles the powerful shock of the detonation products of explosives with a temperature of 6 - 7 thousand Degrees and pressure of $5 \cdot 10^5$ - $6 \cdot 10^5$ kPa. The creation of the shaped-charge jet is achieved by a recess parabolic shapes in the explosive charge. Focused the products of detonation can burn holes in armored plates with a thickness of several tens of centimeters and cause fires.

Cluster munitions is a conventional aerial bombs of large caliber, which are equipped with bomblets of various types: shrapnel from the detonators instant action to destroy equipment and people out of the shelters:

shrapnel from the detonators mine type for mining of port facilities, airfields, railway stations and other facilities of the economy. Cluster munitions with ready elements allows dozens of times to increase the area of damage. Bomber U.S. B-52 dropping 10 cluster bombs, it scatters deadly shrapnel in the area of 8 km². In cluster munitions can be used ball and stinging bomb.

Pellet bombs are cylinders with a diameter of 7.5 cm, the walls of which contain 250 steel balls with a weight of 1, a Modern fighter-bomber can carry up to 1000 of these cylinders. The balls, which rotate rapidly, wound tissue swelling, causing unbearable and almost incurable wounds. Instead of the balls can be used metal needles up to a length of 30 mm, which are driven into the human body and cause

injuries that lead to death is the so - called stinging bomb. You can use also pieces of sharp plastic, which does not show x - ray is so-called plastic bomb.

Ammunition of volume explosion can be used as a means of destroying fortifications, buildings, equipment and unprotected manpower. For the first time the ammunition of volume explosion used US during the war in Vietnam. Despite the condemnation of the international community for this barbaric weapons, the US was supplying these weapons to Israel, which used them for bombing Lebanon in 1983.

A major damaging effect of such ammunition is excess pressure on the front of a shock wave resulting from detonation of the fuel-air mixture which is created by the explosion of the shell of ammunition of volume explosion. The excess pressure near the center of the explosion reaches 3000 kPa, and at a distance of 100 m from the centre of explosion - 10 kPa. With the penetration of the fuel-air mixture through Windows, cracks, the ventilation system of the building, an explosion may occur inside the premises.

Developed several modifications of these weapons. One of them it is a tape with three canisters that are filled with liquid components of a mass of 33 kg each. Drop the bomb slows down due to the action of a parachute. Upon contact of the munition with the ground works lifting charge, which ensures spreading of the liquid and the formation of fuel-air mixture in the form of a cloud with dimensions of 15 m diameter and 3 m height. The undermining of the mixture is carried out using the initiators of delayed-action in several places. The action of the ammunition equivalent to the action of a nuclear warhead with a capacity of 10 tons being the weight of the ammunition of volume explosion of 450 kg.

With the aim of improving the accuracy of hitting the target you can use bombs and guided tapes. They are equipped with television or laser-based systems, the accuracy is characterized by the following data: if the circular deviation of unguided bombs is 200 m, it managed 3.5 m

Incendiary weapons are used for destruction of people, destruction of buildings, industrial facilities and settlements, as well as various compositions, and the like. Based incendiary munitions are incendiary substances and mixtures. They were divided into groups: incendiary mixtures, petroleum-based, or Napalkov; metallic incendiary mixture, or pyrogene; thermite and thermite mixture; normal or plasticized phosphorus.

Napalm Napalm is the most effective V. Apart from oil, the composition of Napalm In include polystyrene and salts atenolol and palmitinovo acid. Chunks of Napalm, which is a gel, burn for 10 minutes, the combustion temperature reaches 1200 ° C, when burning produces gases. Burning Napalm is able to penetrate through the holes and cause the slaughter of people in shelters and technology.

Pirolli condensed metallic ognesmesi petroleum-based, having in its composition magnesium or aluminum shavings, so burning with flares, forming a temperature of 1600 ° C and above.

The thermite mixture - mechanical mixture consisting of powdered metals and metal oxides. During the combustion of thermite mixture, the temperature rises to 3000 ° C. Thermite burn without access of air.

White phosphorus self-ignites in air, creating a temperature up to 900 ° C. the combustion produces a large amount of white toxic smoke, which, along with burns can cause severe poisoning of people.

The basis of the amount of aviation incendiary ammunition incendiary bombs and tanks. In addition, the possible use of incendiary charges of barreled and jet artillery, the use of incendiary grenades and bullets. To protect people from incendiary weapons use defenses. Temporary protection can serve as outerwear and personal protective equipment.

New types of weapons of mass destruction.

Along with the powerful nuclear weapons made nuclear mini-bomb, which is called the nuclear backpack. It is possible to destroy military targets, industrial plants, tunnels, settlements and the like. Power is one kiloton, the size of the cylinder: diameter - 30 cm height - 65 cm, which allows you to carry it in a backpack. With the explosion of such a bomb forms a ball of fire with a diameter up to 105 m. the People who are in an open area, can get a fatal dose of radiation at a distance

1 - 1.5 km At a wind speed of 16 km / h on the axis of the radioactive trace levels of radiation will be:

the distance from the center of the blast at 7.5 km - 500 R / HR;

16.5 km - 50 R / h.

The overpressure at a distance of 100 m to 700 kPa, 160 m - 280 kPa and 320 m - 70 kPa. Wooden houses destroyed in a radius of 850 m, brick - 600 m high - rise-250 m.

New types of weapons of mass destruction is RF, radiological, infrasound, geophysical and beam weapons. Radio-frequency weapon is a weapon of destruction, the effect of which is to use electromagnetic radiation of ultra-high or extremely low frequencies. Ranges of ultrahigh frequencies ranging from 300 MHz to 30 MHz; very low frequencies are the frequency fluctuation which is less than 1000 Hz. This weapon operates on living organisms, causing disruption of the Central nervous system, brain, heart, circulatory system. Radio frequency radiation also act on the human psyche, causing auditory hallucinations. Combat systems of such weapons generators is ultra-high or very low frequencies with directional antennas. Such systems can be terrestrial, aerial and space-based.

Radiological weapons are weapons of mass destruction, whose action is based on the use of combat radioactive substances. These radioactive substances are manufactured in the form of solutions or powders, which have in their composition radioactive isotopes of chemical elements. They are characterized by ionizing radiation which, acting on the tissues of the human body, leads to their destruction, causing radiation sickness or defeat of individual organs. As a result of such actions after a while a person gets sick, impaired its efficiency, and it requires

long-term treatment. The main source of radiological weapons are waste generated during operation of nuclear reactors. The use of a radiological weapon may be carried out using air sprayers, bombs, unmanned aircraft, artillery shells and other ordnance. Infrasonic weapon is a weapon of mass destruction, the basis of which is the use of directional radiation of powerful infrasonic vibrations with a frequency below 16 Hz. Such fluctuations act on the nervous system, disturb the stomach, cause headaches and internal organs, disrupt the rhythm of the breath. Infrasonic radiation can lead to unconscious actions cause unwarranted fear and panic. To generate infrasound can be used rocket engines with resonators and reflectors of sound and are specially manufactured tools.

Geophysical weapons - a set of different tools aimed at military purposes ravages of nature. This happens by artificially cause changes to the physical properties and processes that occur in atmosphere, hydrosphere and lithosphere of the Earth. The use of geophysical weapons implies an active impact on geophysical processes that result in earthquake-prone areas to artificial earthquakes, hurricanes, fire storms, avalanches, snow avalanches, landslides, strong tidal waves such as tsunamis etc. the destruction of the ozone layer in the atmosphere allows you to direct to areas dislokatsii enemy cosmic rays and ultraviolet radiation of the sun.

Beam weapon - a weapon that affects which is based on the use of highly directional beams of electromagnetic energy or a concentrated beam of elementary particles accelerated to high speed. The main types of beam weapons is a laser and beam weapons. When using a beam weapon damaged items of equipment in manufacturing plants, technology, and people have skin burns and retinal. A type of beam weapon is a beam weapon. The main affecting factor is the narrow-beam saturated energy charged or neutral particles (electrons, protons, neutral hydrogen atoms) which are accelerated to a high speed. A powerful stream of energy forms on the object of mechanical shock, causing the active thermal effect and initiates short-wave electromagnetic radiation (such as x-ray). The targets may be people, ground equipment, planes, cruise missiles, Intercontinental ballistic missiles, radio-electronic equipment. Weapon systems beam weapons can be ground -, sea-and space-based.

The purpose and tasks of radiation and chemical protection.

Now in the world produce and use hundreds of different sdyav (hazardous chemicals). On the territory of Ukraine, the rescuers have to deal with dozens of the most common ones. Such substances may be in gaseous, liquid and solid aggregate state.

Chemicals affect a person comprehensively, different affecting factors depending, first, on the physico-chemical and Toxicological properties of Kyrgyzaltyn JSC, and, second, from the thermal and shock action arising in combustion and explosions.

A necessary condition to the harmful effect of Kyrgyzaltyn JSC, is their exposure to or contact with the surface of the body. In the body chemicals can enter through the respiratory (inhalation), gastrointestinal tract (ingestion), skin (reportive).

Hazardous chemicals (sdyav), which are used on chemically dangerous objects of Vinnytsia region, allow us to conclude that the most massive protection of population in emergencies is required of ammonia, chlorine, vapors of organic substances.

The main goal of radiation and chemical protection of population and territories:

- not to miss or to weaken the influence of radioactive, chemical, infection, people, and territories and thus to eliminate or reduce the extent of their lesions;
- to create conditions for the stable functioning of objects of transport, energy, water, sewage and other networks in conditions of radioactive, chemical and biological contamination;
- to eliminate or significantly reduce the loss of farm animals, to prevent contamination of food, food raw materials, sources of radioactive, chemical and biological substances and agents;
- to ensure effective implementation of rescue and other urgent works (SINR) on the infected areas and directly to the lesions. Radiation and chemical protection of population and territories include:

- 1) identifying and assessing the radiation and chemical situation;
- 2) the organization and implementation of dosimetric and chemical control;
- 3) the development and introduction of typical modes of radiation protection;
- 4) the use of collective protection;
- 5) the use of individual protection equipment, devices of radiation and chemical reconnaissance, dosimetric and chemical control rescue services, formations and specialized services of civil protection, involved in carrying out rescue and other emergency operations, fighting fires in the lesions of radiation and chemically hazardous facilities and population living in areas of dangerous pollution;
- 6) implementation of the iodine prophylaxis of the rescuers involved in the elimination of radiation accident, the personnel of radiation-hazardous facilities and population living in zones of possible contamination, radioactive isotopes of iodine to prevent the thyroid gland;
- 7) to provide the population the possibility of acquiring the personal use of individual protection equipment, devices of radiation and chemical control;
- 8) carrying out of sanitary processing of the population and special processing of clothes, property and vehicles;
- 9) development of General criteria, methods and techniques of observations on assessing the radiation and chemical situation;
- 10) other measures of radiation and chemical protection, depending on the situation.

Radiation and chemical protection of population and territories is provided by:

- 1) definition of business entities, which are equipped with a place for sanitary treatment of the population and special processing of clothes, property and vehicles;
- 2) advance the accumulation and keeping in readiness:
 - means of collective and individual protection;

- devices for radiation and chemical reconnaissance, dosimetric and chemical control;

- pharmacological means of radiation protection iodine prophylaxis of the population, rescuers and the personnel of radiation-hazardous facilities of radioactive isotopes of iodine to prevent exposure of the thyroid gland.

1. The implementation of the measures of radiation and chemical protection and provision rests with the subjects of protection.

2. The order of providing the population and workers groups and the specialized services of civil protection means of individual protection, devices of radiation and chemical reconnaissance, dosimetric and chemical control determined by the Cabinet of Ministers of Ukraine.

The population in any region of the globe is confronted daily with ionizing radiation. This is, first of all, the so-called radiation background of the earth:

cosmic radiation;

radiation of radioactive elements located in soil, other materials, air, water;

radiation from natural radioactive substances, with food and water, enter the body, are fixed by tissues and stored in the human body for life. Therefore, dosimetric control is one of the main measures of protection against radioactive substances.

Организация дозиметрического контроля.

Дозиметрический и химический контроль проводится под руководством начальников всех степеней и командиров формирований гражданской защиты. Дозиметрический контроль включает: контроль облучения, контроль радиоактивного загрязнения. Контроль облучения проводится с целью получения данных про поглощенные дозы радиации для первичной диагностики. Для измерения дозы облучения применяются дозиметры. Контроль облучения людей делится на две группы - групповой и индивидуальный.

При групповом контроле один дозиметр выдается на группу людей (бригаду, звено и т.п.), или проводится расчетным методом с помощью формулы.

При индивидуальном контроле дозиметр выдается каждому работнику. Этот метод применяется для категорий, к которым нельзя применить групповой метод.

Devices monitoring the environment.

By appointment all devices are divided into the following groups.

Indicators - simple devices radiation survey, which is used to solve the problem of detecting radiation and their approximate assessment, dose rate, mainly β - and γ - radiation. With the help of indicators can be set, increases if the dose rate or, on the contrary, decreases. These devices have simple electrical circuit with a light or audible alarm. Sensors are gas-discharge counters. This group of instruments are indicators of GP-63. DP-63A, SE-64.

Roentgenometry - designed to measure the dose of x-or γ - radiation. They have a measurement range from a few hundredths of an x-ray up to several hundreds of roentgens per hour (R / HR). As the sensors in these devices use ionization

chamber or gas discharge counters. This group includes roentgenometry DP-5A, DP-5B DP-5B DP-SV.

Radiometers (measuring radioactivity) - designed to detect and determine the extent of radioactive contamination of surfaces and air, mainly α - and (β - radiation). The radiometers can measure small levels of γ radiation. Sensors radiometers are gas-discharge and scintillation counters. This group includes radiometers DP-12 universal base, β -, γ -Beam radiometer-a radiometer Tisa, a radiometric unit DP-100M, DP-100AДМ.

Dosimeters - used to determine the total radiation dose received by the population during the time spent in the contaminated area mainly γ - radiation. Individual dosimeters are small ionization chambers or fotosistemy film. Set, consisting of a set of cameras and charger-measuring device, called the set of individual dosimeters. Sets individual dosimeter DK-02, GP-22B, GP-24, ID-1, ID-11, ID-0,2.

To account for the absorbed doses of irradiation are conducted following documents monitoring:

- statement for the issuance of measuring dose and consideration of indicators;
- control log exposure;
- card account radiation doses;
- journal of selection and delivery of samples (only in the services and divisions CL);
- reports on health and contamination of people, equipment and more. Control of exposure is needed to absorbed doses of radiation did not exceed admissible norms of radiation.

Valid doses:

a) in time of war:

- a single irradiation (up to 4 days) - 50 RUB;
 - repeated exposure for 30 days - 100 rubles;
- for 3 months - 200 R; 1 hour -300 R.

b) in peacetime:

- under normal conditions for 1 hour - 0.5 bar .;
- for the staff in normal conditions for 1 hour - 5 REM .;
- for the population of emergency irradiation for 1 hour - 10 REM .;
- for emergency personnel exposure for 1 hour is 25 REM.

According to these norms for the population absorbed dose in normal conditions should not exceed 0.5 REM in an hour. According to the Law of Ukraine "About protecting of man from influence of ionizing radiation" № 15/98 - VR provides the following excessive doses of radiation:

- for population: 1 mSv / h (1000 mrem / h 0.1 REM);
- staff: less than 20 mSv / h (2000 mrem / h to 2 REM). Allowed to 5 REM (50 mSv), provided that the average dose over five years, not more than 20 mSv per hour (2 REM) in average.

The structure of the radiation dose absorbed per hour is as follows:

- natural background is 200 mrem;

- medical x-ray diagnostics - 150 mrem;
- building materials - 100 mrem;
- additional sources the dose of 50 mrem.

Natural background radiation in Ukraine is of 0.01 - 0.03 Mr / h.

On the globe there are areas in which absorbed doses far exceed the permissible:

- India, state Karal, there are areas where the dose is 40.2 rad per hour;
- Brazil - 20 rad / h;
- USA - 26 rad / h;
- France - 170 rad / hour.

Control of radioactive contamination is effected to determine the extent of contamination by radioactive substances of people, animals, equipment, clothing, PPE, food, water, fodder and so on.

Chemical control is carried out with instruments chemical reconnaissance (VPHR, PPKHR, PHR - MV), and used chemical laboratory (PHL - 54, PHL - LB). If it is not possible to determine S, sdyav - a sample and sent for analysis to the SES.

The responsibility for inspection rests with:

- in cities and districts - the heads of departments and services public procurement of cities, districts, commanders of the territorial units of CD;
- SG - to designated entities on public procurement , chiefs of services and commanders of the GZ object groups GZ;
- the non - working population-the heads of departments, GP cities, districts with the involvement of chiefs Zhekov.

The objects developed orders for the organisation of dosimetric and chemical control, which is determined by:

1. In order to ensure the technical means of control.
2. The organization issuing controls.
3. Records of radiation doses and extent of contamination of PB, S, sdyav.
4. Reporting of absorbed doses, the degree of infestation. Duties of officials on maintenance of control.

Materials for self-control:

1.Warning and informing as a way of protection of population in emergency situations is achieved:

- * a) advance the creation and maintenance of permanent readiness for use of warning systems and informing the public and decision makers about the threat and appearance of emergency situations;
- b) training of the population and the ability to act in emergency situations;
- C) collecting and analyzing information about emergencies.

2. To methods of protection of population in emergency situations include:

- a) compliance with safety rules;
- b) observance of requirements of labor protection;
- * b) engineering protection.

3. Evacuation, as a way of protection in emergency situations is achieved:
- * a) the organized withdrawal or removal of people from the lesions and placing them in safe areas;
 - b) with the exception of the lesions, and shelter people in protective constructions;
 - b) advance education of the public and the ability to act in emergency situations.
4. The measures for state regulation of civil protection include:
- a) assessment of morbidity from infectious diseases;
 - * b) Declaration of safety of industrial objects;
 - a) analysis of the seismic and weather conditions in the regions and planning events.
5. The ionization method of detecting and measuring radioactive radiation is based on:
- a) the ability of gases under the influence of radiation, to pass the electric current;
 - b) the ability of certain substances under the influence of radiation to emit light;
 - C) the ability of radiation to cause darkening of photographic materials.
6. Which of these events belongs to the ways to ensure reliable alerting and informing?
- * a) use centralized state, regional and local systems of radio, television, electronic means and telecommunications;
 - b) study and analysis of the composition of the population, and verbal warning;
 - C) forecasting of possible emergencies and report them.
7. The system of warning and informing as a way of population protection in emergency situations designed for:
- a) collecting and analysing information about emergencies;
 - * b) in a timely manner to managers, officials, and population signals about threat and emergence of emergency situations and continuously informing them about the existing situation;
 - C) supervision and control of dangerous objects and the environment.
8. What is the warning signal in time of peace adopted in Ukraine?
- * a) "Attention all!";
 - b) "Warning alarm";
 - C) "Alarm".

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