Ministry of Health of Ukraine
Ukrainian Medical Stomatological Academy

APPROVED
at a meeting of the department
disaster medicine
and military medicine
«____» _____ 2020
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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. Means of individual protection of the population, classification.
Course	2
Faculty	foreign students training specialty "Medicine", "Stomatology".

Poltava-2020

1. **Relevance of the topic:**

The individual method of protection involves the use of individual means of protection of the respiratory system, skin, as well as medical protection. This method is widely used in peacetime in conditions of radioactive contamination, in areas contaminated with strong edible substances, foci of biological contamination, areas of natural disasters. In an emergency and a state of emergency, all measures to be taken to protect the population include the use of personal protective equipment.

Personal protective equipment is designed to protect people from radioactive, toxic and potent edible substances, as well as bacterial agents.

2. **Specific objectives:**

Know the purpose, structure of individual and collective means, be able to use them in combat circumstances and conduct medical sorting of the affected and sick at the stages of medical evacuation, depending on the possibility of using individual means of protection.

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

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

1. Personal protective equipment, classification.
2. Respiratory protection, classification.
3. Features of respiratory protection in children.
4. Skin protection.
5. Means of collective protection, their purpose and classification.
6. Rules of stay in protective structures.

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

Term	Definition
Personal respiratory protection	These include filtering and isolating gas masks, children's protective chambers, respirators, and the simplest means of

	protection. To protect the respiratory system of people in the civil protection system are gas masks. They protect the respiratory organs, face and eyes of a person from radioactive substances, hazardous chemicals and bacterial substances in the air.
Helmet for the wounded in the head (ShR)	Designed to protect the respiratory system of victims with damage (injury) to the head. Wounds to the head create specific conditions that prevent the use of regular gas masks: soreness, the presence of a bandage from filter material, which makes it difficult to seal, etc.
Isolating gas masks-IP-4, IP-5	used in cases where it is impossible to use filter masks, for example, if there are very high concentrations of OM in the air or any harmful impurity, a low oxygen content in the air (less than 16%), and also when working under water at a shallow depth.
Shelter	an airtight structure for the protection of people, in which for a certain time conditions are created that exclude exposure to dangerous factors arising from an emergency, military (combat) actions and terrorist acts.
Radiation Shelter	leaky construction for the protection of people in which conditions are created that exclude exposure to ionizing radiation in case of radioactive contamination of the area.

4.2. **Theoretical questions for the lesson:**

1. Personal protective equipment, classification.
2. Respiratory protection, classification.
3. Features of respiratory protection in children.
4. Skin protection.
5. Collective protection, their purpose and classification.
6. Rules of stay in protective structures.

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

1. Practical skills in using personal protective equipment. 2. Features of respiratory protection in children.
3.Rules of stay in protective structures.

The content of the topic.
PERSONAL PROTECTIVE EQUIPMENT.
An individual method of protection involves the use of individual respiratory protective equipment, skin, as well as medical protective equipment. This method is widely used in peacetime in conditions of radioactive contamination, in areas contaminated with potent toxic substances, foci of biological contamination, areas of natural disasters. In emergency and emergency situations, all measures that are supposed to be used to protect the public include the use of personal protective equipment. Personal protective equipment is intended to protect people from radioactive, poisonous and potent toxic substances, as well as bacterial agents. Personal protective equipment (PPE) for its intended purpose is divided into respiratory protective equipment, skin protective equipment and medical protective equipment, and according to the protection principle - into filtering and isolating ones.

PERSONAL PROTECTIVE EQUIPMENT AT THE FACILITIES AND IN PRIVATE USE OF CITIZENS.
Filter is that the air that passes in the means of respiratory protection through the filter elements, a layer of activated charcoal, is freed from harmful contaminants and enters the human body clean. Personal protective equipment insulating type materials that are impervious to contaminated air, completely isolate the body from the surrounding air. For a method of manufacturing a personal protection equipment are divided into industry and made the simplest, improvised or made from scrap materials.
Personal protective equipment is a service, providing that provides timesheet (standards) equip depending on the organizational structure of the civil protection units and not service as a Supplement to the personnel or funds to change them.
Means of individual protection of respiratory organs. These include filtering and isolating masks, camera protective children, respirators, the simplest means for protection of respiratory organs of people in the system of civil protection, there are gas masks. They protect the respiratory organs, face and eyes of a person from radioactive substances, hazardous chemicals and bacterial substances in the air.
To individual means of respiratory protection provided durable protection, they must meet the following requirements:
is to provide low resistance to breathing to reduce fatigue;
- to ensure the supply of clean air without contaminants through the suction;
- to ensure the flow of dry air to the glasses not to fog up;
- have low dead volume to prevent inhalation suddenly exhaled breath;
- easy and quick to assemble;
- not to prevent to work in places with limited access of air;

to be light and durable;
- to maintain a satisfactory level of comfort to encourage the use, to reduce fatigue and to help focus attention of the one who uses them;
- have a low noise level of the breather valve, so as not to distract the user;
- have negotiation membrane that can quickly replace radioprogram device.

According to the principle of the masks are divided into filtering and isolating. The filter masks are the main and most common for respiratory protection. All the filter masks are divided into three groups: the General and "special" (for the Armed Forces), civil (for the population and non-military formations GO), industrial (for staff of facilities in chemical industry and other hazardous industries). Absolute contraindications to the use of filter masks:
coma, shock, collapse;
- pulmonary, nasal, stomach bleeding, continuous vomiting, convulsions , acute cardiovascular and pulmonary failure, open pneumothorax; pulmonary edema, shallow breathing;
fresh cases of strokes;
- brain concussion in acute period.

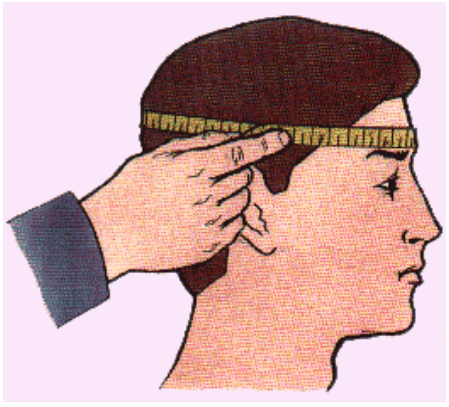
Civilian gas masks (Fig. 7) include gas masks GP-5 (GP-5M) and GP-7 (GP-7V), designed to protect the respiratory organs, eyes and face of a person from OM, RS and biological aerosols (BA), and also from a number of AHOV used in technological processes of industrial production. The gas mask GP-5 includes: filtering and absorbing box GP-5 and the front part (helmet-mask) ШМ-62у. A spectacle assembly and a valve box are mounted in the helmet mask. Non-fogging films and insulating cuffs are added to the gas mask. Films are installed on the inside of the gas mask, and insulation cuffs (used only in winter) are worn on the clip for the glasses on the outside.

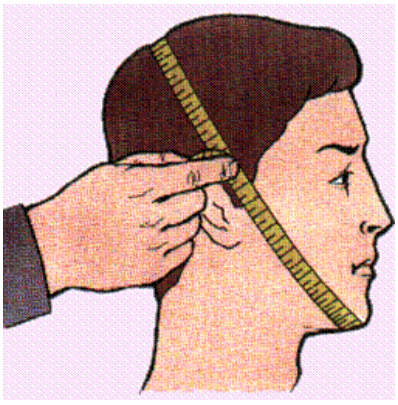
Fig. 7. Samples of gas masks from left to right: GP-5, GP-7, GP-7V.

The size of the helmet-mask is determined by measuring the head in a closed line passing through the crown, cheeks and chin. The gas mask helmet GP-5M has a membrane-type intercom and cutouts for the ears. The selection of the front of the GP-7 (GP-7V) is based on the size of both the vertical and horizontal girth of the head. The horizontal girth of the head is determined by measuring the size of the head in a closed line,

passing in front along the superciliary arch, laterally - 2-3 cm above the edge of the auricle and posteriorly through the most prominent point of the head. The sum of two measurements determines the growth of the mask.

Fig. 8. Horizontal and vertical head measurements.





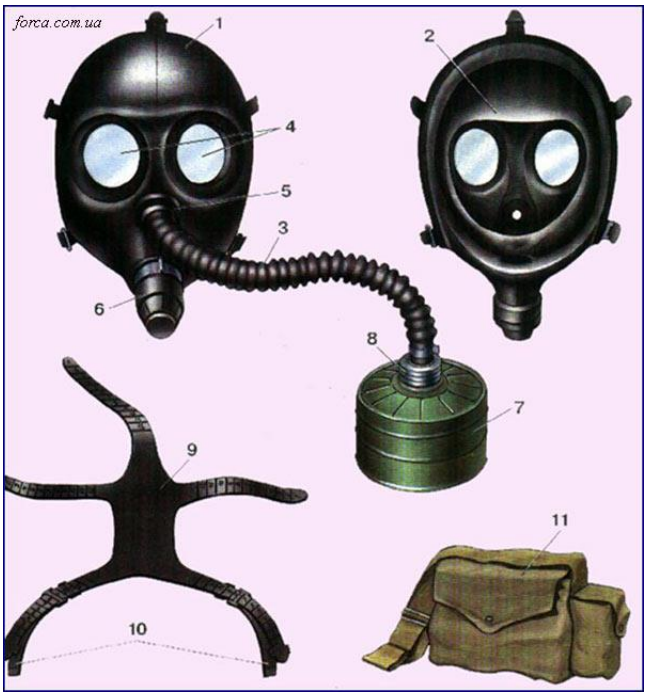
In the gas mask GP-7, the filter-absorbing box GP-7k is similar to the box GP-5, but with improved characteristics. The front part of the MCP is a three-dimensional mask with a shutter made of thin elastic rubber. Mounting the mask to the face is carried out using five straps on which the ledges to regulate the tightness of fit to the face.

In the gas mask GP-7V (Fig. 9), the front part has a device for receiving water from a flask (a rubber tube with a mouthpiece and a nipple). Helmets are available in three sizes; numbers are shown at the bottom of the mask..

Fig. 9. Civil gas mask GP-7V

Fig. 10. Civil gas mask GP-7VM

The children's filter gas masks PDF-Sh and PDF-2Sh are intended for children of school age from 7 to 17 years, and gas masks PDF-D and PDF-2D are for children aged 1.5 to 7 years (Fig. 11), the mask is PDF -7 - for children aged 1.5 to 14 years. Pick up, pick up,



Only adults should wear and remove gas masks for children.

Fig. 11. Gas mask for children filtering type two, preschool for children from 1.5 to 7 years.

1 - case
2 - shutter
3 - connecting tube
4 - point node
5 - inspiratory valve assembly
6 - exhalation valve assembly
7 - filter box
8 - flare nut
9 - headgear
10 - warranty bands
11 - bag.

To protect children under the age of 1.5 years, a protective camera for children KZD-4 (KZD-6) is used (Fig. 12). The main unit of the chamber is a shell, which is a bag of rubberized fabric. The shell is mounted on a collapsible metal frame, together with the pallet forms a folding bed. Two diffuse sorbuval elements for air purification are built into the shell of the chamber. There are two viewing windows in the camera shell for observing a child, and a hermetic mitten for child care. The child is placed in the chamber through a special hole, which is then sealed. This camera is suitable for carrying in hands, over the shoulder or on wheels.

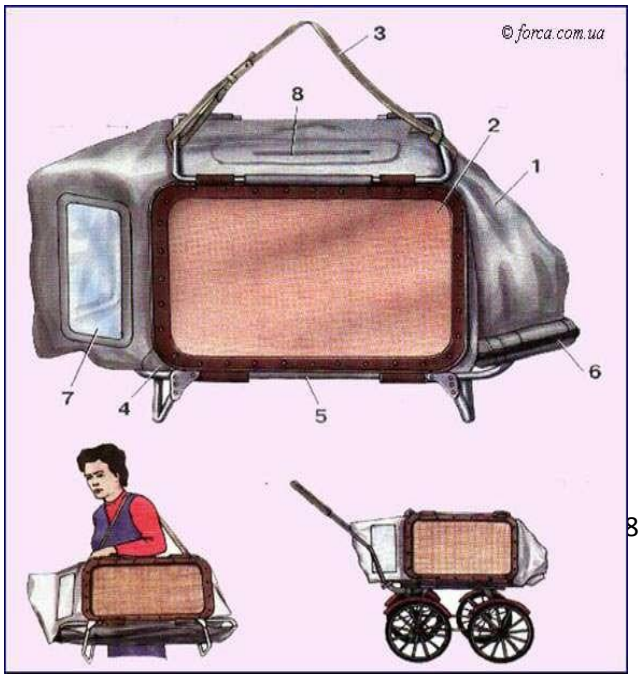


Fig. 12. Protective camera for children KZD-4 (KZD-6)

1– shell
2 - diffuse filter element
3 - braid
4 - frame
5 - pallet
6 - clamp

7 - viewing window
8 - mitten

Filter masks do not protect against carbon monoxide (CO), ammonia and other substances. To protect the respiratory system from carbon monoxide (CO), an additional cartridge kit (CAP) with the front part of the gas mask GP-5 is used. KDP is used for high levels of carbon monoxide in the air. The time of the protective action of the cartridge KDP depends on the conditions of use, primarily on ambient temperature. Helmet for the wounded in the head (ShR) - designed to protect the respiratory organs of victims with damage (wound) to the head. A wound to the head creates specific conditions that prevent the use of regular gas masks: soreness, the presence of a bandage from filter material, which makes it difficult to seal, etc. Therefore, to protect such wounded people, they use a special helmet for the wounded in the head in the form of a helmet of a sufficiently large size and glasses mounted on it, breathing valves and a corrugated tube. At the bottom of the helmet is a seal made of thin elastic rubber, which is used to seal the helmet in the neck. To reduce the harmful space, three pairs of ties are used that are tied at the back.

ShR joins a box of a filtering gas mask. Putting on the helmet of the SR on the wounded does not exceed 1.5 minutes, and primary sealing is carried out in 10-30 seconds.

A wounded man in the head, on which the SR is wearing, requires systematic supervision. It is necessary to monitor the color of the skin of the face and the condition of the pupils, to control the pulse rate and respiration. When vomiting occurs and the respiratory valves are filled with vomit, the helmet is replaced. In the case of a small number of them, to prevent contamination of the valves, the helmet is shifted to the other side or the position of the wounded is changed. In the uninfected zone, the helmet is removed in the opposite order: the corrugated tube is disconnected from the gas mask box, the fabric ribbons are untied, the hook-fastener and the collar of the obturator are unfastened and, having straightened the edges of the wedge-shaped valve, they are brought under the obturator, stretching it, carefully removing the helmet from the head. For reuse, it is washed with soap and water, wiped with tampons moistened with a 2% solution of chloramine or ethyl alcohol and dried. If the helmet is

infected with drip-liquid poisonous substances, it must be degassed by boiling in a 2% solution of soda ash for 2 hours. After such degassing in helmets, the performance is reduced, especially in the places where OM drops fall. Therefore, after degassing and airing, they are checked for strength by stretching and revising to the light, and, if necessary, carry out the required repairs. Keep the helmet for the wounded in the head in a clean and dry place..

Isolating gas masks - IP-4, IP-5 - are used in cases where it is impossible to use filtering gas masks, for example, in the presence of very high concentrations of OM in the air or any harmful impurity, low oxygen content in the air (less than 16%), as well as operating time under water at a shallow depth. The IP-4 gas mask is designed to work only on land, and the IP-5 can be used for light work and under water at a depth of up to 7 m. The protective action time of insulating gas masks in a calm state is 3 hours, during hard work - 30 minutes. The insulating gas mask IP-4 consists of a front part, a regenerative cartridge with a starting device, a breathing bag with an overpressure valve and a bag for storing the gas mask (Fig. 13).

Fig. 13. Isolating gas masks IP-4 and ASP-2

ASP-2 device (Fig. 13)

Designed to protect the human respiratory system when working in an environment unsuitable for breathing, as well as under water at depths of up to 20

m. The device is a type of reservoir apparatus with a supply of compressed air and an open breathing pattern and is used:

a) gas rescue service;

b) in parts during extinguishing fires in smoky rooms;

c) in the fleet as a gas-shielding apparatus and for performing ship underwater operations. The device consists of two cylinders with compressed air, a manifold (for connecting two cylinders into one container), a manometer, a lung machine with a mouthpiece, a nose clip and a headset or a lung machine with a helmet mask, waist belts, a fast-opening buckle.

Industrial gas masks (Fig. 14) are designed to protect workers and employees of industrial and agricultural facilities from the influence of harmful substances (gases, vapors, dust, smoke). They are equipped with front parts from civilian gas masks. Gas mask boxes are specialized in purpose (depending on the composition of the harmful substances from which they are protected), they differ in color and letter designations, for example: a box of the KD brand of gray color protects from ammonia, hydrogen sulfide and their mixture; CO (white) - from carbon monoxide; grade M (red) - from carbon monoxide, ammonia, Arsen and hydrogen phosphorous G (black and yellow) - from mercury vapor.

PPF-95 M PPF-87 PFM-3P

Fig. 14. Industrial gas masks.

The effect of the mask on the body.

When using a mask on the human body there are three factors: breathing resistance, harmful space and pressure the front part of the mask. Breathing resistance is determined by the difference of pressure of air in the atmosphere and in space under the mask and is measured in millimeters of water column. Breathing resistance depends on the density of the filter layer thickness and grain size of activated carbon, as well as the speed of movement of the inhaled air, and this in turn is determined by the amount of air consumed per minute. The amount depends on the nature and intensity of physical activity. At rest a person consumes 9 l / min standing in the room - 12 l / min when walking at a speed of 4 km / h - 25 l / min., when running at a speed of 12 km / h - 64л / min. Accordingly, the resistance of the gas mask breathing when a person is at rest is about 20 mm of water. the article, while running increases to 250 mm of water. article

Harmful space in the mask is called internal volume of the cavity, where delayed exhaled air with an increased content of carbon dioxide and water vapor. The next breath this air mixes with cleaned coming from the filter-absorbing boxes.

The influence of the front part of the mask is reduced to a mechanical pressure of the mask on the face and head that causes pain, decrease of visual acuity and field size, difficulty of speech, hearing loss, irritation of the skin. Reduced or eliminated these effects proper selection of masks and exercise stay in the mask.

The respirators.
Fig. 15. RPG-67:
1 - rubber half mask;
2 - shutter;
3 - cartridges of absorption;
4 - cuffs with inspiration valves;
5 - exhalation valve;
6 - headband.

To protect the respiratory system from radioactive dust and other aerosols, filter materials made in the form of dressings and half masks are used. The civil protection system uses respirators R-2, R-2d, Lepestok, a cotton-gauze bandage, etc. The principle of their operation is based on cleaning inhaled air of solid and liquid particles trapped in the fibers of the filter material. Respirators do not protect against toxic substances and AXO. The respirator is stored in a plastic bag, and carried in a bag for a gas mask.
The respirator must be protected from mechanical damage, from water and exposure to organic solvents and oils. Deactivate the respirator by removing dust from the outside of the half mask. The inner surface of the half mask is wiped with a wet swab, while the half mask is NOT turned out. Then the respirator is placed in a bag, closed with a ring and placed in a gas mask bag.

Cartridge type gas mask respirators - industrial filter respirators with a filter element in the form of a cartridge. Filter respirators are used in an accident with the release of acetone, benzene, ethers, sulfur oxide, hydrogen sulfide, ammonia, mercury vapor, etc. into the atmosphere. The duration of the protective action is from 0.5 hours to 15-20 hours.

Respirator R-2 "Petal" - designed to protect respiratory organs only from aerosols of chemicals. It has the appearance of a filtering half mask of multiple use, the possibility of staying in it - up to 12 hours

Respirator R-2D (for children) - modification R-2, is smaller and provides a continuous stay in it for 4 hours.
Respirator type AVK - is designed to protect the respiratory system from aerosols (including radioactive), vapors and gases of organic origin, ammonia , chlorine, basic and acid gases, smoke, viruses and bacteria. The universal size allows its use to persons with different face shapes, including children. Available in sealed packaging, which ensures the preservation of protective properties for the entire storage period. Weight - no more than 20 g.

The simplest respiratory protective equipment - an anti-dust fabric mask (PTM) and a cotton-gauze bandage - are not inferior to respirators in protective properties.

Designed to protect the human respiratory system from radioactive dust and in the presence of bacterial agents in the air.

Fig. 16. The simplest respiratory protection.

Skin protection: light protective suit L-1 (Fig. 17), protective overalls (suit), combined-arms protective kit, set of protective filter clothing (ZFD). The filtering means for protecting the skin include a set of filtering clothes (ZFD), which protects the human skin from OV and SDYAV, which has a vapor-forming state, and also from RV and BZ in the form of aerosols. The set of the Volga Federal District consists of cotton overalls, impregnated with chemicals that trap OM pairs (adsorption) or neutralize them (chemisorption), as well as men's underwear (shirt and underpants), cotton comforter and two pairs of footcloths (one of which is impregnated with the same composition, as a jumpsuit). Insulating skin protection products are made of airtight materials. They can be airtight (suits, overalls, etc.), completely protecting against drops and fumes of OM, and leaky (raincoats, capes, etc.), which mainly protect against drip-liquid OM. This is a set of OZK (raincoat, protective stockings and gloves), usually used with impregnated clothing and underwear. Lightweight protective kit L-1 is made of rubberized fabric. The kit includes: two-fingered gloves, trousers with stockings, a hood, a shirt with a hood, a bag. L-1 sets are available in three sizes: 1 - for people up to 165 cm tall; 2 - 165-175 cm; 3 - more than 175 cm. In all cases, the protective kit L-1 is worn over clothing. Fig. 17. Protective suit L-1

The simplest skin protection means: ordinary clothes (underwear, sports suits, overalls, etc.), soaked in soap and oil emulsion (2.5 liters per set), as well as raincoats, coats, wraps, wadded jackets. To protect the legs using rubber boots, bots, galoshes, leather shoes.

Personal protective equipment.

Medical remedies are designed to prevent and provide assistance to the population affected by emergencies.

Medical remedies include:

- radioprotective drugs;
- means of protection against exposure to toxic substances - antidotes;
- antibacterial agents (antibiotics, vaccines, serums, etc.).

Medical protective equipment includes: an individual dressing bag (PPI), which consists of a sterile dressing to help with injuries and burns; individual anti-chemical package (IPP), designed to provide self-help and mutual assistance in case of OS damage. With its help, a partial special treatment is carried out immediately after the defeat of OM or SDYAW.

Individual anti-chemical package IPP-11 - is intended for the prevention of injuries by drip-poisonous and chemically hazardous substances through exposed skin, as well as to neutralize these substances on human skin and clothing and tools in the temperature range from +50 to -20 ° C. applied to the skin in advance, the protective effect lasts for 24 hours. Release form: tight package, contains a tampon from nonwoven material, impregnated with anti-gas remedy. For one treatment exposed areas of the skin using a single package.

Individual anti-chemical pack IPP-8 is designed for partial sanitary processing and decontamination of exposed areas of the skin and adjacent clothing in contact with them, S (poisonous substances) in the drip-liquid and a mist, and bacterial means. The package contains a vial of universal degasser S (APB). To go along with four cotton-gauze swab. Due to the rapid suction of the FORT and some other S and sdyav should be possible to shorten the start processing (preferably within 5 min).

Individual dressing package - designed for bandaging of wounds, burns, and to stop some types of bleeding. Is a sterile bandage with two cotton-gauze pads (one fixed on the end of the bandage, the second - mobile), placed in airtight packaging made of rubberized fabric.

First aid kit individual medical protection (of AIS) - designed for first aid in the conditions of liquidation of consequences of emergency situations. Used for the treatment of small wounds, prophylaxis in acute poisoning, to prevent destruction by radioactive substances and encourage the elimination of radionuclides from the body. Drugs enclosed in a pouch, which ensures the constant presence of a first aid kit on the belt with special fastener. The case is made from materials resistant to mechanical, physical and chemical factors.
Kit contains:

1. Butorphanol tartrate 0.2% solution in a syringe tube – anesthetic. Used in acute and chronic pain syndrome medium and strong intensity to prevent a painful shock.
2. Doxycycline hydrochloride, 0,1 in capsules - is an antibiotic of wide spectrum of action, for emergency nonspecific prevention of infectious diseases.
3. Potassium iodide tablets - for prevention of lesions of the thyroid gland with radioactive iodine during accidents at nuclear power plants and other radiation hazardous sites.
4. Pills Biostar - to reduce the negative influence of radionuclides on the organism of man and acceleration of processes for the removal of radionuclides and heavy metals from the body, improve the immune status.
5. Validol in pills - to assist in the attack of stenocardia and as a mild sedative.
6. Activated charcoal tablets - enterosorbent for the binding and excretion of toxins and chemical substances.
7. Bactericidal plaster - for aseptic bandages at insignificant superficial injuries.
8. Sterile bandage for bandaging.
9. Aquatabs - for the disinfection of individual supplies of drinking water and the preparation of solutions for washing of vegetables and fruits.
First aid kit medical individual. Approved by the MOE. Designed for first aid in emergency situations and with the threat of destruction of biological, chemical and radiation means. Kit contains:
1. Hemostatic tourniquet 1 PC.
2. Sterile bandage, 5m x 10cm - 1 PC.
3. Sterile wipes - 2 pack.
4. Ammonia wipes 10 x 10 cm - 2.
5. Package dressing sterile - 1 EA.
6. Plaster bactericidal - 4 PCs.
7. Scarf fabric 75 x 75 cm - 1 PC.
8. The solution of iodine 5%, 10 ml, in sealed pkg. - 1 PC.
9. Scissors with blunt ends - 1 PC.
10. Medical latex gloves - 2 PCs.
11. Gloves n / e - 2 pairs.
12. Potassium iodide, 9 g - 1 pkg.
13. Enterosorbent, 5 g - 1 pkg.
14. Studs English - b EA.
15. A device for artificial respiration "mouth to mouth" - 1 piece.

16. Cotton-gauze bandage - 1 PC.
17. Screen (glasses), protective, disposable - 1 EA.
18. Tetracycline hydrochloride in tab. No. 10 - 1 pkg.
19. Norfloxacin or ofloxacin in the table. No. 10 - 2 pack.
20. Ftalazol furazolidon or in table. No. 10 - 1 pkg.
21. The solution of chlorhexidine digluconate to 0.05%, 100 ml (sealed package) -2 FL.
22. Swab foam - 2 PCs.
23. Swab cotton-gauze - 2 PCs.
24. Soda ash (sealed pack), 10 grams - 3 pieces
25. Package with lock, 20 x 25 cm - 2.
26. Instructions for use - 1 PCs.
27. Styling for attachments - 1 PC.
28. Packages packaging - 3 PCs.
29. Bag - 1 PC.

Bag sanitary (small). It is recommended by the Headquarters of the Civil Defense Department of Ukraine and the Ministry of Health of Ukraine for use during the liquidation of natural disasters, as well as a collective first-aid kit for providing medical assistance in an emergency. The bag is equipped in accordance with TU U 24.4-19246991-013-2001. Bag sanitary (big). It is recommended by the Headquarters of the Civil Defense of Ukraine and the Ministry of Health of Ukraine for use during the liquidation of the consequences of natural disasters, as well as a collective first-aid kit for the provision of medical care in the protective structures of the Civil Defense.

Set individual anti-chemical IPP-ZD. Designed for the disinfection of exposed skin, the working surface of equipment and facilities from chemical, radioactive and biologically hazardous substances. The IPP-ZD set is an integral part of the individual medical kit and can be used instead of IPP-8.

Комплект протихімічного пакета ІПП-ЗД

Life-saving cover - a cloth made of a polyester film with a silver and golden color metal coating from different sides. Designed to protect the victim from hypothermia or overheating for 20 hours, and also protects him from rain. The material of the bedspread is neutral to the tissues of the body, does not stick to wounds and burns, is able to withstand the weight of a person during manual transportation. The cover facilitates visual and radar search of people thanks to the bright reflective surface. Weight 60 g. Dimensions - 2100 × 1600 mm.

THE SHELTER POPULATION IN PROTECTIVE STRUCTURES OF CIVIL DEFENSE.

One of the main ways of population protection from the damaging effects of nuclear, chemical, bacteriological and conventional weapons, as well as accidents and some natural disasters is to shelter the population in engineering constructions, in particular, in collective means of protection. In relation to the provisions of International humanitarian law and the Geneva conventions (1949) on protection in emergency situations of population of any state. Chapter 7 of the Code of civil protection of Ukraine determines the organization of the shelter population in protective structures of civil defense and evacuation. Article 32 of the code of civil defense of Ukraine determines the organization of the shelter population in protective structures of civil defense. Protective structures of civil defense - engineering structures designed to protect the public from hazards arising from emergency situations, military actions or terrorist acts. In 2015 in Vinnytsia region was taken into account 1297 protective structures. Of these, 112 have the status of storage and 1185 - radiation shelters. 76 storage of civil defence located in the regional center.

Protective structures are classified (Fig.1):

a) capacity:

- small - 150 - 600 people;
- medium - 600 - 2000 people;
- large - bigger - 2,000 people;

b) for the purpose:

- to protect the population;

for management bodies;

for medical institutions protective facilities;

in) location:

built - in;

standalone;

- subways;
- in mines;

g) timing of construction:

built in advance;

- fast construction;

d) barrier properties:

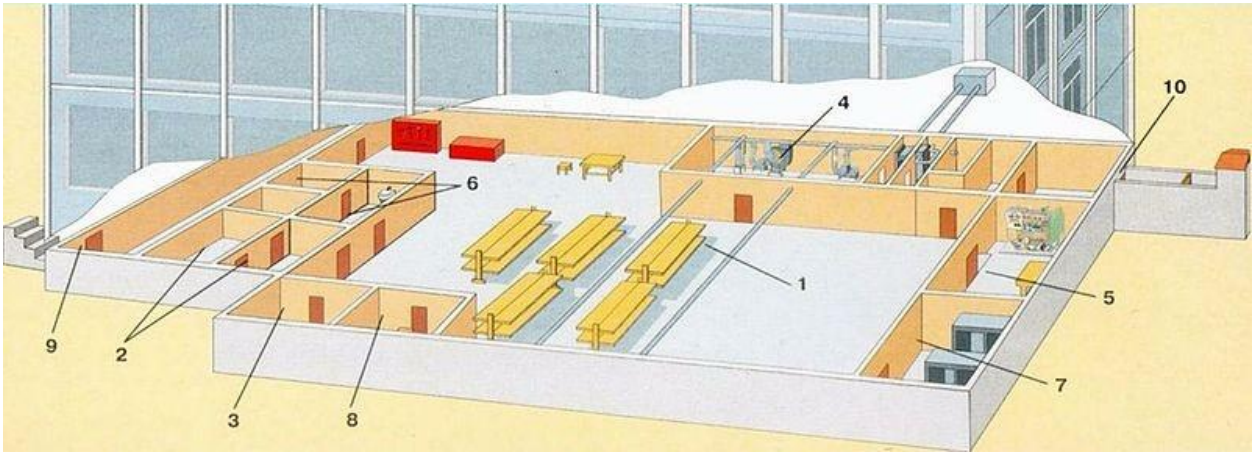
storage;

-fallout shelters;

-the simplest shelter.
Protective structures of civil protection include:
1. Storage - airtight construction to protect people, which over time creates conditions that exclude exposure to hazards arising from emergency situations, military (combat) actions and acts of terrorism.
2. Fallout shelter - leaking constructions for protection of people, which creates conditions that exclude exposure to ionizing radiation in the event of radioactive contamination of the terrain.
3. Prefabricated protective construction of civil defense - a protective structure constructed of special designs in a short time to protect people from exposure to weapons in a special period.
The main elements of the repository:
- room for men;
- control point;
medical item;
camera for storage of products;
the air supply system;
- water supply and sanitation;
- sanitary compartments, inputs (hermetically sealed doors, locks for 3-5 PCs.)
To protect people from some of the hazards arising from emergency situations in peacetime and the weapons in the special period also used dual-use facilities and simple shelters.
Construction of dual use is above ground or underground construction, which can be used for the main functional purpose and to protect the public (e.g., metro).
The simplest shelter is a fortification, ground, or basement, reducing the combined loss of people from the dangerous consequences of emergency situations and from exposure to weapons in a special period.
The shelter shall be:
1. in storage:
- employees working shifts largest economic entities assigned to corresponding categories of civil protection and located in areas of possible significant destruction of settlements, which continue their activities in the period;
- the staff of nuclear power plants, other nuclear installations and the employees of business entities which ensure the functioning of such plants (installations);
- employees working shifts largest economic entities, classified as of special importance for civil protection and located outside of areas of possible significant destruction of settlements, as well as the staff duty personnel of the entities that provide the vital functions of cities assigned to the appropriate groups of civil protection;
- patients, medical staff and health agencies, are not subject to evacuation or may not be evacuated to a safe place.
2. in the fallout shelters:

- employees of business entities, related to the first and second categories of civil protection and located outside of areas of possible significant destruction of settlements, which continue their activities in time of war;
- employees of business entities located in the zones of possible destruction, and a significant threat of radioactive contamination around nuclear power plants;
- the population of the cities, not in relation to the civil protection and other settlements, and the population evacuated from the cities, carried to groups of civil protection and areas of possible significant destruction;
- patients, medical staff and health care institutions located outside of the areas of possible significant destruction of the city in relation to the civil protection and business entities in categories civil protection, as well as healthcare institutions which continue their activities in time of war;
3. in pre-fabricated protective structures of civil protection, the simplest shelters and facilities dual-use - the population of cities in relation to the civil protection, which cannot be evacuated to a safe place, but also other settlements.
To address issues of the shelter population in protective structures of civil protection, the Central Executive authorities, Council of Ministers of the Autonomous Republic of Crimea, local state administrations, local governments and business entities to create a Fund in advance of such structures. The order of creation, the maintenance of the Fund protective structures of civil protection and management of accounting determined by the Cabinet of Ministers of Ukraine. Design, construction, adaptation and placement of protective structures and dual-use facilities are carried out in accordance with the standards that are developed in accordance with the Law of Ukraine "On Building Standards". The requirements for the maintenance and operation of protective structures are determined by the central executive body, which ensures the formation and implements state policy in the field of civil protection.
Space-planning solution.
Storage facilities (Fig. 2) are divided into:
a) main (a room for sheltering people, vestibules-locks, vestibules)
b) auxiliary - (premises for equipment):
- vestibule entrance;
- premises of filtering installations;
- diesel;
- utility production facilities (premises for sheltering people);
- men's wardrobe for clothes - shower;
- men's toilet;
- women's toilet;
- medical Center.

Storage Plan:



1 - a room for sheltering people; 2 - control point; 3 - medical point

(may not apply); 4 - filtering chamber; 5 - the room of the diesel power plant; 6 - sanitary unit; 7 - room for fuel and switchboard; 8 - the area for food (may not settle) 9 - entrance vestibule; 10 - emergency exit with tambour.

The stores provides for a protective inputs and outputs. Rate of floor space of the main room for one person is not less than 0.4-0.5 m2, and the use of repositories in peace time for production purposes should not exceed 40% of the total area of the store. The amount of space per person shall be not less than 1.5 m3. Spaces to shelter people equipped with benches for Seating with a size of 0.45 × 0.45 m, lying surface 0,55 × 1.8 m for one man), the width of the aisle between the benches should be of 0.7-0.85 m, and the width of the passage entrance to the vault should have the following sizes of 0.9-1.2 m Protection of inputs and other openings in storage is performed by establishing a standard protective airtight doors, gates and shutters.

The entrances to the storage and emergency exits.

The entrance consists of a descent of the stairs or ramp, the front vestibule, the vestibule (the vestibule of the gateway) and the entrance holes with door. The number of inlets depends on the capacity of storage and number of people per entrance. At a capacity of storage up to 300 people are allowed to make one entrance and an emergency escape exit with door height 1.8 m. to ensure people pass after the signal of civil defense in the closing doors at the entrances to the vault, you create one - or two-tambours-sluices.

Sealing and waterproofing.

Sealing of repositories is performed to prevent the inside of the storage of toxic substances, radioactive dust, biological aerosols, gaseous products of combustion in fires and flowing air-blast wave, and waterproofing - to prevent penetration of ground and surface waters.

Ventilation and heating.

The premises, which are adapted for storage under the regime of filterventilation, it must be operating overpressure of air is not less than 5 kgf / cm2. The dimensions

of the room for the filtration equipment is determined by its dimensions and the area required for its maintenance. Storage systems equipped with mechanical supply and ventilation (tab. 1, 2) to maintain appropriate thermal, wet and gas parameters of air during all time of stay in them. The ventilation of the storage facilities must ensure normal operation clean ventilation within 48 hours and in mode filterventilation 12 hours.Таблица 1

Vaults located in areas of possible massive fires or strong gas contamination of the territory with harmful substances from secondary factors, provides full isolation with regeneration of internal air with an estimated duration of mode within 6 hours. The ventilation system includes a separate intake channels air to different modes, anti-surge device with cameras installed on the intake and exhaust ducts, filters against dust, absorbing filters, fans, stacking system, hermetic valves, exhaust channel (vaults equipped to work in complete isolation, besides the means of regeneration) and heat capacity of the filter. Storage equipped with Central heating in the form of independent branches from a common heating system is the object or buildings and structures.

Water supply and Sewerage.
To provide water storage is equipped with a connected to external water supply network water supply. Input water distribution network set valves. In case of failure of external water supply networks provides the capacity for emergency supply of water. Norms of water supply needs storage in water are shown in table 2.
Table 2
Norms of water supply storage

Indicators Norm
Water consumption for economic and household needs during the day for one person, l 25
Emergency supply of water for drinking needs for one day for one person, l 3
Emergency supply of water for fire fighting measures in storage with a capacity of 600 people and more, m3 is 4.5
Emergency supply of water for technical needs For the calculation
In the vaults are installed flushing toilets with sewage in Sewerage outer network through independent releases (by gravity or by pumping) with the installation of a gate in the middle storage and emergency tank for collection of faeces.
Restrooms: men - 1 point and 1 urinal for up to 150 people;
for women - 1 point to 75 people;
one washbasin for every 200 persons, but not less than one sanitary unit. Electricity and communications.
Electricity storage is performed from the external network or business entity. In the vaults of large capacity or for a group of closely located stores protective mounted

diesel power plant (DPP) in the event of failure of the external power supply. DES is located at the outer wall of the vault and is separated from other spaces with non-combustible wall with the amount of fire resistance equal to 1часу. Entrance to DES with storage is equipped with a vestibule with two airtight doors that open to the side of the vault. In storage no DES uses local light sources. Store must have a phone input and a radio transmission point. The content of protective structures of civil protection in readiness for the intended use is carried out by economic entities on the balance sheet which they are located (including facilities not included in their authorized capital in the process of privatization (corporatization), at the expense of own means. When you use the same defenses multiple business entities they are involved in keeping the structure in accordance with the contracts concluded between them.

Protective structures of civil protection can be used in peacetime for economic, cultural and household needs in accordance with the procedure determined by the Cabinet of Ministers of Ukraine.

Since the exclusion of the defenses of Fund structures of civil protection it loses the status of protective structures of civil defense. The possession, use and disposal of the structures, which have lost the status of protective structures of civil protection shall be in accordance with the law. Protective structures of civil protection of state and communal property not subject to privatization (alienation). Defenses in peacetime can be leased to meet the economic, cultural and social needs with the conservation purposes of these structures, except those which are in constant readiness for use, namely:

1. Which are the control points.
2. It is intended to cover employees of economic entities with high risk.
3. Located observation areas of nuclear power plants and is designed to shelter the population during radiation accidents. Features rent protective structures determined by the model rental agreement, which is approved by the Cabinet of Ministers of Ukraine.

Checking for readiness of protective structures of civil protection to use provides the Central body of Executive power exercising state supervision in the sphere of technogenic and fire safety, in cooperation with relevant organs and units of civil protection, local government administrations.

Fallout shelter.

The protective properties of the radiation shelters evaluated by the protection factor, which indicates how many times the dose of radiation in open areas at a height of 1 m greater than the dose of radiation in the shelter, that is, the protection factor shows how many times PRU reduces the effect of radiation, and thus radiation dose of people. Fallout shelters can be equipped especially in the basements of buildings and structures. Basements in single-storey wooden houses weaken radiation doses 7 times, in residential one-story masonry (brick) buildings - 40, two-story 100, the middle part of basement of high-rise stone houses - 800-1000 times. At low levels of radiation, and to protect from bacterial means, the

vapors are poisonous and highly toxic substances you can use masonry (brick) and wooden buildings.
In the selection and preparation of shelters for protection against radioactive substances should take into account the protective properties of building materials and individual designs. The ability of building material to attenuate the flux of radiation is characterized by the density and thickness of the layer of half weakening of the material, i.e., a certain thickness of the layer of material, in passing through which the intensity of radiation is reduced in two times. After layer half of weakening of the material can determine the attenuation coefficient for any thickness, knowing that the flow of radiation will be halved as many times as layers half weakening is in the thickness of the material. Assessing the protective properties of buildings and shelters, should pay attention to the parts where the penetration of radioactive dust, hazardous chemicals. Such places the houses have Windows, vents and produhi in the basement of the house, chimneys, ducts, and heating vents. Dangerous radioactive dust in attics, because it will increase the radiation dose of people in the building.
In the village most of the houses suitable to protect people from radioactive dust. In addition, in rural areas there are many advanced in-ground basements, cellars, vegetable storehouses, and other structures.
Assessing the protective properties of the available facilities and on the basis of specific situation and actual needs in each case, it is possible to expect and in advance to prepare the necessary number of shelters for the protection of people in conditions of heavy contamination of areas with radioactive materials.
Preparing a room for shelter from radioactive substances, it is necessary to fulfill two basic requirements: first, to take measures against the ingress of radioactive dust into the room and, secondly, to strengthen the protection of the population, to increase the amount of work to fit shelters, as well as take into account the needs and the availability of necessary materials.
To prevent the entry of radioactive dust and dangerous chemicals into the shelter need to perform a simple sealing areas, eliminating all looseness, the weak sealing. To this end, in wooden houses prokonopachivayut and clay-daubed cracks. Large gap score slats. Cracks in the walls daubed with putty or plaster. Special attention should be paid to the sealing of doors and Windows. Chimneys, furnace vents, door inserts, purged, cracks and produhi in the basement - all these places need to make impervious to radioactive and chemical substances. To have a supply of glass, plywood, roofing felt or polyethylene film for quick closing of Windows, doors and other openings. The overlap can be enhanced by a layer of sand, slag, or just land up to a thickness of 20 cm.
If possible, equip one supply and one exhaust duct in basements, cellars and other underground structures. To provide the thrust and exhaust duct should be installed at 1,5-2 m above the inlet. In homes instead of exhaust ducts is possible to use chimneys in other buildings the major types - existing ventilation ducts. In the supply box or the gap should lay filter with burlap, straw cleavers, Marley.

For equipment under the fallout shelter of the cellar you want to increase its overlap, then the overlap of the fill soil layer of 60-70 cm, to fit tight manhole cover and make vent box.
If necessary, it is necessary to build pre-fabricated from a local PRU (wood, stone, Adobe, reeds) building materials or industrial precast concrete elements, bricks, pipes, fittings. For the construction of the PRU dig a pit, erect the walls and floors. The spaces between the walls of the pit and structures covered with soil, which is every 20-30 cm and rams. Then the soil is poured in place fit the ceiling to the ground around the perimeter of the shelter. Over the overlapping equip waterproofing of roofing material, roofing felt, plastic film or clay with a thickness of 10 cm Clay hydrate, mix the dough and put a convex layer. For waterproofing of poured soil layer of 60-70 cm.
At a 90 ° angle to the main facility and equipped entrance in a sealed vestibule the joints of the frames of the vestibule to the walls prokonopachivayut rags, oakum or moss. At the entrance to the vestibule and the exit from it hung a curtain of dense material. At the entrance instead of the veil can be dense d

Materials for self-control:

1. What are the means of individual medical protection?

* A. Radioprotective drugs, antidotes, antibacterial agents, PPI, PPI, AIMZ;

B. Radioprotectors, antidotes, vaccines, serums, PPI, PPI, AIMZ;

B. Radioprotectors, antidotes, antibiotics, painkillers;

G. Radioprotective drugs, antidotes, antibiotics, PPI, PPI, AIMZ, AI-2.

2. How are extinguishers classified by the type of extinguishing charge?

* A. Water, foam, powder, gas.

B. Carbon dioxide, chemical, foam, powder.

B. Powder, carbon dioxide, foam, water.

G. Water, foam, powder, carbon dioxide.

3. What are the water installations?

* A. Sprinkler, deluge.

B. Sprinkler, automatic.

B. Drencher, irrigation.

G. Sprinkler, irrigation, automatic.

4. What zones are formed as a result of an air-gas mixture explosion?

* A. The area of action of the detonation wave, explosion products, air shock wave.

B. The area of operation of the detonation wave, air shock wave, dangerous wave.

B. The area of action of an air shock wave, a dangerous shock wave, an extremely dangerous shock wave.

D. The area of action of the products of an explosion, an air shock wave, a dangerous shock wave.

5. How are fire extinguishers classified by type of extinguishing action?

* A. Water, foam, powder, carbon dioxide, chladonic, combined.

B. Aerosol, water, foam, powder, carbon dioxide.

B. Water, foam, powder, carbon dioxide, dry.

G. All of the above.

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