MINISTRY OF HEALTH OF UKRAINE
O.O. BOGOMOLETS NATIONAL MEDICAL UNIVERSITY

"Approved"
at the methodological conference of hygiene and ecology department
Head of the department
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GUIDELINES
FOR STUDENTS

Subject	Hygiene and ecology
Module № 1	Assessment of the environment and its impact on the population health
Submodule № 7	Hygiene of emergency situations
Topic of the lesson	Organization of hygienic supply during elimination of emergencies consequences. Peculiarities of temporary location of affected population and rescue units.
Course	6
Faculty	medical
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Kiev

1. Learning objective

1.1 Get familiar with types and characteristic of field location rescue units in the emergency situations.

1.2 Learn the units' filed location hygienic requirements, duties of the officials of the units for their provision.

1.3 Master methods of medical control of unit personnel (and affected population) location during emergencies in the field basic and extempore accommodation, dug-outs, shelters and other constructions deepened into the ground.

2. Basics

2.1. You should know:

2.1.1. Hygienic requirements for the areas, where units will be located and to the planning of these areas.

2.1.2. Hygienic requirements for sanitary improvement of land areas for location (water supply, collection, sewage disposal, solid and liquid waste treatment etc.).

2.1.3. Microclimate and air chemical compound peculiarities of the field habitation and constructions, deepened into the ground.

2.2. You should have the following skills:

2.2.1. To consider design materials (situational plan, general layout, planning schemes and sectional views of premises etc.), to make up expert's decisions based on these materials.

2.2.2. To perform sanitary inspection of the stationing area, premises and services of different function, measure microclimate, air chemicals pollution parameters in such premises.

2.2.3. To draw up conclusions and make recommendations based on examination results of design materials or locations.

3. Self-training questions

3.1. Determination and classification of emergency situations. International and national units on elimination of catastroph consequences.

3.2. Peculiarities of the life support of non-governmental units, rescue teams and affected population during catastrophes and in other emergency situations (location, nutrition, water supply, bath and laundry service, sewage and solid waste collection and neutralization).

3.3. Kinds of field location of rescue units (training units, camps, moving camps- bivouacs, residential constructions and constructions, deepened into the ground).

3.4. Organizations of sanitary inspection of field location of rescue units in emergency situations. Duties of officials of units concerning proper control of hygienic conditions in field locations of different type.

3.5. Area choice requirements for rescue units field location during elimination of catastrophe consequences or other emergency situations.

3.6. Field camp, bivouac sanitary improvement hygienic requirements: water supply, collection, sewage disposal, solid and liquid waste treatment, bath and laundry securing etc.

3.7. Kinds of field habitation (basic and extempore), hygienic requirements for their equipment and operation during emergency situations. Field habitation, deepened into the ground (dug-outs, blindages) and requirements for staying conditions in them (area, cubic capacity, ventilation, heating etc.).

3.8. Indoor shelters, planning elements, area, cubic capacity, carbon dioxide maximum allowable concentration (MAC) regulations, sanitary improvement. Air supply to shelters, filter and ventilating units.

3.9. Methods and means of medical control of rescue units in field conditions, in protective installations.

4. Self-training assignments

4.1. Calculate ventilation volume of the dug-out designed for 40 persons at the first ventilation mode – pure ventilation, carbon dioxide MAC is 1%. (Appendix 3).

4.2. Calculate maximum time of stay of the unit of 20 persons in the dug-out of 100 m^3 volume at the third ventilation mode – total isolation, MAC of CO_2 - 3%. (Appendix 3).

4.3. Calculate cubic capacity of the dug-out designed for 30 persons staying during 3 hours according to their heat-accumulation. (Appendix 3).

5. Structure and content of the lesson (duration of the lesson 160 min + 10 min break)

5.1. Preamble – 5-10 min.
5.2. Test control for assessment of students' knowledge datum level – 10-15 min
5.3. Theoretical training – 30-40 min.
5.4. Typical situational tasks "Krok-2" solution – 30-40 min.
5.5. State exams situational tasks solution – 30-40 min.
5.6. Test control for assessment of students' knowledge final level – 10-15 min.

6. Situational task

I.

For take-off and landing control are used radio-location station (RLS) with dish aerials based on 6 m height. Diameter of dish aerials opening L=8m, wavelength = 3,5 dm, mean power of station Pm=850 Wt, dish aerials gain constant D=200. Just one RLS works.

For the purpose of protection from MW-field were established 3 control areas – 25, 50, 150 m.

But after 6 month of work all workers start to complain of fast tiredness, weakness, headache, excessive (profuse) sweating, gripping in eyes, low blood pressure, stenocardia, inattention.

Energy-flux density (EFD) at 1 control area-1300 $\mu Wt/sm^2$, 2 control area-350 $\mu Wt/sm^2$, 3 control area-40 $\mu Wt/sm^2$.

1. Assess the results of instrumental examinations.
2. Which medical documents must be keeping by doctors at airport.
3. Determine dimensions of control areas, which corresponds to hygienic norms.

II.

In city N. after earthquake started conflagrations. Appear many deceased, injured, dead under blockage. Rescuers work more then 12 hours. Physiological indeces of rescuers –

pulse 90-120 in min,
systolic volume of heart 80-90 ml,
respiration rate 24-26 in min,
respiratory volume of lungs 0,8-1,2 l,
respiratory minute volume 19-31 l,
systolic pressure 140-150 mm Hg,
diastolic pressure 90-100 mm Hg.

1. Give hygienic assessment of situation and physiological state of rescuers.
2. Name etiological factors and risk factors.
3. Plan hygienic, preventive measures.
4. Calculate Ketle and heldebrandt indeces.

10. Literature

6.1. Principal:

6.1.1. Беляков В.Д., Жук Е.Г. Военная гигиена и епидемиология. Учебное пособие.- М.: Медицина, 1988. – С.27-47.

6.1.2. Даценко І.І., Габович Р.Д. Профілактична медицина. Загальна гігієна з основами екології. – 2 видання: К.: Здоров'я, 2004, - С. 651-665.

6.1.3. Загальна гігієна. Посібник до практичних занять. / І.І.Даценко, О.Б.Денисюк, С.Л.Долошицький та ін. / За ред.І.І.Даценко. – Львів.: "Світ", 1992 – С. 4-47; 51-55; 253-255.

6.1.4. Медицина катастроф. – М., 1996. – С.76-104.

6.1.5. Медицина катастроф. Учбовий посібник для студентів медвузів. /А.Є.Дубицький, І.О.Семенов, Л.П.Чепкий. – К.: Здоров'я, 1993. – 462 с.

6.1.6. Дубицький А.Є., Семенов І.О., Чепкий Л.П. Медицина катастроф. Навчальний посібник. 2 видання. – Київ, „Курс". - 1999. – 383 с.

6.1.7. Надзвичайні ситуації. Основи законодавства України. – К., 1998. т.1 – 544 с., т.2 – 496 с.

6.1.8. Військова гігієна з гігієною надзвичайних ситуаціях. – Підручник. /За ред. К.О. Пашка. – Тернопіль: Укрмедкнига, 2005, - С. 19-108.

6.1.9. Lecture materials.

6.2. Additional:

6.2.1. Спичев В.П., Омельченко А.Т. Организационно-техническая основа системы военной медицины катастроф. – М.: Воениздат, - 1992. – 270 с.

6.2.2. Захарченко М.П., Лопатин С.А. Гигиеническая диагностика в екстремальних ситуациях. – С.-Петербург.: Наука. – 1995. – 222 с.

6.2.3. Ионина Н.А., Кубеев М.Н. 100 великих катастроф. – М.: Ритоллклассик, 2000, - 496 с.

6.2.4. Денисов П. Тайны катастроф. – м. Вече, 2000. – 336 с.

6.2.5. Медична служба цивільної оборони. / За ред. Л.М.Майдикова. – К.: Вища школа, 1970. – 278 с.

NEW REFERENCES

1. Hygiene and ecology: textbook for students of higher medical educational establishments / under the editorship of corresponding member of NAMS of Ukraine, prof. Bardov V.G. – Vinnytsia: Nova Knyha, 2009. – 688 p.

2. Hygiene and ecology / V.A. Korobchanskiy, M.P. Vorontsov, A.A. Musulbas. – Kharkov, 2006. – 207 p.

3. Medicine of emergency situations: textbook for students of higher medical institutions / V.V. Chaplyk, P.V. Oliynyk, S.T. Omelchuk, V.V. Humenyuk. – Vinnytsia: Nova Knyha, 2012. – 344 p.

4. General nutrition: Study guide for the 4th accreditation level Medical School Students / edited by S.T. Omelchuk, O.V. Kuzminska. – Kyiv, 2016. – 146 p.

5. Гигиена и экология: учебник для студентов высших медицинских учебных заведений. – Винница: НОВА КНИГА, 2008ю – 720 с.

11. Equipment required for the lesson

1. Training project of the training camp and shelter.
2. Tables:
   - layout of the dug-out, camp and hut tents, mountable-and-dismountable and frame-inflatable field habitations;
   - space, cubic capacity and CO_2 MAC standards of the shelters.
3. Filter and ventilating unit ФВА-1.
4. Instruments for the field habitation hygienic mode assessment (psychrometer, anemometer, noise dosimeter), field gas analyzers for CO_2 (ПГА-ДУ-М) and for detrimental impurities (ПГА-ВП-М).
5. A task for individual work of the students at the lesson.