Hygiene and Ecology

Workbook
for students of medical faculty

Module 2
Special problems of hygiene and ecology

Student_____________________
Year of training _____________
Group_______________________
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<td>Determine different types of biological rhythms day curves, the type of day work capacity and calculation biological rhythms</td>
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<td>5.</td>
<td>Determine and assess the project patient care institutions’ location using the construction drawings of the situational plan-</td>
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<td>Determine and assess the project patient care institutions’ territory zoning using the construction drawings of the general plan-</td>
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<td>7.</td>
<td>Determine and assess the correspondence of the hospital premises’ area, cubic capacity and sanitary accomplishment to hygienic standards; their correspondence to the functional purpose using the constructions’ plans and slits</td>
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<td>8.</td>
<td>Carry out the sanitary inspection and determine the objective figures of the hygienic condition of the situational plan of hospital</td>
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<td>9.</td>
<td>Carry out the sanitary inspection and determine the objective figures of the hygienic condition of the general plan of hospital -</td>
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<td>10.</td>
<td>Carry out the sanitary inspection and determine the objective figures of the hygienic condition of the internal design of department and hospital ward of the hospital</td>
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<tr>
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<td>Perform the act of sanitary-hygienic inspection of hospital with conclusion</td>
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<tr>
<td>15.</td>
<td>Master method of estimation of organism thermoregulation and heat metabolism in hot and tropical conditions</td>
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<tr>
<td>16.</td>
<td>Master the medical control methods of hot and tropical regions water supply and prevention of waterborne diseases</td>
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<td>17.</td>
<td>Carry out medical control of nutrition sufficiency and safety, use methods and measures for prevention of diseases among certain population groups in tropical regions</td>
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</tbody>
</table>
Subject 1. STRUCTURE OF SANITARY-EPIDEMIOLOGICAL STATION, SANITARY LEGISLATION. METHODS OF SANITARY INVESTIGATION OF OBJECT AND PERFORMING THE ACT OF SANITARY INVESTIGATION

Learning objective
- Become acquainted with sanitary epidemiological service in Ukraine, ways and means of population health protection, prophylaxis of diseases.
- Become acquainted with preventive and current sanitary supervision, their tasks and stages.
- Become acquainted with main kinds of sanitary investigation and description of object of sanitary supervision.

Basics
You should know:
- Structure and main tasks of sanitary epidemiological service in Ukraine.
- Notion and contents of preventive and current sanitary supervision, their tasks.
- Stages of sanitary hygienic investigation of objects.

You should have the following skills:
- To carry out sanitary inspection of the object of sanitary supervision.
- To perform the act of sanitary inspection with conclusion.

Self-training assignments:
Main tasks of preventive sanitary supervision:
1. ............................................................................................................................
2. ............................................................................................................................
3. ............................................................................................................................
4. ............................................................................................................................

Main tasks of current sanitary supervision:
1. ............................................................................................................................
2. ............................................................................................................................
3. ............................................................................................................................

2
Main stages of preventive sanitary supervision:
1. .................................................................
2. .................................................................
3. .................................................................
4. .................................................................

Main stages of current sanitary supervision:
1. .................................................................
2. .................................................................
3. .................................................................
4. .................................................................
5. .................................................................

Main kinds of inspection of sanitary investigation objects
1. .................................................................
2. .................................................................
3. .................................................................
4. .................................................................
5. .................................................................
The Form of the “Act of sanitary infestation” of sanitary supervision objects:

1. Introductory part:

2. State part:

3. Conclusion part:

4. Dictate part:

Test questions

2. Structure of sanitary – epidemiological station.
3. Main directions and stages of preventive sanitary supervision.
4. Main directions and stages of current sanitary supervision.

Signature of the Teacher  
Signature of the Student
Subject 2. SANITARY PURIFICATION OF POPULATED AREAS. GENERAL SCHEME OF PURIFICATION OF DOMESTIC SEWAGE

Learning objective:
- To become acquainted with system of sanitary purification of populated areas and general scheme of domestic sewage purification.
- To become acquainted with main schemes of domestic sewage purification. To master the method of selection of principal schemes of sewage in accordance with local conditions.

Basics
You should know:
- Notion "waste", their classification and main systems of waste removing from populated areas.
- Essence of planned system of solid waste collection and export.
- Main methods of domestic waste render harmless (decontamination); hygienic requirements to them.
- Main systems and schemes of domestic sewage purification.

You should have the following skills
- Carry out sanitary inspection of the building for clearance.
- To calculate efficiency of domestic sewage purification on the station of biological purification.

Self-training assignments:
3.1. Situational task № 1. During the sanitary inspection of factory for biothermal work of solid domestic waste (SDW) it was founded out: 20 volumes of air set for 1 volume of SDW; humidity of SDW is 20 %, organic substances- 80%; among them 40% of easily decay; 20% nonorganic substances; sizes of solid particles are 27-32mm; pH is 7.2. Make up hygienic estimation of efficiency biothermal method of render harmless on the base of these conditions. Make up measures, which are directed to increase of efficiency of SDW render harmless.

Solution of situational task

………………………………………………………………………………………………
………………………………………………………………………………………………
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3.2. Situational task № 2. Sanitary inspection of district hospital shows: the area of hospital plot is 4 h; domestic area for dustbins is 35m², distance from domestic area to food department is 40m, to medical building-55m. 42 enameled cisterns are placed on the hospital territory on the distance 15m one by one.
Make up hygienic estimation of sanitary investigation. Make up recommendations for liquidation of breach of sanitary rules for clearing medical establishments territory.

**Solution of situational task**

3.3 Situational task № 3. Calculate efficiency of sewage purification on the station of biological purification according next data.

<table>
<thead>
<tr>
<th>Indices of pollution</th>
<th>Units of measurement</th>
<th>Stages of purification</th>
<th>Before purification</th>
<th>After mechanical purification</th>
<th>After biological purification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Units (% )</td>
<td>Units (%)</td>
<td>Units (%)</td>
<td>Units (%)</td>
<td>Units (%)</td>
</tr>
<tr>
<td>Suspended particles</td>
<td>mg/dm³</td>
<td>179</td>
<td>105</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>BNO</td>
<td>mg 0₂/dm³</td>
<td>200</td>
<td>110</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Oxidation</td>
<td>mg 0₂/dm³</td>
<td>64</td>
<td>36</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Microbial number</td>
<td>3,2 ( \cdot ) ( 10^6 )</td>
<td>1,7 ( \cdot ) ( 10^6 )</td>
<td>1,1 ( \cdot ) ( 10^4 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of helminth’s eggs</td>
<td>1,5 ( \cdot ) ( 10^3 )</td>
<td>76</td>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Solution of situational task**

Test questions

1. Hygienic significance of purification of populated areas.
2. Hygienic character of main systems of population areas purification.
3. Hygienic character of system of populated area purification.
4. Hygienic character of sewage main systems.
5. Hygienic character natural methods of domestic sewage purification.
6. Hygienic character of artificial methods and main buildings for mechanical and biological purification of sewage.

Signature of the Teacher________

Signature of the Student_______
Subject 3. METHODS OF PSYCHOHYGIENE AND PRIMARY PSYCHICAL PROPHYLAXIS

Learning objective:
- Master theoretical knowledge about mental health and its basic criteria, leading peculiarities of human personality.
- Master methods of temperament and character attributes determination, motivation direction and human personality nervous and mental condition peculiarities determination.

Basics
You should know:
- Main objectives of psychohygiene and main criteria of mental health assessment.
- Hereditary factors and environment factors influence on children’s and adolescents’ mental health.
- Leading peculiarities of human personality (temperament and character attributes, motivation direction, and nervous and psychological state peculiarities) and their psycho-hygienic value.

You should have the following skills:
- To determine the leading human personality peculiarities.
- To use psycho-hygienic principles of person’s daily activity optimization during training and in free time.

Self-training assignments:

1. Determine basic attributes of your temperament
Hygienic assessment of individual and typical organism peculiarities especially temperament characteristics allows to determine people with different degree of leading polar basic attributes of higher nervous activity such as extraversion – introversion; rigidity of nervous processes - plasticity of nervous processes, emotional excitement - emotional balance, reactions rate (slow-fast), activity (high- low).
In order to determine basic temperament attributes it is necessary to suggest a person to answer the questionnaire honestly and quickly. A person can answer only “Yes” or “No”.

1. Do you like being in a company frequently?
2. Do you avoid to own things which are not reliable or not firm but beautiful?
3. Do you often have changes of mood?
4. Do you speak quickly?
5. Do you like work which takes high force exertion?
6. Do you gossip?
7. Are you cheerful and funny person?
8. Do you get accustomed to certain clothes, its style, colour and don’t want to change it?
9. Do you often feel that you need a person who understands you, can praise you or cheer up?
10. Is your handwriting quick?
11. Do you look for a work if you can rest?
12. Do you keep your promises?
13. Do you have many good friends?
14. Is it difficult for you to distract from one activity which you are strongly involved into and change it into another?
15. Do you often feel guilty?
16. Do you always walk quickly?
17. Do you think over difficult tasks until you solve it?
18. Can your intellectual activity sometimes be worse than usual?
19. Are you a sociable person?
20. Do you plan your behavior during future meeting?
21. Are you easily insulted by somebody’s jokes?
22. Do you gesticulate while speaking?
23. Do you wake up fresh and cheerful?
24. Do you have such thoughts, which you wish nobody knew?
25. Do you like mocking?
26. Do you check your thoughts before express them?
27. Do you have nightmares?
28. Do you remember and study easily?
29. Is it difficult for you to sit still for some hours without any work?
30. Do you lose your temper when you’re angry?
31. Can you cheer up a dull company?
32. Do you think for a long time before making an important decision?
33. Do you take everything to heart?
34. Do you like games which require speed and good reaction?
35. If you don’t cope with something, do you keep on trying till the end?
36. Did you have feeling of irritation towards your parents?
37. Are you sincere and do you like companies?
38. Is it difficult for you to start a new work?
39. Do you have the feeling that you’re worse than others?
40. Is it difficult for you to work with slow people?
41. Can you work efficiently the whole day without being tired?
42. Do you have harmful habits?
43. Are you careless person?
44. Do you consider your good friends only those, whose friendship to you is reliable and checked?
45. Are you easily irritated?
46. Do you find the best answer during discussion?
47. Do you force yourself to work for long periods of time or do something?
48. Do you discuss things which you don’t know?
Questionnaire code

**EXTRAVERSION**
- “Yes” 1, 7, 13, 19, 25, 31, 37 – 3 marks
- “No” 4, 43 – 2 marks
- “No” 2 – 1 mark

**RIGIDITY OF NERVOUS PROCESSES**
- “Yes” 8, 26, 32 – 3 marks
- “Yes” 2, 14, 20, 38, 44 – 2 marks
- “No” 37 – 2 marks
- “No” 19, 46 – 1 mark

**EMOTIONAL EXCITEMENT**
- “Yes” 15, 21, 33, 39, 45 – 3 marks
- “Yes” 3, 9 – 2 marks
- “Yes” 27 – 1 mark

**REACTION TEMPO**
- “Yes” 4, 16, 28 – 3 marks
- “Yes” 10, 22, 34, 40, 46 – 2 marks
- “Yes” 17, 29, 37 – 1 mark

**ACTIVITY**
- “Yes” 5, 11, 17, 23, 29, 35, 41, 47 – 3 marks
- “Yes” 10 – 1 mark
- “No” 38 – 1 mark

**SINCERITY**
- “Yes” 30, 36, 42, 48 – 3 marks
- “Yes” 6, 12 – 2 marks
- “Yes” 18, 24, 25 – 1 mark

**Assessment of results**

**EXTRAVERSION**
- 22-26 – extremely high extraversion
- 17-21 – high extraversion
- 12-16 – middle extraversion
- 7-11 – high introversion
- 0-6 – extremely high introversion

**RIGIDITY OF NERVOUS PROCESSES**
- 16-23 – extremely high rigidity
- 12-15 – high rigidity
- 7-11 – middle plasticity of nervous processes
- 3-6 – high plasticity
- 0-2 – extremely high plasticity of nervous processes
2. Determine motivation direction and solicitation level of a your person

Solicitation level of a person means needs, motives and other personality features which are expressed in a degree of purpose complication which a person wants to achieve.

Modified form of questionnaire by V.K. Gorbachevsky is used to determine motivation direction of a person. Usage of questionnaire allows to estimate the following components of motive personality structure: inner motive which is connected with the activity process; cognitive motive which characterizes person’s attitude to results of its activity; avoiding motive; general motive; motive to activity changing; self-esteem motive which is expressed by person’s desire to set more and more complicated purpose in daily life.
Also this questionnaire allows to estimate such elements of personality motive structure as
degree of volitional efforts expression; strength mobilization level which has been set; initiative;
gives opportunity to self-concept of achieved results and intellectual potential.

The tested person is suggested to read each statement and decide whether to agree or disagree
with them. Then according to this decision the person should choose one of the variant and to
assess the question. If the person completely agrees - +3; if agrees - +2; if more agrees that
disagrees - +1; if more disagrees than agrees - -1; if disagrees - 2; if completely disagrees - -3.
In case of hesitation and if it is impossible to agree or disagree with the statement – 0.

1. I’m fed up with work which I do every day.
2. I’m half-exhausted while working.
3. I want to show what I can.
4. I feel that I’m forced to achieve good results.
5. I’m interested in result.
6. The task which is being solved is complicated.
7. Nobody needs my work.
8. I’m interested whether my results are better or worse than others have.
9. I’d like to do another activity.
10. I think results of my work will be high.
11. Situations and problems connected with my activity can cause troubles.
12. More results you have more you want to exceed them.
13. I express enough efforts.
14. I consider my best result isn’t a coincidence.
15. I’m not interested in my work.
17. I worry about my work results.
18. I’m energetic while working.
19. I can’t achieve better results.
20. My work is very important for me.
21. I always set a complicated purpose.
22. I don’t care about results of my work.
23. The more I work, the more I’m interested in it.
24. I don’t want to work with all my forces.
25. Maybe my results will be low.
26. Even if you try the result won’t change.
27. I’d like to do any work apart from which I do now.
28. My work is easy.
29. I can achieve better result.
30. The more complicated is the goal, the more I want to achieve it.
31. I feel I can cope with any troubles to achieve the goal.
32. I don’t care about my results in comparison with others.
33. I’m fond of my work.
34. I want to prevent low results.
35. I’m independent.
36. I think that I waste my forces and time.
37. I work with half forces.
38. I’m interested to reach the border of my abilities.
39. I want my result to be the best.
40. I will do everything to achieve my goal.
41. I feel that I can’t cope with it.
42. Exams are lottery.
The processing of results requires to transfer results into standard marks according to rules of direct or inverse transferring.

*Direct transferring:* -3 – 1 point; -2 – 2 points; -1 – 3 points; 0 – 4 points; +1 – 5 points; +2 – 6 points; +3 – 7 points.

*Inverse transferring:* -3 – 7 points; -2 – 6 points; -1 – 5 points; 0 – 4 points; +1 – 3 points; +2 – 2 points; +3 – 1 point.

**Code for results assessment** (i-inverse transferring):

- **Inner motive** – 15i; 23; 33.
- **Cognitive motive** – 5; 22i; 38.
- **Avoid motive** – 11; 17; 34.
- **General motive** – 8; 32i; 39.
- **Self-esteem motive** – 12; 21; 30.
- **Significance of results** – 7i; 20; 36i.
- **Complication of the task** – 6; 28i.
- **Volitional efforts** – 2; 13; 37i.
- **Assessment of the achieved results level** – 19i; 29.
- **Assessment of own potential assessment** – 18; 31; 41i.
- **Set level of forces mobilization** – 3; 24i; 40.
- **Level of supposed results** – 10; 25i.
- **Regularity of results** – 14; 26i; 42i.
- **Initiative** – 4i; 16; 35.

**Assessment of results**

- 3-7 – low level
- 8-14 – average level
- 15-21 – high level

**Conclusion**

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

**Test questions**

1. Psychohygiene as a science, it’s main objective, methods and means.
2. Concept of person health and main criteria of its assessment. Boundary neuropsychic and mental disorders and abnormalities as a hygienic problem.
4. Main human personality peculiarities (temperament and character attributes, motivation direction, and nervous and psychological state peculiarities) and methods of their studying.
5. Psychohygienic basics of daily activity optimization.

Signature of the Teacher

Signature of the Student
Subject 4. SCIENTIFIC BACKGROUNDS OF MEDICAL BIORHYTHMOLOGY AND CHRONOHYGIENE

Learning objective:
- Strengthen the theoretical knowledge on biological rhythms and their main characteristics and types.
- Master the methods of determination of the physiological, psychological and physiological, and calculation correlates of the organism biological rhythm.
- Learn the biorhythmological principles of the rational organization of the people’s everyday activity.

Basics:
You should know:
- Initial conditions and development reasons of medical biorhythmology as a science and its psychohygienic value.
- Main characteristics and classifications of the most widespread biological rhythms.
- Development reasons and the main clinical manifestations of desynchronosis as a medical and hygienic category.

You should have the following skills:
- To determine different types of biological rhythms day curves, the type of day work capacity and calculation biological rhythms.
- To use during the organization of educational (working) process and in one’s free time the biorhythmological principles of the rational organization of the everyday activity.

Self-training assignments
1. Determination of the human day work capacity type

The most adequate and accurate method of the day work capacity type is the test method by O. Ostberg, modified by S. Stepanova. The examined person is suggested to read thoroughly the questions of the personal questionnaire and strictly following their order to choose the most typical for him variant of answer.

1. What time would you prefer to wake up if you were free enough to plan your day schedule according to your own desire?

<table>
<thead>
<tr>
<th>Variant</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) 5:00 – 6:45</td>
<td>5</td>
</tr>
<tr>
<td>b) 6:46 – 8:15</td>
<td>4</td>
</tr>
<tr>
<td>c) 8:16 – 10:45</td>
<td>3</td>
</tr>
<tr>
<td>d) 10:46 – 12:00</td>
<td>2</td>
</tr>
<tr>
<td>e) 12:00 – 13:00</td>
<td>1</td>
</tr>
</tbody>
</table>
2. What time would you prefer to go to bed if you were free enough to plan your evening time according to your own desire?

<table>
<thead>
<tr>
<th>In winter</th>
<th>In summer</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) 20(^{00}) – 20(^{45})</td>
<td>21(^{00}) – 21(^{45})</td>
<td>5</td>
</tr>
<tr>
<td>b) 20(^{46}) – 21(^{30})</td>
<td>1(^{46}) – 22(^{30})</td>
<td>4</td>
</tr>
<tr>
<td>c) 21(^{31}) – 00(^{15})</td>
<td>2(^{31}) – 1(^{15})</td>
<td>3</td>
</tr>
<tr>
<td>d) 00(^{16}) – 1(^{30})</td>
<td>1(^{16}) – 2(^{30})</td>
<td>2</td>
</tr>
<tr>
<td>e) 1(^{31}) – 3(^{00})</td>
<td>2(^{31}) – 4(^{00})</td>
<td>1</td>
</tr>
</tbody>
</table>

3. Do you need an alarm clock if you have to wake up early in the morning at the definite time?
   a) I don’t need it at all 
   b) I need it in some cases 
   c) I really need it 
   d) Obligatory, I can’t without it 
   4

4. If you had to be preparing for exam being limited in time and using night time (23\(^{00}\) – 2\(^{00}\)) for learning, how efficient could your work at night be?
   a) Absolutely inefficient, I couldn’t work at that time 
   b) There could be some benefit 
   c) My work could be quite efficient 
   d) My work could be highly efficient 
   1

5. Is it easy for you to wake up in the morning under the usual conditions?
   a) Very difficult 
   b) Difficult enough 
   c) Easy enough 
   d) Very easy 
   2

6. Do you feel that you have woken up finally during the first 30 minutes after you got up?
   a) I have terrible somnolence 
   b) I am sleepy a little 
   c) I am awake enough 
   d) I am absolutely awake 
   3

7. What is your appetite during the first 30 minutes since you have gotten up?
   a) I have no appetite 
   b) My appetite is reduced 
   c) Good enough 
   d) Perfect appetite 
   4

8. If you had to be preparing for exam being limited in time and using morning time (4\(^{00}\) – 7\(^{00}\)) for learning, how efficient could your work at that time be?
   a) Absolutely inefficient 
   b) I couldn’t work at that time 
   c) There could be some benefit 
   d) My work could be efficient 
   2
9. Do you feel any physical tiredness during the first 30 minutes since you have gotten up?
   a) Very severe weakness 1
   b) I am rather weak 2
   c) I am rather vigorous 3
   d) Absolute vivacity 4

10. If you are having a day off tomorrow, what time will you go to bed?
    a) Not later than usually 4
    b) 1 hour or less later 3
    c) 1-2 hours later 2
    d) 2 hours and more later 1

11. How easy do you fall asleep under the usual conditions?
    a) Very difficult 1
    b) Difficult enough 2
    c) Easy enough 3
    d) Very easy 4

12. You’ve decided to go be engaged in physical training. Your friend has suggested doing it together during 1 hour twice a week from 7:00 till 8:00 in the morning. Is this the best time for you?
    a) I would prefer that time also 1
    b) I could be quite fit 2
    c) It could be difficult for me 3
    d) It could be very difficult for me 4

13. When in the evening you are tired enough to feel like going to bed?
    a) 20:00 – 21:00 5
    b) 21:01 – 22:15 4
    c) 22:16 – 00:45 3
    d) 00:46 – 2:00 2
    e) 2:01 – 3:00 1

14. Which of the suggested time would you prefer to fulfill 2-hour work requiring absolute mobilization of your mental activity?
    a) 8:00 – 10:00 6
    b) 11:00 – 13:00 4
    c) 15:00 – 17:00 2
    d) 19:00 – 21:00 0

15. How tired are you at 11 p.m.?
    a) Very tired 5
    b) Quite tired 3
    c) Partially tired 2
    d) Not tired at all 0
16. Due to some circumstances you had to go to bed some hours later than usual. It’s not necessarily to wake up in the morning at the definite time. Which of the suggested variants is the most suitable for you?
   a) I will wake up and won’t fall asleep any more 4
   b) I will wake up as usual and will be dozing 3
   c) I will wake up as usual and then will fall asleep again 2
   d) I will wake up later than usual 1

17. You have to be on duty at night from 4 to 6 a.m. The next day you are free. Which of the suggested variants is the most suitable for you?
   a) I will sleep only after my duty 4
   b) I will doze a little before and sleep after my duty 3
   c) I will sleep before and doze after my duty 2
   d) I will sleep totally before my duty 1

18. You have to work physically hard during 2 hours. What time would you prefer to do it if you were free enough to plan your day schedule?
   a) 8\textsuperscript{00} – 10\textsuperscript{00} 4
   b) 11\textsuperscript{00} – 13\textsuperscript{00} 3
   c) 15\textsuperscript{00} – 17\textsuperscript{00} 2
   d) 19\textsuperscript{00} – 21\textsuperscript{00} 1

19. You’ve decided to go be engaged in physical training. Your friend has suggested doing it together during 1 hour twice a week from 10 to 11 p.m. Is this the best time for you?
   a) I could be quite fit 1
   b) I think I could be quite fit 2
   c) It’s rather late, I couldn’t be fit 3
   d) Absolutely not, I couldn’t do it that time 4

20. What time did you use to wake up during summer vacations in your childhood?
   a) 5\textsuperscript{00} – 6\textsuperscript{45} 5
   b) 6\textsuperscript{46} – 7\textsuperscript{45} 4
   c) 7\textsuperscript{46} – 9\textsuperscript{45} 3
   d) 9\textsuperscript{46} – 10\textsuperscript{45} 2
   e) 10\textsuperscript{46} – 12\textsuperscript{00} 1

21. Imagine, that you could arrange your working hours yourself. Which of the suggested periods could you have the maximal efficiency in?
   a) 0\textsuperscript{01} – 5\textsuperscript{00} 1
   b) 5\textsuperscript{01} – 8\textsuperscript{00} 5
   c) 8\textsuperscript{01} – 10\textsuperscript{00} 4
   d) 10\textsuperscript{01} – 16\textsuperscript{00} 3
   e) 16\textsuperscript{01} – 21\textsuperscript{00} 2
   f) 21\textsuperscript{01} – 24\textsuperscript{00} 1
22. What time do you usually reach “the top” of your working activity?
   a) 00\(^0\) – 4\(^0\)          1
   b) 4\(^0\) – 8\(^0\)          5
   c) 8\(^0\) – 9\(^0\)          4
   d) 9\(^0\) – 14\(^0\)         3
   e) 14\(^0\) – 17\(^0\)       2
   f) 17\(^0\) – 24\(^0\)       1

23. Sometimes we can hear about people of the morning and evening types. What type do you attribute yourself?
   a) clearly to the morning       6
   b) more to the morning than to the evening one  4
   c) more to the evening than to the morning one  2
   d) clearly to the evening       0

   **The work capacity type** is determined by the total score:
   more than 92 points – clearly defined morning type;
   77 – 91 points                – mildly defined morning type;
   58 – 76 points                – the arrhythmic type;
   42 – 57 points                – mildly defined evening type;
   less than 42 points           – clearly defined evening type.

Conclusion _______________________________________________________
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   **Test questions**

1. Biological rhythms and human health. The biological rhythms concept. Initial conditions and development reasons of medical biorhythmology as a science.
2. Main characteristics of the biological rhythms (level, period, amplitude, acrophase, form of daily curve etc.).
3. Classifications of the most widespread biological rhythms.
4. Methods of determination of different types of biological rhythms day curves.
5. Methods of determination of human day working ability type.
7. Conception of desynchronosis as a main type of chronopathology and its medical and hygienic category. Types of desynchronosis.
8. Biorhythmological principles of the rational organization of the everyday activity. Chronohygiene as a basis of the desynchronosis prevention.

   Signature of the Teacher_________   Signature of the Student_________
HYGIENE OF MEDICAL PREVENTIVE ESTABLISHMENTS  
Subject 5. HYGIENIC ESTIMATION OF THE PLACEMENT AND DESIGN OF SEPARATE HOSPITAL DEPARTMENTS BY THE PROJECT

Date ______

Learning objective
- To strengthen the students’ knowledge of the hygienic requirements concerning the patient care institutions’ location and planning on the basis of assessment and analysis of the study project materials and the normative documents;
- To teach the students to draw the hygienic conclusions, substantiated resolutions and give the recommendations

Basics
You should know:
- Basic hygienic requirements concerning the planning and regime of exploitation of the patient care institutions, the therapeutic, surgical, infectious diseases and other specialized departments

You should have the following skills:
- Using the construction drawings of the situational and general layout to determine and assess the project patient care institutions’ location and territory zoning, taking into account objects, adjacent to the land parcel, “wind rose”, correspondence with the site development, percentage of green area and the constructions’ orientation.
- Using the constructions’ plans and slits to determine and assess the correspondence of the hospital premises’ area, cubic capacity and sanitary accomplishment to hygienic standards; their correspondence to the functional purpose.

1. Sanitary estimation of the placement of the hospital (situational plan)
1.1. The scale of the situational plan
1.2. Characteristic of "wind rose"
1.3. Location of the hospital
1.4. The surrounding objects and distance to them
1.5. Presence of sources of pollution of the environment around hospital and distance to them
1.6. Conclusion
Example of situational plan of district hospital

1. The school
2. The village
3. The living houses
4. The bread bakery
5. The garages
6. The market
7. The clothing factory
8. The factory of chemical equipment
9. The hospital
10. Green plantation
2. Sanitary and hygienic estimation of the general plan of the hospital for 320 beds.

2.1. The scale of the general plan: .................................................................

2.2. Shape of the hospital plot: ...................................................................

2.3. The size of the plot: length; width ......................................................

2.4. The ratio of width and length of the hospital plot ..................................

2.5. The area of the hospital plot: ...............................................................

2.6. The area of the hospital plot for one bed: ...........................................

2.7. Presence and number of entrances to the territory of the hospital ......

2.8. Presence of separate entrances to the morgue zone, to the economic zone and to the polyclinic zone .................................................................

2.9. Presence of a sufficient number of paths and passages on the hospital plot ....

2.10. The percentage of building of the territory ...........................................

2.11. The percentage of green plantations on the territory ..........................

2.12. The list and location of medical buildings and other buildings on the territory of the plot .................................................................

2.13. Orientation of the medical building front ............................................

2.14. The correct situation of different zones on the territory of hospital (by "wind rose") .................................................................

Conclusion:
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Example of general plan of district hospital

Scale 1 : 1000

1. The main medical building for 240 beds
2. Medical building for 60 beds
3. Infectious building for 20 beds
4. Administrative building
5. Food department
6. Morgue
3. Sanitary-hygienic estimation of the internal design of the hospital section

3.1. The scale of the internal design

3.2. Number of beds in the ward section

3.3. Number of the entrances to the ward section

3.4. The type of the corridor in the ward section

3.5. The set of main rooms for medical treatment and other rooms in the ward section

3.6. Number and percentage of:
   3.6.1 one-bed wards in the ward section
   3.6.2 two-beds' wards
   3.6.3 four-beds' and more wards

3.7. The scheme of movement of the patients in the ward section

3.8. The place of sanitary sections in the ward department

3.9. Possibility of the draught ventilation of the wards and other medical rooms in the ward section

3.10. Estimation of the corridor
   3.10.1 length of the corridor
   3.10.2 width of the corridor
   3.10.3. area of the corridor
   3.10.4 The area of the corridor for one patient

4. Hygienic estimation of the ward
   4.1. Length of the ward
   4.2. Area of the ward
   4.3. Area of the ward for one patient
   4.4. Height of the ward - 3.2 m
   4.5. Volume of the ward
   4.6. Volume of the ward for one patient

4.7. Natural lighting of the ward
   4.8.1 number of the windows in the ward
   4.8.2 width of the window
   4.8.3 area of one window
   4.8.4 total area of windows (without transom)
   4.8.5 Lighting coefficient
The internal design of the therapeutic department

a - the ward section with a corridor of two-side building; b-the ward section with a two-way corridor;
1 – the sanitary treatment room; 2 the room for daily stay of patients; 3 - the dressing room; 4 - the wards for 4 beds; 5 - the post for the nurse on duty; 6 - the wards for 1 bed; 7 - the elysters room; 8 - the room for keeping the portable equipment; 9 the bathroom; 10 - the room for dirty linen; 11 – the sanitary room; 12 - the wards for 2 beds; 13 - the doctor's room; 14 - the head's room; 15 - the room for endoscope; 16 - the refreshment room; 17 - the dining room; 18 - the room for personnel; 19 - the chief-nurse's room; 20 - the nurse-manager's room; 21 - the room for daily stay of patients; 22 - the doctor's room
Test questions

1. Hygienic requirements to the placement of medical preventive establishments on the territory of city.
2. Hygienic requirements to the general plan of a hospital
3. Hygienic characteristic of the various systems of planning of hospitals,
4. Hygienic requirements to internal design of a hospital.
5. The main principle of the design of a ward section.
6. Hygienic requirements to the hospital wards.

Signature of the Teacher _____________  Signature of the Student _____________
Subject 6. THE METHOD OF SANITARY-HYGIEニック INSPECTION OF THE MEDICAL PREVENTIVE ESTABLISHMENTS

Learning objective
- Master the knowledge on the hygienic conditions and harmful factors influencing the efficacy of patients’ treatment and medical workers’ health.
- Become familiar with the legislative and organizational measures of the provision of the optimal regime, hygienic conditions for patients of the in-patient departments and the medical workers’ labour protection.
- Master the general scheme and methods of subjective (sanitary inspection) and objective sanitary control of the conditions of patients’ stay and the conditions of medical personnel labour at the hospital.

Basics
You should know:
- Basic hygienic requirements concerning the planning, equipment, regime, exploitation of the treatment, diagnostic, accessory and consumer subdivision of the in-patient departments.
- Hygienic standards of microclimate, air, ventilation, natural and artificial lighting of different subdivisions of the medical institution, their importance in the patients’ treatment efficacy and the conditions of medical personnel labour.
- Harmful and dangerous factors of different subdivisions of the medical institution (diagnostic, physiotherapeutic, balneal etc.), their influence on the patients’ and medical personnel health.

You should have the following skills:
- To carry out the sanitary inspection and determine the objective figures of the hygienic condition of the medical institution different subdivisions.
- To determine and assess harmful and dangerous factors of different subdivisions of the medical institution and their influence on the patients’ and medical personnel health.

Act of sanitary inspection of a medical preventive establishment
1. General information.
1.1. Name of the medical preventive establishment
……………………………………………………………………………………………………
1.2. Address of the hospital
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1.3. Number of beds in the hospital
……………………………………………………………………………………………………
1.4. Radius of service of the hospital
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2. Sanitary inspection of the situational plan of the hospital.
2.1. Location of the hospital in the city
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2.2. The surrounding objects and distance to them
……………………………………………………………………………………………………
2.3 Presence of polluted sources of the environment around the hospital and distance to them. 

3. Sanitary inspection of the general plan of the hospital.
3.1. Shape of the plot of the hospital
3.2. Length of the plot
3.3. Width of the plot
3.4. Ratio of the width and length of the plot
3.5. The area of the hospital plot
3.6. The area of the plot for one bed
3.7. Number of entrances to the territory
3.8. Presence and names of zones on the territory of the hospital
3.9. Presence of sufficient number of paths and passages on the hospital plot
3.10. Presence of separate entrances to the morgue and economic zone
3.11. The percentage of building of the territory
3.12. The percentage of the green plantation and their location on the territory of the hospital
3.13. The list of medical buildings, their situation and co-situation on the territory
Scheme of general plan of hospital

Scale

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4. Hygienic inspection of the main building of the hospital.
4.1. The system of construction of the hospital .........................................................
4.2. Orientation of the medical building front .........................................................
4.3. Number of stories in the main building .............................................................
4.4. Location of departments on the stories of the hospital
   4.4.1 on the first story .............................................................................................
   4.4.2 on the second story .......................................................................................  
   4.4.3 ......................................................................................................................
   4.4.4 ......................................................................................................................
   4.4.5 ......................................................................................................................
   4.4.6 ......................................................................................................................
   4.4.7 ......................................................................................................................
   4.4.8 ......................................................................................................................
   4.4.9 ......................................................................................................................
5. Sanitary inspection of the ward section
5.1. Number of beds in the ward section .................................................................
5.2. Number of the entrances to the ward section ...................................................
5.3. Type of the corridor in the department ..............................................................
5.4. The set of main rooms for medical treatment and other rooms in the ward section.
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5.5. Presence and number of one-bed wards, two-beds' wards, four-beds' wards and more in the ward section .................................................................
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5.6. The scheme of movement of the patients in the ward section ...........................
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5.7. The place of sanitary sections in the ward section ..............................................
   ................................................................................................................................
5.8. Possibility of the drought ventilation of the wards and other medical room........
   ................................................................................................................................
Scheme of internal design of the department
6. Hygienic inspection of the ward:
6.1. Length of the ward .................................................................
6.2. Width of the ward .................................................................
6.3. Area of the ward .................................................................
6.4. Number of beds in the ward ..............................................
6.5. Area of the ward for one patient ....................................
6.6. Height of the ward ..............................................................
6.7. Volume of the ward ............................................................
6.8. Volume of the ward for one patient ...............................
6.9. Natural lighting of the ward
- the number of windows .................................................
- the width of the window ..............................................
- the height of the windows ..............................................
- the area of one window ................................................
- the area of all windows (without transom) ......................
- the lightning coefficient in the ward ...............................

7. Conclusions ..................................................................................
Test questions

1. Hygienic requirements to the placement of a medical preventive establishments on territory of city. The method of inspection.
2. Hygienic requirements to the general plan of a hospital. The method of inspection.
3. Hygienic characteristic of the various systems of planning of hospitals.
4. Hygienic requirements to internal design of a hospital. The method of inspection.
5. The main principle of the planning of a ward section.
6. Hygienic requirements to the ward of a hospital.
7. Hygienic requirements to the microclimate in a hospital.
8. Hygienic requirements to natural and artificial lighting in hospital wards and other medical rooms. The method of inspection.

Signature of the Teacher________
Signature of the Student_______
Subject 7. SANITARY-HYGIENIC INSPECTION OF FOOD DEPARTMENT OF HOSPITAL

Learning objective
- To strengthen the students’ knowledge of the hygienic requirements to food department

Basics
You should know:
- The main sanitary-hygienic requirements to location of food department.
- Sanitary requirements to the internal planning and to the equipment of a food department
- Hygienic requirements to culinary treatment (cooking) of food products.

You should have the following skills:
- To carry out the sanitary-hygienic inspection of food department,
- To perform the act of sanitary-hygienic inspection of food department with conclusion.

1. Site of a building of food department in terrain of the ground area of hospital

2. Keeping of the sanitary demands to the terrain of zone of the food department (regimen of a sweeping; architecture of gathering of dust; the device of garbage collector, of unload holes, their clearing and disinfection)

3. The set of the basic and supplementary locations which are included in food department, their square, and height

4. Intrinsic design of food department. Keeping of a principle "streaming" (sequence of technological processes; lack of opposing streams of alimentary raw material and ready nutrition)
5. Regimen of a streaming sweeping of locations of food department. Keeping of a regimen of sanitary day. Disinfection of floors, walls, doors etc. Presence, nomenclature, condition of a storage and marking of harvest stock

6. Arrangement of the technological equipment in the basic locations of food department

7. Performance of the technological equipment (finishing tables, chopping boards, knives, intrafactory tare)

8. Condition of storage and marking of finishing tables, boards, knives etc

9. Sequence of the collecting of a wastage and dust in industrial locations of food department
10. Regimen of washing kitchen and restaurant utensils, glasswares and tablewares

11. Correspondence of foodstuff acting on the food department, demands of the working normative-engineering specifications. Presence of the accompanying documents certifying quality of products, with the indicating of date and hour of development of perishable food, and also date and hour of a total elapsed time of their storage

12. Category of acting on the food department of meat and eggs. Presence of a marking

13. Keeping rules of a commodity neighborhood at a storage of products in cold storage rooms

14. Marking cold storage rooms on aspects of products, stored in them

15. Keeping the demands to culinary handling of foodstuff

16. Keeping terms and temperature schedule of storage of ready dishes

17. Keeping about taking out of assays of ready dishes and support of journal
18. Measure on struggle with insects and gnawers on the food department

19. Keeping the demands to transportation of foodstuff from bases supplying hospital, on the food department and transportation of ready nutrition from food department in abjointings of hospital

20. Water supply, water drain, heating and ventilation on the food department

21. Air-thermal regimen on the food department

22. Natural and artificial illumination on the food department

23. Timeliness of transit of medical surveys by the personnel of the food department. Presence and regularity of support of the sanitary books
Test questions

1. Sanitary requirements to the territory of a food department location.
2. Sanitary requirements to the internal planning of a food department.
3. Sanitary requirements to the equipment of a food department.
4. Hygienic requirements to culinary treatment (cooking) of food products.
5. Hygienic requirements to the regime of plates and other utensils washing.
6. Personal hygiene of the staff of a food department (preliminary examination, periodical survey).

Signature of the Teacher__________
Signature of the Student___________
Subject 8. SANITARY INSPECTION OF RADIOLOGICAL DEPARTMENT OF HOSPITAL

Learning objective
- Extend, methodize and strengthen knowledge on radiation hazard for personnel and patients of patient care institutions during usage of radioactive nuclides and other sources of ionizing radiations in diagnostic and treatment purposes, on principles and ways of radiation protection.
- Master methods and ways of radiation control of labour conditions of personnel and protection of patients in radiological departments of hospitals.

Basics
You should know:
- Ways of use of radioactive nuclides and other sources of ionizing radiations in hospitals with diagnostic and treatment purpose.
- Peculiarities of biological effects of ionizing radiation.
- Essence of radiation hazard during working with radionuclides and other sources of ionizing radiation.

You should have the following skills:
- To measure and assess parameters which characterize radiation environment in work and adjacent premises and individual doses of personnel during work with radionuclides and other sources of ionizing radiation.
- To carry out sanitary inspection of radiological departments of hospitals.

1. General characteristic of radiological department of hospital
1.1. Name of patient care institution, its departmental submission and address

1.2. Characteristic and assessment of allocation of building of radiological department on the area, type of building, presence of zone of unavailability, presence of control area, its measures

1.3. Structure of department, peculiarities of allocation and planning of its subdivisions, functional connection between them
1.4. Assessment of radiation environment on territory of control zone and outside of it by determination of absorbed dose rate in the air of $\gamma$-radiation

2. Department of teletherapy.
2.1. Allocation and planning of department, basic premises, characteristic of devices used for radiotherapy

2.2. Radiation protection of control room, adjacent premises and territory from $\gamma$-radiation (presence of protective shroud on radiating device, materials and thickness of walls in treatment room, presence of protective labyrinth at entrance, protective doors, their prohibition, presence of attentive light alarm)

2.3. Observing system for irradiation of patients

2.4. Characteristic and estimation of ways of protection of patients from side irradiation

2.5. Assessment of effectiveness of radiation protection in control room and other adjacent premises by calculation method and by measurement of absorbed dose rate in the air
3. Departments for treatment by sealed sources.

3.1. Allocation and planning of department.

3.2. Sources of irradiation that used in department, their activity, methods of application of sources to patients (manual-linear and consistent).

3.3. Characteristic of radiation dangerous premises (depository for sources of irradiation, radiomanipulation room, radiotreatment room), their accordance to hygienic requirements.

3.4. Conditions of storage and transportation of sources of irradiation.

3.5. Ways of radiation protection of personnel in depository for sources of irradiation, radiomanipulation room, radiotreatment room.

3.6. Radiation protection of adjacent premises and territory.

3.7. Assessment of effectiveness of radiation protection by necessary calculations and measurement of absorbed dose rate in the air of workplace, behind shields, in adjacent premises, on adjacent territory.
4. Department for treatment by open sources.

4.1. Allocation of department, characteristic of use of radioactive nuclides, class of it’s radiation hazard

4.2. Characteristic of radiation dangerous premises (depository of radioactive nuclides, packing room, treatment room, washing room, radiological wards) their accordance to permitted class of works, sanitary improvement (covering of walls, floor; exhaust hoods, ventilation, collection, removal and deactivation of solid and liquid radioactive waste).


4.4. Presence of individual radiation protection devices for personnel: working clothes, overalls, aprons, arm-bands, breathing masks and others.

4.5. Sanitary and domestic premises for personnel.

4.6. Results of measurements and assessment of level of radioactive pollution of workrooms and other premises.
5. Acquaintance with documentations of radiological department, its types Analysis and assessment of materials of radiological and medical control during previous year and current year ……………………………………………………………………………………………
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6. Conclusions.
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Test questions
1. Ionizing radiation as occupational hazard for personnel of hospitals.
2. Ionizing radiation as risk factor for patients of hospitals during radiology and nuclear diagnostic and treatment procedures.
3. Structure of radiological department of hospital. Peculiarities of radiological hazard and radiation protection in each organization department (bare, sealed sources, long-focus therapy).
5. Methods of collection and sterilization of radioactive waste during work with bare sources of ionizing radiation.
6. Methods and ways of sanitary control and survey during work with sources of ionizing radiation in patient care institutions.

Signature of
the Teacher_________  Signature of
the Student____________
Subject 9. SANITARY-HYGIENIC INSPECTION OF AN X-RAY ROOM

Learning objective
- Master methods and ways of radiation control of labour conditions of personnel and protection of patients in X-ray departments of hospitals.

Basics
You should know:
- The peculiarities of the placement and internal design of X-ray room,
- Peculiarities of sanitary-hygienic and medical protective regimen in X-ray room.

You should have the following skills:
- To carry out the sanitary-hygienic inspection of the X-ray room.
- To perform the act of sanitary-hygienic inspection of the X-ray room.

Act
of sanitary-hygienic inspection of the X-ray room

1. Location of the X-ray room in an inpatient and outpatient complex.
2. The set of premises of the X-ray room and their size in m²
3. The height of the X-ray premises
4. Neighbouring premises
5. Character of the X-ray apparatus mounted in the room, its factory number, year of production.
6. Character of stationary means protection (walls, top and bottom, doors, windows, stuff of the floor). Individual means of protection (a large protective screen, a small protective screen, on-chest apron from leaden rubber, leaden gloves and an under-shield apron)

7. Individual means of protection (a large protective screen, a small protective screen, on-chest apron from leaden rubber, leaden gloves and an under-shield apron)

8. Character of the microclimate in the premises of the X-ray room

9. Character of the natural and artificial lighting in the X-ray room

10. Character of the ventilation and heating system in the X-ray room

11. Character of water supply and sewerage in the X-ray room

12. Presence of grounding of the equipment

13. The technical state of the equipment

14. Results of dosimetry

15. Presence of the documents (a passport of the X-ray room, a control-technical log book, protocols of measurement of the protection quality, exposition and scheme of the X-ray room, safety rules)

16. The order of the control of radiative loads on the patients
17. Conclusion

Test-questions
1. The basic aspects of radiative monitoring in radiological departments and X-ray room.
2. Characteristics of radiological hazard in X-ray diagnostic room and conditions it depends on.
4. The main principles of radiative asepsis.
5. The basic principles of a radiative protection of the personnel of medical establishments at work with "close" sources of ionizing radiations.
6. The procedure of sanitary-hygienic inspection of X-ray room.

Signature of
the Teacher_________ Signature of
the Student__________
Subject 10. HYGIENE ESTIMATION OF TROPICAL CLIMATE, ITS INFLUENCE ON THE LIVING CONDITION, WORK ABILITY AND POPULATION HEALTH

Learning objective
- To learn hygienic peculiarities of living and work conditions of people in hot and tropical climatic zones.
- To master method of estimation of organism thermoregulation and heat metabolism in hot and tropical conditions.
- To study main kinds of people pathology in hot and tropical countries.

Basics
You should know:
Physiological peculiarities of thermoregulation in the conditions of overheating microclimate and its influence on the human health.

You should have the following skills:
- To determine parameters of microclimate and their influence on the human body.

Situational task № 1
Builders work the hostel in the town of one of a countries with tropical climate. Air temperature on the working place is +37°C, relative humidity 98%, air movement is 1.0 m/s. What regimen of work and rest must be for these workers?

Solution of situational task
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Situational task № 2
Team of agricultural workers work on the plantation for growing sugar-cane in one from countries of Caribbean basin, in summer (August).

Heat production of these workers (M) is 310 kcal/hour. An average radiant temperature of the environment: reading of black spherical thermometer \( t_{\text{sph}} \) is +42°C, reading of dry thermometer \( t_{\text{dry}} \) is +38°C, air movement \( V \) is 0.1 m/s, maximum air humidity \( p \) is 48 Hg mm. Calculate thermal load on these workers and make up hygienic conclusion.
Solution of the situational task

2.1. Calculation of loss (-) or income (+) of heat through radiation (R) by the formula

\[ R = H \cdot (t_{sph} - 35) \text{ kcal/h} \]

\[ R = 11 \cdot (\ldots.. - 35) = \ldots.. \text{ kcal/h} \]

2.2. Calculation of loss (-) or income (+) of heat through convection (C) by the formula:

\[ C = 6 \cdot V^{0.6} \cdot (t_{dry} - 35) \text{ kcal/h,} \]

where \( V^{0.6} \) is in the table

<table>
<thead>
<tr>
<th>V, m/s</th>
<th>0.05</th>
<th>0.1</th>
<th>0.2</th>
<th>0.3</th>
<th>0.4</th>
<th>0.5</th>
<th>0.6</th>
<th>0.7</th>
<th>0.8</th>
<th>0.9</th>
<th>1.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V^{0.6} )</td>
<td>0.17</td>
<td>0.25</td>
<td>0.38</td>
<td>0.49</td>
<td>0.58</td>
<td>0.66</td>
<td>0.74</td>
<td>0.81</td>
<td>0.87</td>
<td>0.94</td>
<td>0.99</td>
</tr>
</tbody>
</table>

\[ C = 6 \cdot \ldots.. \cdot (\ldots.. - 35) = \ldots.. \text{ kcal/h} \]

2.3. Calculated of maximum heat loss by sweat evaporation

\[ E_{\text{max}} = 12 \cdot V^{0.6} \cdot (42 - p) \text{ kcal/h} \]

\[ E_{\text{max}} = 12 \cdot \ldots.. \cdot (42 - \ldots..) = \ldots.. \text{ kcal/h} \]

2.4. Calculation of Heat–Load Index (HL) according to Belding and Tatch calculation.

\[ HL = M + C + R - E_{\text{max}} \text{ (kcal/h)}, \]

where:
- \( M \) - intensity of metabolism during work;
- \( R \) - heat exchange through radiation, kcal/h;
- \( C \) - heat exchange through convection, kcal/h;
- \( E_{\text{max}} \) - maximum acceptable heat loss through sweat evaporation, kcal/h.

\[ HL = \ldots..+\ldots..+\ldots..-\ldots..=\ldots.. \text{ kcal/h} \]

Conclusion

__________________________________________________________________________________________________

__________________________________________________________________________________________________

__________________________________________________________________________________________________

46
Test questions

1. Hygienic characteristics of climate and weather of hot and tropical altitudes.
3. Hygienic peculiarities of daily and season osculation of air temperature, radiant temperature, humidity, air movement.
4. Influence of meteorological conditions on the metabolic and other physiological functions of human body.
5. Hygienic character of climate of savannas, steppes arid zones (dry deserts), wet tropical wooden (humid tropical climate).
6. Diseases connected with hot and tropical climate their prophylaxis.
7. Adaptation and acclimatization of men in hot and tropical climate.
8. Personal hygiene in hot and tropical climate (hygiene of skin, clothes; hygienic regimen of day).
9. Peculiarities of planning and building populated areas in hot and tropical climate.
10. Hygiene of water and water supply sewerage system, removing and decontamination of solid waste.
11. Hygiene of dwelling in hot climate.
12. Hygienic requirement to natural and artificial illumination of living and public premises.
14. Specific character of building materials which are used in hot and tropical countries.
15. Peculiarities of organization of work regimen in conditions of arid and humid tropical zones.
16. Parameters of microclimate when physical work is impossible.

Signature of the Teacher_________  Signature of the Student___________
Subject 11. WATER AND WATER SUPPLY HYGIENE IN TROPICAL CLIMATE CONDITIONS

Learning objective

- Learn the peculiarities of tropical regions water supply.
- Master the medical control methods of hot and tropical regions water supply and prevention of waterborne diseases.

Basics

You should know:
- The hygienic and epidemiological water significance in tropic conditions.
- Methods and measures of sanitary inspection of tropic regions population water supply.

You should have the following skills:
- To examine water supply sources, select water samples for laboratory analysis taking into account tropic conditions. (sample preserving)
- To assess the water laboratory analysis results.

Situational task

Using international water standard (IWS –73), decide if water from water-pump of river water-tower is suitable for drinking with the following laboratory results:
- transparency – 15 cm
- turbidity – 5.5 units
- colour – 35°C
- taste – “fish” 3 points
- odour – “fish” 3 points
- temperature – 22°C
- pH – 6.5
- dry residue – 250 mg/l
- general hardness – 1.5 mg-equiv./l
- iron – 0.5 mg/l
- fluorine-ion – 1.2 mg/l
- copper – 0.1 mg/l
- manganese – 0.08 mg/l
- oxidizing ability – 8 mg O₂/l
- ammonia nitrogen – 0.35 mg/l
- nitrite nitrogen – 0.03 mg/l
- nitrate nitrogen – 55 mg/l
- microbial number – 220
- coli-titer – 16

Average water consumption by population of this locality is 6 l per day. If necessary, suggest methods of water quality improvement.
Solution of situational task

1. The general conclusion about quality of the drinking water under study. Is the water potable or not potable?

2. Are there signs of pollution of the drinking water with organic substances?

3. Are there any organic substances of animal or vegetable origin?

4. When was the drinking water polluted?

5. Are there any changes of mineral composition of the drinking water? Show the signs

6. What hygienic and sanitary measures must be taken for improving quality of the drinking water?
Conclusion

List the decentralized water supply sources in arid and humid tropical areas and protective measures against their pollution.

Test questions

1. Physiological functions of water (structural, exchanging, transporting, excretory, heat exchanging etc.) and their peculiarities in tropic conditions.
2. Epidemic and endemic waterborne diseases of arid and humid tropic regions.
3. Human body dehydration in tropical climate, its signs and symptoms.
4. Scientific substantiations of norms of physiological, residential, industrial water requirements and their peculiarities in tropical regions.
5. Hygienic requirements to water quality and their peculiarities in tropical conditions.
6. Organoleptical and chemical characteristics of water, their hygienic significance and peculiarities in tropical regions water.
7. Organoleptical, chemical, bacteriological, toxicological water pollution indices, their peculiarities in tropical conditions.
8. International water quality standards and peculiarities of their usage in tropical conditions.
9. Hygienic characteristic of water recourses and water supply sources in arid and humid tropical areas.
10. Hygienic characteristic of methods and means of purification, disinfection, special water conditioning methods in tropical conditions.
11. Methods and organization of drinking water quality sanitary control in cases of centralized and decentralized water supply in developed countries of tropical regions and in developing counties.

Signature of the Teacher_________ Signature of the Student_________
Subject 12. HYGIENIC, TOXICOLOGICAL AND EPIDEMIOLOGICAL PECULIARITIES OF NUTRITION IN TROPICAL REGIONS

Learning objective

- Learn the social and hygienic, toxicological and epidemiological nutrition peculiarities of tropical regions population.

Basics

You should know:
- Basics and conditions of rational nutrition and ways of its realization in tropical climate.
- Food poisonings classification and their peculiarities in hot and tropical regions.
- Alimentary diseases and foodborne infections typical for hot and tropical regions.

You should have the following skills:
- To carry out medical control of nutrition sufficiency and safety, use methods and measures for prevention of diseases among certain population groups in tropical regions.

Situational task 1.
1. A worker of cotton plantation is 170 cm height, he lost 4 kg of weight during last month (30 days). The ideal theoretical body mass for this height is 70 kg. The worker performs physical work of medium intensity and receives 2 500 kcal intake. Calculate how many calories the intake should be increased by to compensate his body weight loss.

Situational task 2.
Estimate proteins and fats sufficiency of 25 years old woman which is worked in textile-factory if it is known that her weight is 60 kg, middle subcutaneous thickness is 5 mm, according data of urea clinical analysis urea nitrogen is 14 mg/100ml, total nitrogen in urine - 17 mg/100ml

1. Protein nutrition index

\[ PNI = \frac{N_1}{N_2} \]

Where \( N_1 \) - urea nitrogen
\( N_2 \) - total nitrogen in urine

Proteins sufficiency
2. Fat sufficiency

\[ D = M \times C \times 6.32 = \]

where:  
D - fats amount in g;  
M - middle subcutaneous thickness in mm (it is determined under lower angle of the right scapula, on the back surface of the right shoulder and on the side surface of belly);  
C - body surface in m\(^2\)

Level of fat sufficiency

Conclusion

……………………………………………………………………………………………………………………………………………………………………
……………………………………………………………………………………………………………………………………………………………………
……………………………………………………………………………………………………………………………………………………………………
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……………………………………………………………………………………………………………………………………………………………………
……………………………………………………………………………………………………………………………………………………………………

Test questions

1. Rational nutrition and conditions of its provision.
2. Physiological and hygienic basics of rational nutrition in tropical conditions.
3. The importance of main nutrients (proteins, fats, carbohydrates, vitamins, mineral salts, microelements, taste substances (spices) in nutrition of tropical regions population.
4. Hygienic characteristics of food products, used by population of arid and humid tropical regions.
5. General characteristic of alimentary diseases of tropical regions population.
6. Malnutrition and complete starvation diseases, vitamin deficiency diseases among tropical regions population.
Overeating diseases in tropical regions.
7. Diseases caused by poor quality of food intake (foodborne diseases, helminthosis, food poisoning, enzymatic deficiency).
8. Methods of medical control over tropical regions population nutrition.
10. Food products storage and preservation peculiarities in tropical conditions, usage of preservatives and antibiotics.
11. Methods and measures of prevention of the foodborne diseases, infections and invasions with alimentary transmission mechanisms, food poisoning.

Signature of the Teacher_________  Signature of the Student_________
INFORMATION AND REFERENCE MATERIALS
STRUCTURE OF SANITARY-EPIEMIOLOGICAL SERVICE IN UKRAINE

Ministry of Public Health of Ukraine

Department of State sanitary-epidemiological supervision of Ministry of Public Health of Ukraine

State sanitary-epidemiological service

Central state sanitary-epidemiological station of Ministry Of Public Health of Ukraine

Regional sanitary-epidemiological stations (SES)

Urban sanitary-epidemiological stations

District in cities sanitary-epidemiological stations

District rural sanitary-epidemiological stations

Crimea antiplague station of Ministry of Public Health of Ukraine

Subdivisions and establishments of sanitary legislation and hygienic regulation

Administration of sanitary-epidemiological regulation and standardization, examinations/expertise and registers

Department of sanitary-epidemiological standardization and regulation

Department of examinations/expertise and registers

Administration of population radiation protection and medical problems of Chernobyl accident

Administration of social dangerous diseases and AIDS prevention, and formation the healthy life-style

Scientific research institutions of hygienic and anti-epidemic profile and hygienic chairs of medical institutions of higher education

Departmental sanitary-epidemiological service

Sanitary-epidemiological stations on the water transport

Sanitary-epidemiological stations on railway transport

Sanitary-epidemiological stations of Ukrainian civil aviation

Sanitary-epidemiological stations of Ministry of the Interiors of Ukraine

Sanitary-epidemiological station of the security service of Ukraine

Sanitary-epidemiological administration of State department of punishment execution

Sanitary-epidemiological subdivisions of medical service of Ministry of Defense

Sanitary-epidemiological subdivisions of State Committee of boundary of Ukraine

Medical subdivisions of units of Ministry of extraordinary situations
Structure of sanitary-epidemiological stations of different authority levels

Chief State sanitary doctor (corresponding Central, regional, urban or district SES)

Organization and methodical department

- Sanitary-hygienic department
  - Food hygiene department
  - Hygiene of labour department
  - Municipal hygiene department
  - Hygiene of children and adolescents department
  - Toxicological department (only in Central, regional, urban SES)
  - Radiation hygiene department (only in Central, regional, urban SES)

- Sanitary-hygienic laboratory
  - Physical, instrumental methods of research
  - Sanitary-chemical methods of air, water, soil, food products research
  - Hydrobiological methods of research the water from surface sources
  - Toxicological laboratory (only in Central, regional, urban SES)
  - Radiation hygiene laboratory (only in Central, regional, urban SES)

- Epidemiological department
  - Antiepidemic department:
    - group of intestinal infections;
    - group of acute respiratory infections;
    - group of tuberculosis
  - Parasitic infection department
  - Especially dangerous and quarantine infections department (only in Central, regional, urban SES)

- Bacteriological laboratory
  - Department of bacteriological analyses of patients discharges, bacillicarriers
  - Department of bacteriological analyses of water, food products, air

- Antiepidemic department:
  - group of intestinal infections;
  - group of acute respiratory infections;
  - group of tuberculosis

- Desinfection department
  - Preventive disinfection, disinsection, deratization department
  - Chamber disinfection and sanitary cleansing department
  - Evacuation and focal disinfection department
  - Disinfection station (self-support in cities, regional centers)

- Parasitological department
  - Parasitological department
  - Virology department (only in Central, regional, urban SES)
  - Especially dangerous infections laboratory (only in Central, regional, urban SES)
Scientific research institutions of hygienic and antiepidemic profile in Ukraine

**Hygienic profile**

- O.M. Marzeev institute of hygiene and medical ecology (Kyiv)
- Scientific research institute of labour medicine of AMS of Ukraine (Kyiv)
- Scientific research institute of social medicine and public health organization of Ministry of Public Health of Ukraine (Kyiv)
- Scientific research institute of pharmacology and toxicology of AMS of Ukraine (Kyiv)
- Kharkiv scientific-research institute of labour medicine of AMS of Ukraine
- Krivoi Rog scientific-research institute of labour medicine of AMS of Ukraine
- Odesa scientific-research institute of transport medicine of AMS of Ukraine
- Simpheropol scientific-research institute of balneotherapy of AMS of Ukraine
- L.I. Medvid institute of ecohygiene and toxicology of Ministry of Public Health of Ukraine (Kyiv)
- Donetsk scientific-research institute of labour medicine of AMS of Ukraine

**Antiepidemic profile**

- L.I. Gromashevsky scientific-research institute of epidemiology and infectious diseases of AMS of Ukraine (Kyiv)
- Zabolotniy Institute of microbiology of National Academy of Science (Kyiv)
- Lviv scientific-research institute of hygiene and microbiology of AMS of Ukraine
- I.I. Mechnikov scientific-research institute of microbiology and immunology of AMS of Ukraine (Odesa)
Efficiency of domestic sewage purification on different constructions and stages of purification

<table>
<thead>
<tr>
<th>Type of purification</th>
<th>Efficiency of domestic sewage purification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Suspended particles</td>
</tr>
<tr>
<td>Mechanical purification (two-tiered settling tank)</td>
<td>50-70</td>
</tr>
<tr>
<td>Biological purification (aerotank)</td>
<td>70-90</td>
</tr>
</tbody>
</table>

The sizes of area of plot for hospitals

<table>
<thead>
<tr>
<th>Number of beds in hospital</th>
<th>The area of plot per bed (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;50</td>
<td>300</td>
</tr>
<tr>
<td>50-100</td>
<td>300-200</td>
</tr>
<tr>
<td>100-200</td>
<td>200-140</td>
</tr>
<tr>
<td>200-400</td>
<td>140-100</td>
</tr>
<tr>
<td>400-800</td>
<td>100-80</td>
</tr>
<tr>
<td>800-1000</td>
<td>80-60</td>
</tr>
<tr>
<td>&gt;1000</td>
<td>60</td>
</tr>
</tbody>
</table>

Area of wards per patient in hospital

<table>
<thead>
<tr>
<th>Department</th>
<th>Area of wards (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infectious and tuberculous (for adults)</td>
<td>8</td>
</tr>
<tr>
<td>Infectious and tuberculous (for children)</td>
<td>7</td>
</tr>
<tr>
<td>Recovery treatment, radiological</td>
<td>10</td>
</tr>
<tr>
<td>Intensive therapy</td>
<td>13</td>
</tr>
<tr>
<td>Noninfectious (for adults)</td>
<td>7</td>
</tr>
<tr>
<td>Noninfectious (for children)</td>
<td>6</td>
</tr>
<tr>
<td>For children till one year</td>
<td>3</td>
</tr>
<tr>
<td>Psychoneurologic</td>
<td>6-7</td>
</tr>
</tbody>
</table>
### Recommended orientation of windows in hospital premises

<table>
<thead>
<tr>
<th>Premises</th>
<th>Geographical latitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating rooms, rooms for resuscitation, sectional rooms, delivering rooms</td>
<td>Southern of 45° N.L.</td>
</tr>
<tr>
<td>Wards for patients with tuberculosis and other infectious diseases</td>
<td>S, SE, E, NE, NW</td>
</tr>
<tr>
<td>Wards for intensive therapy, department for children to 3 years old, playing rooms for children’s department</td>
<td>Not admitted to West, wards for intensive therapy to West and South – West</td>
</tr>
<tr>
<td>Laboratories for bacteriological researches, for receiving infectious materials and its checking.</td>
<td>N, NE, NW, SE, E</td>
</tr>
</tbody>
</table>

### List and areas of main premises of wards section and department

<table>
<thead>
<tr>
<th>Premises</th>
<th>area in m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>One bed wards</td>
<td>9-16</td>
</tr>
<tr>
<td>Two beds wards and more</td>
<td>3-13 for one bed</td>
</tr>
<tr>
<td>Semibox (box) for 1 bed</td>
<td>22</td>
</tr>
<tr>
<td>Box for 2 beds</td>
<td>27</td>
</tr>
<tr>
<td>Consulting room</td>
<td>10</td>
</tr>
<tr>
<td>Premise for nurse</td>
<td>6</td>
</tr>
<tr>
<td>Toilet for patients</td>
<td>3-6</td>
</tr>
<tr>
<td>Procedure room</td>
<td>12-22</td>
</tr>
<tr>
<td>Room for personal hygiene</td>
<td>5</td>
</tr>
<tr>
<td>Bath with shower</td>
<td>12-14</td>
</tr>
<tr>
<td>Room for day rest</td>
<td>0.8-1</td>
</tr>
<tr>
<td>Room for keeping analysis materials</td>
<td>3</td>
</tr>
</tbody>
</table>

General premises of non-infectious department for adults

<table>
<thead>
<tr>
<th>Premises</th>
<th>area in m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head room</td>
<td>12</td>
</tr>
<tr>
<td>Bandage room</td>
<td>22</td>
</tr>
<tr>
<td>Room for nurse</td>
<td>12</td>
</tr>
<tr>
<td>Storage room for portative technical</td>
<td>12-20</td>
</tr>
<tr>
<td>Refreshment room</td>
<td>18-22</td>
</tr>
</tbody>
</table>
### Hygienic norms of microclimate in the different rooms of hospital

<table>
<thead>
<tr>
<th>Name of the room</th>
<th>Parameters of the microclimate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T°, °C</td>
</tr>
<tr>
<td>1. Hospital room for adults</td>
<td>20</td>
</tr>
<tr>
<td>2. Hospital room for children</td>
<td>22</td>
</tr>
<tr>
<td>3. Operating room</td>
<td>22-24</td>
</tr>
<tr>
<td>4. Newborn's room</td>
<td>25</td>
</tr>
</tbody>
</table>

### Level of natural illumination with side (lateral) illumination of the hospital premises, %

<table>
<thead>
<tr>
<th>Premises</th>
<th>In zone with steady snow covering</th>
<th>On the rest territory of the country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating rooms, delivering rooms, section rooms</td>
<td>1.6</td>
<td>2</td>
</tr>
<tr>
<td>Bandage rooms, consulting rooms, laboratories, assistant’s rooms, wards for intense therapy</td>
<td>0.8</td>
<td>1</td>
</tr>
<tr>
<td>Wards, premises for day rest, procedure rooms</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>Refreshment rooms, rooms for visitors, X-ray and physiotherapeutic rooms</td>
<td>0.4</td>
<td>0.5</td>
</tr>
</tbody>
</table>

### Hygienic norms of artificial lighting for different hospital premises

<table>
<thead>
<tr>
<th>Premises</th>
<th>artificial lighting (lux)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Incandescent lamps</td>
</tr>
<tr>
<td>Operating rooms</td>
<td>200</td>
</tr>
<tr>
<td>Other premises of operating block</td>
<td>150</td>
</tr>
<tr>
<td>Doctor’s office</td>
<td>100</td>
</tr>
<tr>
<td>X-ray room</td>
<td>30</td>
</tr>
<tr>
<td>Boxes, isolating rooms</td>
<td>75</td>
</tr>
<tr>
<td>Wards</td>
<td>75</td>
</tr>
<tr>
<td>Diagnostic laboratories</td>
<td>250</td>
</tr>
</tbody>
</table>
Maximum allowable equivalent-effective temperature (EET) indices.

<table>
<thead>
<tr>
<th>Labour mode</th>
<th>Labour intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>light</td>
</tr>
<tr>
<td>Without breaks during the shift</td>
<td>30.4</td>
</tr>
<tr>
<td>With breaks:</td>
<td></td>
</tr>
<tr>
<td>-every 3 hours</td>
<td>32.7</td>
</tr>
<tr>
<td>-every 2 hours</td>
<td>33.3</td>
</tr>
<tr>
<td>-every 1 hour</td>
<td>35.0</td>
</tr>
<tr>
<td>-every 30 min</td>
<td>38.2</td>
</tr>
<tr>
<td>-every 20 min</td>
<td>40.5</td>
</tr>
<tr>
<td>For people acclimatized to high temp</td>
<td>32.2</td>
</tr>
<tr>
<td>For non-acclimatized to high temp</td>
<td>30.2</td>
</tr>
</tbody>
</table>

Protein sufficiency of human organism

<table>
<thead>
<tr>
<th>Protein nutrition index</th>
<th>Level of protein sufficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>95-90</td>
<td>Adequate</td>
</tr>
<tr>
<td>90-85</td>
<td>sub adequate</td>
</tr>
<tr>
<td>85-80</td>
<td>Low</td>
</tr>
<tr>
<td>80-70</td>
<td>sub compensated</td>
</tr>
<tr>
<td>70-30</td>
<td>Insufficient</td>
</tr>
<tr>
<td>30-25</td>
<td>significant disorder</td>
</tr>
</tbody>
</table>

Determination of human body surface by weight

<table>
<thead>
<tr>
<th>Body mass in kg</th>
<th>Body surface, m²</th>
<th>Body mass in kg</th>
<th>Body surface, m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0.482</td>
<td>60</td>
<td>1.729</td>
</tr>
<tr>
<td>20</td>
<td>0.834</td>
<td>70</td>
<td>1.922</td>
</tr>
<tr>
<td>30</td>
<td>1.19</td>
<td>80</td>
<td>2.098</td>
</tr>
<tr>
<td>40</td>
<td>1.323</td>
<td>90</td>
<td>2.263</td>
</tr>
<tr>
<td>50</td>
<td>1.535</td>
<td>100</td>
<td>2.518</td>
</tr>
</tbody>
</table>
## International Water Standard (IWS-73)

<table>
<thead>
<tr>
<th>Indices</th>
<th>LPC</th>
<th>MAC*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbidity</td>
<td>to 5 units</td>
<td>to 25 units</td>
</tr>
<tr>
<td>Color</td>
<td>to 20 °C</td>
<td>to 20 °C</td>
</tr>
<tr>
<td>Taste and odour</td>
<td>to 2 points</td>
<td>to 2 points</td>
</tr>
<tr>
<td>Temperature</td>
<td>+ 8 - +12°C</td>
<td>+ 10 - +14°C</td>
</tr>
<tr>
<td>Active reaction pH</td>
<td>7 – 8.5</td>
<td>6.5 – 9.2</td>
</tr>
<tr>
<td>Solid residue</td>
<td>to 1 000 mg/l</td>
<td>2 000 – 3 000 mg/l</td>
</tr>
<tr>
<td>General hardness</td>
<td>2 mg equiv/l</td>
<td>10 mg equiv/l</td>
</tr>
<tr>
<td>Iron in water blue by eosin</td>
<td>0.3 – 0.5 mg/l</td>
<td>0.3 – 0.5 mg/l</td>
</tr>
<tr>
<td>Iron in city water</td>
<td>0.1 mg/l</td>
<td>1 mg/l</td>
</tr>
<tr>
<td>Chlorides</td>
<td>to 350 mg/l</td>
<td>600 mg/l</td>
</tr>
<tr>
<td>Sulfates</td>
<td>400 – 500 mg/l</td>
<td>400 mg/l</td>
</tr>
<tr>
<td>Nitrates per nitrogen</td>
<td>to 10 mg/l</td>
<td>11 mg/l</td>
</tr>
<tr>
<td>Fluorides</td>
<td>0.5 – 1.5 mg/l</td>
<td>0.8 – 1.7 mg/l</td>
</tr>
<tr>
<td>Copper</td>
<td>0.05 mg/l</td>
<td>1.5 mg/l</td>
</tr>
<tr>
<td>Manganese</td>
<td>0.05 mg/l</td>
<td>0.5 mg/l</td>
</tr>
<tr>
<td>Oxidation</td>
<td>2 – 3.4 mg O₂/l</td>
<td>2 - 4 mg O₂/l</td>
</tr>
<tr>
<td>Nitrites per nitrogen</td>
<td>to 0.002 mg/l</td>
<td>to 0.002 mg/l</td>
</tr>
<tr>
<td>Microbial number</td>
<td>100 in 1 ml</td>
<td>100 in 1 ml</td>
</tr>
<tr>
<td>Coli-index</td>
<td>not more than 3</td>
<td>-</td>
</tr>
<tr>
<td>Coli-titre</td>
<td>not less than 300</td>
<td>-</td>
</tr>
</tbody>
</table>

* MAC – maximum acceptable concentrations.
## Professional groups of workers

<table>
<thead>
<tr>
<th>Group</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; group</td>
<td>Workers occupied with mental work&lt;br&gt;Engineers, teachers, physicians (except surgeons), chiefs of enterprises, scientific workers, secretaries, students, managers of industrial enterprises, literature workers, businessmen, controllers, laboratory assistants.</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; group</td>
<td>Workers occupied with light physical work&lt;br&gt;Coaches, workers of automatic industrial process, clothing-industry workers, agronomists, salespeople, stock-breeders, junior nurses, trainers, nurses.</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; group</td>
<td>Workers who physically occupy with not hard work&lt;br&gt;Drivers, cooks, shoe-makers, surgeons, fitters, adjusters, chemists, textile-workers, workers of public nutrition, salespeople in food shops, water-transport workers, railway men.</td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt; group</td>
<td>Workers occupied with hard physical work&lt;br&gt;Dockers, builders, metallurgists, riggers, miners, steel-makers, foundry men.</td>
</tr>
</tbody>
</table>

### Daily caloric value and quantity of proteins, fats and carbohydrates for different professional groups of population (men)

<table>
<thead>
<tr>
<th>Professional groups</th>
<th>Coefficient of physical activity</th>
<th>Age (years)</th>
<th>Caloricity (Kcal)</th>
<th>Proteins (g)</th>
<th>Fats (g)</th>
<th>Carbohydrates (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>18-29</td>
<td>2450</td>
<td>67</td>
<td>37</td>
<td>68</td>
</tr>
<tr>
<td>I</td>
<td>1.4</td>
<td>30-39</td>
<td>2300</td>
<td>63</td>
<td>35</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40-59</td>
<td>2100</td>
<td>58</td>
<td>32</td>
<td>58</td>
</tr>
<tr>
<td>II</td>
<td>1.6</td>
<td>18-29</td>
<td>2800</td>
<td>77</td>
<td>42</td>
<td>78</td>
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<tr>
<td></td>
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<td>2650</td>
<td>73</td>
<td>40</td>
<td>74</td>
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<tr>
<td></td>
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<td>40-59</td>
<td>2500</td>
<td>69</td>
<td>38</td>
<td>69</td>
</tr>
<tr>
<td>III</td>
<td>1.9</td>
<td>18-29</td>
<td>3300</td>
<td>91</td>
<td>50</td>
<td>92</td>
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<tr>
<td></td>
<td></td>
<td>30-39</td>
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<td>87</td>
<td>48</td>
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<td>40-59</td>
<td>2950</td>
<td>81</td>
<td>45</td>
<td>82</td>
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<tr>
<td>IV</td>
<td>2.3</td>
<td>18-29</td>
<td>3900</td>
<td>107</td>
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<td>100</td>
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<td></td>
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<td>40-59</td>
<td>3500</td>
<td>96</td>
<td>53</td>
<td>97</td>
</tr>
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</table>
Daily caloric value and quantity of proteins, fats and carbohydrates for different professional groups of population (women)

<table>
<thead>
<tr>
<th>Professional groups</th>
<th>Coefficient of physical activity</th>
<th>Age (years)</th>
<th>Caloricity (Kcal)</th>
<th>Proteins (g)</th>
<th>Animal origin</th>
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</thead>
<tbody>
<tr>
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<td>18-29</td>
<td>2000</td>
<td>55</td>
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<tr>
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<td>40-59</td>
<td>1800</td>
<td>50</td>
<td>28</td>
</tr>
<tr>
<td>II</td>
<td>1.6</td>
<td>18-29</td>
<td>2200</td>
<td>61</td>
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<td>58</td>
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<tr>
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<td>1.9</td>
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<td>2600</td>
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<td>40</td>
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<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>IV</td>
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<td>3050</td>
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<td>46</td>
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<tr>
<td></td>
<td></td>
<td>30-39</td>
<td>2950</td>
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<td>45</td>
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<td></td>
<td></td>
<td>40-59</td>
<td>2850</td>
<td>78</td>
<td>43</td>
</tr>
</tbody>
</table>
UDC: 613:577.4 (07)
Hygiene and Ecology. Module 2:
Workbook for students of medical faculty.
V.A. Korobchanskiy, O.I. Gerasimenko
Kharkov: KNMU, 2012. 66 pages

Structure and content of workbook for students corresponds to educational program and basic program plan of practical lessons for students of the 3rd year study. It includes list of compulsory practical skills and practical lessons for special questions of hygiene.

Workbook contains the main information and reference materials in order to international and Ukrainian hygienic standards and other purposeful information.

Approved by scientific council of KNMU
Protocol № 6 from 21.05.2009.

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