Assessment tools for certification
in the subject "Pharmaceutical ecology"
for students admitted in 2024
according to the educational program
33.05.01 Pharmacy,
focus (profile) Pharmacy,
(specialty),
form of study full-time
for the 2025-2026 academic year

1. Assessment tools for conducting ongoing certification in the discipline

1.1. Assessment tools for conducting certification in seminar-type classes

Certification in seminar-type classes includes the following types of assignments: testing, solving situational problems, a test, and an interview on test questions.

1.1.1. Examples of test tasks

Verifiable indicators of competence achievement: UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.

1. Choose one answer out of four. The type of monitoring that involves tracking the state of natural systems, in the absence of regional anthropogenic influences, is called

a) basic
b) global
c) impact
d) regional

2. Choose one answer out of four. The type of monitoring that involves studying and assessing particularly dangerous areas is called

a) impact
b) social and hygienic
c) regional
d) basic

3. Choose one answer out of four. Integrated risk assessment is

(a) a process of jointly analysing risks associated with multiple sources, impact factors and routes of exposure to humans, biota or environmental resources, with the identification of a defined priority area of analysis

b) a process of jointly analysing risks associated with multiple sources, influencing factors and routes of human exposure

c) the process of analyzing risks associated with the allocation of a specific priority area of analysis

G) the process of analyzing risks that are not associated with the identification of a specific priority area of analysis

4. Choose one answer out of four. Danger is

a) a set of properties of a factor in a person’s environment (or a specific situation) that determine their ability to cause adverse health effects

b) a set of properties of a factor in the human environment (or a specific situation) that determine their ability to cause adverse health effects under certain conditions of exposure

c) a set of properties of a factor of the human environment that determine their ability to cause, under certain conditions, effects that are unfavorable to health

d) a set of properties of a factor in the human environment (or a specific situation) that determine their ability to cause effects hazardous to health

5. Choose one answer out of four. Environmental monitoring

a) this is a long-term observation of the state of the natural environment, its pollution and natural phenomena occurring in it, as well as an assessment and forecast of the state of the natural environment and its pollution

b) an information system for observing, assessing and forecasting changes in the state of the environment, created with the aim of identifying the anthropogenic component of these changes against the background of natural processes

c) comprehensive observations of the state of the environment, including components of the natural environment, natural ecological systems, processes and phenomena occurring in them, assessment and forecast of changes in the state of the environment

d) this is a long-term observation of the state of the natural environment, its pollution and natural phenomena occurring in it

1.1.2. Multiple choice or sequencing or matching tasks

1. Select several answers . Types of environmental pollution are divided into

a) chemical
b) radioactive
c) thermal
d) electromagnetic
d) noise
e) biological
ë) plural

2. Choose several answers. The following industrial wastes pose the greatest threat to humans and all biota

a) chemical substances of hazard class 1
b) chemical substances of hazard class 2
c) carcinogens (dioxin , benz (a) pyrene , etc.)
d) dust of organic and inorganic substances
d) chemical substances of hazard class 3
e) chemical substances of hazard class 4

3. Select multiple answers. The main purpose of monitoring is to provide the environmental protection and environmental safety management system with reliable information that allows

a) assess the state of the human habitat and biological communities
b) identify the reasons for the deviation of indicators
c) assess the consequences of changes in indicators
d) determine management decisions to eliminate the causes of deviations indicators
d) impose penalties on violators of environmental legislation

4. Choose several answers. The main tasks of environmental monitoring:

a) monitoring sources of anthropogenic impact;
b) monitoring of anthropogenic impact factors;
c) monitoring the state of pollution of natural environments;

d) assessment of the state of pollution of natural environments;

d) forecast of pollution of natural environments and objects of natural environments

e) assessment of population health.

1.1.2. Examples of situational tasks

Verifiable indicators of competence achievement: UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.

1. In the aquatic environment, the amplitude of temperature values is small - does not exceed 50 °C, while in the terrestrial-air environment it can reach up to 100 °C. The aquatic environment is characterized by high density and relatively low oxygen content - 1% of the volume. Light in clean waters penetrates to a depth of 50-60 m, in heavily polluted waters - to a few centimeters.

Exercise:

1. Name the limiting factors of the aquatic environment.
2. Which inhabitants are typical for the aquatic environment - homeothermic or poikilothermic, and why?
3. What is the ecological valence of aquatic inhabitants to the temperature factor?
4. Name the main ways in which aquatic organisms adapt to high water density and lack of light.
5. Give examples of non-periodic factors that can affect aquatic life.

2. During the environmental assessment of waste water prepared for discharge into a reservoir, the following impurities were found: a) mineral – sand, slag, silt particles; b) chemical; c) organic – plant residues, waste paper, physiological secretions of people and animals.

Laboratory data: pH of wastewater 9.59 (N - pH 6.5-7.5); chloride content 6.5 mg/l (N - 1.5 mg/l), mineral salt content 5.7 mg/l (N - 3.0 mg/l).

Exercise:

1. What category does wastewater belong to based on its composition?
2. Can wastewater be classified as “purified”?
3. At what values of pH, COD, concentrations of petroleum products, chlorides, and mineral salts is wastewater considered purified?
4. What are the water consumption standards per capita in our country depending on the level of development of the locality’s infrastructure?

etc.<…>

1.1.3. Example of a test version

Verifiable indicators of competence achievement: UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.

Test "Applied Ecology".

1. Classification of targeted anthropogenic impacts on the biosphere.
2. What waters are called wastewater (definition, characteristics)?

1.1.4. Examples of interview control questions

Verifiable indicators of competence achievement: UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.

1. "Greenhouse effect" - causes and consequences.
2. Ozone layer depletion - causes and consequences.
3. "Acid rain" - causes and consequences.
4. What is eutrophication of water bodies, and what causes this process?

1.2. Assessment tools for independent work of students

Assessment of independent work includes essay.

2. Assessment tools for conducting midterm assessment in the discipline

The midterm assessment is carried out in the form of a test.

2.1. List of questions for preparation for the midterm assessment

No.	Questions to prepare for the midterm assessment	Verifiable indicators of competency achievement
1	Pharmaceutical ecology: definition, goals, objectives. The place of pharmaceutical ecology in the system of ecological knowledge.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
2	History of the formation and development of scientific ecological knowledge. Formation of ecology as a complex interdisciplinary science.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
3	Development of V.I. Vernadsky's teaching on the biosphere. Functions of living matter in the biosphere (according to V.I. Vernadsky) The concept of the noosphere.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
4	The great cycle of substances in nature.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
5	Biological circulation of substances in nature.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
6	Minor circulation of substances in nature - what functions in nature does it provide?	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
7	Biogeochemical cycles of substances are the most vital for the biosphere (O2 , C , S , N) .	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
8	The habitat of modern man (according to N.F. Reims).	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
9	Physical and chemical methods, methods of applied statistics used in environmental research.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
10	Field and laboratory methods of ecological research.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
11	Instruments used in environmental research.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1.,

		UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
12	Levels of biological organization and ecology. The organism as an integral system.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
13	The concepts of population, ecotype, biocenosis, biotope and biogeocenosis.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
14	Concepts of biogeocenosis. Scheme of biogeocenosis.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
15	Intraspecific and interspecific interactions as the basis for the existence of biocenoses.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
16	Trophic levels: autotrophic and heterotrophic organisms; producers, consumers , reducers and their role in metabolism and energy.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
17	Ecological factors. Types of ecological factors. Ecological factors of the environment that affect a living organism. Classification.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
18	Patterns of the impact of environmental factors on the body: the optimum rule; the minimum rule; Shelford's tolerance rule .	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
19	Patterns of the impact of environmental factors on the body: the rule of two levels of adaptation; ambiguity of the effect of a factor on various functions of the body; the rule of interaction of factors; the law of ecological duplication.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
20	Adaptation of the organism to environmental factors. Basic laws and rules of adaptation.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
21	The main mechanisms of formation of adaptations at the organism level.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
22	Features of adaptation of organisms to different living environments. Adaptation of plants to light and temperature conditions.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1.,

		UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
23	Anthropogenic factors – definition. Ecological consequences of the influence of anthropogenic factors on the natural environment.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
24	Modern environmental problems and ways to overcome them.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
25	The impact of chemicals on public health. Routes of entry of chemicals into the body.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
26	Xenobiotics: definition, classification. Routes of xenobiotics entering food products.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
27	Food additives. System of standardization and quality control of food additives.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
28	Biologically active food supplements (BAA). Procedure for establishing the safety of BAA.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
29	Ecology of nutrition: Main regulatory documents concerning the production, quality control and use of food additives (Federal laws of the Russian Federation, orders of the Ministry of Health of the Russian Federation, Sanitary Rules and Regulations , guidelines and instructions approved by the Ministry of Health of the Russian Federation); general principles for assessing the effectiveness, safety and quality of food additives.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
30	Environmental pollution - definition, indicate its types and objects of pollution	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
31	The main anthropogenic (technogenic) pollutants of the atmosphere, methods of their analysis.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
32	The main anthropogenic (technogenic) pollutants of the hydrosphere, methods of their analysis.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.

33	The main anthropogenic (technogenic) pollutants of the lithosphere and medicinal plant materials, methods of their analysis;	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
34	The main anthropogenic (technogenic) pollutants and pollution associated with the production of medicines and chemicals, areas of prevention.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
35	The main consequences of air pollution: acid rain, ozone layer depletion, greenhouse effect – characteristics of the cause and conditions of occurrence.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
36	Main groups of measures for the protection of atmospheric air, purpose, characteristics.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
37	Wastewater - definition, Mechanical and biological treatment of wastewater: concept, main stages and methods, their characteristics.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
38	Main types of anthropogenic impact on soils. Main soil pollutants.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
39	What is land degradation and what are its causes?	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
40	“Soil erosion” - give a definition, list the types of erosion processes.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
41	"Desertification" - give a definition, indicate the reasons.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
42	Chemical and pharmaceutical enterprises and pharmacy organizations as sources of environmental pollution.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
43	Environmental safety and technology in pharmaceutical and chemical production: content of concepts, examples.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.

44	Environmental protection organizations at industrial enterprises, including chemical and pharmaceutical enterprises; tasks of these organizations; concepts of MAC of pollutants of the atmosphere, hydrosphere, soil, medicinal plant materials, as well as their hazard classes.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
45	Natural conditions and nature management: concepts, types of nature management, examples of nature management in the Volgograd region.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
46	Natural resources Classification of natural resources, examples of natural resources of the Volgograd region.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
47	Natural resource potential of the region: concept, characteristics	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
48	Natural resources, features of resource management on the model of the Volgograd region	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
49	Rational and irrational use of natural resources: concepts.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
50	General principles of rational use of natural resources	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
51	Environmental monitoring: concept, types of monitoring. Objectives and tasks of environmental monitoring.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
52	Environmental risks: concept, types. Population health risk assessment - content, stages.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
53	Sanitary and hygienic monitoring: concept, goals and objectives, importance for public health protection.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
54	Objectives and general principles of environmental protection.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.

55	Environmental assessment: concept, purpose, content.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
56	Industrial environmental control program – goals and objectives, main content.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
57	Industrial environmental control program - procedure and deadlines for submitting a report on the organization and results of industrial environmental control. Tasks of the specialist.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
58	Achievements of environmental science and practice, concepts for the development of environmental protection, including the protection of medicinal plants, environmental legislation.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
59	Basic principles of environmental protection.	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.
60	Specially protected areas: concept, functions, use	UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.

The midterm assessment includes the following types of tasks: an interview on midterm assessment questions, and solving a situational problem.

2.2. Examples of situational tasks
Verifiable indicators of competence achievement: UK-1.1.1., UK-1.2.1., UK-1.3.1., UK-5.3.1., UK-8.1.1., UK-8.2.1., UK-8.3.1., OPK-3.1.1., OPK-3.2.1., OPK-3.3.1.

1. Private houses are located 2 km from the chromium compounds plant and the thermal power plant (under the smoke plume of the chimneys). Forests have been destroyed on the territory of the industrial complex and quarries. Toxicants (SO_2, NO_2, CO, heavy metals) were found in the atmospheric air. A decrease in and damage to grass and tree leaves, a decrease in the number of some plant and animal species were noted. Anthropogenic pollution and eutrophication of water in reservoirs were revealed. To combat overgrowing of the reservoir, herbivorous fish (silver carp) are bred. An increase in the volume of industrial waste (solid and liquid) and a deterioration in the quality of the human habitat (severe pollution of water, soil, air, an increase in the general incidence of disease among the population) were noted. The chromium content in the soil reaches 50 mg / kg, potatoes - 65 mg / kg, carrots - 40 mg / kg, wheat - 80 mg / kg. The soils are light chestnut, acidic (pH 4.5).
Exercise:
1. Name the sources of soil pollution.
2. What pollutants affect environmental facilities?
3. What anthropogenic impact do emissions have on flora and fauna (direct or indirect)?
4. The concept of introduction, does it have a place in this problem?
5. What are the reasons for the decline in the number of living organisms (direct, accidental, environmental pollution)?

6. Calculate the coefficient of cumulation (translocation) of chromium in the plant. What are the environmental problems, their priority significance, the necessary measures for their prevention?

2. During the environmental assessment of waste water prepared for discharge into a reservoir, the following impurities were found: a) mineral – sand, slag, silt particles; b) chemical; c) organic – plant residues, waste paper, physiological secretions of people and animals.
Laboratory data: pH of wastewater 9.59 (N - pH 6.5-7.5); chloride content 6.5 mg/l (N - 1.5 mg/l), mineral salt content 5.7 mg/l (N - 3.0 mg/l).

Exercise:

1. What category does wastewater belong to based on its composition?
2. Can wastewater be classified as “purified”?
3. At what values of pH, COD, concentrations of petroleum products, chlorides, and mineral salts is wastewater considered purified?
4. What are the water consumption standards per capita in our country depending on the level of development of the locality’s infrastructure?

2.3. Example of an examination ticket

Federal State budget educational institution higher education
"Volgograd state Medical University"
Ministry of Health of the Russian Federation

Department: common hygiene And ecology IOZ im. N.P. Grigorenko
Discipline: Pharmaceutical ecology
Specialist in specialty 33.05.01 Pharmacy, focus (profile) Pharmacy
Training year: 2025- 2026

Ticket No. …

1. Field and laboratory methods of ecological research.
2. Main types of anthropogenic impact on soils. Main soil pollutants.
3. Situational task: A farmer brought vegetables to the market for sale. A toxicological examination revealed excess nitrates in all vegetables: up to 6700 mg/kg in spinach, up to 5000 mg/kg in beets, up to 4000 mg/kg in lettuce, up to 3500 mg/kg in radishes, and 300 mg/kg in cabbage. It turned out that in order to increase the yield, the farmer used plant care products, including nitrogen-containing mineral fertilizers, several times a week. The produce was rejected, and an explanatory talk was held with the farmer on the use of nitrates in the process of growing vegetable crops. Task: Explain the reason why the agricultural produce was rejected. Assume the possible impact of high doses of xenobiotics on the human body . List the necessary preventive measures.

L.S. Head of Department _____ N.I. Latyshevskaya

The full fund of assessment tools for the discipline is available in the EIS of the Federal State Budgetary Educational Institution of Higher Education VolgSMU of the Ministry of Health of Russia at the link: https://elearning.volgmed.ru/course/view.php?id=12470

Considered at a meeting of the Department of General Hygiene and Ecology of the N.P. Grigorenko Institute of Public Health, minutes of May 23, 2025, No. 10.

Head of Department N.I. Latyshevskaya