

THE TEXTBOOK OF A NEW GENERATION “RADIOECOLOGY”

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The science of radioecology has lately become of great importance in training bachelors in certain areas of education, for example, environmental engineers. Therefore, there is a great necessity in knowledge of the basic laws of radioactivity, the behavior of artificial and natural radionuclides in the biosphere and the biological effects of ionizing radiation. The content of higher education today has triggered off a number of problems, and their resolution determines its form in the future. An integrated approach is being introduced when choosing the advanced methods and ways of teaching, new learning technologies and distance learning are brought into practice, organizational and methodological materials on students' independent work are being improved. One of the methodological approaches to solve these problems is the creation of innovative educational literature, which takes into account all challenges of higher education. The textbooks are designed to be reliable tools that provide trustworthy information to maintain and improve understanding of critical concepts by students.

The essence of the task is to organize the cognitive activity by combining all the components of the educational process in one methodical edition: presentation of theoretical material, the practical part in the form of tasks, test tasks, tasks for self-control and examples of problem-based individual tasks. The textbook is used in the study of the professionally-oriented discipline “Radioecology”, aimed at shaping the professional qualities of a future specialist, which is fully reflected in the very content of the textbook¹. Attention is focused on the issues that every ecologist must know.

Theoretical part of the textbook is a methodically adapted system that includes the following sections: “Atomic nucleus structure”, “Natural radioactivity”, “Artificial radioactivity”, “Ionizing radiation”, “Dosimetry”, “Technologically-modified radiation background”, “Radiation protection”, “Sources of man-made radioactivity”, “Nu-

clear power engineering”, “Prospects for development of nuclear power engineering after the Chernobyl accident”, “Circulation of artificial radioisotopes in the external environment”, “General laws of radiobiological effect of radiation”, “Radiation syndromes and radiation poisoning”. In presenting the material, the principle of logical inter-thematic relations is observed. Each section has a fairly voluminous theoretical material, without simplification, characteristic of some modern educational publications. The textbook is aimed at the future; therefore, in the theoretical part, the latest achievements in the field of radioecology and radiobiology are presented as the additional material.

The practical part of the textbook submits tasks and exercises of various difficulty levels: easy, medium, hard and creative. Mastering the practical part of the textbook motivates learning activities. Differentiation of the practical part according to the difficulty level and a gradual transition to higher levels contributes to it greatly. Individual tasks in the form of problem situations are a creative component of the practical part. When performing a task that combines various topics of the discipline, interdisciplinary links are traced and different approaches to the solution are possible. Individual tasks are of great importance in enhancing the study of various professionally-oriented environmental disciplines by students. Individual tasks of various difficulty levels are the new integrated approaches, focused on the knowledge and practical professional training, which creates the basis for the formation of a competitive personality. Controls of students' knowledge and skills are presented in the form of tasks for self-control and test tasks of various types

The content, the structure of the textbook, the depth of interpretation of the material and its methodological orientation form students' research thinking, impart the skills to solve specific practical tasks on radiation problems at the place of production, increase the level of qualification and competence of the future specialist. The textbook is designed to help students organize their independent work.

¹ Хоботова Е.Б., Грайворонська І.В., Уханьова М.І. Радіоекологія. Харків: ХНАДУ, 2018. 288 с.; 31 іл.