


## BELARUSIAN STATE MEDICAL UNIVERSITY

Colloquium  
on «Radiation Medicine and  
Ecology» for students of the  
Medical Faculty of Foreign  
Students studying at the specialty:  
7-07-0911-01 «General Medicine»

«APPROVED»  
Head of the Department Radiation  
Medicine and Ecology, PhD in  
Medical sciences, Assoc. Prof.  
  
A.R. Avetisov  
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### **Questions for the colloquium № 1 Section "Environmental medicine"**

1. Ecosystem: concept, components (ecotope and biocenosis), profiles. Basic principles of ecosystem functioning. Ecosystems classification regarding energy sources accessibility; examples of ecosystems and profiles. Human activities pressure on the ecosystem's sustainability.

2. Trophic levels and food chains. Producers, consumers, reducers. Patterns of energy and substance transfer within the food chain. Stepwise accumulation of foreign chemical substances, toxic compounds and radionuclides included, during their moving up the food chain.

3. Abiotic and biotic environmental factors.

4. Mechanisms of influence of environmental factors on the human body.

5. Visible light: definition of the concept, characteristics. Biological clock, the mechanism of regulation of the circadian cycle. "Seasonal affective disorder": pathogenetic mechanism, signs, prevention.

6. The influence of the visible region of the solar spectrum and illumination on humans. Regulation of the circadian rhythm.

7. Causes of development, clinical manifestations, prevention and treatment of affective seasonal disorder.

8. Environmental factors: electromagnetic radiation properties; electromagnetic radiation scale. Ultraviolet radiation: ranges, profiles, sources.

9. The principal parameter to describe the effect of UV radiation exposure on the skin: erythema action spectrum (EAS).

10. Ultraviolet radiation: the common mechanisms of the human health implications; erythema formation; minimal erythema dose (MED).

11. Types of the human skin sensitivity to UVR.

12. Ultraviolet (UV) index, practical application.

13. Ultraviolet radiation in the sequence of vitamin D<sub>3</sub> synthesis in the human body.

14. Algorithm of quantification of the incurred daily UVR dose.

15. Deterministic effects of UVR exposure on human health: descriptive features of variants, intrinsic mechanisms of occurrence and evolving.

16. Stochastic effects of UVR exposure on human health: descriptive features of variants, inherent mechanisms of occurrence and evolving, risk factors.

17. Strategies to prevent the skin and the organ of vision adverse effects. Medicinal products compounds modifying human sensitivity to UVR.

18. Geomagnetic storm phenomenon. Geomagnetic factors. Geomagnetic storm associated hazards for human health. Human body systems responses. Tools for prevention of geomagnetic factors detrimental effects on human health.

19. Oxidative stress, intrinsic mechanisms of occurrence and evolving. Oxidative stress drivers.

20. Human sensitivity to geomagnetic disturbances and meteorological events: concept, classification based on the variety of clinical manifestations, types of metheopathic responses in humans.

21. Fine mechanisms of chemical factors action in a human body. Alien chemicals (xenobiotics): concept, relevant classification, profiles.

22. Toxicity-attributed properties of xenobiotics. Mechanisms of toxic action. Routes for innate human body barriers breaching.

23. Toxicokinetics of xenobiotics: absorption, distribution / accruing in organs / tissues, metabolism, excretory pathways.

24. Effectors of the endocrine system, EESs (another pertinent term: endocrine disruptors): concept, classification, action fine mechanisms, human health anticipated implications of a long-term exposure.

25. The role of natural EESs in human health. Known protective effects of natural EESs.

26. Multiple chemical sensitivity (MCS): concept, underlying causes for its occurrence and evolving, chemical inducers, clinical manifestations, approaches in diagnosing and cure.

27. Biological factors: examples; types of interaction of living organisms.

28. Mechanisms of unfavorable effects of biological factors on human system.

29. Fungi: the role in ecosystem and human pathology.

30. *Candida albicans* as the most common agent of the fungi-associated diseases in humans.

31. Exorphins: concept, targets and biological effects in humans; chemical substances with exorphan-bearing properties.

32. Hypersensitive pneumonia and Legionnaires' disease: causes, clinical manifestations, approaches of treatment and prevention.

33. House dust mites as a prominent biological factor of a polluted indoor environment.