

UDK: 636:614.4

LEVELS OF BIOLOGICAL RISK AND BIOLOGICAL SAFETY IN THE DETECTION OF INFECTIOUS DISEASES

Assistant: *Klichov Odil Ilkhomovich*

E-mail: odilklichov94@gmail.com

*Samarkand State University of Veterinary Medicine,
Livestock and Biotechnologies*

Abstract. This article provides information on biological safety levels, biological safety rules, infectious pathological agents, biological safety boxes of class I and II, and pathogenic microorganisms.

Key words: Biosafety, BHD, physical barriers, BSL-1, BSL-2, BSL-3, BSL-4, Cartagena protocol, bactericidal lamps, biological safety cabinets class I and II, dangerous and exotic strains.

Enter. President of the Republic of Uzbekistan Shavkat Mirziyoyev on October 9, 2019 adopted by the Legislative Chamber, approved by the Senate on October 11 "On the accession of the Republic of Uzbekistan to the Cartagena Protocol on Biosafety of the Convention on Biological Diversity signed the Law". This Protocol was adopted on January 29, 2000 in Montreal, and until now 171 countries and the European Union (EU) as an international organization have joined the Protocol. The President also signed the law "On Ratification of the International Convention on the Protection and Promotion of Various Forms of Cultural Expressions". This convention was adopted by the Legislative Chamber on September 30, 2019, and approved by the Senate on October 11.

The main purpose of this Convention is to protect and encourage various forms of cultural self-expression, to create conditions for free cooperation of different cultures based on strengthening international cooperation and consensus in this field.

Relevance of the topic: Biosecurity is a threat to a healthy person, animal or plant through direct exposure, pollution or indirect exposure, disrupting the balance of the environment. an infectious pathological agent (or its part) that infects. This is to preserve the biological essence, biological qualities, connections and properties of living organisms, preventing the loss of biological integrity, which may occur as a result of:

The purpose and objectives of the research. Design of veterinary laboratories, construction of buildings at a prescribed distance from sources of pollution and damage. Determination of potential biological hazards and the level of biological safety. Ensure that appropriate equipment is used for the safe storage of biological

material when working with infectious pathological agents, as well as practical instructions describing the necessary equipment and procedures to be performed by laboratory personnel. These are called "Biological Safety Levels" (BHD). There are four levels of these.

Biological safety level 1.

Safety regulations, equipment, and laboratory facilities are suitable for working with known strains of microorganisms in which human disease has not been reported. It is not necessary to isolate the laboratory from the entire building. The work can be performed in a conventional laboratory bench for standard microbiological procedures. No special protective equipment is required or used. Laboratory personnel receive regular safety training and are supervised by a laboratory director with experience in a standard microbiology laboratory. Biological safety cabinets are not required when working with strains of these microorganisms.

Biological safety level 2.

Safety rules, equipment and laboratory equipment are suitable for working with certain microorganisms belonging to the medium risk group that cause diseases in humans and animals.

The main differences from biological safety level 1:

- Laboratory staff undergo special training on working with pathogenic microorganisms under the guidance of experienced specialists;
- limited access to the laboratory during working hours;
- it is recommended to be careful with sharp objects;
- Care should be taken when handling which may cause aerosols and splashes. It is recommended to use physical barriers. It is recommended to work in biological safety boxes of class I and II.

Biological safety level 3

Safety regulations, equipment, and laboratory facilities are appropriate for working with indigenous and exotic microorganisms that can be transmitted through airborne droplets and cause serious, fatal diseases. Particular attention should be paid to the protection of employees (primary and secondary barriers), as well as society and the environment. Requirement: Work in Class I and II biological safety cabinets.

Biological safety level 4

In accordance with safety regulations, work rules, equipment and laboratory rooms are adapted to work with dangerous and exotic strains of microorganisms that pose a great threat to human health and animals. The disease is transmitted by airborne droplets or unknown means and is incurable, and there are no vaccines or drugs. Laboratory personnel undergo special and thorough training on the safe handling of highly dangerous microorganisms and are conducted under the guidance of an expert with experience in such work. Access to the laboratory is strictly limited. The

laboratory is located in a separate building or in a completely isolated part of the building. There are special rules for doing work in the laboratory.

Results and their analysis. 1. The veterinary laboratory should be located in a separate room.

2. It is not allowed to build a veterinary laboratory near the warehouses of chemicals and other harmful substances, as well as in the territory of residential buildings.

3. There should be two entrances to the veterinary laboratory: one for workers and the other for receiving material to be examined.

4. The access of outsiders to the laboratory premises should be limited. The premises of the veterinary laboratory must include the following: laboratory examination room; auxiliary buildings; vivarium (for keeping laboratory animals).

5. The composition of the production rooms of the veterinary laboratory is determined based on the specific characteristics of the veterinary research being conducted.

Production buildings of departments of veterinary laboratories, which use animal infectious disease agents in their activity, should be designed so that workers pass through sanitary control rooms when entering these departments.

Ensuring biosafety when working with laboratory equipment.

- Laboratory furniture should have a coating resistant to the effects of detergents and disinfectants. There should be no seams or cracks on the surface of the tables.

- Buildings where work is carried out with potentially infectious materials are equipped with bactericidal lamps, which require disinfection of air and surfaces according to regulations.

- Instruments, equipment and measuring instruments used in the laboratory must be certified, technically accurate, subject to timely standardization, have a technical passport and operating instructions, taking into account biological safety requirements.

BIOSAFETY LEVELS

basic classes of laboratory risks from low to high



BSL-1



BSL-2



BSL-3



BSL-4



Biosafety Laboratory

Conclusions

1. It is necessary to follow the rules of biological safety when testing infectious agents in the laboratory.
2. Laboratory staff should familiarize themselves with the special instructions for working with pathogenic microorganisms under the guidance of experienced specialists.
3. Buildings where work is carried out with materials that can be infected with infectious diseases must be equipped with bactericidal lamps, air and surfaces must be disinfected in accordance with regulations.
4. It is recommended to use physical protection barriers. It is recommended to work in biological safety boxes of class I and II.

List of used literature

1. Klichov Odil Ilxomovich. Chorvachilik xo'jaliklari va chorvachilik mahsulotlarini qayta ishlash korxonalarida veterinariya bioxavfsizligi. Veterinariya meditsinasi jurnali maxsus son № 3 2023 yil, 6-oktabr ISSN 2991-554-3 63-64 betlar.
2. «Практическое руководство по биологической безопасности в лабораторных условиях», ВОЗ, 2004,
http://www.who.int/about/licensing/copyright_form/en/index.html.

3. Новоселова Т. “Учебное пособие по биологической безопасности”, Научно-исследовательский центр по разоружению, Университет Брэдфорда, Англия, 2016, http://www.teambasedlearning.org/answers-to-faqs/#q3_1.
4. Никитина Е.В., Решетник О.А. «Биобезопасность пищевых продуктов», учебное пособие, Казанский государственный технологический университет, Казань, 2006, <http://www.nptemp.ru/resources>.
5. Азаев М.Ш., Агафонов А.П., Дадаева А.А. «Основы биологической безопасности», Учебно-практическое пособие, «ИНФРА-М», 2020 г., <https://www.labirint.ru/books/723521>
6. Ермишин А.П., Подлиских В.Е., Воронкова Е.В., Аношенко Б.Ю., Зарьков В.М. «Биотехнология, биобезопасность, биоэтика» Минск «Тэхналогія», Электронная версия с изм. и дополнениями от 20.12.2006, https://biosafety.igc.by/wp.content/uploads/2018/02/7DDCE_ermishin_a_p_biotehnologiya_biobezopasnost_bioetika.pdf.
7. Ibragimov F. B., Piyasov Z. I., Ibragimov F. M. VETERINARY SANITATION OF FISH MEAT QUALITY ASSESSMENT OF ASPECTS. – 2023.