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**Architectural and technical code for biosafety laboratories
(English Translation)**

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Table of Contents

- 1 General
- 2 Terms
- 3 Classification, and technical indicators of biosafety laboratories
 - 3.1 Classification of biosafety laboratories
- 5 Air Conditioning, Ventilation and Purification
 - 5.1 General provisions
 - 5.2 Air supply system
 - 5.3 Exhaust system
 - 5.4 Airflow organization
 - 5.5 Components and materials of the air conditioning purification system
- 6 Water supply and drainage and gas supply
 - 6.1 General provisions

1 General

1.0.1

In order to make the design, construction and acceptance of biosafety laboratories meet the laboratory biosafety protection requirements, this specification is formulated.

1.0.2

This specification is applicable to the design, construction and acceptance of new, rebuilt and expanded biosafety laboratories.

1.0.3

The construction of biosafety laboratories should strictly follow the building technology principles of physical isolation, take biosafety as the core, ensure the safety of experimenters and the safety of the surrounding environment of the laboratory, and should meet the environmental requirements of experimental objects, so as to achieve Practical and economical. The equipment and materials used in the biosafety laboratory should have qualified certificates and inspection reports that meet the requirements and are within the validity period. For newly developed products and processes, there should be identification certificates or test proof materials.

1.0.4

The design, construction and acceptance of biosafety laboratories shall not only implement the provisions of this specification, but also comply with the relevant current national

standards.

2.0.1 Primary barrier primary barrier

The isolation between the operator and the operated object is also called the first level of isolation.

2.0.2 Secondary barrier secondary barrier

The isolation of the biosafety laboratory and the external environment is also called secondary isolation.

2.0.3 Biosafety laboratory

Microbiology laboratories and animal laboratories that meet biosafety requirements through protective barriers and management measures. Including the main laboratory and its auxiliary rooms.

2.0.4 Laboratory containment area

It refers to the area with relatively high biological risk, and the area that has requirements for the tightness of the enclosure structure and the direction of airflow.

2.0.5 Non-contamination zone of laboratory auxiliary work area

The laboratory auxiliary work area refers to the area with relatively small biological risk, and also refers to the area outside the protective area in the biosafety laboratory.

2.0.6 Main laboratory main room

It is the room with the highest pollution risk in the biosafety laboratory, including the experimental operation room, animal breeding room, animal anatomy room, etc. The main laboratory is also called the core work room.

2.0.7 Buffer room

A closed room set between laboratory areas with different contamination probabilities. When necessary, a mechanical ventilation system can be installed, the doors of which have an interlocking function and cannot be opened at the same time.

2.0.8 Individually ventilated cage (IVC)

An independently ventilated barrier device with feeding boxes as the unit, clean air is sent into each independent cage box to keep the feeding environment at a certain pressure and cleanliness, to avoid environmental pollution of animals (positive pressure) or animal pollution of the environment (negative pressure)), all experimental operations need to be

carried out in biological safety cabinets and other equipment. The device is used for breeding clean, specific pathogen free or infected (negative pressure) animals.

2.0.9 Animal isolated equipment

Refers to the general term for the isolation devices used to raise animals in animal biosafety laboratories. The animal breeding environment of the equipment is negative pressure and one-way airflow to prevent pathogens from leaking into the environment and effectively prevent animals from escaping. Commonly used animal isolation equipment includes isolators, laminar flow cabinets, etc.

2.0.10 Airtight door

The airtight door is a kind of airtight door. The airtight door usually has an integrated door leaf and door frame, and the gap is sealed by means of a mechanical compression device or an inflatable sealing ring.

2.0.11 Waste water of biohazard

Hazardous wastewater contaminated with harmful biological agents.

2.0.12 Cleanliness class 7

The number of dust particles greater than or equal to 0.5 μm in the air is greater than 35200 grains/ m^3 to less than or equal to 352000 grains/ m^3 , the number of dust particles greater than or equal to 1 μm is greater than 8320 grains/ m^3 to less than or equal to 83200 grains/ m^3 , and the number of dust particles greater than or equal to 5 μm Greater than 293 grains/ m^3 to less than or equal to 2930 grains/ m^3 .

2.0.13 Cleanliness Class 8

The number of dust particles greater than or equal to 0.5 μm in the air is greater than 352,000 grains/ m^3 to less than or equal to 3,520,000 grains/ m^3 , the number of dust particles greater than or equal to 1 μm is greater than 83,200 grains/ m^3 to less than or equal to 832,000 grains/ m^3 , and the number of dust particles greater than or equal to 5 μm Greater than 2930 grains/ m^3 to less than or equal to 29300 grains/ m^3 .

2.0.14 Static at-rest

The facilities in the laboratory have been built, the process equipment has been installed, the ventilation and air conditioning system and equipment are in normal operation, but there is no staff to operate and the experimental subject has not yet entered the state.

2.0.15 Comprehensive performance judgment comprehensive performance judgment

Carry out comprehensive testing and evaluation of the engineering and technical indicators of the biosafety laboratory that has been completed and accepted.

3.1 Classification of biosafety laboratories

3.1.1

The biosafety laboratory can be composed of a protective area and an auxiliary working area.

4.3.3 The foundation design of the biosafety laboratory should comply with the relevant provisions of the current national standard "Code for Design of Building Foundations" GB 50007. The foundations of Level 3 biosafety laboratories should be designed according to Class A, and the foundations of Level 4 biosafety laboratories should be designed according to Class A.

4.3.4 The main structure of Level 3 and Level 4 biosafety laboratories should adopt concrete structure or masonry structure system.

4.3.5 When the suspended ceiling of Level 3 and Level 4 biosafety laboratories is used as a technical maintenance interlayer, the live load of the suspended ceiling should not be less than 0.75kN/m², and a separate maintenance channel should be used for particularly important equipment in the suspended ceiling.

5.1 General provisions

5.1.1

The division of air-conditioning and purification systems in biosafety laboratories should be determined after technical and economic comparisons based on the degree of hazard of the operating objects and the layout of the plane, and effective measures should be taken to avoid pollution and cross-contamination. The division of the air-conditioning purification system should be conducive to laboratory disinfection and sterilization, the setting of automatic control systems and energy-saving operation.

5.1.2

The design of the air-conditioning purification system of the biosafety laboratory should consider the heat and humidity load of various equipment.

5.1.3

The design of air supply and exhaust systems in biosafety laboratories should take into account the conditions of use of biological safety cabinets and animal isolation equipment.