

BIOSAFETY LEVEL 3 LABORATORIES (BSL-3)

Biosafety Level 3 (BSL3) facilities are biological containment laboratories in which work is done with potentially hazardous biological agents which may cause potentially lethal disease after inhalation. It includes genetically modified microorganisms, cell cultures and human endoparasites, which may provoke any infection, allergy or toxicity, being a risk to human health.

Classifies biological agents (Royal Decree 664/97) into four infection risk groups on the basis of the following criteria:

Risk Group 1: A microorganism that is unlikely to cause human disease.

Risk Group 2: A pathogen that can cause human disease to laboratory workers, but the risk of spreading to the community is low. Effective treatment and preventive measures are available.

Risk Group 3: A pathogen that can cause serious human disease and may present a serious hazard to laboratory workers. It could present a risk if spread in the community, but effective treatment and preventive measures are available.

Risk Group 4: A pathogen that usually produces life-threatening human disease and endangers laboratory workers and may present a high risk of spreading. Effective treatment and preventive measures are not usually available.



“To be surprised, to wonder, is to begin to understand.”

Preventive measures should involve all workers and professionals from all areas. All staff should routinely follow standard precautions to prevent exposure of the skin and mucous membranes, in all situations that may lead to accidents

The basic elements that serve to biosafety containment of risk caused by infectious biological agents are three :

Work practices: Standardized working practices are the most basic yet most important to protect laboratory personnel. Those who may be in contact -more or less directly- with infectious agents should be aware of the potential risks involved and must also be adequately trained in the techniques required for a safe handling of pathogenic organisms.

These standardized procedures should be written and updated regularly.

Safety equipment (primary barriers): includes devices or appliances that ensure process safety (e.g. biosafety cabinets) and personal protective equipment (coveralls, footwear and shoe covers, face shields, etc.)

Facility design and construction (secondary barriers): They are aimed at laboratory personnel protection, being also barrier for those outside the laboratory and protecting people or animals in the community from infectious agents that can be accidentally released from the laboratory.

These design features include specialized ventilation systems to ensure directional air flow, air treatment systems for decontaminating agents or eliminate exhaust air, controlled access areas, air locks in the doors of laboratory or building access or separate modules to isolate the laboratory. The magnitude of secondary barriers depend on the infectious agent in question and manipulations with which they are performed.

This magnitude will be determined by the risk.

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