

Biological Safety Risk Assessment

Bacteria, viruses, fungi or other infectious agents are studied because they cause disease. Since many of these agents are pathogenic to humans, animals, or other forms of life, their use poses risks, which vary with each agent and the way it is used. The [CDC](#) and the [NIH](#) have developed the Biosafety in Microbiological and Biomedical Laboratories ([BMBL](#)) Guidelines, which classify microorganisms into different [Biosafety Levels](#). Pathogen risks are determined by weighing a number of factors associated with the microorganism. These factors include the severity of the disease that the microorganism causes, the routes of infection, its virulence, and infectivity. Other factors that are taken into account include the existence of effective therapies, possibilities for immunization, the presence of vectors, quantity of agent being used and whether the agent is indigenous to the United States.

Conditions under which an infectious agent is used in a laboratory is also of concern. Factors such as large volumes and high concentrations of an agent in growth media create a greater risk than working with smears of the same agent on microscope slides. Using agents in unusual or untried research settings can also alter the associated risks.

The [BMBL](#) uses the above factors to classify biohazards into four distinct [Biosafety levels](#).