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BIOSAFETY LEVEL (BSL) LABS IN ASIA

Compiled by Jeselyn

What are BSL Labs?

BSL Labs are designated facilities established for the handling and investigation of infectious agents or toxins. Currently, these labs are classified into four levels, ranging from **BSL 1 to BSL 4**. The categorization is primarily based on factors such as the transmissibility, severity, and origin of the studied microorganisms, which are also classified into risk groups 1 to 4.

Risk Group 1 (BSL 1 and 2)

Pathogens that are unlikely to cause human or animal disease – E. Coli K-12, chickenpox.

Risk Group 2 (BSL 2 and 3)

Pathogens that have the capability to inflict diseases in both humans and animals, but do not pose a significant threat to scientist, the community, livestock or the environment – Mycobacterium, Salmonella, Streptococcus pneumonia.

Risk Group 3 (BSL 3)

Pathogens that have the potential to cause serious diseases in both humans and animals, but typically do not transmit easily from one infected individual to another – Influenza virus H1N1, H2N2, H5N1, Bacillus anthracis (Anthrax).

Risk Group 4 (BSL3+ and 4)

Pathogens with the capacity to cause significant diseases in humans or animals and can easily spread from one individual to another – Ebola, the Lassa fever, the Marburg virus.

Source: Compiled from World Health Organization. 2004. "Laboratory Biosafety Manual." https://iris.who.int/bitstream/handle/10665/42981/9241546506_eng.pdf?sequence=1

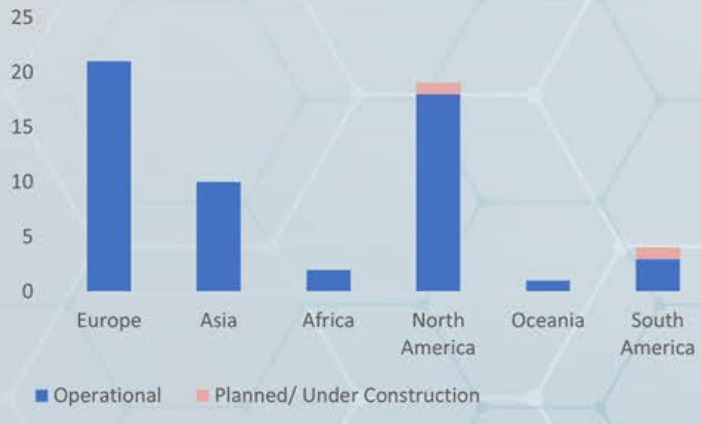
Each BSL Lab has a specific purpose. Although they mainly function as research facilities, BSL 2 labs, for example, may also offer **primary health and diagnostic services.** Throughout the COVID-19 pandemic, governments depended on the BSL 2 labs to handle human samples and assist in the diagnostic processes. These laboratories are also created **to develop novel or improve existing vaccines, understand new emerging biotechnology, and strengthen a country's ability to prevent, detect, and respond to biological emergencies.**

All these positive aspects and functions, however, do come with a significant challenge.

BSL4 labs are rapidly increasing in number. By the beginning of 2023, there are approximately **69** BSL4 labs globally; **51** in operations, **3** under construction, and **15** planned spread across 27 countries.

Global Distribution of BSL4 Labs

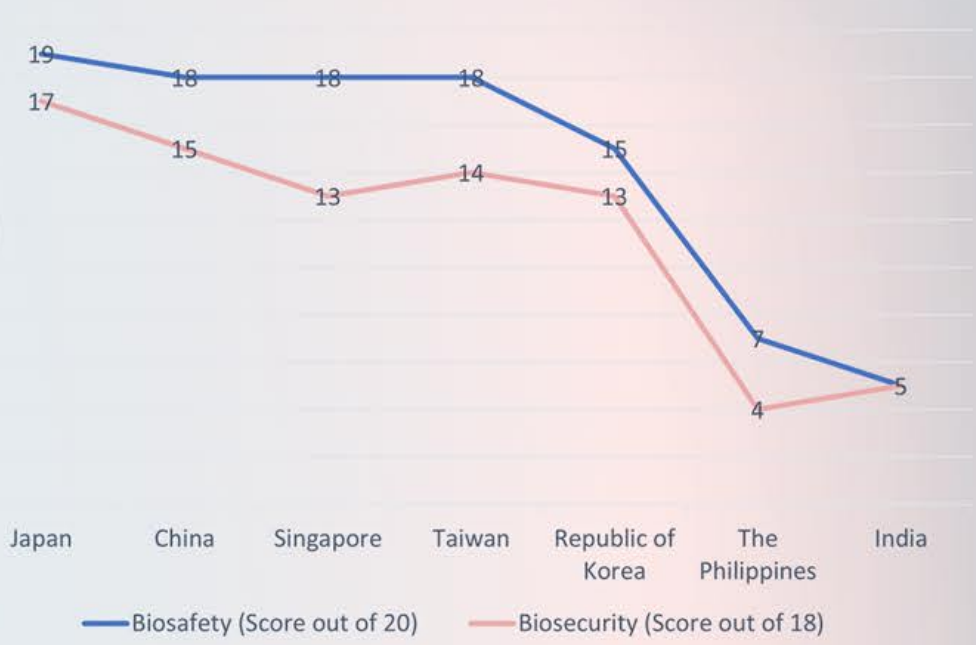
Global Distribution of BSL3+ Labs



Source: Compiled from King's College London. 2023. "Global Biolabs Report 2023." https://static1.squarespace.com/static/62fa334a3a6fe8320f5dcf7e/t/6412d3120ee69a4f4efbec1f/1678955285754/KCL0680_BioLabs+Report_Digital.pdf

In Southeast Asia, countries have declared their intentions to set up BSL4 laboratories for the purpose of combating and preventing infectious diseases. However, evidence indicates that their oversight in biosafety and biosecurity may not be sufficient.

Biosafety and Biosecurity Oversight Score



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