



Biowarfare and Biodefense

Thousands of different microorganisms can affect the health, safety, and economic stability of entire populations. Many medical and government organizations have created lists of pathogenic microorganisms most relevant to their missions. For example, the Centers for Disease Control and Prevention (CDC) maintains an ever-changing list of notifiable diseases; the National Institute of Allergy and Infectious Disease (NIAID) lists agents used for bio-warfare, and the Department of Health and Human Services (HHS) maintains a list of critical human pathogens.

Using microorganisms as harmful biological agents in the context of biological warfare (biowarfare), bioterrorism, and bio-crime are becoming more realistic. Biowarfare (BW) refers to the intentional use of biological agents (e.g., bacteria, viruses, fungi, and toxins) as weapons in war scenarios. BW agents can be deadlier than other conventional weapon systems. This is because even minute quantities of BW agents can cause mass casualties and/or fatalities, depending on the agent used, and the type of weaponization performed on the agent.

The recent COVID-19 pandemic has significantly changed our way of living and impacted the global economy. Global communication systems and technology and modern means of transportation have led to rapid spread of infectious diseases. In the past three decades, more than forty infectious diseases have emerged. Bio-safety has fast emerged as a major challenge worldwide. The SARS-CoV infection spread globally following its emergence in China in July 2003. Another variant of Influenza Virus A, H7N9, emerged in Eastern China. Simultaneously, H1N1 Swine Flu Virus emerged in South America and subsequently reported in China. MERS or Middle East respiratory syndrome emerged in 2015 in China. In 1976, Ebola was first discovered in Central Africa. Biological pathogens can be artificially modified to enhance characteristics in terms

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