

7. Bioterrorism– International Relation

From invisible life to national probe– Inside India's first ricin 'bioterrorism' case

The Gujarat ATS uncovered India's first suspected ricin-based bioterror plot, involving a highly toxic biological agent extracted from castor beans. This incident highlights the growing threat of bioterrorism by non-state actors and underscores the urgent need for a robust national biosecurity framework to regulate dual-use technologies and prevent mass destruction.

Incident– In 2025, the Gujarat Anti-Terrorist Squad (ATS) uncovered an alleged ricin-based bioterror plot.

Significance– This marks India's first suspected ricin-linked bioterror case with possible international links, highlighting a new dimension of security threats.

About Ricin

Source– Ricin is a highly toxic carbohydrate-binding protein extracted from the castor bean plant (*Ricinus communis*).

Mechanism of Toxicity

1. It functions by blocking protein synthesis in cells.
2. This leads to cell death and eventually causes multiple organ failure and death within hours of exposure.
3. Lethality– Even a few milligrams can be fatal.

International Classification

1. It is listed under Schedule-1 of the Chemical Weapons Convention (CWC).
2. Its production and use are strictly supervised by the Organisation for the Prohibition of Chemical Weapons (OPCW).

Treatment– Currently, there is no known antidote for Ricin poisoning.

Understanding Biological Weapons

Definition– Biological weapons involve the use of pathogens (bacteria, viruses, fungi) or toxins (like ricin, botulinum toxin) to cause disease or death in humans, animals, or crops.

Classification– They are classified as Weapons of Mass Destruction (WMDs) due to their potential to cause large-scale harm and widespread panic.

Appeal to Non-State Actors

1. Low Cost– They are relatively inexpensive to produce compared to nuclear or conventional weapons.
2. High Impact– They possess a high psychological impact, creating fear and disruption disproportionate to the physical damage.

Why Biosecurity Is Critical for India?

Demographic Vulnerability– India's large population and high population density significantly increase the potential casualty count and spread rate of any biological incident.

Agro-Economic Dependence– A heavy reliance on agriculture and livestock makes the economy vulnerable to agro-terrorism. Susceptibility to transboundary animal diseases could devastate food security and rural livelihoods.

Biotechnology Boom– The rapid growth in biotechnology research introduces the challenge of regulating dual-use research—technologies that have beneficial civilian uses but can also be misused for military or harmful purposes.

Terrorism Threat– The increasing interest of non-state actors in low-cost, high-impact biological agents compounds national security risks.

India's Existing Biosecurity Architecture

Institutional Framework

Department of Biotechnology (DBT)– Oversees research governance and safety frameworks for laboratories working with hazardous biological materials.

Plant Quarantine Organisation of India– Regulates agricultural imports and exports to prevent the entry of exotic pests and diseases.

National Disaster Management Authority (NDMA)– Has issued detailed guidelines for the management of biological disasters and pandemics.

Key Legal Instruments

Act/Rule	Purpose
Environment (Protection) Act, 1986	Governs the handling of hazardous microorganisms and genetically modified organisms (GMOs) to prevent environmental release.
WMD Act, 2005	The Weapons of Mass Destruction and Their Delivery Systems (Prohibition of Unlawful Activities) Act, 2005 criminalises the manufacture, transport, or transfer of biological weapons.
Biosafety Rules, 1989	Regulates recombinant DNA research and biocontainment procedures (updated with 2017 guidelines).

International Measures

Measure	Description	Key Feature
Biological Weapons Convention (BWC)	Entered into force in 1975. Prohibits development, production, acquisition, transfer, and stockpiling of biological and toxin weapons.	First multilateral disarmament treaty banning an entire category of WMDs.
Chemical Weapons Convention (CWC)	A multilateral treaty banning chemical weapons and requiring their destruction within a specified timeframe.	Implemented by the OPCW (Organisation for the Prohibition of Chemical Weapons).
Australia Group	An informal forum of countries seeking to prevent the proliferation of chemical and biological weapons.	Harmonises export controls on dual-use materials, equipment, and technologies.

Global Best Practices

United States– Anchors its framework under the National Biodefense Strategy (2022–2028), which integrates health, defence, and biotech oversight into a unified approach.

China– Enacted the Biosecurity Law (2021), which treats biotechnology and genetic data as matters of national security, mandating centralised control over research and material transfers.

United Kingdom– The Biological Security Strategy (2023) focuses heavily on bio surveillance and rapid response capabilities.

Way Ahead for India

National Framework– Establish a comprehensive national biosecurity framework with clear leadership and inter-ministerial coordination mechanisms to avoid fragmentation.

Regulatory Updates– Legal and regulatory systems must be updated to address emerging threats from synthetic biology and dual-use research.

Technological Investment– Enhance investment in genomic surveillance, microbial forensics, and early-warning systems to detect and attribute biological attacks swiftly.

Source– <https://indianexpress.com/article/long-reads/from-invisible-life-to-national-probe-inside-indias-first-ricin-bioterrorism-case-10527483/>