

# India Biological Chronology

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[2007-2003](#) | [2002-2001](#) | [2000-1990](#) | [1989-1970](#) | [1969-1892](#)

Last update: April 2008

**As of April 2008, this chronology is no longer being updated.  
For current developments, please see the India Biological Overview.**

*This annotated chronology is based on the data sources that follow each entry. Public sources often provide conflicting information on classified military programs. In some cases we are unable to resolve these discrepancies, in others we have deliberately refrained from doing so to highlight the potential influence of false or misleading information as it appeared over time. In many cases, we are unable to independently verify claims. Hence in reviewing this chronology, readers should take into account the credibility of the sources employed here.*

*Inclusion in this chronology does not necessarily indicate that a particular development is of direct or indirect proliferation significance. Some entries provide international or domestic context for technological development and national policymaking. Moreover, some entries may refer to developments with positive consequences for nonproliferation.*

## 2007-2003

### 10-14 December 2007

An Indian delegation attends the fourth Meeting of the States Parties to the BWC in Geneva, Switzerland.  
—List of Participants BWC/MSP/2007/INF.1, 14 December 2007, p. 13, [www.opbw.org](http://www.opbw.org).

### 26 October 2007

The Defence Research & Development Establishment (DRDE), in Gwalior, India issues a request for tenders to supply a "Speed Vacuum Concentrator Cum Freeze Drying System" that will be used for the "concentration and drying of highly sensitive samples of DNA, RNA, proteins along with other biological and non-biological samples."  
—Invitation for Tender/Quotation For Import, Ref No. 03/07-08/15/MB, Speed Vacuum Concentrator Cum Freeze Drying System, 26 October 2007, [www.drdo.org](http://www.drdo.org).

### 20-22 September 2007

Speaking at the annual conference of the Indian Association of Biomedical Scientists the Defence Research Development Organization (DRDO) Chief Controller for Research and Design, Dr. W. Selvamurthy says that India's armed forces have placed orders worth over 20 billion rupees (\$500 million) for specialist equipment to prepare the country against attacks by chemical, biological and nuclear weapons. The equipment, which is to be produced in India, includes protective clothing, detection systems, shelters and drugs. Selvamurthy notes that "[t]hese products are being produced by thirty DRDO and ordnance factories and would be supplied within a period of one year,"

—The CBW Conventions Bulletin, No. 78 (February 2008), p. 36.

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**20-24 August 2007**

An Indian delegation of six attends the Biological Weapons Convention Meeting of Experts in Geneva, Switzerland.  
—List of Participants BWC/MSP/2007/MX/INF 3, 24 August 2007, p. 12, [www.opbw.org](http://www.opbw.org).

**28 May 2007**

The Russian Federal Customs Service temporarily suspends the export of all human medical biological materials as a result of a report produced by the Federal Security Service (FSB) on bioterrorism. The FSB report allegedly claims that a number of foreign organizations are engaged in research to develop ethnically specific biological weapons including the Indian Genome Institute. Materials are sent from Russia to the India to verify diagnoses, to identify bone marrow donors, or to be used in research for new drugs.

—The CBW Conventions Bulletin, No. 76+77 (October 2007), p. 39.

**20 April 2007**

Panacea Biotech Ltd., the second-largest vaccine manufacturer in India, reports completion of the first two phases of trials for its recombinant anthrax vaccine.

—"Panacea Biotech Developing Vaccines for Dengue (Also Completes The First Two Phases of Trials for its Recombinant Anthrax Vaccine)," India Business Insight, 20 April 2007, in Lexis-Nexis Academic Universe, 20 April 2007, [www.lexis-nexis.com](http://www.lexis-nexis.com).

**28 March 2007**

The Indian National Crisis Management Committee (NCCM) approves a model of standard operating procedures (SOPs) for preventing and responding to a bioterrorism attack. The Ministry of Home Affairs (MHA) will be in charge of coordinating command, control and preparedness measures as well as post-attack response mechanisms, but primary responsibility for responding to attacks will lie with State governments. The model will first be implemented in the capital city of New Delhi, and subsequently expand to other cities.

—"Norms to Tackle Bioterror Mooted," Financial Express, 28 March 2007, in Lexis-Nexis Academic Universe, 28 March 2007, [www.lexis-nexis.com](http://www.lexis-nexis.com).

**28 February 2007**

The Indo-U.S. joint working group on counterterrorism meets to discuss cooperation in a number of areas including bioterrorism and weapons of mass destruction (WMD).

—"Joint Statement on Indo-U.S. Counterterrorism, Joint Working Group Meeting," Press Release: Embassy of the United States in New Dehli, 28 February 2007, <http://newdelhi.usembassy.gov>.

**23 February 2007**

U.S. and Indian officials are reported to be working together to ensure Indian export control laws are in line with international guidelines during a meeting of the bilateral High-Technology Cooperation Group (HTCG) in Washington. U.S. Assistant Secretary of Commerce for Export Administration Chris Padilla is quoted as stating that Indian officials agree with his assessment that "Indian export controls comply with a majority of items controlled under the Australia Group for chemical and biological weapons purposes."

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—"U.S., India Working To Agree On India's Export Control Gaps," Inside US Trade, 2 March 2007, in Lexis-Nexis Academic Universe, 2 March 2007, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **8 January 2007**

Rajiv Venkayya, Special Assistant to the [U.S.] President for Bio-defense, White House Homeland Security Council, explains at an information session hosted by the Confederation of Indian Industry (CII) that "given the advancements in the field of biotechnology and pharmaceutical industry in India, the country has potential for developing a system to counter any future pandemic and bio-terrorist attacks." Venkayya also stated that the United States was eager to collaborate with India in developing response capabilities to bioterrorist attacks.

—"U.S. looks up to India for developing bio-terrorism response," The Press Trust of India, 8 January 2007, in Lexis-Nexis Academic Universe, 8 January 2007, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **27 September 2006**

Aethlon Medical, an American company, reports the results of its clinical trial of its Hemopurifier device conducted at the Appollo Hospital in Delhi, India. The Hemopurifier is a "broad-spectrum treatment countermeasure against drug and vaccine resistant bioweapons, naturally evolving pandemic threats such as H5N1 Avian Flu, and chronic infectious disease targets, including Hepatitis-C (HCV) and the Human Immunodeficiency Virus (HIV)" and works by filtering out viruses directly from the bloodstream.

—"Aethlon Medical Reports on Landmark Human Study," Business Wire, 27 September 2006, in Lexis-Nexis Academic Universe, 28 September 2006, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **1 September 2006**

India is reported to be setting up a national level institute on disaster management, including response to nuclear, chemical, and biological disasters. The institute, to be located at Latur, will train about 2,000 people a year, mainly first responders.

—"Institute to Tackle Nuke, Biological & Chemical Threats," The Statesman, 1 September 2006, in Lexis-Nexis Academic Universe, 2 September 2006, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **31 August 2006**

An Indian company, B V Biologicals, issues a press release reporting its plans to construct a Biosafety Level 3 containment facility for developing and testing vaccines for foot-and-mouth disease. The company also notes in the release that the facility could potentially be used to contain any kind of infectious agent that threatens the country, such as anthrax or SARS. The company's stated aim, according to the CEO of its parent company, Venkateshwara Hatcheries Group, is to "explore the challenges posed by bioterrorism and other emerging infectious diseases in the country."

—"Biocontainment plant set up," The Press Trust of India, 31 August 2006, in Lexis-Nexis Academic Universe, 1 September 2006, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **19-20 April 2006**

The India-US Joint Working Group on Counterterrorism meets in Washington DC to discuss US-India cooperation in a number of common concern including bioterrorism.

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—"Joint United States-India Statement on the India-US Joint Working Group on Counterterrorism," US Department of State Press Release, 21 April 2006, [www.state.gov](http://www.state.gov).

#### **16 December 2005**

Indian researchers at the Center for Biotechnology, Jawaharlal Nehru University in New Delhi report that they have developed transgenic crops expressing an antigen similar to protective antigen (PA), one of the toxins produced by *Bacillus anthracis* after infection. Such crops "may serve as a source of an edible vaccine against anthrax."

—"Anthrax Vaccines Development; New data illuminates research in anthrax vaccines development," Bioterrorism Week, 19 December 2005, in Lexis-Nexis Academic Universe, 16 December 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **13 November 2005**

F.U. Ahmed, the Director of the North East Indira Gandhi Regional Institute of Health and Medical Sciences (NEIGRIHMS), states that zoonotic diseases have a potential 'used as a biological weapon by terrorists in the north-eastern region' of India with "devastating" impacts on the population and the economy. He was speaking at a national symposium on "newer strategies for the diagnosis and control of zoonoses" put on by the Indian Council of Agricultural Research (ICAR).

—"Terrorists can use biological weapon in NE," Hindustan Times, 13 November 2005, in Lexis-Nexis Academic Universe, 14 November 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **27 October 2005**

Panacea Biotech Ltd., the second-largest vaccine manufacturer in India, is reported to be developing a recombinant anthrax vaccine.

—"Firms on the Move: Panacea Biotech (Panacea is Developing a Recombinant Anthrax Vaccine, a Hib Conjugate Vaccine and a Vaccine for Encephalitis)," India Business Insight, 27 October 2005, in Lexis-Nexis Academic Universe, 29 November 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **20 May 2005**

The Institute of Peace & Conflict Studies in New Delhi publishes an article titled "Looking Beyond Bio-Weapons and Bio-Terrorism in South Asia," which suggests that South Asian terrorists groups are less likely to attempt the procurement and use of biological weapons than groups based elsewhere, despite biological materials being "easier to procure" in the region. This is attributed to the strategy of targeting mainly state officials and property and avoiding mass-casualty attacks that could diminish the popular support on which the groups rely. However, groups fighting for religious reasons may be likely to use bioweapons due to their internal motivation. Also raised is the possibility of "biocrime," attacks with biological materials perpetrated by the criminal underground, presumably motivated by the desire for profit rather than by politics or ideology

—"Looking Beyond Bio-Weapons and Bio-Terrorism in South Asia," Institute of Peace & Conflict Studies, 20 May 2005, [www.ipcs.org](http://www.ipcs.org).

#### **13 May 2005**

On 13 May 2005, India's upper house of parliament passes legislation banning the proliferation of nuclear, biological, chemical, and missile technology. The Weapons of Mass Destruction and Their Delivery Systems

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(Prohibition of Unlawful Activities) Bill is passed by the lower house of parliament on 12 May 2005 and will become law as soon as it is signed by Indian President Abdul Kalam. The bill states that a person caught engaging in commerce in these technologies could face five years to a life in prison as well as a fine. The legislation covers Indians in India and abroad and foreigners residing in India.

—"India's Upper House Approves Nuclear Bill," Agence France Presse, 13 May 2005; in Lexis-Nexis Academic Universe, 13 May 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

### **1 May 2005**

The Indian Ministry of Science and Technology, Department of Biotechnology releases a draft version of a National Biotechnology Development Strategy and welcomes comments from the public for up to six weeks after the release date. Notable propositions from the strategy include: increasing human resources in biotechnology by improving quality of biotechnology-related education at the undergraduate and graduate level; improving physical and bureaucratic infrastructure necessary for biotechnology research and development; promoting biotechnology industry and trade; and establishing a regulatory body, the National Biotechnology Regulatory Authority for clearing biotech products and establishing a policy framework for controversial research (e.g. stem cells).

—"National Monitor in Biotech Draft," Indian Express, 1 May 2005; in Lexis-Nexis Academic Universe, 1 May 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com); "National Biotechnology Development Strategy (Draft)," Department of Biotechnology, Ministry of Science and Technology, Government of India, 31 March 2005, <http://dbtindia.nic.in>.

### **10 February 2005**

The Federation of Asian Biotech Association (FABA) is formed with India as one of the eight founding members. FABA's aims are to promote biotechnology as a profession and the interaction of academia and industry in the field; to act as a facilitator between industry and government; to encourage investment and cross-border trade in biotechnology; and to sponsor international meetings of scientists.

—"About Us," Federation of Asian Biotech Association, [www.biofaba.org](http://www.biofaba.org).

### **22 December 2004**

In a lecture entitled "New Dimensions of Terrorism", Indian Home Minister Shivraj Patil cautions against the possible use of biological and chemical weapons by terrorists. He says that advanced technologies falling into wrong hands may lead to the spread of terrorism to the oceans and to outer space. He gives this lecture to the Indian Intelligence Bureau.

—"Home Minister Calls for Co-Coordinated Efforts to Fight Terrorism," The Hindustan Times, 22 December 2004, in Lexis-Nexis Academic Universe, 8 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

### **3 December 2004**

Indian Defense Research and Development Establishment (DRDE) director K. Shekhar describes his organization's efforts to fight dengue fever in India. In a press conference, he explains that DRDE scientists have successfully used "chemical C21 Hydrocarbon" to kill dengue spreading mosquitos, and a "diethyl phenyl acetamide" insect repellent for Indian troops in dengue and malaria-ridden areas.

—"Defense Scientists Join Fight Against Dengue," Indo-Asian News Service, 3 December 2004, in Lexis-Nexis Academic Universe, 8 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

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#### **29 November 2004**

Indian Minister of Defense Pranab Mukherjee explains during a military seminar that the government has decided to raise more units of special forces with skills to counter proliferation. He says, "And the plans entail totally reorganizing them from a mandate vis-à-vis unconventional warfare, counterproliferation, special reconnaissance, psychological operations and other specialized tasks. The reorientation has to be undertaken as emerging international threats point towards possibilities of nuclear and biological weapons falling into terrorist hands." —"India to Upgrade Nuclear Deterrence, Special Forces: Defense Minister," *Agence France Presse*, 29 November 2004, in Lexis-Nexis Academic Universe, 8 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **8 November 2004**

India and the European Union sign a document on a "strategic partnership", including measures to enhance nonproliferation and disarmament. A draft statement reads, "In recognition of the shared concerns of the international community regarding the danger posed by the proliferation of nuclear, chemical, and biological weapons, including acquisition by non-state actors, we resolve to enhance collective action to fight proliferation of WMD as well as means of delivery." —"India, EU to Set Up Dialogue Mechanism on Disarmament," *Indo-Asian News Service*, 8 November 2004, in Lexis-Nexis Academic Universe, 8 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **7 October 2004**

U.S. chief weapons inspector in Iraq Mr. Charles Duelfer testifies before the U.S. Congress that India may have sold Saddam Hussein dual-purpose equipment that could be converted for production of unconventional weapons. He also names Turkey and Italy as possible suppliers. —"India Could be Among Saddam Suppliers: USA," *The Statesman*, *Global News Wire*, 8 October 2004, in Lexis-Nexis Academic Universe, 8 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **8 August 2004**

Indian Home Minister Shivraj Patil says that India's response to biological, chemical, and other unconventional forms of terrorism is being formulated by scientists and experts from within and outside the country. He states that in the future "the area of terrorist activities may increase. Individuals may use weapons, individuals may use biological weapons, chemical weapons, and radiological weapons." —"India's Response to Non-Conventional Terror Being Formulated," *The Press Trust of India*, 8 August 2004, in Lexis-Nexis Academic Universe, 8 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **24 March 2004**

The Asian Age releases a report outlining Indian and U.S. plans to work together on a project to develop vaccines to counter biological and chemical warfare. Indian research chief V.K. Aatre explains that India's Defense Research and Development Organization will collaborate on this and other military science programs with U.S. laboratories to be chosen by Washington. —"US, India to Work on Gadgets for 'Futuristic' Soldiers: Report," *Agence France Presse*, 24 March 2004, in Lexis-Nexis Academic Universe, 8 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

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#### **12 February 2004**

The Hindustan Times releases a report outlining an Indian army program to build hundreds of underground decontamination bunkers near the Pakistan border and distribute nuclear, biological, and chemical warfare gear to troops. Army Brigadier G.R.C. Rajan explains, "In the event of an attack, soldiers can pass through the shelter for decontamination."

—"Indian Commanders to Get Nuclear Fallout Shelters Near Pakistan Border," Associated Press, 12 February 2004, in Lexis-Nexis Academic Universe, 8 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **4 January 2004**

It is reported that the Union home ministry is in the process of formulating an elite force — comprising four battalions of Central paramilitary forces — to take on biological, chemical, and radioactive attacks. A senior Indian home ministry official explains, "Not only have the experts and institute which will train these personnel been identified, a basic structure, training manual and syllabi have also been prepared. To get matters started, these paramilitary forces will be sent to the United States, United Kingdom, and Israel to receive world-class training. Indian defense expert Brahma Chellaney also discusses military training for biological terrorism attacks, saying "More than counter-measures, it is important to ward off such attacks totally. As India is a soft target for terrorists, it needs an elite force. Not only does this translate into a relief force, but it also ensures decontamination after such attacks have struck."

—Sharma, Jyoti. "An Anti-WMD Force to Reckon With," *The Economic Times of India*, Global News Wire, 4 January 2004, in Lexis-Nexis Academic Universe, 8 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **23 October 2003**

The U.S. Congressional Research Service asserts that there is a danger that India may develop a biological weapons program. In a report, the service claims that "India, a 1973 signatory of the Biological Weapons Convention (BWC), is believed to have an active biological defense research program as well as the necessary infrastructure to develop a variety of biological agents."

—"India Has 30 to 35 Nuclear Weapons," *The Press Trust of India*, 23 October 2003, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **19 September 2003**

According to an unnamed senior official at the Indian home ministry, Indian security agencies fear that terrorist outfits operating in India could make use of ricin to launch biological attacks. He states, "Security agencies have been given messages advising them to be on the lookout for terrorists making toxins such as ricin after noticing instructions on how to produce the toxin appeared in materials used to train al-Qaeda terrorists."

—Jayachandran, C.R. "Ricin Terror Over India's Horizon," *The Times of India*, Global News Wire, 19 September 2003, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **11 July 2003**

India is named as one of 10 countries affected by the British Foreign Office program, in which post-graduate scholars from these countries are likely to be vetted before being accepted by a university if their research could contribute to the proliferation of chemical or biological weapons. The program is named the "Voluntary Vetting

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Scheme," and has been in operation since 1994. The other countries on the list are Pakistan, Iran, Iraq, Syria, Israel, Egypt, Cuba, Libya, and North Korea.

—Suroor, Hasan. "Indian Scholars on U.K.'s Vetting List," *The Hindu*, Global News Wire, 11 July 2003, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **26 June 2003**

The Hindustan Times releases a report saying that an Indian parliamentary committee has considered plans to build underground bunkers to protect MPs from nuclear and biological attacks. The plans are believed to be in response to the December 13, 2002 terrorist attacks on the Indian parliament.

—"Indian Parliament May Build Bunkers to Protect MPs from Nuclear Attack," *Agence France Presse*, 26 June 2003, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **12 April 2003**

Scientific advisor to the Defense Ministry V.K. Aatre states that India "cannot keep bio-chemical arms". He makes this comment during a lecture at the Indian Institute of Technology in response to a student's question on whether India had chemical weapons.

—"Aatre: Strengthen Bonds Between Industry, Scientific Institutions," *The Times of India*, Global News Wire, 12 April 2003, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **11 April 2003**

Pakistani Minister for Information and Broadcasting Shaikh Rashid Ahmed states that India is a "fit case" for pre-emptive strikes owing to its possession of chemical weapons. According to Ahmed, "As far as chemical and biological weapons are concerned, it is India that is active in this field. And it has stockpiled these weapons in neighboring countries." However, Indian Defense Minister George Fernandes and External Affairs Minister Yashwant Sinha reject Ahmed's allegations as false.

—"Pakistan Information Minister Reiterates India Fit Case for Preemptive Strikes," Global News Wire, 12 April 2003, in Lexis-Nexis Academic Universe, 16 February 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com); "Indian Defense Minister Rejects Pakistan's Biological, Chemical Weapons Charge," BBC Monitoring South Asia — Political, 11 April 2003, in Lexis-Nexis Academic Universe, 16 February 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com); "Pakistani Minister Says India Stockpiles Weapons in Other Countries," BBC Monitoring South Asia — Political, 22 April 2003, in Lexis-Nexis Academic Universe, 16 February 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **26 March 2003**

Mr. K. Sekhar, Director of the Defense Research and Development Establishment of the Indian Ministry of Defense, is quoted in *The Hindu* newspaper as saying, "In quite a few cases the antidotes to BW (biological warfare) agents are well known, but no nation will sell it to you. If we are to protect our armed forces and our citizens, we have to develop our own medical armor. In fact, we have had to develop our own auto injectors loaded with a variety of antidotes for weapons like nerve gas which are supplied to our troops engaged in decontamination tasks." The article also states that the Mr. Sekhar's organization has recently perfected possibly the only known prophylactic, code named DRDE-07, for the most common gas warfare chemical, sulphur-mustard.

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—"Toxic Technology Challenges and Spin-Offs," *The Hindu*, 26 March 2003, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

### **11 March 2003**

U.S. State Department Spokesman Richard Boucher says that the United States has applied sanctions on Indian company Protech Consultants Private Limited for "knowingly and materially contributing to Iraq's chemical and biological weapons program." He asserts, however, that these sanctions do not affect U.S.-Indian relations.

—"Sanctions on Indian Company Not to Affect Indo-US Ties," *The Press Trust of India*, 12 March 2003, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

### **19 February 2003**

The United States announces sanctions on the Indian company NEC Engineers Private Limited for allegedly contributing to Iraq's biological and chemical weapons program. American officials say that NEC Engineers' transfers of biological and chemical materials to Iraq took place "over a period of time," including but not limited to 2002.

—"US Sanctions Indian Company for Selling Iraq WMD Materials," *Washington Times*, 2 February 2003, in Lexis-Nexis Academic Universe, 16 February 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

### **10 February 2003**

Indian Prime Minister Atal Behari Vajpayee says "The international community has to be vigilant against the real possibility of chemical and biological weapons and weapons of mass annihilation falling into the hands of terrorist organizations." Prime Minister Vajpayee makes this statement in an address at the International Youth Conference on Terrorism.

—"Terror Talks: PM Slams 'Double Standards'," *Indian Express*, Global News Wire, 10 February 2003, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

### **17 January 2003**

During a military parade, India's Mobile Decontamination System is displayed for the first time. The system was developed by the Defense Research and Development Organization to provide defense and protection against biological and chemical attacks. The system is displayed on the Mi-17 IV and MI-35 helicopters. Attending the parade is India's President, A.P.J. Abdul Kalam.

—"Return of Armed Forces in Full Measure," *The Hindu*, 27 January 2003, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

### **6 January 2003**

In a comment on India's nuclear posture announcement, Pakistani Foreign Office Spokesman Aziz Khan says, "India's announcement to use nuclear weapons if attacked with biological or chemical weapons signals an important extension of India's policy of using nuclear weapons. This is further evidence that nuclear weapons and their use is very much a part of India's strategic policy."

—"Operation Against Terrorists Only by Pakistani Forces: FO," *The Pakistan Newswire*, 6 January 2003, in Lexis-Nexis Academic Universe, 16 February 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

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### **5 January 2003**

The Indian government announces a new nuclear posture that allows India to "retain the option of retaliating with nuclear weapons" in the event of a major biological or chemical attack against India or Indian forces anywhere.

—"India Establishes a Nuclear Command System," *The New York Times*, 5 January 2003, [www.nytimes.com](http://www.nytimes.com).

[Back to Top](#)

## **2002-2001**

### **18 December 2002**

Indian Defense Minister George Fernandes states that "The government has initiated necessary steps to ensure protection from nuclear and bio-attack." However, the minister also says that it would not be in the interest of national security to disclose further details of these initiatives.

—"Defense Ministry Hasn't Replied to CAG: George," *The Times of India*, Global News Wire, 19 December 2002, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

### **11 December 2002**

Lieutenant-General B.N. Shahi, the Director-General of the Armed Forces Medical Services, says that the Army is taking precautions against the possibility of the use of biological agents by terrorists, and that India faces threats from smallpox and anthrax. He states, "We have plans to counter them in the form of antidotes and vaccines."

—Chowdhury, Srinjoy. "Bio-terror Close to Home," *The Statesman*, Global News Wire, 12 December 2002, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

### **6 December 2002**

Indian students present papers on bio-weapons, bio-terrorism, and anthrax at the Integrated Science National Meet.

—"Seminar to Focus on Integrated Science," *The Hindu*, 6 December 2002, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

### **8 November 2002**

Representatives from the Army Medical Corps and the Defense Research and Development Organization participate in a seminar on "Medical Response to NBC (Nuclear, Biological, and Chemical) Warfare." They identify "Survive to Serve" as the key strategy to counter such a chemical, biological, or nuclear attack, and stress that Indian hospitals are not adequately prepared for events arising from such an attack.

—"In the Name of an NBC Attack," *The Economic Times of India*, Global News Wire, 10 November 2002, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

### **5 November 2002**

Indian scientists say that the Indian government's 1975 decision to shut down a U.S.-sponsored mosquito research project in India has been vindicated by the United States' admission that a similar project on Baker Island in the South Pacific was part of a Cold War biological weapons research program. N.P. Gupta, the former director of the

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National Institute of Virology states that then-Prime Minister Indira Gandhi "acted correctly" by ordering the closure of the U.S.-sponsored project just before the planned massive release of "Aedes aegypti" mosquitos in Sonepat, India. These mosquitoes transmit yellow and dengue fevers.

—"Closure of US Project Justified, Say Indian Scientists," *The Press Trust of India*, 5 November 2002, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **28 October 2002**

The United Nations General Assembly's first committee unanimously adopts India's draft resolution on measures to prevent terrorists from acquiring weapons of mass destruction. The resolution focuses on the need for member states to take steps to ensure that biological, chemical, and nuclear weapons, their delivery systems, and related materials and technologies, do not fall into the hands of terrorists. The resolution is non-binding and not enforceable.

—"India Moves UN on Weapons of Mass Destruction," Global News Wire, 28 October 2002, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **28 October 2002**

President A.P.J. Abdul Kalam asserts on behalf of India that "We will not make biological weapons. It is cruel to human beings." He makes this statement in response to a question during a conversation at the Al-Almeen Education Society in Bangalore.

—"India Not To Make Biological Weapons: President," *The Press Trust of India*, 28 October 2002, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **26 October 2002**

In a public address to the commanders of the three armed services, Prime Minister Atal Behari Vajpayee states, "technology has now created chemical and biological weapons of great diversity, which are difficult to detect. Many of the techniques and weapons can fall into the hands of non-state actors."

—"Goals, Not Dates, First: PM," *Indian Express*, 27 October 2002, in Lexis-Nexis Academic Universe, 14 February 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com). "PM Warns of Unexpected Terror Targets & Tactics," Global News Wire, 28 October 2002, in Lexis-Nexis Academic Universe, 6 April 2005, [www.lexis-nexis.com](http://www.lexis-nexis.com).

#### **11 July 2002**

India's military scientists say that they have developed safeguards against chemical, biological, and nuclear weapons. They assert that they did not violate any international conventions during their experiments. They state that they also have developed 26 items that allow them to detect and respond to a chemical or nuclear attack.

—Pratap Chakvarty, "India Readies Nuclear Shelters, Trains Military Against First Strike," *Agence France Presse*, 11 July 2002.

#### **21 June 2002**

The DRDO laboratory in Gwalior develops First Aid Kits for nuclear, biological and chemical warfare. The kits are split into two groups, Type A and Type B. Type A kits provide support for four to six persons, while Type B kits support 50-60 persons. Type A kits contain an inhaler, antibiotics, antipyretic tablets, dressing pads, personal

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decontamination kits, three-color detector paper, and amyl nitrate durules. Type B kits contain essential medicines, drugs, injectibles, syringes, dressing materials, detector paper, and a water testing kit. Both kits have already been entered into service.

—"First Aid Kit to Treat NBC Injuries Developed," *Press Information Bureau of Indian Press Release*, 21 June 2002, <http://pib.nic.in>.

#### **19 June 2002**

DRDO laboratories in Gwalior and Ahmednagar develop a nuclear, chemical, and biological decontamination system.

—"NBC Decontamination System Developed," *Press Information Bureau of Indian Press Release*, 19 June 2002, <http://pib.nic.in>.

#### **7 June 2002**

Dr. A.K. Walia, New Delhi's health minister, is quoted as saying that the capital is ready for all levels of attack, including a biological or nuclear attack. He also says that some hospital workers have received special training on how to respond to a chemical attack, and that India had ordered three mobile hazardous chemical units from Germany.

—Edna Fernandes, "India Prepares for The Prospect of Nuclear War; Civil Defense Mass Production Ordered of Shelters Able to Withstand Nuclear Attack; A National Contingency Plan for The Masses Has Been Put on Standby in Recent Days," *Financial Times*, 7 June 2002, Asia-Pacific; p. 12.

#### **30 May 2002**

Milind Shete, editor of the Vishwa Hindu Parishad (VHP) weekly *Sanskritik Vartapatra* in Pune, receives a letter containing a white powder. The letter contains a note stating that if VHP general secretary Dr. Pravin Togadia does not change his style of functioning, more letters will be sent. The sender identifies himself as Al-Qaida and writes, "Welcome to the world of bio-terror." The letter is sent by authorities for testing. Results of the tests are not reported.

—"Anthrax Scare in VHP Office," *Daily Global News*, 31 May 2002, [www.ds-osac.org](http://www.ds-osac.org).

#### **23 May 2002**

An Integrated Field Shelter is developed. The shelter is designed to provide collective personnel protection from nuclear, chemical, or biological agents. The shelter is developed by the Research and Development Engineers, Pune, which is part of the DRDO. It is designed to accommodate thirty people for 95 hours.

—"Integrated Field Shelter for Protection From Nuclear, Biological And Chemical Agents Developed by DRDO," *Ministry of Defense Press Release*, 23 May 2002, <http://mod.nic.in>.

#### **1 March 2002**

India signs a deal with Polish SKO-1T Drawa-T Thermal Imaging Fire-Control Systems to update 250 of its T-72 tanks. The deal will allow India to update its tanks' nuclear, biological, and chemical defense systems.

—Grzegorz Holdanowicz and Rahul Bedi, "India Signs T-72 Upgrade Deal," *Jane's*, 20 March 2002, [www.janes.com](http://www.janes.com).

**Related content is available on the website for the Nuclear Threat Initiative, [www.nti.org](http://www.nti.org).**



**January 2002**

India officially permits the sale of genetically engineered cotton seeds.

—Ranjit Devraj, "Environment: Biotechnology Weapons Worse Than Nukes, Critics Say," *Inter Press Service*, 25 January 2002.

**27 November 2001**

The Indian state of Andhra Pradesh announces that it will establish a specialized Bio-Safety Laboratory (BSL-2) at the Institute of Preventive Medicine. The laboratory will be tasked with countering the various forms of bioterrorism.

—"India: Tackling Bio-Terrorism: Specialized Lab Soon," *The Hindu*, 28 November 2001.

**27 November 2001**

Union minister for Health and Family Welfare Dr. C.P. Thakur states that none of the 303 suspected anthrax samples tested at the National Institute of Communicable Diseases has tested positive for anthrax.

—"Gov't Taking Steps to Set up Special Courts," *Times of India*, 4 December 2001.

**26 November 2001**

Union minister for Health and Family Welfare Dr. C.P. Thakur states that an around-the-clock control room has been set up at the National Institute of Communicable Diseases.

—"Two Anthrax Deaths Reported in Karnataka," *Times of India Online*, 26 November 2001, [www.timesofindia.com](http://www.timesofindia.com).

**20 November 2001**

India holds a three-fold strategy to prevent exploitation of any loopholes in the BWC. The Indian representative to the Conference on Disarmament, Rakesh Sood, states that dual-use medical technology should be regulated on guidelines that are negotiated and accepted by all parties to the treaty.

—"India for Checking Misuse of Biological and Toxin Convention," *Press Trust of India*, 20 November 2001.

**19 November 2001**

US Undersecretary of State for Arms Control John Bolton notes in a speech that the US Central Intelligence Agency (CIA) has previously stated that India is suspected of having a biological weapons program.

—Frances Williams, "US Name and Shames on Bioweapons; Germ Warfare: Washington Denounces Six Countries Accused of Having or Seeking Such Weapons," *Financial Times*, 20 November 2001.

**12 November 2001**

The High Security Animal Disease Laboratory in Bhopal agrees to test the anthrax vaccine developed by Panacea Biotech Limited and Biotechnology Consortium.

—"India: Anthrax Vaccine Being Tested," *The Hindu*, 13 November 2001.

**9 November 2001**

The Russian Embassy in New Delhi receives two letters containing a suspicious white powder. The letters are handed over to authorities, who send them to India's National Institute of Communicable Diseases for tests. Results of the tests are not reported.

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—"Anthrax Scare in Russian Embassy, Textile Ministry, UPSC," *Press Trust of India*, 9 November 2001, Nationwide International News.

#### **9 November 2001**

The Textile Ministry in New Delhi receives a letter containing powder. The substance is sent to the National Institute of Communicable Diseases for tests. Results of the tests are not reported.

—"Anthrax Scare in Russian Embassy, Textile Ministry, UPSC," *Press Trust of India*, 9 November 2001, Nationwide International News.

#### **5 November 2001**

Panacea Biotech Limited and Biotechnology Consortium enter into an agreement to develop and market a new anthrax vaccine. Unlike other anthrax vaccines, this one does not contain lethal factor (LF) and edema factor (EF).

—"Panacea, BCI In pact to Market Anthrax Vaccine," *Hindustantimes.com*, 5 November 2001.

#### **November 2001**

An Indian government committee studying India's capability to respond to a biological terrorist attack releases a report in which it concludes that India must establish a specialized laboratory focused on bioterrorism. Following the report, the Indian government immediately releases funds to establish such a lab.

—"India: Tackling Bio—Terrorism: Specialized Lab Soon," *The Hindu*, 28 November 2001.

#### **30 October 2001**

The Rashtrapati Bhawan in New Delhi receives two letters containing a suspicious powder. The substance is sent to the National Institute of Communicable Diseases for tests. Tests show that the substance does not contain *B. anthracis* spores.

—"Anthrax Scare at Indian Presidential Palace," *International News*, 30 October 2001; "Anthrax Scare in Russian Embassy, Textile Ministry, UPSC," *Press Trust of India*, 9 November 2001, Nationwide International News; "Rashtrapati Bhawan letter tests negative for anthrax," *Press Trust of India*, 4 November 2001.

#### **29 October 2001**

The Indian Home Ministry in New Delhi receives a letter containing a suspicious powder. The substance has been sent for testing, with results not being reported.

—"Home Ministry Receives Yet Another Suspicious Letter," *Press Trust of India*, 29 October 2001.

#### **29 October 2001**

At a workshop of Indian scientists and state health officials addressing the issue of bioterrorism, Union Health Minister C.P. Thakur states that India is preparing for a biological attack. Thakur states that the health ministry has prepared India by gearing up public health machinery, stockpiling antibiotics, and organizing continuing education of doctors.

—"Health Ministry Gets Its Act Together on Bioterror," *Times of India*, 31 October 2001.

#### **27 October 2001**

The National Institute of Communicable Diseases states that all 92 of the suspected anthrax samples have turned

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up negative. The Institute states that the samples are tested by using a direct smear examination, inoculation, and PCR studies.

—"Anthrax Scare: All Samples Test Negative," *Press Trust of India*, 27 October 2001, Nationwide International News.

#### **27 October 2001**

A letter containing a suspicious powder is sent to Chief Minister Chandrababu Naidu in Hyderabad. Doctors from the Institute of Preventative Medicine are called to determine if the substance contains *B. anthracis* spores, with negative results. Authorities send the substance to the National Institute of Communicable Diseases for further analysis.

—"Anthrax Alarm at Secretariat," *Times of India*, 29 October 2001.

#### **26 October 2001**

The Centre announces that a meeting is to be held on 29 October to review states' and unions' preparedness for a chemical or biological terrorist attack. The meeting is to include home and health ministers from all Indian states and unions.

—"India: Meet to Discuss Bioterrorism," *The Hindu*, 27 October 2001.

#### **24 October 2001**

The Bombay office of Chagan Bhujbal, the deputy chief minister in the state of Maharashtra, receives a letter containing a white powder. The substance is sent for tests, which are negative for *B. anthracis* spores.

—"Anthrax Horror Strikes Europe," *Sunday Mail*, 4 November 2001, News; p. 5; "Defense Lab Tests Show White Powder in India Does Not Contain Anthrax Spores," *Reporter-news.com*, 6 November 2001, [www.reporter-news.com](http://www.reporter-news.com).

#### **24 October 2001**

The office of Goa Chief Minister Manohar Parikkar in Panaji receives a letter containing a suspicious white powder. The substance is sent to the health department in Bombay for tests. Results of the tests are not reported.

—"India in Grip of Anthrax Scare," *Rediff.com*, 24 October 2001, [www.rediff.com](http://www.rediff.com); "India: Mail With 'Suspicious Powder' Reaches Office of Advani, High Places," *The Economic Times in English*, 26 October 2001, available from FBIS, document identification number SAP20011026000063.

#### **24 October 2001**

The office of Maharashtra Chief Minister Vilasrao Deshmukh receives a letter containing a suspicious white powder. The letter does not include a note. The substance is sent to the Haffkine Institute for testing, which shows that it does not contain *B. anthracis* spores.

—"Anthrax Scare Grips Office of Vilasrao Deshmukh," *Nrilinks.com*, October 2001, [www.nrilinks.com](http://www.nrilinks.com); "Anthrax Scare Reaches Mantralaya Via Mail," *Times of India*, 26 October 2001; "India: Mail With 'Suspicious Powder' Reaches Office of Advani, High Places," *The Economic Times in English*, 26 October 2001, available from FBIS, document identification number SAP20011026000063; "India: 'Powder' at Deshmukh Office," *The Hindu*, 25 October 2001; Pamela Raghunath, "Traces of Anthrax Found in Mail to Mantralaya," *Gulf News*, 3 November 2001.

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**24 October 2001**

The Indian Defense Research and Development Establishment is asked to conduct training programs on all aspects of biological and chemical warfare for civilian authorities.

—P. Sunderarajan, "India: Training to Tackle Biological Warfare," *The Hindu*, 25 October 2001.

**24 October 2001**

A letter containing a powdery substance is found in Panjagutta. The substance is sent to the Institute of Preventive Medicine for tests, results are not reported.

—"Panic Grips US Attack Suspect's Families," *Times of India*, 27 October 2001.

**24 October 2001**

A letter containing a powdery substance is found in Afzalgunj. The substance is sent to the Institute of Preventive Medicine for tests, results are not reported.

—"Panic Grips US Attack Suspect's Families," *Times of India*, 27 October 2001.

**23 October 2001**

A seven member high-level team led by Alok Srivatsav, Inspector General of Public Food Health Laboratories, Drugs, and Copyrights and the Director of Institute of Preventive Disease, visits Bharat Biotech. The team is to assess the company's capabilities in detecting anthrax, as state facilities do not have this capability.

—"India: Anthrax Detection: High-level Team Visits Bharat Bio," *Business Line*, 24 October 2001.

**23 October 2001**

Indian Home Minister L.K. Advani receives a letter at his office in New Delhi containing a suspicious powdery substance. The substance is sent for tests, which reveals that it does not contain *B. anthracis* spores.

—"Anthrax Jitters in North block," *Press Trust of India*, 23 October 2001, Nationwide International News; "Anthrax Scare at Indian Presidential Palace," *Agence France Presse* 30 October 2001, International News.

**23 October 2001**

The Arti Industries corporate office in Bombay receives an envelope from Egypt containing a yellow powder. The office is decontaminated and workers are sent home, while the substance is sent for tests. Results of the tests are not reported.

—"Anthrax Scare Hits Bombay Chemical Factory," *Agence France Presse*, 23 October 2001, International News; "Anthrax Scare Spreads to Indian Home Ministry," *Agence France Presse*, 23 October 2001, International News; "Indian Laboratory Suspects One Anthrax Letter Case," *Agence France Presse*, 2 November 2001, International News.

**23 October 2001**

An editor for the Marathi newspaper *Lokmat* in Nagpur receives an envelope containing a suspicious white powder. The letter does not include a note. The substance is sent to the Haffkine Institute in Mumbai for tests. Results of the tests are not reported.

—"Anthrax Jitters in North Block," *Press Trust of India*, 23 October 2001, Nationwide International News; "Anthrax Scare Hits Nagpur City," *Times of India*, 24 October 2001.

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### **23 October 2001**

A letter containing a suspicious white powder is sent to the commanding officer stationed at the Air Force Station in Tambaram, India. The letter was reportedly mailed from another district within the city. The substance is sent for tests, with results not being reported.

—"IAF Station Gets Second Powder-Laced Letter," *Indiainfo.com*, 24 October 2001, <http://news.indiainfo.com>;  
"India: Mail With 'Suspicious Powder' Reaches Office of Advani, High Places," *The Economic Times in English*, 26 October 2001, FBIS, document identification number SAP20011026000063.

### **23 October 2001**

The office of A.R. Nanda, a senior bureaucrat in India's Family Welfare Ministry in New Delhi, receives a letter containing a suspicious powder. The substance is sent to the National Institute of Communicable Diseases for tests. Results of the tests are not reported.

—"Anthrax Scare Spreads to Indian Home Ministry," *Agence France Presse*, 23 October 2002, International News;  
"FW Secy Gets "Suspicious Mail," *Press Trust of India*, 23 October 2001, Nationwide International News.

### **23 October 2001**

The residence of Uttaranchal Chief Minister Nityanand Swami in Dehra Dun receives an envelope containing a white powder. The envelope has "Laden" written on it in Urdu. The substance is taken by authorities for tests. Results of these tests are not reported.

—"Anthrax Scare at Uttaranchal CM's Residence," *Rediff.com*, 24 October 2001, [www.rediff.com](http://www.rediff.com); "India: Mail with 'Suspicious Powder' Reaches Offices of Advani, High Places," *The Economic Times*, 26 October 2001, FBIS, document identification number SAP20011026000063.

### **23 October 2001**

Employees at the General Post Office in Ranchi discover two envelopes that contain a suspicious powder. One envelope is addressed to a person in New York, while the other is addressed to the chairman of the company IIT-JEE. Both envelopes are written in identical writing. Tests on the substance reveal that it is not *B. anthracis*, but possibly a detergent.

—"Anthrax Jitters in North Block," *Press Trust of India*, 23 October 2001, Nationwide International News; "Anthrax Scare in Jharkhand, Bihar Towns," *Times of India*, 27 October 2001; "Envelopes Contain Detergent Powder," *Press Trust of India*, 26 October 2001, Nationwide International News.

### **23 October 2001**

PKB Chakraborty, police commissioner in Nagpur, receives an envelope containing a suspicious white powder. The substance is sent to the Haffkine Institute for testing. Results are not reported.

—"Anthrax Jitters in North Block," *Press Trust of India*, 23 October 2001, Nationwide International News; "Anthrax Scare Hits Home," *The Statesman*, 24 October 2001; "Anthrax Scare Hits Nagpur City," *Times of India*, 24 October 2001.

### **22 October 2001**

Federal Health Minister C.P. Thakur states that India needs to be prepared to handle smallpox. He states that a

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workshop on preparedness will be held October 29, 2001.

—"We Should be on Alert to Handle Smallpox: Thakur," *Press Trust of India*, 22 October 2001, Nationwide International News.

#### **22 October 2001**

The National Institute of Communicable Diseases releases guideline of precautions and treatments for anthrax.

—"NICD Guidelines on Anthrax Treatment," *Times of India*, 22 October 2001.

#### **21 October 2001**

An envelope containing 25 grams of white powder is discovered in a post office box in Kasimnagar. The substance is sent for testing, with results not being reported.

—"Govt to Set Up Labs as Anthrax Fear Spreads," *The Economic Times*, 21 October 2001; "India: Postal Sorters to Be Given Protective Gear Against Anthrax," *The Hindu*, 21 October 2001.

#### **21 October 2001**

The World Health Organization (WHO) states that India has the capability to test for anthrax. The WHO identifies the National Institute of Communicable Diseases in New Delhi, a laboratory in Meerut, and a laboratory in Izzatnagar as three qualified laboratories.

—"No Need to Panic Over Anthrax: WHO," *Press Trust of India*, 21 October 2001, Nationwide International News.

#### **20 October 2001**

The National Commission for Minorities (NCM) in New Delhi receives an envelope suspected of containing anthrax. The letter is sent for tests, which reveal that it does not contain *B. anthracis* spores.

—"No Harmful Substance Found in Letters to UNICEF, NCM Offices," *Press Trust of India*, 23 October 2001, Nationwide International News; "Powder Paranoia Hits The World," *Indian Express*, 24 October 2001, [www.indianexpress.com](http://www.indianexpress.com).

#### **20 October 2001**

The office of the Himalayan Mail newspaper in Srinagar receives an envelope containing a suspicious white powder. The substance is sent to the National Institute of Communicable Diseases for testing, which reveals that it does not contain *B. anthracis* spores.

—"US Media Units in India Get 'Suspicious' Letters," [Indiainfo.com](http://news.indiainfo.com), 22 October 2001, <http://news.indiainfo.com>; Ed Johnson, "Global Anthrax Fears Grow as Second Case Confirmed Outside United States," Associated Press, 20 October 2001, International News; Hans Greimel, "World Goes on Anthrax Alert as Hoaxes, Jitters Spread," Associated Press, 22 October 2001, International News; Ellen Beck, "India Media Get Suspicious Letter," United Press International, 22 October 2001.

#### **20 October 2001**

Associated Press office in Srinagar receives a letter containing a white powder. The letter is addressed from the AP's office bureau in New Delhi. The letter contains a note that states "It is a gift for all those who work for America and support America." The substance is sent to the National Institute of Communicable Diseases for testing, which reveals that it does not contain *B. anthracis* spores.

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—Hans Greimel, "World Goes on Anthrax Alert as Hoaxes, Jitters Spread," Associated Press, 22 October 2001; "US Media Units in India Get 'Suspicious' Letters," *Indiainfo.com*, 22 October 2001, <http://news.indiainfo.com>; Ed Johnson, "Global Anthrax Fears Grow as Second Case Confirmed Outside United States," Associated Press, 20 October 2001; Ellen Beck, "India Media Get Suspicious Letter," United Press International, 22 October 2001.

#### **20 October 2001**

The CNN office in Srinagar receives a letter containing a suspicious white powder. The letter is addressed from CNN's bureau office in New Delhi. The substance is sent to the National Institute of Communicable Diseases for testing, which reveals that it does not contain *B. anthracis* spores.

—"US Media Units in India Get 'Suspicious' Letters," *Indiainfo.com*, 22 October 2001, <http://news.indiainfo.com>; Ed Johnson, "Global Anthrax Fears Grow as Second Case Confirmed Outside United States," Associated Press, 20 October 2001, International News; Hans Greimel, "World Goes on Anthrax Alert as Hoaxes, Jitters Spread," Associated Press, 22 October 2001, International News; Ellen Beck, "India Media Get Suspicious Letter," United Press International, 22 October 2001.

#### **20 October 2001**

The state government in Andhra Pradesh forms a seven-member technical committee to handle cases of suspected anthrax letters.

—"Andhra Sets Up Committee to Handle Anthrax Related Case," *Press Trust of India*, 21 October 2001.

#### **20 October 2001**

Hyderabad city police commissioner P. Ramulu states that the Biological Veterinary Research Institute does not have masks to protect its workers from powder that may contain spores of *B. anthracis*.

—"Govt Unprepared for Anthrax Threat," *Times of India*, 22 October 2001.

#### **20 October 2001**

Chief Minister Chandrababu Naidu agrees to set up a technical committee consisting of officials from the public health and forensic science departments of the Veterinary Biological Research Institute, Institute of Preventive Medicine, and Center for Cellular and Molecular Biology. The committee is established to counsel Naidu on anthrax issues.

—K. Rama Rayalu, "CM to Clamp Down on Powder Mail," *Times of India*, 22 October 2001.

#### **19 October 2001**

A letter suspected of containing *B. anthracis* spores is received at the UNICEF office in New Delhi, India. Employees at the office notify authorities after becoming suspicious because of the handwriting on the envelope. The letter is immediately sent for tests which reveal that the letter does not contain *B. anthracis* spores.

—"No Harmful Substance Found in Letters to UNICEF, NCM Offices," *Press Trust of India*, 23 October 2001; "Anthrax Phobia Grips Delhi," *The Statesman*, 19 October 2001.

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—"No Harmful Substance Found in Letters to UNICEF, NCM Offices," *Press Trust of India*, 23 October 2001;  
"Anthrax Phobia Grips Delhi," *The Statesman*, 19 October 2001.

#### **19 October 2001**

Directors and deputy directors of the State Veterinary department are directed to store the anthrax vaccine liquid in adequate quantities.

—"Preventive Steps in M.P. Against Anthrax," *The Hindu*, 19 October 2001.

#### **19 October 2001**

Dr. S.C. Pasha, the head of biology at the National Institute of Communicable Diseases, states that the Institute is the center for anthrax tests.

—"NICD Examining Examples," *Times of India*, 19 October 2001.

#### **19 October 2001**

Union Health Minister C.P. Thakur states that all Indian hospitals have been put on high alert for suspected anthrax cases. Thakur states that the National Institute of Communicable Diseases is the nodal agency for testing and responding to such a case. The National Institute of Virology in Pune is also to be used for advanced tests.

—"Hospitals Put on High Alert For Anthrax," *Times of India*, 20 October 2001.

#### **19 October 2001**

An envelope containing a suspicious white powder is found at the General Post Office in Hyderabad. The substance is sent to the Veterinary Biological Research Institute for tests. Results are not reported.

—"India: Anthrax Scare in Hyderabad, Vijayawada," *The Hindu*, 20 October 2001.

#### **19 October 2001**

An envelope containing a suspicious white powder is delivered to the World Missionaries of Evangelists of India in Hyderabad. The envelope is addressed to the mission's president, Issac J. Kommanapalli. The substance is sent to the Veterinary Biological Research Institute for tests. Results are not reported.

—"India: Anthrax Scare in Hyderabad, Vijayawada," *The Hindu*, 20 October 2001.

#### **19 October 2001**

Three postal covers (envelopes) suspected of containing *B. anthracis* spores are discovered in Hyderabad. The covers are sent to the Veterinary Biological Research Institute for tests. Results are not reported.

—"Suspected Anthrax Letters Hit Hyderabad," *tehelka.com*, 20 October 2001, [www.tehelka.com](http://www.tehelka.com).

#### **18 October 2001**

Professor Atul Sarma at the Indian Statistical Institute in New Delhi receives an envelope suspected of containing spores of *B. anthracis*. The envelope has the names of world leaders such as George Bush and Tony Blair written on it. Sarma becomes suspicious and notifies authorities because the envelope has been sent from an unknown person linked with a Singapore-based newspaper and also has an unclear postal stamp. Investigation results are not reported.

**Related content is available on the website for the Nuclear Threat Initiative, [www.nti.org](http://www.nti.org).**



—Preeti Mehra, "India: Anthrax Scare Has Everyone on Their Toes," *Business Line*, 20 October 2001; "Anthrax Scare in Delhi Institute," *Times of India*, 19 October 2001; "2 Report Mail, Anthrax Scare Spreads," *Times of India*, 19 October 2001.

#### **18 October 2001**

An employee at the Indian Air Force base in Tambaram, India, receives a letter containing a suspicious white powder. The letter has been postmarked in the Besant Nagar area of Tambaram. Tests on the substance reveal that it does not contain *B. anthracis* spores.

—"IAF Station Gets Second Powder-Laced Letter," *indiainfo.com*, 24 October 2001, <http://news.indiainfo.com>; "Panic Across India as Packets With White Powder Continue to Land at Post Offices," *Indian Express in English*, 21 October 2001, FBIS, document identification number SAP20011021000027; "Anthrax Scare at Kalpakkam," *Kalpakkam.com*, October 2001, [www.kalpakkam.com](http://www.kalpakkam.com).

#### **16 October 2001**

Union Health Minister C.P. Thaku and other health officials discuss the possibility of bioterrorism as the cause of the 1994 plague outbreak in Surat and the 2001 outbreak of unidentified encephalitis in Siliguri.

—"India: Rapid Response Teams From Chemical, Biological Warfare," *The Hindu* (16 October 2001).

#### **15 October 2001**

According to defense scientists, India is racing to train medical staff on response measures to a chemical or biological attack. These officials state that the DRDO, the NICD, and the Union Home Ministry are heading the program to train these individuals, and that the DRDE will serve as a training ground.

#### **15 October 2001**

The Indian government cautions people to be on high alert for the possibility of chemical or biological attacks. Officials state that the DRDO and the Defense Ministry are preparing "rapid response teams" to respond to the threat. It is the first time that India's top scientists have outlined the terrorist threat involving these weapons

—"People Told to Be Alert Against Biological Terrorism Threat," *Press Trust of India*, 15 October 2001.

#### **15 October 2001**

Top Indian defense scientists state that India is prepared to tackle the fallout from a chemical or biological attack.

—"India: Rapid Response Teams from Chemical, Biological Warfare," *The Hindu*, 16 October 2001.

#### **15 October 2001**

A postal cover containing a powder-like substance is discovered in Vizhickathode. The substance is sent for tests. Results are not reported.

—"Anthrax Panic," *The Hindu*, 16 October 2001.

#### **11 October 2001**

A gynecologist receives a letter suspected of containing anthrax at the Indraprastha Apollo Hospital in New Delhi. The letter is forwarded to authorities for tests, which reveals that the letter does not contain *B. anthracis* spores.

—Preeti Mehra, "India: Anthrax Scare Has Everyone on Their Toes," *Business Line*, 20 October 2001; "Anthrax

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Phobia Grips Delhi," *The Statesman*, 19 October 2001; "Anthrax Panic at Apollo Hospital," *Times of India*, 19 October 2001.

#### **6 October 2001**

Colonel Balram Sahukar states that the Indian "military is quite capable of handling any WMD attack."  
—Sujata Dutta Sachdeva, "Sarin to Smallpox: Can We Handle Bio-Terrorism?" *Times of India*, 6 October 2001.

#### **October 2001**

The office of Sriram Tripathi, a senior police official in Barabanki receives an envelope containing a suspicious white powder. The substance is sent to New Delhi for tests. Results of the tests are not reported  
—"India: Postal Sorters to Be Given Protective Gear Against Anthrax," *The Hindu*, 21 October 2001; "Indian Postal Employees to Be Given Gloves and Masks to Combat Anthrax," *Agence France Presse*, 20 October 2001.

#### **October 2001**

A senior police official in Barabanki receives an envelope containing a suspicious white powder. The substance is sent for tests, with results not being reported.  
—"India: Postal Sorters to be Given Protective Gear Against Anthrax," *The Hindu*, 21 October 2001; "Indian Postal Employees to Be Given Gloves and Masks to Combat Anthrax," *Agence France Presse*, 20 October 2001.

#### **October 2001**

The police chief at a university in Gwalior, India, receives a letter containing suspicious powder. Tests at DRDO reveal that it is chalk powder.  
—Preeti Mehra, "India: Anthrax Scare Has Everyone on Their Toes," *Business Line*, 20 October 2001; "India Taking All Steps to Check Germ Warfare Threats: Advani," *Press Trust of India*, 19 October 2001, Nationwide International News; "India: Anthrax Scare Has Everyone on Their Toes," *Business Line*, 20 October 2001.

#### **October 2001**

In Vijayawada, seven goldsmiths receive "covers" (envelopes) containing a white powder. Authorities state that "Anthrax-Chavuku Sidamkandi" ("be prepared for death from anthrax") is scrawled in Tengu on the cover. The substance is sent for testing, which reveals that it does not contain *B. anthracis* spores.  
—"India: Postal Sorters to Be Given Protective Gear Against Anthrax," *The Hindu*, 21 October 2001; "India: Anthrax Scare in Hyderabad, Vijayawada," *The Hindu*, 20 October 2001.

#### **October 2001**

The Madras Atomic Power Station in Kalpakam receives a letter containing white powder. Tests on the substance reveal that it does not contain *Bacillus anthracis* spores.  
—"Anthrax Scare Grounds A-I Aircraft in Paris," *Times of India*, 24 October 2001; "Panic Across India as Packets with White Powder Continue to Land at Post Offices," *Indian Express in English*, 21 October 2001, FBIS, document identification number SAP20011021000027.

#### **October 2001**

A postal employee is rushed to the hospital after coming into contact with a suspicious white powder while sorting

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mail at the Main Post Office in Baharampur, India. The woman complains of pruritis and rash formation. The substance is taken by authorities for testing. Results of the tests are not reported.

—"Anthrax Jitters on North Block," *Press Trust of India*, 23 October 2001; "Powder Paranoia Hits The World," *Indian Express*, 24 October 2001, [www.indianexpress.com](http://www.indianexpress.com).

#### **October 2001**

VP Saxena, Vice-Chancellor of Jiwaji University in Gwalior receives a letter containing a suspicious powder. Tests at the DRDO reveal that it is chalk powder.

—Preeti Mehra, "India: Anthrax Scare Has Everyone on Their Toes," *Business Line*, 20 October 2001; "More Suspicious Letters in Delhi, Anthrax Scare Grips MP," *The Statesman*, 21 October 2001; "India: Anthrax Scare Has Everyone on Their Toes," *Business Line*, 20 October 2001.

#### **October 2001**

A 12-year-old girl and her cousin in Tulasipur fall unconscious after sniffing white powder in an envelope. The envelope is addressed to one of the girl's father, Madan Sahu, and was sent by his nephew undergoing military training in Ahmednagar, India. The substance is sent for testing, with results not being reported.

—"India: Postal Sorters to Be Given Protective Gear Against Anthrax," *The Hindu*, 21 October 2001; "Sorters at Foreign Post Offices to Be Given Masks, Gloves," *Press Trust of India*, 21 October 2001, *Nationwide International News*, "White Powder Causes Anthrax Fear in Orissa Village," *Indiainfo.com*, 20 October 2001, <http://news.indiainfo.com>.

#### **October 2001**

According to the National Institute of Communicable Diseases, India is not stockpiling smallpox vaccine.

—Nilanjana Bhaduri Jha, "Can we Handle Bio-Terrorism?," *Times of India*, 10 October 2001.

#### **October 2001**

India's Health Minister C.P. Thakur holds a meeting with health officials to discuss and create a plan to deal with a biological attack. Different measures were devised during the meeting, such as arrangements for extra beds in leading hospitals and storage of preventive medicines. The Federal Health ministry is also tasked with dealing with BW, and the National Institute of Virology in Pune is to be upgraded.

—"Health Ministry Taking Steps Against Germ Warfare," *Press Trust of India*, 7 October 2001, *Nationwide International News*.

#### **October 2001**

The Indian Council of Medical Research states that it is ready to launch a vaccine for anthrax. The council states that it is awaiting government approval.

—Ellen Beck, "India Media Get Suspicious Letter," *United Press International*, 22 October 2001.

#### **October 2001**

The Defense Research & Development Establishment conducts a four-day anti-BW training course for Indian senior police officers, doctors, and administrators.

—Pallava Bagla, "Little-Known Lab, India's Germ-Buster," *LeadIndia*, 25 October 2001, [www.leadindia.org](http://www.leadindia.org).

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### **October 2001**

A National Disaster Management Agency is set up in the Home Ministry to deal with all types of disasters, including weapons of mass destruction (WMD).

—Sujata Dutta Sachdeva, "Sarin to Smallpox: Can We Handle Bio-Terrorism?" *Times of India*, 6 October 2001.

### **25 September 2001**

Union health minister C.P. Thakur states that while India's national laboratories are able to detect any lethal virus that may be deliberately unleashed, India does not have a smallpox vaccine stock available.

—"WHO Cautions Against Bio-Weapons Strike," *Times of India Online*, 25 September 2001, [www.timesofindia.com](http://www.timesofindia.com).

### **23 September 2001**

Dr. K.K. Datta, Director of the National Institute of Communicable Diseases, states that the Institute does not have the structure in place to prevent and detect incidents of bioterrorism. Datta adds that the Institute is trying to develop such a capability.

—"India Gearing Up to Face Threat of Biological Weapons," *Times of India Online*, 23 September 2001, [www.timesofindia.com](http://www.timesofindia.com).

### **July 2001**

At the Indo-Russian Joint Council for ILTP in Moscow, India and Russia both identify 146 new joint research and development projects. These projects will cover such fields as biotechnology, immunology, biomedical sciences, and chemical sciences.

—Anders Axelsson, et al., "Indian and Pakistani Weapons of Mass Destruction in a Security Policy Context: A Comprehensive Analysis of Capabilities, Objectives, and Consequences," *Swedish Defense Research Agency*, March 2002.

### **12 May 2001**

India concludes "Operation Complete Victory" in the Pokharen desert.

—"India's 'War Hysteria' Threatens Regional Peace," *Khabrain in Urdu*, 12 May 2001, FBIS, document identification number SAP20010515000028.

### **11 May 2001**

The Bangalore-based Biocon India is awarded the 2001 Biotechnology Product and Process Development and Commercialization Award by the Department of Biotechnology, Ministry Science and Technology for its invention of a solid matrix bioreactor.

—"India: Recognition for Biocon's Technology," *The Hindu*, 15 May 2001.

### **5-10 May 2001**

India conducts "Operation Complete Victory" in the Pokharen desert. The exercise involves military maneuvers and for the first time incorporates chemical, nuclear, and biological weapons into the exercises. The exercise also tests new equipment such as protective gear, decontamination routines, and electronic warfare systems for battle in a contaminated area.

—*Chemical Weapons Convention Bulletin: News, Background, and Comment on Chemical and Biological Warfare*

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*Issues*, September 2001, Issue Number 53, p. 26; Anders Axelsson, et al., "Indian and Pakistani Weapons of Mass Destruction in a Security Policy Context: A Comprehensive Analysis of Capabilities, Objectives, and Consequences," *Swedish Defense Research Agency*, March 2002.

#### **10 April 2001**

In meetings between External Affairs and Defense Minister Jaswant Singh and visiting US officials, India states that it believes that chemical and biological weapons present a greater danger than nuclear weapons. India believes that these weapons are more dangerous because of the ease with which they can be procured by international terrorist groups.

—*Chemical Weapons Convention Bulletin: News, Background, and Comment on Chemical and Biological Warfare Issues*, June 2001, Issue Number 52, p. 53.

#### **7 April 2001**

Rakesh Sood, India's permanent representative to the Conference of Disarmament, tells the *Times of India* that even though there is no immediate threat to patented information, India's biotech industry should prepare safeguard measures for its industry for the negotiations of the BWC.

—"Firms Need to Make Safeguard Steps as Bio Forum Charts Verify," *Times of India*, 7 April 2001.

#### **4 April 2001**

The Confederation of Indian Industry (CII), in conjunction with the DRDO, organizes a conference of Indian pharmaceutical and biotech firms. The conference is set up to discuss the implications of the proposed verification measures of the BWC.

—"Indian Firms Face Patent Threat from BTWC Norm (Pharma And Biotech Firms to Declare Information on Research, Manufacturing, Discovery of Drugs)," *India Business Insight*, 7 March 2001.

#### **17 March 2001**

Retired Pakistani Lieutenant General Khalid Latif Moghat states that India's large nuclear, chemical, and biological programs are proof of India's future strategic plans and goals.

—"Article Urges Pakistan to Remain Prepared to Check India's Aggressive Designs," *Dawn in English*, 17 March 2001, FBIS, document identification number SAP20010317000055.

#### **February 2001**

India and Germany sign an agreement to work together in developing new drugs and vaccines. The agreement covers research in the fields of genomics and proteomics, tissue and cell culture, bioinformatics, nuclear magnetic resonance (NMR) spectroscopy, and tuberculosis research.

—Anders Axelsson, et al., "Indian and Pakistani Weapons of Mass Destruction in a Security Policy Context: A Comprehensive Analysis of Capabilities, Objectives, and Consequences," *Swedish Defense Research Agency*, March 2002.

#### **February 2001**

The Indian Government decides to constitute a task force to study the opportunities and potential investments of biotechnology.

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—Anders Axelsson, et al., "Indian and Pakistani Weapons of Mass Destruction in a Security Policy Context: A Comprehensive Analysis of Capabilities, Objectives, and Consequences," Swedish Defense Research Agency, March 2002.

#### **18-19 January 2001**

In an inaugural address to a two-day seminar on nuclear, biological, and chemical defense in Lonavala, Indian Vice-Admiral Harinder Singh calls for "urgent steps to meet the asymmetric threats in the form of chemical and biological weapons emerging from the low-intensity proxy wars." Another speaker, Indian Vice-Admiral A.S. Krishnan, states that chemical and biological weapons appear to be gaining a slow but steady foothold as potential devices for use against military and civilian groups. In addition, Krishnan states that a Nuclear, Biological, and Chemical (NBC) defense doctrine has been drafted, and the creation of a joint services institute for NBC warfare has been proposed at the College of Military Engineering in Pune.

—*Chemical Weapons Convention Bulletin: News, Background, and Comment on Chemical and Biological Warfare Issues*, March 2001, Issue Number 51, p. 44; Lonavia V. Radhika, "Armed Forces to Formulate Defense Against Nuclear Attacks," *Indiainfo.com*, 19 January 2001, <http://news.indiainfo.com>.

#### **January 2001**

The US Department of Defense reports that India has many qualified scientists, numerous biological and pharmaceutical production facilities, and biocontainment facilities suitable for research and development of dangerous pathogens. The report also states that at least some of these facilities are being used to support research and development for biological warfare (BW) defense work.

—Anthony Cordesman, *Weapons of Mass Destruction in the Middle East*, 27 December 2001, p. 31.

[Back to Top](#)

## **2000-1990**

#### **April 2000**

The Defense Materials & Stores Research & Development Establishment in Kanpur organized a Vaccination Camp. The goal of the camp was to provide employees and their families vaccinations and protection against Hepatitis-B. —"DMSRDE Organized Vaccination Camp," *DRDO Newsletter*, 2000, [www.drdo.org](http://www.drdo.org).

#### **6 July 1999**

According to unidentified Pakistani sources, India has started preparations to develop biological weapons. According to these sources, it is receiving help from Israel, along with unidentified German and Bulgarian companies. The sources also state that India will use these weapons to avert the use of nuclear weapons. —"Pakistan Claims India Developing Biological Weapons," *Khabrain in Urdu*, 6 July 1999, FBIS, document identification number BK0607150099.

#### **5 April 1999**

The Indian Army calls for the formation of a National Infrastructure Cell. The cell would assess threats, implement

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and monitor countermeasures, and develop ways to warn potential targets. The Army also calls for a National Commission on Critical Infrastructure Protection. The Commission would consist of scientists, government and private sector officials, and would be tasked with finding ways to defend infrastructure and develop appropriate countermeasures.

—"Cell to Assess Terrorist Threat Mooted," *The Statesman*, 5 April 1999.

#### **1999**

Former Biopreparat first deputy chief Ken Alibek asserts in his book *Biohazard* that during a trip to India, he saw indications of a possible biological weapons program. Alibek states that increased security at certain Indian facilities convinces him that India is developing these weapons.

—Ken Alibek, *Biohazard* (New York: Random House, 1999), p. 279.

#### **22 October 1998**

Dr. A.P.J. Abdul Kalam introduces Revac-B, a vaccine for hepatitis B, developed by the Hyderabad based Bharat Biotech International Limited.

—"Revac-B Vaccine Launched," *Business Line*, 24 October 1998.

#### **14-19 September 1998**

The Defense Research & Development Establishment conducts a Continuing Education Program (CEP) course on Concepts in Toxicology.

—Defense Research & Development Establishment, [www.drdo.org](http://www.drdo.org).

#### **July 1998**

The Indian Ministry of Defense, working with the Confederation of Indian Industries, sets up a task force to explore partnerships with seven DRDO facilities. The laboratories are involved in developing dual-use technologies, biotechnology, and software. The partnership is part of an effort to counter sanctions against India.

—"Sanctions Spur Indian Privatization," *Jane's Defense Weekly*, 1 July 1998, p. 16.

#### **June 1998**

The Defense Ministry agrees to open eight Defense Research and Development Organization (DRDO) laboratories to industrial use.

—*CII-DRDO Joint Initiatives*, [www.ciidefence.com](http://www.ciidefence.com).

#### **May 1998**

The United States imposes sanctions on 200 Indian companies following India's successful nuclear test.

—*India-Pakistan Sanctions Legislation Fact Sheet*, 11 July 2001, [www.clw.org](http://www.clw.org).

#### **1998**

According to Western intelligence sources, Libya has purchased equipment and laboratory instruments from India, China, and Serbia that allows it to develop its biological weapons program.

—Michael Evans, "Iraqi Scientists Helping Libyan Germ Warfare," *The Times*, 6 January 1998, Overseas News.

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**25 November 1997**

US Defense Secretary William Cohen states that over 25 countries have or may be developing chemical and biological weapons and ways to deliver them. Cohen did not list all 25 nations, but states that the programs of North Korea, China, Pakistan, Russia, and India all represented a threat to the United States.

—"US Lists 'Threatening' Nations," *Calgary Herald*, 26 November 1997, News; p. A11.

**26 October 1997**

The Taskforce on Biotechnology and Agro-based Industries recommends that India set up a biodiversity center for the evaluation and genetic mapping of indigenous plants unique to Kerala. The taskforce believes that doing this will help improve India's agriculture sector by creating better seeds, biofertilizers, biopesticides, and improved cultivation, harvest and storage methods.

—"India: Biotechnology Park Mooted for State," *The Hindu*, 27 October 1997, p. 6.

**December 1996**

At the Fourth Review Conference of the BWC in Geneva, Switzerland, Indian representative Arundhati Ghose states that setting up a verification system for the convention would be difficult. Ghose cites the dual-use nature of biotechnology as one of the impediments to having an effective system. She adds that a verification system that balances these concerns is feasible, and that the group should continue to work for such a system but not be tied down by artificial deadlines.

—"UN: State Parties Cite Urgent Need to Strengthen Biological-Weapons Convention," *M2 Presswire*, 3 December 1996.

**16-27 September 1996**

The Defense Research & Development Establishment conducts a Continuing Education Program (CEP) course on Fundamentals of Biotechnology.

—Defense Research & Development Establishment, [www.drdo.org](http://www.drdo.org).

**1996**

The Defense Agricultural Research Laboratory moves its headquarters to Pithoragarh.

—Defense Agricultural Research Laboratory, [www.drdo.org](http://www.drdo.org).

**13 July 1995**

Iran, Pakistan, India, and China obstruct the establishment of a verification system for the BWC.

—*Jane's Information Group*, 13 July 1995, issue #000/2359.

**1994**

The Jamnalal Bajaj Tropical Disease Research Center is established at the Mahatma Gandhi Institute of Medical Sciences, Sevagram. The center is to focus on immunodiagnosics, immunomonitoring, immunoprophylaxis, and surveillance and molecular studies related to filariasis, tuberculosis, and leprosy.

—Indian Parasitology Centers, [www.parasitologyindia.org](http://www.parasitologyindia.org).

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#### 1994

Following an outbreak of plague in Surat, India, the government focuses on *Y. pestis*. Medical school work is designed to deal with plague in more detail, and the National Institute for Communicable Disease's plague unit is modernized to allow more efficient diagnosis. The government also plans to set up a sophisticated national surveillance system.

—"Urban Environment and Human Health," *World Resources 1996-1997: A Guide to the Global Environment*, [www.wri.org](http://www.wri.org).

#### 1993

The Defense Institute of Physiology & Allied Sciences is relocated to a building on Lucknow Road in Delhi.

—*Defense Institute of Physiology & Allied Sciences*, [www.drdo.org](http://www.drdo.org).

#### 5 November 1990

*Press Trust of India* releases a report stating that Indian biologists are creating viruses that can kill insect pests that destroy crops. According to the report, the National Institute of Immunology and the Tamil Nadu Agricultural University in Coimbatore are engineering genes of Baculoviridae for this purpose.

—"India Biologists Creating Suicide Squads of Viruses to Combat Insect Pests," *The Xinhua General Overseas News Service*, 5 November 1990.

[Back to Top](#)

## 1989-1970

#### 1989

The Indian company Hoechst India Ltd. begins production of PCEC rabies vaccine on a primary chicken embryo cell line.

—Anthony T. Tu, *Toxin-Related Diseases: Poisons Originating from Plants, Animals and Spoilage* (New Delhi: Oxford & IBH Publishing Co., 1993), p. 502.

#### 1984

The Agricultural Research Unit is redesignated the Defense Agricultural Research Laboratory (DARL).

—Defense Agricultural Research Laboratory, [www.drdo.org](http://www.drdo.org).

#### 1982

The Defense Bioengineering and Electromedical Laboratory is established. The lab is established following the merger of the Aero Bio-Engineering Unit of the Institute of Aviation Medicine and the Electromedical Instrumentation Division of LRDE.

—Defense Bioengineering & Electromedical Lab Information Packet, [www.drdo.org](http://www.drdo.org).

#### 1982

The Regional Medical Research Center for N.E. Region is established in Dibrugarh, Assam. The center is set up to

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promote biomedical research and to combat the health problems of the seven northeast states of Arunachala, Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura.

—*Indian Parasitology Centers*, [www.parasitologyindia.org](http://www.parasitologyindia.org).

#### **October 1980**

The Field Laboratory is upgraded to a full-fledged establishment and is designated the Defense Research Laboratory.

—Defense Research Laboratory, [www.drdo.org](http://www.drdo.org).

#### **1980**

The Department of Defense Research and Development is established and is set up to manage DRDO and its various laboratories.

—John Pike, "Defense Research and Development Organization: Indian Special Weapons Agencies," *Federation of American Scientists*, 29 May 2002, [www.fas.org](http://www.fas.org).

#### **Early 1980s**

Biotechnology begins to expand rapidly in India following the concerted efforts of the Indian Department of Science and Technology, the Indian Council of Agricultural Research, private entrepreneurs, and the formation of the Department of Biotechnology,

—"How Biotech Improved Agriculture," *The Hindu*, 23 July 1998.

#### **1976**

The Defense Material & Storage R & D Establishment is created. The establishment is an amalgamation of three other establishments: Defence Research Laboratories (Stores) (DRL(s)), Textiles & Stores Research & Development Establishment (TSRDE) and Defence Research Laboratories (Materials) (DRL(M)), and the Defense Institute of Stores Preservation and Packaging.

—*Defense Material & Storage R&D Establishment*, [www.drdo.org](http://www.drdo.org).

#### **15 July 1974**

India ratifies the BWC.

—"Chemical and Biological Weapons Proliferation at a Glance," *Arms Control Association*, September 2002.

#### **15 January 1973**

India signs the Biological and Toxin Weapons Convention (BWC).

—"Chemical and Biological Weapons Proliferation at a Glance," *Arms Control Association*, September 2002.

#### **1973**

The Jiwaji Industrial Research Laboratory comes under the control of the Ministry of Defense and becomes the Defense Research & Development Establishment.

—Defense Research & Development Establishment, [www.drdo.org](http://www.drdo.org).

[Back to Top](#)

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## 1969-1892

### 1968

The Defense Institute of Physiology & Allied Sciences is relocated to the Army Base Hospital in Delhi.

—Defense Institute of Physiology & Allied Sciences, [www.drdo.org](http://www.drdo.org).

### November 1963

The Field Laboratory (FLT) is moved to Tezpur.

—Defense Research Laboratory, [www.drdo.org](http://www.drdo.org).

### 1963

Malaria Institute of India is renamed the National Institute of Communicable Diseases.

—Indian Parasitology Centers, [www.parasitologyindia.org](http://www.parasitologyindia.org).

### 1963

The Vaccine Institute places a freeze-dried smallpox vaccine on the market.

—Anthony T. Tu, *Toxin-Related Diseases: Poisons Originating from Plants, Animals and Spoilage* (New Delhi: Oxford & IBH Publishing Co., 1993), p. 502.

### October 1962

The Field Laboratory (FLT) is established to address the specific requirements of troops located in northeast India.

—Defense Research Laboratory, [www.drdo.org](http://www.drdo.org).

### 9 February 1962

The Research & Development Establishment, Pune is founded as an amalgamation of the Technical Development Establishment, Ahmednagar and Inspectorate of Engineering Stores, Calcutta. It is set up as a nodal establishment to meet the technical requirements of Army engineers.

—Defense Research Laboratory, [www.drdo.org](http://www.drdo.org).

### 1962

ICAR's FRL becomes part of DRDO, under the control of the Defense Science Laboratory in Delhi. The lab is set up to make the hostile terrain of Jammu and Kashmir conducive to agriculture.

—Field Research Laboratory, [www.drdo.org](http://www.drdo.org).

### 1962

The Defense Institute of Physiology & Allied Sciences is established at Madras, with a focus on high-altitude physiology, psychology, nutrition, and biochemistry.

—Defense Institute of Physiology & Allied Sciences, [www.drdo.org](http://www.drdo.org).

### 28 December 1961

The Defense Food Research Laboratory is established at Mysore. The laboratory is set up to deal with the different food challenges facing the military and paramilitary forces.

—Defense Agricultural Research Laboratory, [www.drdo.org](http://www.drdo.org).

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**1960**

Field Research Laboratory (FRL) is founded in Leh under the control of the Indian Council of Agricultural Research (ICAR).

—Field Research Laboratory (FRL), [www.drdo.org](http://www.drdo.org).

**1958**

The Defense Research and Development Organization (DRDO) is established as an amalgamation of the Technical Development Establishment (TDE) of the Indian Army, the Directorate of Technical Development and the Defense Science Organization. DRDO is set up to provide the Armed Services with new technology.

—John Pike, "Defense Research And Development Organization: Indian Special Weapons Agencies," Federation of American Scientists, 29 May 2002, [www.fas.org](http://www.fas.org); Captain Paul McQuay, "Summary of The Indian Defense Science And Technology Organization," 16 March 1995, [www.nmjc.org](http://www.nmjc.org), 5/30/01; *DRDO*, [www.drdo.com](http://www.drdo.com).

**17 February 1951**

The Central Drug Research Institute in Lucknow is inaugurated by Prime Minister Jawaharlal Nehru.

—Indian Parasitology Centers, [www.parasitologyindia.org](http://www.parasitologyindia.org); *Central Drug Research Institute*, [www.cdriindia.org](http://www.cdriindia.org).

**1947**

A research center in Gwalior is inaugurated by the Governor General of India and becomes known as the Jiwaji Industrial Research Laboratory.

—*Defense Research & Development Establishment*, [www.drdo.org](http://www.drdo.org).

**1940**

The Drugs and Cosmetics Act is passed. The act creates a legal framework for the vaccine industry in India.

—Anthony T. Tu, *Toxin-Related Diseases: Poisons Originating from Plants, Animals and Spoilage* (New Delhi: Oxford & IBH Publishing Co., 1993), p. 507.

**1940**

The Department of Antitoxins and Sera is established at the Haffkine Institute, Bombay and the Central Research Institute, Kasauli.

—Anthony T. Tu, *Toxin-Related Diseases: Poisons Originating from Plants, Animals and Spoilage* (New Delhi: Oxford & IBH Publishing Co., 1993), p. 502.

**1938**

The Malaria Survey of India moves to New Delhi and becomes the Malaria Institute of India. The center primarily conducts research on "vector biology and control, genetics, cellular and molecular biology, parasitology, epidemiology, pharmacology and biochemistry that is related to malariology and the development of malaria control strategies." The institute maintains close links with international medical organizations as well as national laboratories.

—Indian Parasitology Centers, [www.parasitologyindia.org](http://www.parasitologyindia.org).

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**1930**

The Plague Institute is renamed the Haffkine Institute following the death of Dr. Waldemar Mordecai Haffkine.  
—Haffkine Institute, <http://theory.tifr.res.in>.

**1927**

The Central Malaria Bureau at Kasauli is renamed the Malaria Survey of India.  
—Indian Parasitology Centers, [www.parasitologyindia.org](http://www.parasitologyindia.org).

**1924**

The Maharaja of Gwalior sets up a research laboratory in Gwalior to explore the forest products and mineral resources of the area.  
—Defense Research & Development Establishment, [www.drdo.org](http://www.drdo.org).

**1920**

The Plague Institute begins to manufacture a rabies vaccine.  
—Anthony T. Tu, *Toxin-Related Diseases: Poisons Originating from Plants, Animals and Spoilage* (New Delhi: Oxford & IBH Publishing Co., 1993), p. 502.

**1909**

The Central Malaria Bureau at Kasauli is established in Kasauli.  
—Indian Parasitology Centers, [www.parasitologyindia.org](http://www.parasitologyindia.org).

**1907**

The Pasteur Institute of South India at Coonoor is established to develop vaccines for such diseases as rabies and polio.  
—Anthony T. Tu, *Toxin-Related Diseases: Poisons Originating from Plants, Animals and Spoilage* (New Delhi: Oxford & IBH Publishing Co., 1993), p. 502; "Coonoor," *Hill Resorts in India*, [www.hillresortsindia.com](http://www.hillresortsindia.com).

**1905**

The Central Research Institute at Kasauli is established.  
—Anthony T. Tu, *Toxin-Related Diseases: Poisons Originating from Plants, Animals and Spoilage* (New Delhi: Oxford & IBH Publishing Co., 1993), p. 502; "Kasauli," [Indiainfo.com](http://Indiainfo.com), <http://travel.indiainfo.com>.

**1901**

The Vaccine Institute is established in Nagpur to develop vaccines for different diseases.  
—Anthony T. Tu, *Toxin-Related Diseases: Poisons Originating from Plants, Animals and Spoilage* (New Delhi: Oxford & IBH Publishing Co., 1993), p. 502.

**1900**

The Pasteur Institute of Kasauli is established in Kasauli.  
—Anthony T. Tu, *Toxin-Related Diseases: Poisons Originating from Plants, Animals and Spoilage* (New Delhi: Oxford & IBH Publishing Co., 1993), p. 502; "Kasauli," [Indiainfo.com](http://Indiainfo.com), <http://travel.indiainfo.com>.

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### **1900-1915**

The Plague Institute is successful in developing vaccines for cholera and typhoid.

—Anthony T. Tu, *Toxin-Related Diseases: Poisons Originating from Plants, Animals and Spoilage* (New Delhi: Oxford & IBH Publishing Co., 1993), p. 502.

### **10 August 1899**

The Plague Institute is established in Bombay, directed by Dr. Waldemar Mordecai Haffkine.

—Anthony T. Tu, *Toxin-Related Diseases: Poisons Originating from Plants, Animals and Spoilage* (New Delhi: Oxford & IBH Publishing Co., 1993), p. 501.

### **1 October 1897**

In response to an outbreak of plague in India, Dr. Waldemar Mordecai Haffkine creates and tests a vaccine against *Yersinia pestis*.

—Anthony T. Tu, *Toxin-Related Diseases: Poisons Originating from Plants, Animals and Spoilage* (New Delhi: Oxford & IBH Publishing Co., 1993), p. 501.

### **1892**

Dr. Waldemar Mordecai Haffkine creates India's first vaccine, targeting *Vibrio cholerae*.

—Anthony T. Tu, *Toxin-Related Diseases: Poisons Originating from Plants, Animals and Spoilage* (New Delhi: Oxford & IBH Publishing Co., 1993), p. 501.

[Back to Top](#)

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