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Urgency of Preventing Biological Warfare and Ensuring Bio-Safety

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Despite the international convention regarding ban on biological weapons existing for over 50 years, allegations of biological warfare have been surfacing from time to time with varying levels of credibility and evidence. What appears to be more certain is that several governments have maintained at least some levels of defensive as well as aggressive biological warfare research. What is completely certain is that certain kinds of biological research being pursued in many high security labs in many parts of the world have biological warfare implications in the sense that this can be useful for biological warfare objectives.

It is also clear that strong government connections to such labs and research certainly exist. Some of these labs and projects involve foreign collaborations as well. Concerns have been expressed even by senior scientists that accidents at such labs can result in almost equal harm as can be caused by actual warfare, although in the case of accidents harm can be suffered more by friends than foes, or else harm can spread so much as to fail to distinguish between friend and foe. Then there is always the threat arising from biological weapons, or potential of biological weapons, getting into the hands or control of terrorists. All these dangers together add up to a very serious situation and clearly there is need for further urgent action to prevent the threat of biological warfare and well as accidents in high security bio labs.

Two aspects of bio-weapons may be mentioned here to be of particular relevance in this context. Firstly, while biological weapons can also be used in relatively mild ways, it is equally true that in the case of their most destructive use these too are capable of killing millions of people, although over a longer period of time when compared to nuclear weapons. The second aspect is that these can be developed and used in much more secretive ways compared to nuclear weapons. In fact even when these inflict enormous damage, it may at times be difficult to get conclusive proof of the use of bio-weapons, let alone the identity of the user/perpetrator, although of course there will be strong suspicions backed by circumstantial evidence.

Some time back Russia circulated a 310 page document which alleged that bio-weapons use preparations are being made in Ukraine with USA help. An AP report from the United Nations headquarters published in The Tribune, India, dated October 29 2022 tells us—

> "Russia's US Ambassador Vasily Nebenzya, said Moscow will pursue a UN investigation of its allegations that both countries (US and Ukraine) are violating the convention prohibiting the use of biological weapons. The dispute came in the third UN Security Council meeting on Ukraine-related issues that Russia has called since Tuesday.
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> "Nebenzya said the Russian military had recovered drones capable of spraying bio-agents as well as documents that he said related to research on the possibility of spreading pathogens through bats and migrating birds. The 310 page document that Russia circulated to council members this week alleged there is "military biological" activity in Ukraine with support of the US Defense Department. This document includes an official complaint to the council, allowed under Article VI of the 1972 biological weapons convention."

As expected these allegations were dismissed by the USA and its allies as disinformation and fabrication.

Biological warfare (also called germ-warfare) can be used to spread disease among human beings or destroy crops on a large scale. Protection against such an attack is extremely difficult, especially in the case of a surprise attack. According to the Stockholm International Peace Research Institute,

> "The insidious effects of many chemical and biological warfare agents make them suited to sabotage, for not only do they cause widespread damage, but their delayed effects may also enable the saboteur to escape detection."

U.S. expert Kathleen C. Bailey has stated,

> "Although biological warfare and toxin warfare were historically viewed as less practical weapons because of technical problems in production and effective delivery, tremendous technology advances such as genetic engineering and development of stabilizers have made these weapons relatively easy to manufacture and deliver effectively. Because these weapons are inexpensive and comparatively easy to produce, an increasing number of nations may pursue them."

Speaking further about the threats posed by biological weapons, she says

> "a bacteria or virus used as a weapon could spread well beyond its intended victims, causing an epidemic worldwide. The pathogen could mutate, becoming even more deadly and resistant to treatment or prevention."

The use of biological and toxin weapons was outlawed by the 1972 Biological and Toxin Weapons Convention. Nevertheless biological warfare research continued in several countries, especially the two super powers i.e. the USA and the USSR. Former Russian President Boris Yeltsin admitted that that an epidemic of anthrax in Ural mountains in 1979 was caused by an accident at a biological warfare production plant.

As for biological warfare research in the USA, the Third World Guide has reported,

> "Early in the Reagan administration a systematic campaign was initiated to develop military capacity based on advances in the biomedical and biotechnology, such as genetic engineering. These efforts included attempts to undermine the Biological Weapons Convention of 1972, sharply increasing expenditures for biological weapons research and development, active recruitment of University scientists into Department of Defense, and formal testimony before the US Congress in 1986 urging the development of military capacity in biotechnology."

Senior American journalist William Blum has reported,

> "In 1956 and 1958, declassified documents have revealed that the US army loosed swarms of specially bred mosquitoes in Georgia and Florida to see whether disease carrying insects could be weapons in a biological war. The mosquitoes bred for the tests were of Aedes Aegypti type, the precise carrier of dengue fever as well as other diseases. In 1967, it was reported by Science magazine that at the US government centre in Fort Detrick, Maryland, dengue fever was amongst those diseases that are at least the object of considerable research and that appear to be among those regarded as potential biological warfare agents."

Cuba protested time and again against the possible involvement of chemical and biological warfare agents in the destruction of its crops, outbreak of African swine and dengue fever but such is the nature of biological warfare that conclusive evidence is difficult to get.

As biological warfare research was continued by the big powers, one of the main problems they faced was in conducting field tests and other experiments which could prove dangerous for their own people. This problem was solved to some extent by shifting these experiments to developing countries in the garb of development and health research.

Disturbing evidence of several such research projects in India was made available in 1975 in the 167th report of Public Accounts Committee of the Indian Parliament titled 'Foreign Participation or collaboration in research products in India,' and in its follow up report in 1976. These reports indicted several such projects such as a genetic control of mosquitoes unit (GCMU) project, a microbial pesticide project and some other projects.

An article published in New Scientist said,

> "If one were intending a yellow fever attack on India, this information collected by the GCMU would be very useful."

A widely circulated magazine in India 'The Week' alleged in two cover stories (October 9, 1994 and July 23, 1995) that the outbreak of pneumonic plague in Surat was the result of biological warfare experiments conducted by the USA. The Week said that several suspicious circumstances led it to suspect from the outset that the microbe was not a natural plague bacterium but one mutated in some germ-warfare lab. The magazine said in its July 23 issue, the laboratories which examined the microbe strains collected from Surat have reported that they are different from all known natural strains of the plague germ, Yersinia pestis. The Week said that USA Scientists have been developing a germ detector device known as BIDS (Biological Integrated Detection System). This required field tests some of which, the Week said, may have been conducted in Surat.

Summarizing the reason why suspicions persist, a news report released by the Press Trust of

India said,

> "While the final report of the Ramalingaswami Committee on Surat plague is yet to be released, there is increasing suspicion among scientists that the strain of Yersinia pestis, which caused the outbreak, was genetically engineered. Basis for this suspicion is a test report from the US Centre for Disease Control at Fort Collins in Colarado that the Surat strain is unique and not related to any known stain of the plague bacillus."

Attention has also been drawn to the biological warfare implications of what has been called the 'terminator technology'. In a widely discussed paper (published in the Ecologist, Sept/Oct 1998) Ricarda A Steinbrecker and Pat Roy Mooney (widely acclaimed winner of the Right to Livelihood Award) summarize the implications of this most controversial use of generic engineering,

> "On March 3rd 1998 the US Department of Agriculture (USDA) and a little-known cotton-seed enterprise called Delta and Pine Land Company, acquired US patent 5,723,765 – or the Technology Protection System (TPS). Within days, the rest of the world knew TPS as Terminator Technology. Its declared goal is to promulgate plants that will produce self terminating offspring – suicide seeds. Terminator Technology epitomises what the genetic engineering of food crops is all about and gives an insight into the driving forces behind the corporate campaign to control and own life.–
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> "The Terminator also portends a hidden dark side. As a Trojan Horse for other transgenic traits, the technology might also be used to switch any trait off or on. At least in theory, the technology points to the possibility that crop diseases could be triggered by seed exports that would not have to "kick in" immediately – or not until activated by specific chemicals or conditions. This form of biological warfare on people's food and economics is becoming a hot topic in military and security circles."

Several eminent scientists comprising the Independent Science Panel have also clearly indicated the biological warfare potential of genetic engineering. The ISP writes, "By far the most insidious dangers of genetic engineering are inherent to the process itself, which greatly enhances the scope and probability of horizontal gene transfer and recombination, the main route to creating viruses and bacteria that cause disease epidemics. This was highlighted, in 2001, by the 'accidental' creation of a killer mouse virus in the course of an apparently innocent genetic engineering experiment. Newer techniques, such as DNA shuffling, are allowing geneticists to create in a matter of minutes in the laboratory millions of recombinant viruses that have never existed in billions of years of evolution. Disease-causing viruses and bacteria and their genetic material are the predominant materials and tools for genetic engineering, as much as for the intentional creation of bio-weapons."

More recently there have been several allegations that research which can be of great use for biological warfare research has been carried out under the garb of some (not all or most) 'gains of function' research projects.

What appears to be most likely is that some of the biggest military powers of the world have kept open the option of biological warfare and bio-weapons, despite the ban on these, and the technology for these is available. It is in this context that recent allegations of Russia should not be dismissed entirely, but should instead be examined in an unbiased way for their implications. At least this much is clear that if bio-weapons are used in the present crisis situation, then apart from the direct harm caused by them, this will lead to further fast

escalation of an already extremely dangerous situation. This can even lead to increased possibility of use of nuclear weapons. In suspicion-charged conditions, it is important to avoid bio-weapons and also to dispel suspicions regarding this.

It is still not adequately realized that for several decades now virologists in dozens of labs located in several countries have been rather routinely creating viruses which are more dangerous than those that exist in nature. More recently a proliferation of highest bio-safety category labs has been reported in some countries and it is likely that this is at least partially an indicator also of such high-risk research being conducted in more labs than before.

As in the case of viruses the line between civilian research and biological warfare research is rather thin, an additional concern is that despite the ban on biological weapons, some aspects of such research may also increasing. What is already well known in any case is that there have been several exposures from time to time of biological warfare research being performed in the guise of civilian research.

In particular high level of concern has persisted among several senior scientists regarding unacceptably high risks relating to research which involves the creation of novel potential pandemic pathogens (PPPs). These concerns were strong enough for the US government to impose a two to three year moratorium on some aspects of this research. This and some other related research is sometimes referred to as gains-of-function research. The US Government moratorium order defines such research as research that improves the ability of a pathogen to cause disease.

This order of the US government issued in October 2015 is titled 'US Government Gain-of-Function Deliberative Process and Research Funding Pause on Selective Gain-of-Function Research Involving Influenza, MERS and SARS Viruses'. This order mentioned that such research has some benefits but also entails bio-safety and bio-security safety risks; hence the risks and benefits of gain-of-function research should be evaluated. Till a robust scientific review of this can be completed, a moratorium on US government funding of more risky aspects of such research will be imposed. More specifically this much-discussed order stated, "New US funding will not be released for gain-of-function research projects that may be reasonably anticipated to confer attributes to influenza, MERS or SARS viruses such that the virus would have enhanced pathogenicity and/or transmissibility in mammals via the respiratory route."

However several senior scientists were disappointed when the moratorium was lifted all too soon in December 2017 after the stated completion of the review process.

Dr Mark Lipsitch, a senior epidemiologist, was among those scientists who had welcomed the moratorium. He teamed up with Dr. Thomas V. Inglesby to write an important paper in mBio—Journal of American Society of Microbiology dated Nov-Dec. 2014 titled 'Moratorium on Research Intended to Create Novel Potential Pandemic Pathogens (PPPs)'. This paper while welcoming the moratorium stated that as some gain-of-function research can also be useful, it may be more relevant to talk of reducing the risk of novel PPPs. This paper stated that experiments which create the possibility of initiating a pandemic should be subjected to rigorous quantitative risk assessment and there should be search for safer alternatives. This paper regretted that despite the serious risks involved a rigorous and transparent risk assessment for this work has not yet been established.

Further this paper argued that during the moratorium, progress should also be made in calculating the risks associated with potential deliberate misuse of PPP strains and with potential deliberate misuse of the information that is created and published following PPP experimental work. This calculation should take into account the possibility of deliberate theft and dissemination by either persons working within a lab or theft by those outside the lab. The paper pointed out that this possibility may be rare, but there have been precedents already of scientists using pathogens from their own labs to cause harm. Further the paper said that this assessment should take into account the possibility that some scientists may deliberately misuse the knowledge gained and published following the experiments by recreating the novel PPP strains in another laboratory using methods from published papers and then purposefully disseminate it.

When the moratorium was lifted Dr. Lipsitch expressed concern at this decision. He was joined by some other senior scientists like Dr. Richard Ebright in this opposition.

Earlier a paper by Lynn C. Klotz Edward and J. Sylvester published in the Bulletin of Atomic Scientists had stated that SARS virus had already escaped from labs 3 times between 2003 and 2011. Even the security of the highest category BSL4 labs was not adequate as there had been 3 escapes from such highest safety labs between 1990 and 2011—one in Taiwan, one in England and one in the Soviet Union. This paper argued that assuming a rather low probability of accident, the possibility of accidental leak from the nearly 42 labs engaged then in live PPP research relating to three of the more dangerous viruses, escape of a dangerous virus from lab amounted to 80 per cent in at least one lab in 12.8 years, a very high probability indeed. However this may well be higher now as the work is now likely to be taking place in a much higher number of labs compared to the estimate made then of 42 labs worldwide.

Clearly there is a very serious threat from novel PPPs and efforts should be continued to restrict such research and reduce its inherent dangers in various ways. A worldwide moratorium should be considered, followed by an international commission of scientists and bioethicists, selected carefully to exclude those who derive personal gain from such research, to examine comprehensively, in an entirely unbiased way and with the precautionary principle as guide, all aspects of this controversial issue and to make recommendations based on this.

The entire issue of genetically altered and engineered viruses should be discussed and debated among people also in well-informed conditions of transparency as very important issues of big risks to safety cannot be left to a few experts alone and should be the subject of well-informed public discussion as well. In all such matters, safety should get the highest consideration.

As the safety afforded by the convention banning biological weapons has turned out to be illusionary to a large extent, there is renewed urgency of international efforts to ban biological weapons in more effective and comprehensive ways, and in addition to also prevent accidental releases from high hazard bio-labs which can be potentially capable of causing as much harm, or even more, than deliberately and selectively used bio-weapons. No country in the world is safe from such threats, although dangers just now may be highest in Europe due to the Ukraine conflict. Safety first and safety foremost must be the guiding principle of protective and preventive actions involving scientists, peace and disarmament activists, the UNO and governments.

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