

Evaluation of Biological Agents in Warfare

Ananda Majumdar

University of Alberta

Abstract

Biological weapon had been used by Assyrians to poisoned their enemy in 6th century B.C., in 1346 Mongol warriors of the Golden Horde died of plague and their bodies were thrown over the walls of Crimean city Kaffa, resulting in the killing of estimated 25 million Europeans, The British Army used small pox against native Americans during the siege of Fort Pitt in 1763, resulting in the killing of estimated one hundred native Americans in Ohio country in 1764, during the world war 1 imperial German government used anthrax and glanders and became encourage to produce biological weapon because of its advancement through bacteriology and germ theory in 1900, as germ warfare, is produced by biological toxins or infectious agents like bacteria, viruses, fungi(living organisms) and perhaps lethal or non-lethal etc. who are universally recognized as dead but reproduces by making of biological weapons to kill humans, animals, plants or to devastates entire universe, effects of biological war is similar to nuclear war, it can wipeout an entire community or an entire civilization from the universe, attack by insects over enemies is called entomological warfare, entomological weapon is recognized as biological weapon, biological weapon, chemical weapon and nuclear weapon are different kinds but they are not conventional warfare, the war is for universal devastation, biological weapon uses for strategic advantage over enemy either by threat or deployment, also known as area denial weapon, it can be deployed, stockpiled, or developed by individual, terrorist or a nation state over their enemy. As a student and a researcher of the area in international development and international affairs, I always would like to explore areas which can be useful for the knowledge and information and can be a message to the world for its security, I am interested to pursue my PhD in the areas of international development and writing articles is a part of my preparedness for my higher studies.

Keywords: State Sponsored Terrorism, Bio germ, Erosion of Genetic Diversity, Hague Convention, Geneva Convention, Bioweapon, Biodiversity, Endangered Species, Bioterrorism, Indigenous Culture.

Introduction

The threat of biological warfare by using germs is a particular challenge to all countries and its authorized representative, devises long term emergency response plan, RAND has developed training and exercises for health agencies to tackle and respond bioterrorism, create guidelines to improve individual preparedness for chemical, radiological, nuclear and biological attacks by other countries, terrorist organization, it has experimented about the consequences of psychological effects of bioterrorism over entire society, human being, the abilities of producing and using chemical and biological weapons by North Korea is a threat, therefore what can we do for the mitigation of this threat? any conflict between South and North Korea could lead the

use of biological weapons, so it is a concern to think about, think about Syria's program of biological weapons, they could be threat for the USA directly or indirectly through various terrorist organizations, various technological advancement has been discovered such as Crispr, a biotechnology makes genetic editing easier, cheaper and accessible but is there any guarantee that advancement of biotechnology can stop biological, chemical war and make the conventional charts obsolete?

Literature Review

The history of the development, production and use of biological weapons is large, it had seen in ancient empire warfare, in first world war and in second world war, even today it is secretly developing, and producing by

few countries, various agreements, conventions held in the past and in present but the outcome is zero, the declaration of elimination of bio, chemical weapon has not been succeed, powerful countries are making for the status of power, terrorist organizations are getting together morally supported by few countries for the use of bioterrorism, steps has taken to tackle any incidents but the question is how prepared we are to survive from a biological war? It can happen any moment without any clue or identification because of its environmental characters. Therefore, steps need to be taken for the survival of human and the animal world and its ancient, traditional culture as it's positive signs, but negligence by the official representative(government) can lead the devastation of entire human being include its traditional culture.

Methodology

I follow books, articles, newspapers, web links, collect information's from those sources, I make a draft and edited it various times by adding, deleting information, thus I understand the topic, gain knowledge, and make a final report on it and I follow the criteria of citation at the end.

Result and Discussion

Biological warfare is also familiar as germ warfare, is produced by biological toxins or infectious agents like bacteria, viruses, fungi(living organisms) and perhaps lethal or non-lethal etc. who are universally recognized as dead but reproduces by making of biological weapons to kill humans, animals, plants or to devastates entire universe, effects of biological war is similar to nuclear war, it can wipeout an entire community or an entire civilization from the universe, attack by insects over enemies is called entomological warfare, entomological weapon is recognized as biological weapon, biological weapon, chemical weapon and nuclear weapon are different kinds but they are not conventional warfare, the war is for universal devastation, biological weapon uses for strategic advantage over enemy either by threat or deployment, also known as area denial weapon, it can be deployed, stockpiled, or developed by individual, terrorist or a nation state over their enemy but if it uses with no notice over enemy than it recognizes as bioterrorism over the country or group or individual who uses it, use of biological weapon or chemical weapon is the violation of international laws such as; customary international humanitarian law, and international treaties, therefore use of biological weapon in arm conflict is war crime, offensive biological weapons such as; stockpiling, production, and its use over anyone have been outlawed by the convention of biological weapons

in 1972 where 170 countries participated due to its importance and to prevent from any kind of biological warfare, it is more dangerous than nuclear weapon because of its effectiveness, it takes days to be effective after using and as a result immediately it cannot be stooped, living organisms like plague, smallpox, have ability to transmit person to person and over entire population, it can be effective even over friendly forces, it remains a significant concern for the military and civilian population of all nations, biological weapon had been used by Assyrians to poisoned their enemy in 6th century B.C., in 1346 Mongol warriors of the Golden Horde died of plague and their bodies were thrown over the walls of Crimean city Kaffa, resulting in the killing of estimated 25 million Europeans, The British Army used small pox against native Americans during the siege of Fort Pitt in 1763, resulting in the killing of estimated one hundred native Americans in Ohio country in 1764, during the world war 1 imperial German government used anthrax and glanders and became encourage to produce biological weapon because of its advancement through bacteriology and germ theory in 1900, by the Hague convention in 1907 production, development and uses of biological and chemical weapons has been condemned and was showed respect on the laws and customs of the war on land, however the Geneva protocol of 1925, banned the use of asphyxiating, poisonous or other gases, as chemical weapons, as well as the use of bacteriological methods of warfare but it did not actually prohibit the production, development and the stockpiling of bio and chemical weapon, a complete ban were made in the 1930s in the framework of the League of Nations, but there was no success, provision of biological and chemical weapon agenda appeared of the Eighteen-Nation Committee on disarmament in Geneva, called the conference on disarmament in 1968, a year later, the United Nations published an influential report on the problems of chemical and biological warfare, and the question received special attention at the UN General Assembly, UN report concluded that certain chemical and biological weapons cannot be confined in their effects in space and time and might have grave and irreversible consequences for humans and nature and this would apply to both the attacking and the attacked nations, at the end of 1960s, the Biological Weapons and Toxin Convention was signed in 1972 and entered into force in 1975, history of these weapons production did not have good rapport, Britain in world war 2nd made a laboratory for the advancement of biological weapons and weaponized itself though Britain never used but thus it produced agents like anthrax, tularemia, botulism etc. for industrial production, following the UK, Japan and France also started their biological weapon program, biological weapon is an appeal to the terrorist for its easy

production as a common technology, difficult to detect and easy for them to escape, because biological weapons through food, poison, bacteria and through different species has incubation for three to seven days, after that they start to work and in the meantime terrorist's gets enough time to lead, CNN's report on Al-Qaida's biological weapon experiment was dangerous, they reported that the terrorist organization started to produce loose association of cells for cyanide and ricin attack, it has been argued that biological agents can be controlled and can be declared an offensive war by the rational state against any country, but attacking through small pox can be controlled, it can be worldwide affects including users country, however agent like bacteria can be controlled, anthrax can be controlled easily and can be created in a garden shed, biological agents can be used against human such as over civilian and military, bacillus anthracis is very effective because of its various forms such as; it can be started through ordinary influenza like symptoms to a lethal hemorrhagic mediastinitis within three to seven days with a fatality rate approximately 90% or over on untreated patients, bacteria like bacillus anthracis, brucella spp, burkholderia mallei, burkholderia pseudomallei, chlamydomphila psittaci, coxiella burnetii, francisella tularensis, some of the rickettsiaceae, shigella spp., vibrio cholerae, and Yersinia pestis are considered for biological weapons or have been weaponized, viral agents like bunyaviridae (rift valley fever virus), Ebolavirus, many of the flaviviridae (Japanese encephalitis virus), machupo virus, Marburg virus, variola virus, and Yellow fever virus have been weaponized or considered to be biological weapons, Toxins can be used as weapons or have been weaponized including ricin, staphylococcal enterotoxin B, botulinum toxin, saxitoxin, and several mycotoxins. These toxins and the organisms are sometimes referred to as select agents. In the United States, their possession, use, and transfer are regulated by the Centers for Disease Control and Prevention's Select Agent Program, the USA during cold war invented a anti-crop capability that could harm plantation, plant disease like bioherbicides or mycoherbicides had been discovered for the destruction of enemies agriculture and it was one of argument that because of anti-agricultural agents Sino-Soviet conflict did not turn into a general war, disease like wheat blasts and rice blasts had been weaponized in aerial spray tanks and cluster bombs for delivery to enemies watershed in agriculture regions to initiate ephiphytotics, US offensive biological warfare was based on its vast arsenals of plant disease during 1969-70's, during the world war second herbicidal warfare program had been used on Malaya, Vietnam in counterinsurgency operation which had been discovered by the USA and Britain for plant growth regulator, in

1980 Soviet Ministry of Agriculture discovered variants of foot and mouth disease and rinderpest against cow, African swine fever for pigs, and psittacosis to kill chicken. These agents were prepared to spray from tanks attached to airplanes over hundreds of miles, code name ecology, during the Mau Uprising in 1952, the poisonous latex of the African milk bush was used to kill cattle, entomological warfare is another biological warfare used by insects over enemy, Japan used insects as their biological weapons over enemies, plague is this kind of biological agent, it can be used in varieties such as infecting insects with a germ and then dispersing insects over target area, insects then act as vector by biting enemies and thus infection persons, another form is to direct attack against corps, and the another one is to attack on enemies by bees, wasps and so on, these are ways of modern biological warfare, disease like canine distemper on the North American black footed ferret, Caspian seal, and the African wild dogs were outbreak dangerously, canine distemper is dog viral disease can be spread into wildlife population with the results on susceptible species of wild carnivores and this dog disease was cultured and tested in biological weapon laboratories, it was last seen among the wild population of the North American black-footed ferret and the African wild dog population of the Serengeti National Park in Tanzania, as a result other animals of the region were threatened by the spillover infections of canine distemper and rabies from domestic dog populations and one third of the Serengeti's resident lion died because of this viral disease, those viral animal diseases like monkey pox, marburg fever, plagues were spread into animals including human world especially during wartimes emergencies such as breakdown in medical and veterinary support system, civil conflicts etc., during the civil war in Southern Rhodesia(Zimbabwe) viral biological agents like anthrax, rabies were spread among wild animals and domestic animals in that country, in 2000 and 2001 estimated 1000 documented human cases were discovered and 11 of them were dead due to anthrax viral disease, there was very little evidence of bio weaponizations against human in Zimbabwe because of various rival conflicts among communities, but it was not sufficient proof for allegations, the country was always facing lacking of food, lacking sustainability, as a result villagers took risk for food or sale of meat by butchering diseased cattle, and hides, causing human death. The meeting of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxin Weapons and Their Destruction in Geneva, Switzerland held in 2010 to prevent and minimize the consequences of natural outbreaks of dangerous infectious diseases as well as the threat of alleged use of biological weapons against BTWC

state parties(The Bacterial and Toxin Weapons Convention, in March 1975 was the first multilateral disarmament treaty banning an entire category of weapons of mass destruction by the efforts of 22 countries leaders, declaration of the convention is about four pages long, bans the development, production stockpiling, or acquisition of biological agents or toxins of any type or quantity that do not have protective, medical, or other peaceful purposes, or any weapons or means of delivery for such agents or toxins. Under the treaty, all such materiel is to be destroyed within nine months of the treaty's entry into force. The BTWC currently has 163 states parties and 110 signatories), 60 day course of prophylactic antibiotic treatment for individuals had exposed to low doses of anthrax, data is available to local public health officials in real time, most models of anthrax epidemics indicate that more than 80% of an exposed population can receive antibiotic treatment before becoming symptomatic, and thus avoid the moderately high mortality of the disease, because of biological weapons threat in our modern time since the past, biodefence system has been discovered for its analysis and immediate identification of encountered suspect materials, USA's Lawrence Livermore National Laboratory (LLNL), employs a sandwich immunoassay, in which fluorescent dye-labeled antibodies aimed at specific pathogens are attached to silver and gold nanowires. In the Netherlands the company TNO has designed Bioaerosol Single Particle Recognition eEquipment (BiosparQ), a system that would be implemented into the national response plan for bioweapon attacks in the Netherlands, researchers at Ben Gurion University, Israel, are developing a different device called the Biopen, essentially a Lab-in-a-Pen, which can detect known biological agents in under 20 minutes using an adaptation of the ELISA, a similar widely employed immunological technique, that in this case incorporates fiber optics, in 2013 a total of 180 countries had signed the Biological Weapons Conventions as updated and fresh convention, Taiwan is also among the states to sign the treaty, they all promised again by signing that they will not develop or produce, stockpile any kind of germs, agent, nerve gas as biological weapons, however few countries have capability to produce and they keep continue as their countries interest, there are five different types of agents that could be weaponized and used in warfare or for terrorism; such as bacteria which is single-cell organism cause diseases such as anthrax, brucellosis, tularemia, and plague, rickettsiae, microorganisms, that resemble bacteria but differ in that they are intracellular parasites reproduce inside cells, Typhus and Q fever are examples of diseases caused by rickettsia organisms, viruses which is intracellular parasites, that can be weaponized to cause

diseases such as Venezuelan equine encephalitis, fungi, which is pathogens that can be weaponized for use against crops to cause such diseases as rice blast, cereal rust, wheat smut, and potato blight, toxins, which is poisons that can be weaponized after extraction from snakes, insects, spiders, marine organisms, plants, bacteria, fungi, and animals, an example of a toxin is ricin, which is derived from the seed of the castor bean. According to the Centre's for Disease Control and Prevention bioterrorism is an intentional production of viruses, bacteria and other germs that can be used for the destruction of human being intentionally through aerosol spray, in explosive devices, injected into skin (North Korean leader is famous for the use of biological agent through injected into skin, he thus killed his step brother at the airport), bacteria like bacillus anthracis is the most affected germ to be used in a bioterrorism attack causes anthrax which is deadly infection in people and animals, easily found in nature and survives for a long time in environment, it can be released in powders, sprays, water or through food etc. because of its versatile character, in 2011 anthrax spores were sent through the US postal system, 22 people were affected and 5 among them were dead, nobody was able to caught the guilty party, it has been classified by the US Center for Disease Control as Category A agent, posing a significant risk for national security, variola major(smallpox) is another potential germ to be used in a bioterrorism attack, it spreads from person to person but due to the invention of medicine and successful launch of immunization program by the UN, the threat of using smallpox as biological weapon has decreased against human being, it was believed that small pox have been used as a biological weapon against Native Americans and in American Revolutionary War, pneumonic plague is another kind of germ can be used as biological weapon, which develops rapidly and does not respond well to antibiotics, on the other side bubonic plague is not that dangerous because of its treatment through antibiotics, cholera is another germ to be used as biological weapon added to a major water source, vibrio cholera had been weaponized by the United States, Japan, South Africa, Iraq etc. tularemia, especially francisella tularensis can be another biological weapon cases fever, swelling of lymph, glands, pneumonia, fever, cough, vomiting, diarrhoea etc. it can cause infection by entering through breaks in the skin or by breathing into the lungs, Japanese studied about this bacterium and the United States stockpiled it, Dr. Kenneth Alibek a former scientist involved in USSR biological weapons program to develop tularensis agent for the red army against German troops in the battle of Stalingrad during the world war 2nd, according to the Johns Hopkins Center for Public Health Preparedness aerosol dissemination of f.tularensis in populated area

would be acute, without specification, febrile illness after few days of infection, it can be deadly without antibiotic treatment, ebola virus disease is deadly induced by infection first discovered in Congo in 1976 transmitted to human from the animal causing fatality rate estimated 50 percent, it is dangerous to use as biological weapon because of high fatality rate, it was a suspense that the former USSR produced ebola as a biological weapon under a five year plan implemented between 1986 and 1990, however there is no evidence of it being used, marburg haemorrhagic fever comes from marburg virus of the filovirus family, includes the ebola virus, it is a category A virus by the CDC's, former USSR conducted experiment of marburg virus in aerosol form and to transform it into a biological weapon as their strategic weapon against NATO, they preferred to produce marburg virus for q fever because of estimated 90 percent fatality rate, aflatoxin, a group of harmful metabolites produced by strains of fungi for cell or organ death, liver disease, according to the United Nations Special Commission(UNSCOM) Iraq produced and deployed different munitions with aflatoxin during gulf war, there are some others germs like monkeypox (found in Africa, was identified in 1970, it can be weaponized, pneumonia due to monkeypox may cause death) arboviral encephalitides(members of the alphavirus genus, associated with encephalitis, came from horses first, it has high fatality rate, can be occurred from mosquito bite, it can spread through air) viral hemorrhagic fevers, staphylococcal enterotoxin B, bunya virus, mycotoxins, typhus and many viruses and bacteria can be uses as biological weapons, a biological agents are going to be more dangerous because of the invention of gene editing technology(CRISPR) which helps scientists to easily modifying DNA sequences to alter gene function, it has good and bad side, it helps to correct genetic defects but it has the potential for terrorists organizations or for dictators of the globe, editing of human germline could be harmful which is possible by this technology and might create genetic changes. From the period of 1990-95, the AUM Shinrikyo sect used both biological weapons and chemical weapons on target in Japan, attempted four attacks using anthrax and six using botulinum toxin on various targets including US naval base at Yokosuka, however they were not the master of biological weapons technology and attempts were mostly unsuccessful, Al-Qaeda operated an anthrax laboratory in Afghanistan prior to overrun by the US and Afghan Northern alliance forces in 2001-02, anthrax-laden letters were sent to politicians and prominent individuals in America, few of them were killed and mostly were sent to the hospital while forcing the evacuation of congressional office buildings, the offices of Governor of New York, newspaper offices, and several television network

headquarters etc. a report had been publishing by the FBI saying that, letters were sent by a microbiologist who had worked in the US army, he committed suicide after being named a suspect in the report and investigation, though it was not proved, during the cold war followed by world war 2nd both Russia and the United States and their ally countries were preparing to develop and research on biological weapons, though United States and allies obeyed and complied the law and the rules of the biological weapons convention in 1972 and its treaty in 1975 but Russia and its allies did not comply and produced biological weapons, former Soviet Union developed a program in 1980 to produce smallpox in large quantities stored in refrigerated tanks to using as biological weapon agent, it was easy for them due to the lack of checking by the international committee of biological weapons verification, after the collapse of Soviet Union, then President Boris Yeltsin confirmed that Russia violated the convention law(Biological Convention Law) and declared to terminate their weapons program, The United States and Russia agreed to work together to contain the spread of biological warfare capabilities and find out ways to stop transferring those weapons to rebel or terrorist groups outside the border of the former USSR, civilian jobs were created by the financing of the US for estimated 60,000 scientists who worked for Soviet biological weapons program, according to the book of the historian of University of Western Ontario, Donald Avery, Canadian Government had secret role to develop biological weapons since world war 2nd, Canadian scientists worked with both the British and Americans to develop anthrax for the use of bio-weapon against Germany and Japan, according to the historian, Canada's first biological weapons lab on Grosse Ile near Quebec city closed at the end of the world war 2nd but during the cold war bio-weapons research center was at the Suffield military base in Alberta, Canada was working with Americans for the project called Project 112, testing weapon in Alaska and Alberta and spraying simulated biological weaponry in North American cities, including Winnipeg, however it had been denied by the Canadian Government that Canada was involved to develop, produce biological weapons with British and the Americans, however, Canada by obeying all international convention against biological weapons implements the biological and toxin weapons convention through a series of laws over biosafety, biosecurity, nonproliferation and the control of biological materials, the most important Canadian law for the protection against biological weapon is the Human Pathogens and Toxins Act., run by the Public Health Agency of Canada Centre for biosecurity, Canada is sharing data about Canadian laboratories, research into biological weapons defense conducted by the government

and military, capacity to develop vaccines to the international agency of confidence building measure for her respect and compliance over international treaties, there were various conference held to protect the world and to stop producing biological weapons since the first Biological Weapons Convention(BWC) on 10th April 1972 and its enforcement on 26th March 1975, the second review convention in 1986 agreed that all the states parties were to implement a number of confidential building measures(CBM's), confidential building measures were expanded through the third review conference in 1991, then in 1996 as the fourth conference, then in 2001 as the fifth conference and in 2006 as its sixth conference, seventh conference was in December, 2011 where 103 state parties to the convention were participates, working for peace, rights and well-being, a motto implemented by the UN for the elimination of all biological and chemical weapons, threat of biological weapon is more broader, and reality than nuclear weapon because of its deadly and cheap development, 1 gram toxin can kill 10 million people, purified form of botulinum toxin is estimated 3 million times more potent than Sarin, a chemical nerve germ, a SCUD missile filled with botulinum toxin could affect an area of estimated 3700 square kilometer, an area 16 times greater than could be affected with Sarin, missiles production is expensive and when they fly, become hot, so it has to be fitted with cooling system, on the other side biological agents are killed and easy to produce and use for others, a nation with advanced pharmaceutical and medical industry basically can produce large numbers of biological weapons, conventional weapon explode once and then finished , but with a few particles of Hanta virus many thousands of people could become carriers that infect thousands more people, this is the difference between biological weapon and conventional or nuclear weapon, a seed culture of anthrax bacteria could be grown to mass quantities in around 90-96 hours, and the level of technology needed to do this kind of work is also much lower when compared to Nuclear weapons, techniques are mostly used can be found in text book and journal and available in the courses of college and universities, while nuclear weapons material is not that easy to access. The first recorded use of biological agents is the Romans using dead animals to foul the enemies' water supply. This had the dual effects of decreasing enemy numbers and lowering morale, history of biological weapons production and its use against enemies has various examples worldwide; 1346-1347, Mongols catapult corpses contaminated with plague over the walls into Kaffa (Crimea), forcing besieged genoans to flee causing of the epidemic of plague that swept across medieval Europe killing nearly 25 million, in 1710 Russian troops used plague-infected corpses

against Swedes, 1767 during the French and Indian Wars, the British give blankets used to wrap British smallpox victims to hostile Indian tribes and they killed due to this unknown disease, Canadian aboriginals in earlier years died due to unknown diseases came from British traders, in 1916-1918, German agents used anthrax and the equine disease glanders to infect livestock and feed for export to Allied forces, incidents include the infection of Romanian sheep with anthrax and glanders for export to Russia, Argentinian mules with anthrax for export to Allied troops, and American horses and feed with glanders for export to France, in 1937, Japan begins its offensive biological weapons program though their unit 731, the BW research and development unit, located in Harbin, Manchuria, during developments and experimental programs estimated 10,000 prisoners were killed in Japanese, in 1939, nomonhan incident, Japanese poison in Soviet water supply with intestinal typhoid bacteria at former Mongolian border, it was the first use of biological weapons by Japanese, in 1940, Japanese dropped rice and wheat mixed with plague which carrying fleas over China and Manchuria, in 1942, USA begins its offensive biological weapons program and chooses Camp Detrick, Frederick, Maryland as its research and development site, in 1945 Germany was the tactical user of biological weapons, large reservoir in Bohemia is poisoned with sewage, in 1951, in a test of BW dispersal methods, biological simulants are sprayed over San Francisco, USA, in 1966 United States conducted a vulnerable test to covert biological weapon attack by releasing a harmless biological stimulant into New York city subway system, in 1969, President Richard Nixon of the United States announced unilateral dismantlement of the U.S. offensive BW program and concerned on Soviet biological program as well, in 1970, President Nixon extends the dismantlement efforts to toxins, closing a loophole which might have allowed for their production, in 1978 Bulgarian exile Georgi Markov was stabbed with an umbrella injected with a tiny pellet containing ricin, a highly toxic, natural protein, it was an association by then Soviet Union because of his spying against Soviet, from 1965 to 1991 then President Saddam Hussein of Iraq developed offensive biological weapon ability which included anthrax, botulium, toxin and aflatoxin, as current example, Sergei and Yulia Skripal, father and daughter were found semi-conscious on a public bench near a shopping center in a small English town of Salisbury on Sunday, March 4, 2018 and were transported to a hospital, after investigation by British investigators, it was declared by the British Government that Skripals and Bailey were attacked with novichok, a chemical agent developed by then Soviet Union in the 1970's-80's, After the breakup of the Soviet Union, Vil Mirzayanov, a chemist who helped develop the agent,

said that Soviet laboratories had developed enough of the substance to kill several hundred thousand people, prevention, protection, detection, treatment, and decontamination are few technical methods to prevent such warfare, prevention methods can be through preventive action by the international inspection regime to deter the production and dissimulation of biological agents, protection through protective suits, clothing, gas masks and filters may provide limited protection for short periods of time, but the persistence of biological agents such as anthrax makes such protections mainly useful for military personnel and first responders, Anthrax can remain active and potentially lethal for at least 40 years, anthrax is an exception than other agents because of longer living germ, it can be an establishment and maintenance of a good health care system due to biological threat, vaccination is a form of protection, which may provide substantial protection against naturally occurring agents, though vaccines often provide limited or no protection against genetically engineered variants designed to defeat such vaccines, so protection has limitation of such biological weapon warfare (Ebola in 2014 as the recent incident broke entire West Africa from the epicenter of Congo, showed the world how weak our health care system, how helpless we are and how's are preparation against biological germs, however many countries took steps to improve global health security in order to monitor and respond to disease threats, but there is more work to do for enough protection of human development in health care), dictation against bio weapon is to detect it, and its source, though it takes few hours to days but the advancement of biotechnology will help to reduce time for detection and more reliable, USA and its allied force against Iraq during gulf war were suffered because of the lack of detection, detectors like SMART (Sensitive Membrane Antigen Rapid Test), JBPDS (Joint Biological Point Detection System), BIDS (Biological Integrated Detection System), IBAD (Interim Biological Agent Detector) are available for such modern warfare, treatment options after infection depend on whether or not the infectious agent is identified, If not identified, massive doses of antibiotics may be given in hopes that something may work for the survival, this is why in a biological warfare arena health care system must need to be improved and maintained well, decontamination is another method from the survival of germ weapon, it can be through using chemicals, heat, UV rays etc. it can work against anthrax agents which can live or active estimates forty years, biological and chemical, there are few countries plus Taiwan have had or are currently suspected of having biological weapons programs, they are Canada,

China, Cuba, France, Germany, Iran, Iraq, Israel, Japan, Libya, North Korea, Russia, South Africa, Syria, the United Kingdom, the United States, India, Pakistan, Kazakhstan, Egypt, Sweden, Norway are suspected to have their secret biological programs in today's scenario, though they are all members of the biological and toxin weapons convention, but there is no way to know about the truth, therefore international committees, organizations and world bodies for inquiries are not that influential in reality, there are few terrorist organizations including Al Qaeda network are also believed to have financial resources and political influences, contact to have access biological weapons production, developmental practices and nurtured its culture, it is believed that the sophisticated bioweapons facilities and arsenals is the range of estimated \$10,000 to \$100,000, an amount which could be easily affordable by those terrorist organizations like Hamas, Al-Qaeda, Hezbollah, Hiybul-Mujahidin, Lashkar-E-Taiba and many more global terrorist organizations, countries like Libya, Syria, North Korea, Iran are suspected to have their own state sponsored biological weapons programs even today which endangers the entire world because of their direct or indirect relations or supportive relations with global terrorist organizations for economic reasons, and to spread terror globally, biological weapons cultures, diseased animals, infectious materials can be easily introduced into international cargo transportation networks for shipment to the USA with no risk of identification, it can be easily acts in developing countries due to improper handling containment of production and their storage facilities, deployments of affected agents in transit etc.

Conclusion

Biological weapons, chemical weapons are more dangerous and affective than nuclear or thermonuclear weapons and difficult to identify because of its long time and slowly reactions, it has history from generation to generation to use against animals, crops, human beings, it seems little possibility to prevent such attacks on the animal world, it can be easily used or can be easily spread in the entire world for the destruction of civilization because of available and easier access of technology from the textbooks in school, the United States must strengthen its capacity for early detection of diseased animals, and sources that can be caused for biological germ threats or can be used as weapons, and thus increases the ability and availability of control technologies and containment facilities, collaboration between scientists and policy makers of the country must be built for the building of more developed structures that can protect as much

as possible from the impact of spillover of agricultural bioweapons on ecosystem and nonagricultural system of national economies, these initiatives must be built in every country in the world or more assistance program from the developed countries to developing countries for their protection against bio germs or weapon, world population is growing but the invention of technologies are not inventing much to tackle well of those threat, state sponsored terrorism against enemy country, organized crime by powerful countries, terrorist organizations are the stakeholders for various threats and they have to decide whether they would like peace or not, it is very important to improve mechanism for the integration and intergovernmental cooperation, communication, networking and collaboration to combat and control those bioagents, more medicines, vaccination, purification of water, environmental concern need to increase and discover, public health and system need to be more modernized, importance of food security has

to be prioritized, otherwise containment of biological germs disease will spread, threat of weaponization will increase and developed secretly, result in the erosion of genetic diversity in the animal world, indigenous people and thus the total destruction of human livelihood and the cultural civilization.

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