Chemical and Biological Terrorism

Biological and chemical weapons are often referred to as the "poor man's nuclear weapons" because they are comparatively cheap and easy to manufacture. They are also capable of causing massive casualties. So terrorist groups and others are capable of garnishing this type of weaponry, which has been around for many, many years in various forms.

"The distinction between chemical and biological weapons is that chemical weapons consist of artificially engineered compounds, while biological weapons consist of living microscopic organisms. Biological warfare, of which germ warfare is a specific type, is the older of the two."[1]

Photo by James Tourtellotte

Chemical weapons should not be viewed as less threatening than biological weapons. They are easy to manufacture with common household ingredients and can kill as quickly as an atomic bomb.

Bioterrorism

Instances of biological terrorism "can be found in ancient history, such as the Assyrians' poisoning of wells with the fungus disease rye ergot in the sixth century B.C."[2] Additionally, its use was noted when Roman and Persian warriors placed rotting animals into drinking wells of their opponents.

There is evidence of other uses. British forces infected Native Americans with blankets containing smallpox.[3] Anthrax and other diseases were used by Germany in World War I to poison opposition horses, livestock and feed; and during the years 1932 to 1945 approximately 10,000 Chinese were killed with biological warfare.[4] Japan used several germ agents on China prior to World War II.[5] Countries have even used it in creative ways by giving false claims of a disease outbreak to prevent the enemy from advancing. For example, Poland protected itself from the Nazis by falsely claiming it had a typhus epidemic.[6]

Bioterrrorism has even been used in recent years. In 1984, Oregon experienced salmonella poisoning at several restaurant salad bars from members of a religious group called the Rajneeshee, who unsuccessfully tried to affect the outcome of a local election. Other bio-terror weapons include smallpox, botulism, pneumonic plague and tularemia. Smallpox and the pneumonic plague can be passed from person to person.[7]

This makes biological weaponry especially dangerous because it can be contagious and its effect can be felt for an indefinite period of time. In addition, getting biological agents that are used to make these weapons is as easy as ordering off the Internet or through the mail because they are extensively used in medical research.[8] Botulism and tularemia, however, cannot be transmitted from one person to another.[9]

The use of this type of weaponry is obviously a concern for the United States. We could be under attack and not know it until it was too late. By the 1990s, individuals and terrorist groups were able to access elements that make up biological weapons.

Weapon Comparison

	Nuclear	Biological	Chemical
Procurement	Hard	Relatively Easy	Relatively Easy
Manufacture	Hard	Relatively Easy	Relatively Easy
Storage	Difficult	Difficult	Difficult
Delivery	Hard	Hard and Hazardous	Hard and Hazardous
Group Size	Fair	Few	Few
Lethality	High	High	High
Target Control	Fair	Poor	Poor
Property Damage	High	Low	Low
Cost Effectiveness	So-so to Good	Very Good	Very Good
Detection	High	Low	Low

[Source: Brian Solomon, ed., Chemical and Biological Warfare, The Reference Shelf/Volume 71, Number 3 (New York: The H.W. Wilson Company, 1999) 111.]

Testing/Research/Restrictions

During the Cold War the United States and Russia both did extensive work in creating germ weaponry. It was revealed that Moscow's germ program was much more dangerous than ours. "Painstakingly, the germ-development program at Fort Detrick had tested prospective germ weapons on nearly a thousand American soldiers, in sealed chambers and the wilds of the Utah desert. Reaching beyond the military, it had exposed prisoners at the Ohio State Penitentiary, where volunteers were carefully monitored. Clandestinely, it also sprayed American cities with mild germs to investigate the likely impact of deadly pathogens."[10] Besides germ testing in Utah, the military expanded testing into Okinawa, Panama, the Central Pacific and Alaska.

"In 1969 President Richard Nixon ordered the unilateral dismantling of the United States' offensive bioweapons program after the U.S. military staged more than 200 open-air experiments over a 20-year period above populated areas from Minneapolis to San Francisco to learn how clouds of bacteria would drift and decay in the environment."[11]

After the Soviet Union joined the United States in signing the Biological Weapons Convention in 1972, it began building up its bioweaponry. Ironically, this convention banned the development, stockpiling and acquisition of biological weapons. After the collapse of the Soviet Union, it is believed that this expertise was shared with countries like North Korea, Iraq, Iran and China. Some also believe that terrorists garnished this intelligence from these same scientists.[12]

Much of the early germ work was done on bacterial diseases. Viruses then emerged because they are more deadly and microscopic. In size comparison, "if bacteria were the size of cars and minivans, viruses would be the size of cell phones."[13]

More recent concerns over terrorism and the use of biological weapons were realized shortly after Clinton took office early in 1993. The World Trade Center was attacked with a bomb, killing six and injuring about a thousand. This spurred continued research and development in the area of biological/chemical defense, arguing that much more damage to civilian life would have occurred had the terrorists used these types of weapons. Nobody expected what would happen a little less than a decade later. We need to adjust to changing tactics of terrorists in order to stay on top of the terrorist threat.

The United States seems to have been doing more work in creating germ weapons as opposed to finding solutions in defending against biological weapons. However, more research is being done on both the offensive and defensive side of germ warfare. There is still much uncertainty about the threat of germ weapon attacks against the United States or any other country. However, "the threat of germ weapons is real and rising."[14]

The Department of Defense reported the following nine countries were threats for germ warfare: China, India, Iran, Iraq, Libya, North Korea, Pakistan, Russia and Syria. Approximately 2.4 million American soldiers were inoculated against four strains of anthrax following this report.[15]

In June 2002, the Bush administration decided to stockpile the vaccine for use on American civilians, should there be a possible outbreak instead of just administering it to military personnel.[16]

Five people died from the 2001 anthrax-laden letter attacks.

Anthrax

Anthrax, as a bio-terror weapon, got widespread attention from contamination reports and the many false alarms following the events of Sept. 11. Five people died from the 2001 anthrax-laden letter attacks, and 23 contracted anthrax from these letters, according to the Centers for Disease Control and Prevention (CDC). Only four letters were found containing anthrax all originating from the same Trenton, New Jersey postmark. The letters referred to Sept. 11 and say "Allah is great." There were three people that came down with the illness, two of which died, who were unconnected with the media or postal service. "According to postal records, however, letters headed for their neighborhoods passed through the same sorting machine as those sent to the senators, and at around the same time."[17]

Until the latter-part of the 20th Century, it was not used as a weapon of mass destruction. But is has since been cultivated and stored by terrorist groups and nations for this purpose.[18]

Anthrax is a non-contagious disease caused by a spore-forming organism called Bacillus anthracis. It creates a bacterial infection and is naturally found in the soil around the Mississippi River including parts of rural Texas and Oklahoma.[19] It is a very old disease that is more frequently carried by hooved, grass-eating animals in Asia, South America, Africa, and some areas of Europe. It can be passed to humans who come in contact with these infected animals. This type of exposure is not common in the United States. Humans can catch it when coming in contact with its spores, which is especially deadly if inhaled. However, it can be cured with early intervention through antibiotics.[20]

How to Identify Suspicious Packages and Letters that may Contain Anthrax:

- Threatening message(s)
- Incorrect titles or tiles with no name listed
- Return address is missing
- Misspellings
- Poorly typed or handwritten
- Air mail, special delivery or foreign mail
- Marked personal or confidential
- Too much postage
- Unusual weight
- Envelope is lopsided or oddly shaped
- Lots of tape or string to keep it closed
- Protruding tinfoil or wires
- Discolored, stained or containing odors
- Powdery substance on the outside or feels like it may contain a powder

The three types of antibiotics that have been approved for the treatment of anthrax in humans include Penicillin, Tetracycline and Ciprofloxacin (Cipro).[21] "A May 2002 study said that a treatment involving shots of vaccine plus a 60-day regimen of several antibiotics is more effective than simply taking Cipro."[22]

As a preventive measure, there is a 93 percent effective anthrax vaccine. The vaccine contains no dead or live bacteria; however, there is some controversy about the safety of the vaccine and some are even linking it to the Gulf War Syndrome.[23]

Three types of the disease can be found in humans including intestinal anthrax, inhalation anthrax and cutaneous anthrax depending on the type of exposure.

Intestinal anthrax is caused by the consumption of contaminated meat. It starts with nausea and abdominal pain and progresses to vomiting blood and diarrhea. This form is often fatal because it frequently goes untreated due to the difficulty in recognizing and diagnosing the problem.

Inhalation anthrax begins when a person inhales the spores of the bacterium. It may start as a cold or flu and is followed by breathing problems. If it is allowed to progress further, it is likely to be fatal because it causes mediastinal widening, which can be seen on a chest x-ray. This form of anthrax is generally the most dangerous form.

Cutaneous anthrax is contracted through the skin, usually through some type of abrasion on the skin. It begins with itching, then a lesion that turns into a bump followed by a painless ulcer with a black center. If left untreated, it can cause blood poisoning but is the least dangerous form of anthrax.[24]

If infection is suspected from a package or envelope, the following precautionary steps should be taken right away.[25]

1. Isolate the package.
2. Immediately wash hands and other skin that has been exposed with water only (no soap).
3. If it gets on clothes, change and shower with water only (no soap) and seal the clothes in a plastic bag.
4. Call the proper authorities.
5. Report anyone that may have come in contact with the substance, package or envelope.
6. Immediately follow-up with the family doctor to be tested. If the disease is detected it must be treated with antibiotics. Exposure alone does not indicate that someone will catch the disease.

Iraq's Biochemical Weapons

In light of the recent war with Iraq due to its perceived weapons of mass destruction threat to U.S. safety and security, it is relevant to include some of the research done about Iraq's biochemical arsenal in this study of chemical and biological terrorism.

The biggest question for most people is: "Did Saddam Hussein have weapons of mass destruction, and was he a threat to U.S. Security?"

In Hussein's early days in leadership he was often admired for his work. However, in his quest for power, he seems to have been corrupted and many who had admired him now despised him. ". . . in 1979, just when he may have been poised for election to the party's top position, he seized the party leadership in an abrupt and violent manner — accusing a number of influential party leaders of treason, and then having them publicly executed."[26]

He seemed to glory in himself by having many statues erected of himself, "poems lauding him presented on television, and a nineteen-part biography written about his accomplishments."[27] After tracing his lineage to the daughter of the prophet Muhammad, he "had a 600-page copy of the Koran hand-written in his own donated blood."[28]

In the 1980s, Iraq developed an arsenal with approval from the United States due to the upheaval in Iran, which was seen as a bigger threat to U.S. security at that time. Germany was largely responsible for sharing biochemical weaponry with Iraq. However, the United States released technology and intelligence to Iraq due to the concerns with Iran. With approval from the commerce department, Iraq even ordered germs from the American Type Culture Collection of Maryland, a non-profit supplier of microbes to the world, primarily used for research.[29]

Germs can be obtained and shipped around the world. In fact, Iraq ordered germs from the American Type Culture Collection of Maryland, a non-profit supplier of microbes to the world.

Saddam tried out his new weapons on approximately 1700 Iranians, who were maimed or killed by the weapons.[30] Three years later in 1987 through 1988, Iraq used chemical weapons on its own people in northern Iraq, the Kurds, because they welcomed Iranian occupiers. The chemical cloud consisting of sarin, mustard gas and possibly VX sent by Saddam killed 5,000 and left 65,000 more civilians seriously injured. Many of those that didn't die developed severe lung cancer and skin diseases. Abnormal cancer and birth defect rates were also a result.[31]

Photo by James Tourtellotte
"Advance applied x-ray technology allows CBP officers to see inside entire seaport containers." (cbp.gov)

Following these incidents and the Gulf War, the United Nations stepped in to monitor Hussein's weaponry through a number of inspections. One United Nations inspector, Terrence Taylor, exposed some interesting things about Iraq's policies and programs after returning from inspections. He mentioned that Iraq would only reveal their work on a particular chemical or biological agent after the inspections unveiled evidence of its involvement. "The Iraqi policy seems to be that they tell the world only what we already know," Taylor said.

During many of Taylor's investigations Iraqis would avoid issues that were brought up and would come up with false stories regarding revealed evidence through repeated questioning and investigations. Iraq was working on bacteria, viruses and toxins, some of which could incapacitate and others were lethal. Aflatoxin, which debilitates then kills in a horrible way and clostridium perphlingum, which causes flesh to rot were also found. Work with animal diseases and anti-crop agents were also discovered. Taylor mentioned that the work was far more than declared and that a lot of effort has been put into covering up these things and others. He and others felt they were also keeping back other more serious dangers. Although Baghdad said it had destroyed some of these weapons, it provided no proof of it.[32]

After a meeting in 1995 between Dr. Rod Barton, a United Nations inspector, and four Iraqi generals and scientists, Iraq seemed to more fully cooperate. "In the months that followed, Iraq dropped its denials and grudgingly admitted that it had run an elaborate program to produce germ weapons, eventually confessing that it had made enough deadly microbes to kill all the people on earth several times over."[33] The assumption that Iraq was now cooperating soon faded after visiting a site bombed during the Gulf War. In August 1991, inspectors went to Salman Pak — a site believed to be Iraq's main germ-warfare complex. Iraqis had leveled the site two weeks prior to the inspectors' arrival, and it appeared that many documents had been lit on fire. A chamber for dispersing germs on test subjects large enough to hold a human was also found. Iraq claimed it was used to test the effectiveness of vaccines on dogs, donkeys, monkeys and sheep. With all of this evidence and eventual confession, they denied having any type of delivery system for these weapons.[34]

During these inspections, in addition to its biological weapons (which are harder to detect and easily hidden) Baghdad declared tens of thousands of tons of chemical weapons; however, inspectors later discovered hundreds of thousands of tons of chemical weapons. The U.N. destroyed the weapons they found. In an interview with General Wafiq Al-Sammarrai, an Iraqi defector, he said that Iraq still has biological weapons. According to General Al-Sammarrai, in a presidential meeting, Saddam said regarding the inspections: "We will fool them and we will bribe them, and the matter will be over in a few months."[35] Prior to the recent quest to disarm Iraq, inspectors discovered that equipment previously tagged by inspectors was missing at a missile site. "Moving such equipment violates past U.N. directives . . ."[36] Iraqis also denied inspectors access to some sites and claimed that they destroyed their weapons and paperwork, but documentation of this was never kept so inspectors have a hard time believing that this actually occurred.[37]

There is still much to be discovered about Iraq's involvement in manufacturing and storing this type of weaponry that hopefully will be discovered in time following the recent "disarming" of Iraq and freeing its people from Saddam Hussein's oppressive leadership. There are many that feel the importance of ending Hussein's regime because of his involvement in creating this type of weaponry, which can only be done on a state level. His use against us was of concern, but perhaps more importantly, he may also have placed them in the hands of terrorist groups.[38]

Chemical Weapons

Chemical weapons should not be viewed as less threatening than biological weapons. They are easy to manufacture with common household ingredients to anyone with a chemistry background and can kill as quickly as an atomic bomb. One can't taste or see them; they are colorless and odorless. They are distributed through clouds and aerosols.

Photo by James Tourtellotte

Properly identifying and containing hazardous material is crucial to avoiding harmful effects to humans.

Reactions to chemical weapons include bad headaches, vision disturbances, runny nose, drooling, tightness of the chest, nervous system failure and eventual death. One small drop of some chemicals can cause a one-inch blister on the skin.[39]

The first nerve gas that was developed was called Tabun. Sarin was then developed, which proved to be 10 times more lethal than Tabun. One single drop of Sarin on the skin can kill a person in 10-15 minutes. When inhaled, the vapor can also kill a person within minutes.[40]

Types of Chemical Weapons

Sarin

Sarin is a deadly nerve agent (the most poisonous kind of chemical weapon) that can kill a person through absorption in the skin or through inhalation. Sarin was developed in

the 1930s by the Germans who were looking to develop a more potent pesticide and is believed to be 500 times more toxic than cyanide. A sophisticated lab is required to process Sarin, and the process is complicated and dangerous. It kills by paralyzing the muscles around the lungs, causing an exposed person to suffocate, but can be stopped with the prompt administration of an antidote like atropine. "At room temperature, Sarin takes a liquid form, but it evaporates quickly into a gas. Sarin acts and dissipates more quickly than other nerve agents."[41]

VX

VX, an oil-based nerve agent, is believed to be the most dangerous nerve agent ever developed. A British scientist developed it in the 1950s while he was researching different pesticides. The British government later shared the formula with the United States. When absorbed through the skin, it is 100 times more deadly than Sarin. But if inhaled, it is twice as deadly as Sarin. It disrupts the nervous system so quickly and severely that immediate injection of the right antidote is needed for survival.[42]

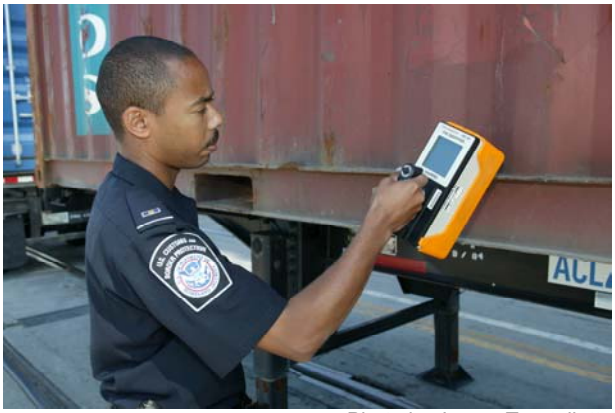

Photo by James Tourtellotte

Containers holding dangerous chemicals can be detected through modern technology.

Mustard Gas

Unlike chemical nerve agents, mustard gas is a blistering agent that attacks the skin and eyes. It is one of the best known and most potent chemical agents, which have been used by several countries in the past. Spain used it against Morocco, Italy against Ethiopia, the Soviet Union against China, Japan against China, Egypt against Yemen, and Iraq against Iran.[43]

Victims can suffer longer lasting debilitations with mustard gas than a nerve agent, but it is less fatal. It also disrupts a cell's DNA, causing cancer and birth defects. It is a gas but takes the form of a liquid at room temperature and can remain toxic for decades, especially in colder climates. In liquid form it attacks the skin and eyes, and when inhaled it can damage the lungs and other organs. Although it has nothing to do with mustard, it gets its name from its color and sometimes its odor. It is less likely to kill larger numbers of people than nerve agents. However, "Dr. Jean Pascal Zanders of the Stockholm International Peace Research Institute says that terrorists might consider using mustard gas to cause economic or social disruption — for example, by contaminating a transportation route — than to try to cause mass casualties."[44]

History of Chemical Weapons

During WWI, the super powers of the day held the monopoly on chemical weapons. The Germans used chemical weapons, which resulted in 5,000 dead and 10,000 injured.

Retaliation followed with more chemical weapons affecting around 79,000 people who choked and burned to death.[45]

After the use of chemical and biological weapons in World War I, the Geneva Protocol of 1925 was established. The document was established after a group of nations got together to discuss the dangers and prohibit the use of chemical weapons. The document outlawed the use of chemical and biological weapons in warfare. However, there were no restrictions placed on the manufacturing and stockpiling of this type of weaponry. This left the way open for countries to use these weapons in retaliation.[46]

With no way of enforcing this policy and with the lack of restrictions placed on manufacturing and stockpiling, a chemical weapons arms race ensued before WWII. Hitler proclaimed chemical weapons were his victory weapons.[47]

Potential targets for bioterrorism and chemical poisonings need to be carefully monitored.

Americans performed poison gas tests on its own troops to test the gasses' effectiveness before considering them for use on the Japanese during WWII. As many as 60,000 naval recruits had to go into gas chambers as many as six times to determine the consequences of their use. Long-term effects of these research studies have shown that many of these recruits had heart and lung disease, lost use of their legs, and had the inability to feel a cut or burn on the skin. Instead of using these poisons, we used the atomic bomb.[48]

During the Cold War, biological and chemical weapons' research was extensive because their use can be more effective than conventional explosives. Nixon renounced the use of any chemical and biological weapons that kill or incapacitate. As a result, the United States began destroying these types of weapons. The development, production, and stockpiling of this weaponry was prohibited and adopted by many countries after this announcement. However, even after some countries signed a 1972 treaty there was evidence that they had these weapons and never stopped producing them.[49]

In 1990, the Soviet Union and the United States headed up a new agreement with more stringent restrictions on the development and stockpiling of chemical weapons that was left out of the Geneva Protocol. The agreement also required the destruction of existing weapons in addition to penalizations for countries that violated the new Chemical Weapons Convention (CWC).

However, many years passed of negotiations before the United States and 65 other nations ratified the agreement in 1997. This new treaty bans the development, production, stockpiling, transfer and use of poison gas. There is still a lot of debate over

the effectiveness of the treaty — its benefits and drawbacks. It is difficult to verify compliance among countries, and it is believed that many countries have evidence that they have violated the treaty, which leaves the United States vulnerable for any compliance.[50]

One may wonder how this applies to terrorists. Can they acquire such weapons and will they use them? This question is best answered by looking at the first recorded use of chemical weapons by terrorists. In early 1995, subway commuters in Japan were poisoned with Sarin, a potent nerve gas that was released by a Japanese cult called Aum Shinrikyo leaving as many as 12 dead and injuring more than 3,500.[51]

In the past, some argued that traditional weapons such as explosives would have the same effect without endangering the attackers, hence, why would an enemy utilize biological or chemical warfare because it is highly dangerous to anyone working with these substances? That question seems ridiculous today in light of the events of Sept. 11 and the deliberate suicide of the terrorists.

Notes:

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3. Anthrax: A Practical Guide for Citizens/What You Should Know, What You Can Do, & How it Came to This (USA: A compilation of public materials intended to serve as a practical citizen's guide by The Parents' Committee for Public Awareness, 2001).
4. "Anthrax."
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Protocol for the Prohibition of the use in war of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare

Opened for signature: 17 June 1925,
entered into force: 8 February 1928

The undersigned Plenipotentiaries, in the name of their respective governments:
Whereas the use in war of asphyxiating, poisonous or other gases, and of all analogous liquids, materials or devices, has been justly condemned by the general opinion of the civilized world; and

Whereas the prohibition of such use has been declared in Treaties to which the majority of Powers of the world are Parties; and

To the end that this prohibition shall be universally accepted as a part of International Law, binding alike the conscience and the practice of nations;

Declare:
That the High Contracting Parties, so far as they are not already Parties to Treaties prohibiting such use, accept this prohibition, agree to extend this prohibition to the use of bacteriological methods of warfare and agree to be bound as between themselves according to the terms of this declaration.

The High Contracting Parties will exert every effort to induce other States to accede to the present Protocol. Such accession will be notified to the Government of the French Republic, and by the latter to all signatories and acceding Powers, and will take effect on the date of the notification by the Government of the French Republic.

The present Protocol, of which the English and French texts are both authentic, shall be ratified as soon as possible. It shall bear to-day's date.

The ratifications of the present Protocol shall be addressed to the Government of the French Republic, which will at once notify the deposit of such ratification to each of the signatory and acceding Powers.

The instruments of ratification of and accession to the present Protocol will remain deposited in the archives of the Government of the French Republic.

The present Protocol will come into force for each signatory Power as from the date of deposit of its ratification, and, from that moment, each Power will be bound as regards other Powers which have already deposited their ratifications.

In witness whereof the Plenipotentiaries have signed the present Protocol.
Done at Geneva in a single copy, the seventeenth day of June, One Thousand Nine Hundred and Twenty-Five.

(Source: The Geneva Protocol as found on www.fas.harvard.edu/~hsp/1925.html)