

Are Biological Weapons Correctly Classified as WMD

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Discrepancies can often be found among definitions used by the scientific and political communities when topics overlap their respective fields. While the role of terminology in science is to rigorously describe things in a repeatable manner, in politics terminology is often manipulated and used to achieve a particular goal. An amusing, more benign, example of this occurred in the 1980's when the United States courts determined that the tomato was a vegetable despite all scientific data classifying it as a fruit. In this particular instance, the effects of the difference in labeling were insignificant. However, there are some cases in which differences in terminology can have wide ranging effects. In the case of weapons classification, the terminology used can greatly influence geopolitical situations, international policy, and national security issues.

There are three categories of weapons that fall under the designation "Weapons of Mass Destruction" (WMD): nuclear, chemical, and biological. Nuclear warheads are truly WMD's. Even the earliest versions were capable of killing tens of thousands of people and destroying large amounts of infrastructure in a single strike. The 1945 bombing of the Japanese city of Nagasaki leveled 6.7 million square meters of surface, damaged or destroyed roughly 18,000 homes, killed roughly 74,000, and injured approximately 75,000 more. Modern nuclear weapons have a greatly increased capability for massive death and destruction.

The classification of biological agents as WMD's is not as easily defined. In 1970, President Richard Nixon signed a biological weapons treaty with the Soviet Union that banned bio-weapon research in both countries, having determined that the use of any biological agent in warfare was anathema to all nations and their citizens. Despite this treaty, several biological and chemical attacks have occurred, mostly by terrorist groups or religious extremists. At the forefront of most Americans' minds are the Anthrax

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Letters of October 2001 that infected 23 people and killed five. In February 2004, the White House and Senate have received mail laced with the toxin ricin ([Intel Report](#)). These attacks resulted in no illnesses or deaths. The most successful terrorist attack using either biological or chemical weapons was executed by the Aum Shinrikyo cult in Japan when sarin nerve gas, a chemical weapon, was released in the Tokyo subway resulting in 12 deaths and 5000 related cases of illness ([Terrorist Incident](#)). These examples are certainly harmful attacks, but they are hardly comparable to the destruction caused by nuclear weapons.

As stated, the Bio/Chem attacks described here were carried out by terrorist groups or individuals with limited resources and likely without the backing of a nation state. The United States, Japan, South Africa, and the Soviet Union all had full-scale Bio/Chem weapons programs. With state sponsorship, is it possible to produce far more complex and deadly agents. The question of whether state sponsored bio-weapons programs (or terrorist groups being supported by a nation state) could produce a weapon capable of inflicting the loss of life and national disruption at the same levels as nuclear weapons must also be examined.

In order to make this determination, we must examine the properties a biological weapon must possess to maximize its efficacy:

1. Highly infectious and communicable
2. Air-borne
3. Resistant to treatment and vaccination
4. Deadly, but only after an period in which the victim is infectious and healthy
5. Simulating symptoms of the common cold
6. Stable in the environment
7. Deliverable to a large group of individuals at multiple locations

Most of these properties are self-explanatory, but one may wonder about numbers 4 and 5 on the list. If a disease causes illness and death within a very short time, it is likely that the infection will burn itself out by killing infected individuals before they have a chance to infect others. This phenomenon is commonly seen in outbreaks of Ebola Hemorrhagic Fever. A disease that simulates the common cold will likely go unnoticed for an extended period of time, allowing for the proliferation of the disease. By the time the health community notices the strain on the health-care system resulting from infected individuals, it will be too late for quarantine measures to be effective. Infected individuals with exotic symptoms (those associated with hemorrhagic fevers, for example) immediately alert the public health sector to the possibility of a bio-attack, triggering a massive response.

A biological agent that possessed all of the above characteristics could be considered a weapon of mass destruction, but, thankfully, such an agent is not presently known to exist. Infectious agents that are currently dealt with as bio-weapons contain some of these characteristics and can be engineered to contain others. One example is the bacteria *Bacillus anthracis*. It is air-borne, deadly, simulates the common cold in its initial

stages, is stable in the environment in spore form, and can be delivered to a large group of individuals over a wide geographic range. The infection cannot be spread from person to person, and a vaccine does exist to prevent infection. Modern treatment with antibiotics and post-infection vaccination has been shown to lower the death rate from a previous estimation of 90% to 22%.

These natural attributes can be augmented through modern biological techniques. Of specific concern is the reported ability of an engineered strain of *Bacillus anthracis*, created by AP Pomerantsev, to overcome the immunity provided by vaccination. In addition, the insertion of genes that confer resistance to antibiotics is exceedingly simple. Engineering of the type conducted by Pomerantsev and insertion of resistance genes could be conducted in an advanced research laboratory under specific safety conditions.

A strain of *Bacillus anthracis* engineered as described would be more deadly than a non-engineered strain, but death from an attack would still be limited to individuals who were directly exposed at a site of release. The results of such an attack would therefore cover a discrete physical area and populace, comparable in essence to the limited scope of a conventional explosive attack, with the difference being a delay in death and an extended period of public concern or panic. A variety of similar scenarios can be examined by considering the characteristics of a particular disease agent and the possibilities for genetic engineering of that agent. Some diseases are inherently more deadly than others, and some genetic modifications are more difficult to successfully carry out than others. The result is that without the confluence of all the traits listed above, the biological weapons that we are familiar with today are not truly WMD's.

This begs the question: if biological weapons are not WMD's, why do governments consider them as such? The answer is that the label fulfills the political and sociological goal of instilling a widespread aversion to a particular class of weapons, regardless of the actual threat posed by any member of the category whether engineered or not. One result is the discouraging of poor nations from pursuing biological weapons research for fear of being shunned by the international community. Another is using such research by a hostile nation as a reason for rallying domestic and international support for isolation, sanction, or invasion. Classifying nuclear, biological, and chemical weapons together can also serve a very practical purpose in protecting a nation's military through a complex system of deterrence. By equating biological and chemical weapons with nuclear weapons, nations that are nuclear powers have established a justification for utilizing their nuclear arsenal to retaliate against a Bio/Chem attack. During the Gulf War, the implicit threat by the United States to use the overwhelmingly destructive power of its nuclear arsenal in response to biological attacks by Iraqi soldiers is widely credited for preventing such an attack. The deaths that would have resulted from these attacks are not comparable, but there was no general outcry to such retaliatory threats at the time or to this day.

It is clear that biological weapons should not be considered WMD's in the same category as nuclear weapons by the scientific community and by weapons experts. Such a classification for the international community and the general populace does, however,

serve the admirable goal of removing a category of weapons from consideration by most governments. However, one should consider the question: which is more humane, to kill, maim, or injure a soldier with standard munitions or to make them sick and disabled for a period of time, tying up an opponent's infrastructure and military capabilities after which they would be able return home to families and help rebuild following a conflict? A wide variety of infections can bring about temporary disability (consider the practical outcome of soldiers infected with a severe diarrheal illnesses such as typhoid fever) making it apparent that Bio/Chem weapons could be used in such a fashion. Such planning was considered to be a major focus of the Soviet program, which actually had a variety of illnesses to deliver to specific military opposition based on the units' specific function and location on the battlefield.

Regardless of the morality, however, it seems that the security interests of the nuclear powers are currently better served by deterrence based on nuclear response, rather than the speculative goodwill to be found in limited casualty through the use of non-deadly illnesses. In addition to being a military deterrent, the current incongruence in definition provides a powerful diplomatic tool in the realm of international relations, and this classification scheme should be maintained.

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