



# Audit of the Conventional Wisdom

## All Weapons of Mass Destruction Are Not Equal

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In the United States, weapons of mass destruction have become the *bête noir* of the 21<sup>st</sup> century. They are now the justification for pre-emptive war, for an expansion of the cold war nuclear arsenal, and for the spending of billions of dollars on offensive and defensive measures. Since significant portions of U.S. foreign and domestic policy are based on this categorization, it is high time to reflect on whether these weapons pose such a lethal threat.

There is some truth to the U.S. concern about weapons of mass destruction (WMDs). The September 11, 2001 attacks showed that terrorists have become intent on causing as much death and destruction as possible. There are numerous reports that Al Qaeda has sought to acquire WMDs.<sup>1</sup> Terrorists are not the only ones interested in such weapons: currently there are eight states with nuclear weapons, sixteen with chemical weapons programs, and five to twelve with biological weapons programs.<sup>2</sup>

Partly in response, the United States has based recent nuclear weapons targeting policy on the concept of a broadly conceived WMD threat, equating nuclear weapons with biological and chemical ones. Moreover, the United States is still involved in a war in Iraq that it waged in large part because of the WMD threat. The United States spends \$7 billion on biodefense but less than \$2 billion preventing a nuclear attack. These developments beg the question: are biological and chemical weapons really as threatening to the United States as nuclear weapons?

The first step in trying to answer this question is to determine how the concept of weapons of mass destruction is used, what these weapons can actually do, and whether we can protect ourselves against them. Then it will be clearer whether these weapons really occupy the same category. The new perspective we gain on the concept of weapons of mass destruction will help us grasp the implications for foreign and domestic policies.

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*continued on page 2*

ar weapons, materials, and expertise, a more difficult task. In contrast, it is possible to mount defenses against chemical and biological weapons. Detection of attack, use of protective clothing, and administration of antidotes, vaccines, and other treatment can greatly reduce casualties.

The question remains, are these all weapons of *mass destruction*? If we accept that nuclear weapons truly cause mass destruction and death, and we calibrate mass destruction against the hundred-thousand-odd fatalities that nuclear weapons can cause, are chemical and biological weapons commensurate? Clearly, chemical weapons are not in the same category as nuclear weapons. At most, an attack carried out under ideal climatic conditions would result in a few thousands of deaths.<sup>14</sup>

Some experts consider biological and nuclear weapons to be the “true” weapons of mass destruction.<sup>15</sup> The higher end of the lethality range of biological weapons is certainly in the realm of the threat posed by nuclear weapons, but the range itself is troubling. If a nuclear weapon goes off in a densely populated area, it will kill tens of thousands of people. It is not possible to make the same assertion for biological weapons. The extremely uncertain estimates of deaths from bioweapons rely on simulations that use limited datasets. For instance, one significant source of uncertainty is the lethality of the agent such as anthrax and modified (genetically or antibiotic-resistant) agents. These simulations describe worst-case scenarios and do not consider the ameliorating effects of defenses such as a good public health system. A bioweapon attack on the heart of a poor, overcrowded, third world city may indeed result in the high death rates suggested in some models. But is the United States as vulnerable? Hardly. It has an extensive public health system and has invested in biological weapons defenses. At this time, there is simply not enough data to suggest that biological weapons should occupy the same policy category as nuclear weapons.

### National Policy Implications

What are the political and economic implications of equating biological and chemical weapons with nuclear ones? Americans are living in a state of fear of attack by WMD. The United States is now targeting non-nuclear weapons states with nuclear weapons and in the process is increasing the value of nuclear, chemical, and biological weapons. Moreover, the United States is spending far more money on biodefense measures than for nuclear defense.

News reports and politicians try to convince the public of the threat posed by WMD. Consider this statement from President Bush: “Those attacks [of September, 11, 2001] also raised the prospect of even worse dangers, of terrorists armed with chemical, biological, radiological and nuclear weapons. The possibility of

secret and sudden attack with weapons of mass destruction is the greatest threat before humanity today.”<sup>16</sup> This kind of rhetoric leads the public to believe that an attack is imminent and would be equally destructive, no matter which weapon is used. Statements like this suggest that proliferation of these weapons is on the rise.

The only actual proliferation that has taken place over the last few years is nuclear weapons proliferation by North Korea, Libya (now disarmed), and perhaps Iran. There are no known new instances of biological or chemical weapons proliferation by states. Moreover, warnings of bioweapons attack are out of proportion to the threat.<sup>17</sup> (And indeed few people die each year from terrorist attacks—even during 2001, when 2,988 died in the 9/11 attacks; that same year in the United States, 3,923 died by drowning.)<sup>18</sup> Though a bioweapons attack might be expected to kill up to thousands, it most likely wouldn’t reach the number of traffic deaths per year (40,000-odd).

The fear of bioweapons attack is in itself a problem. The dire warnings communicated by the U.S. Government and the media could lead

to panic and chaos, resulting in more deaths than if a calmer and more rational approach were used. Instead, Americans could be told that in the event of a bioweapons attack they should take precautions similar to those that prevent the transmission of any infectious disease (washing hands frequently, etc.). By doing so, fewer would likely die. More resources to strengthen the public health system would also boost confidence, trust, and protection.

One of the main U.S. foreign policy tools that relies heavily on the concept of WMD is the 2002 Nuclear Posture Review. In establishing the size of the nuclear force for the United States, it claims

the emergence of a new, hostile military coalition against the United States or its allies in which one or more members possesses WMD and the means of delivery is a potential contingency that could have major consequences for U.S. defense planning, including plans for nuclear forces . . . North Korea, Iraq, Iran, Syria, and Libya are among the countries that could be involved in immediate, potential, or unexpected contingencies. (p.16)

The 2002 National Strategy to Combat Weapons of Mass Destruction makes this policy more explicit, stating: “The United States will continue to make clear that it reserves the right to respond with overwhelming force—including through resort to all of our options—to the use of WMD against the United States, our forces abroad, and friends and allies.” The

*“Domestic defense against a biological weapons attack should not be receiving more than three times the funding as nuclear weapons defense strategies.”*

# A B I L I T Y of the Conventional Wisdom

## Weapons of Mass Destruction

The term weapons of mass destruction was first used on December 28, 1937, in a London *Times* article on the aerial bombing of Spanish cities by the Germans, noting, “Who can think without horror of what another widespread war would mean, waged as it would be with all the new weapons of mass destruction?” The United Nations has used this term since 1947, defining it as “atomic explosive weapons, radioactive material weapons, lethal chemical and biological weapons, and any weapons developed in the future which have characteristics comparable in destructive effect to those of the atomic bomb or other weapons mentioned above.”<sup>3</sup> The Bush administration defines WMD as nuclear, chemical, and biological weapons,<sup>4</sup> currently the most common understanding of the term.

WMD use must involve mass casualties, especially deaths. In some situations, conventional weapons have created “mass destruction,” such as the fire bombings by Allied troops during the Second World War. Civilians were targeted, and the deaths numbered in the tens of thousands for Dresden and 100,000 for Tokyo. A true WMD would create similar casualties with a single weapon.

Nuclear weapons destroy not only human lives but also infrastructure. We know from the atomic bombs dropped on Hiroshima and Nagasaki the destructive power of these weapons. In Hiroshima, the 15-kiloton bomb killed 140,000 people; in Nagasaki, the 21-kiloton device killed 70,000.<sup>5</sup> Both of these cities were turned into wastelands from the blasts’ shock waves and associated fires. Modern nuclear weapons in the stockpiles of nuclear weapons states (of which there are about 30,000) average more than 100 kilotons yield.

A chemical weapon attack on a city could be expected to produce a maximum of thousands of deaths. During the First World War, “successful” gas attacks would use tons of gas and produce hundreds to thousands of deaths and thousands of injured.<sup>6</sup> An Office of Technology Assessment report suggests 1,000 kilograms of sarin gas aerially dispersed on a city of density 3,000 to 10,000 people per square kilometer would result in 300 to 8,000 deaths, depending on the climatic conditions at the time of the attack.<sup>7</sup> The “success” of a chemical weapons attack depends on the purity of the agent; climatic factors, such as wind, cloud cover, temperature, and precipitation; the physical properties of the chemical, including density, vapor pressure, and boiling point; persistence in the environment; and delivery mechanism.<sup>8</sup> Moreover, the lethality of a chemical weapons attack depends on whether the targets are defended. Gas masks and protective clothing provide full protection against chemical weapons—defenses that do not exist for explosive or incendiary attack.<sup>9</sup>

Biological weapons are more difficult to characterize in terms of lethality. The reason for this is perhaps a good one: A large-scale biological weapons attack using well-dispersed agent has never occurred. The Office of Technology Assessment estimated that depending on climate conditions, 100kg of anthrax could result in 130,000 to 3,000,000 dead in an urban region of 3,000 to 10,000 people per square kilometer.<sup>10</sup>

Actually, a number of studies of biological weapons’ lethality generate an enormous range, from 66 deaths to 88 billion deaths per kilogram of agent used for anthrax.<sup>11</sup> This variance underscores the uncertainty involved in predicting the lethality of these agents as weapons. A National Academy of Science report pointed out that “modeling efforts over the past decade, at least those publicly available, tend to emphasize worst-case scenarios—broad-scale attacks involving millions of human casualties, if not fatalities.”<sup>12</sup>

The ability of a target population to defend itself against the use of nuclear, chemical, or biological weapons varies widely. Against nuclear weapons there is very limited defense possible. The national missile defense program—designed to intercept incoming warheads—may never be able to solve the problem posed by countermeasures, warheads loaded with hundreds of thousands of bomblets containing biological agent or decoys that fool the interceptor.<sup>13</sup> It cannot defend against a nuclear bomb delivered surreptitiously, such as by cargo container ship. Defense against nuclear attack, then, takes the form of preventing the spread of nucle-

United States is suggesting that if attacked with chemical or biological weapons, it may respond with nuclear weapons.

In specifically identifying Iraq, Iran, Syria, and Libya, the United States reversed assurances it made in 1978 and 1995 that it would not attack non-nuclear weapons states with nuclear weapons.<sup>19</sup> This new strategy has spawned more expansive policies, such as that found in the classified appendix to a 2002 National Security Presidential Directive, which allows the use of pre-emptive attacks on nations or terrorists who are “close to acquiring” WMDs and missiles that can transport them.<sup>20</sup> The thinking goes like this: “the United States still needs nuclear weapons to deter a nuclear attack. But it must also...present a threat of nuclear retaliation to deter a biological attack, which could be as deadly, and which might not be deterred by the threat of U.S. conventional retaliation.”<sup>21</sup> But if biological weapons are not nearly as deadly as nuclear weapons, as I argue, then it follows that their use by states might very well be deterred by conventional weapons counterattack.

Instead of inhibiting attacks and proliferation of “weapons of mass destruction,” these policies may encourage them. The U.S. WMD policies and biodefense programs inflate the capabilities of biological and chemical weapons. This exaggeration can translate to encouragement to states and terrorists to try to acquire these weapons. As suggested by the recent behavior of North Korea, Iraq, Iran, and Libya, nuclear weapons appear to be the most desirable weapons to states, but because of the ease of acquisition of biological and chemical weapons, these may be more desirable to non-state actors.

Equating nuclear weapons with biological weapons has important implications for U.S. domestic policy. Funds are being diverted to defend against and respond to future biological weapons attacks from more pressing issues. In a letter to *Science* magazine in 2005, more than 700 scientists expressed their concern about the massive redirection of funding from “projects of high public-health importance to projects of high biodefense but low public health importance.”<sup>22</sup> Grants to work on bioweapons agents increased by 1,500 percent in the 2001-2005 period compared with 1996-2000. Similar increases in national biodefense spending exist. For FY2001, the U.S. government spent \$414 million on civilian biodefense; in FY2005, the budget request was \$7,647.6 million,<sup>23</sup> an increase of 1,850 percent.

A comparison of biodefense spending to nuclear security spending reveals the priorities of the U.S. Government. As suggested earlier, the only defenses available against nuclear weapons attack are preventive: securing nuclear weapons, materials, and personnel around the world that could be used in a nuclear weapons program, and improving border security to detect the entry of a nuclear weapon into the United States. The United States has established a number of programs to this end. In FY2005, the U.S. government spent \$803 million securing nuclear warheads, materials, and expertise in the former Soviet Union.<sup>24</sup> The Department of Energy spent an additional \$549 million in FY2005 to plan to dispose of U.S. weapons

plutonium and uranium declared excess to military needs.<sup>25</sup> In FY2006, the federal government requested \$125 million for radiation portal monitors to protect the country’s borders.<sup>26</sup> Even when all these programs are considered together, the spending on defense against nuclear weapons use in the United States is less than \$2 billion, much less than that spent on biodefense programs.

As the experience of the 1990s shows, nuclear weapons are the ones being proliferated. If they are the true weapons of mass destruction, then current U.S. policies do not make sense. Domestic defense against a biological weapons attack should not be receiving more than three times the funding as nuclear weapons defense strategies. Biological and chemical weapons are not nuclear weapons. In the event of a biological weapons attack, the U.S. may never determine who committed the attack, as it has not in the case of the 2001 anthrax attacks. Foreign policies that promise nuclear retaliation against those who attack with biological and chemical weapons are therefore weak threats. A stronger position to deal with the proliferation of these weapons would be to set policies that devalue nuclear, biological, and chemical weapons, instead of spending billions of dollars defending ourselves against ghosts, and in the process putting these weapons on a pedestal.

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# The Audit of Conventional Wisdom

In this series of essays, MIT's Center for International Studies tours the horizon of conventional wisdoms that animate U.S. foreign policy, and put them to the test of data and history. By subjecting particularly well-accepted ideas to close scrutiny, our aim is to re-engage policy and opinion leaders on topics that are too easily passing such scrutiny. We hope that this will lead to further debate and inquiries, with a result we can all agree on: better foreign policies that lead to a more peaceful and prosperous world. Authors in this series are available to the press and policy community. Contact: Amy Tarr ([atarr@mit.edu](mailto:atarr@mit.edu), 617.253.1965).

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