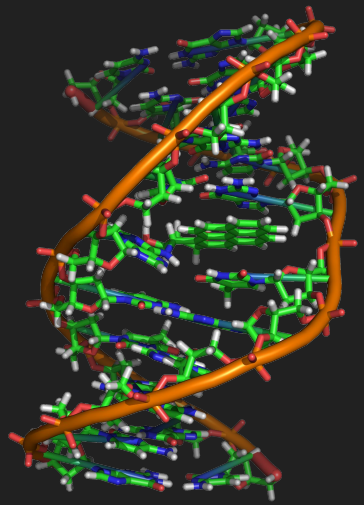
Chemical and Biological Weapons Research



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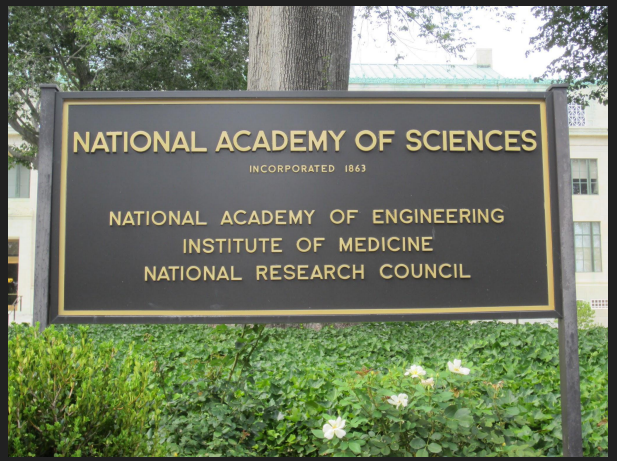
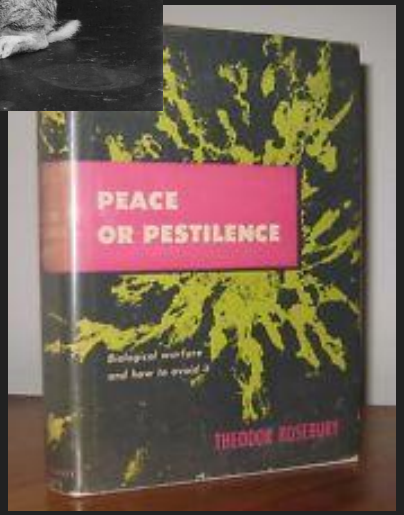
A little history….

- In the US Biological warfare began at the close of WWI (1918). The only agent being used at this time was the toxin ricin, it was adhered to shrapnel and delivered by artillery shell. In the early 1920's the US decided that a biological weapons program would not be profitable.
- As WWII erupted the US still maintained these weapons were overall impractical and had no official program. Other countries like France, Japan and the UK had other views and begun their biological weapons programs. As late as 1942 the US had no biological weapons capabilities. With the escalating conflict in Europe the US Secretary of War, Henry L. Stimson requested the National Academy of Sciences to examine the situation. In February 1942 the NCA recommended that research and the development of a biological weapons program begin ASAP. By November Franklin Roosevelt, under pressure from the British and the NAS, approved an American biological weapons program that was operational by the spring of 1943 at Fort Detrick in Maryland.





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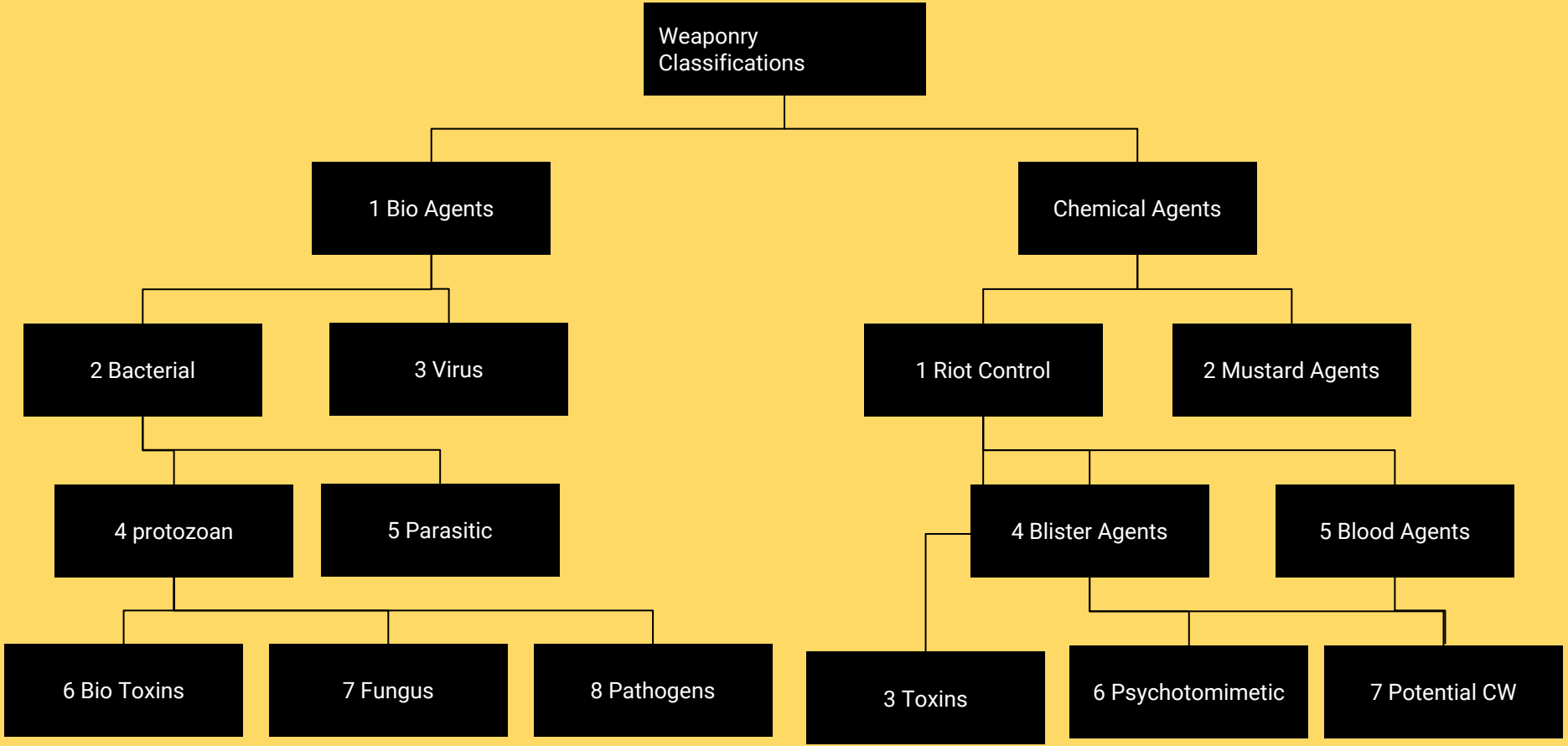
- 3 other agent production plants were established in Indiana, Mississippi and Utah all of which were coordinated and supervised by the new War Research Service (WRS), within the Federal Security Agency.
- After the war the program continued and progressed rapidly, but under heavy controversy and secrecy.
- By the late 1940s many scientists came out against biological weapons. Theodore Rosebury, previously a supervisor at Fort Detrick issued a warning against the development of biological weapons. In 1949 he published his book *Peace or Pestilence?* In which he presented his argument on why biological weapons should be banned by world powers.
- The public remained uninformed of any breakthroughs in biological warfare. Including new agent production plants, the development of the cluster bomb and the ongoing studies on environmental and open-air experiments that were taking place.

Wrapping up the History...

- By the 1960s with the Vietnam War in full swing, wide public awareness was brought to the US biological weapons program. The use of chemicals, riot-control agents and herbicides like Agent Orange sparked international criticism and negativity impacted US public opinion on the development of these weapons. Also, highly controversial human and open air experiments were discovered.
- The Nixon Administration felt an urgent need to respond to the growing negative perception of the US biological weapons program. He announced the unilateral renouncement of the program in 1969. Ultimately, in 1972 he joined the Soviet Union and over 100 other countries in signing the Biological and Toxin Weapons Convention, an international treaty outlawing biological warfare. The 1925 Geneva Protocol which had provisions that would have banned bacteriological warfare was finally ratified by the US in 1975.

"The United States shall renounce the use of lethal biological agents and weapons, and all other methods of biological warfare. The United States will confine its biological research to defensive measures such as immunization and safety measures."

~Richard Nixon Nov. 25, 1969


Weaponry Classifications
1 Bio Agents
Chemical Agents
2 Bacterial
3 Virus
1 Riot Control
2 Mustard Agents
4 protozoan
5 Parasitic
4 Blister Agents
5 Blood Agents
6 Bio Toxins
7 Fungus
8 Pathogens
3 Toxins
6 Psychotomimetic
7 Potential CW

Cost Effective $$$

- U.S. Bioweapon & Chemical program ended in 1973. Total budget was ***300 Million*** Which would be around 966 million today
- According to the Congressional Budget Office, it will cost ***350 billion*** to maintain the nuclear arsenal from 2014 to 2023. ***35 billion*** average in that time span. (*Not including sub costs or production costs*)

So Cheap It's Falling In the Wrong Hands

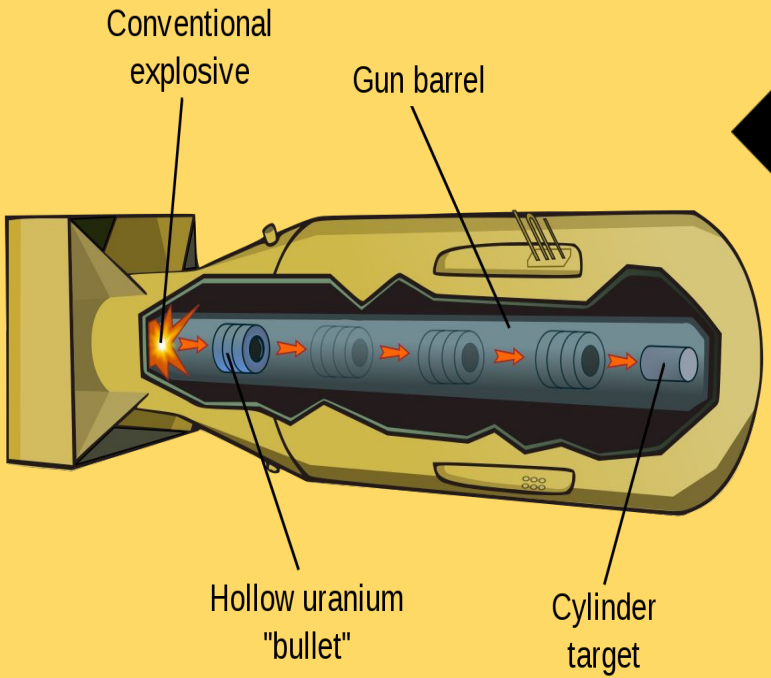
Several treaties have been Signed; The last being in april 1997 to ban and destroy chemical stockpiles of the world's major powers.

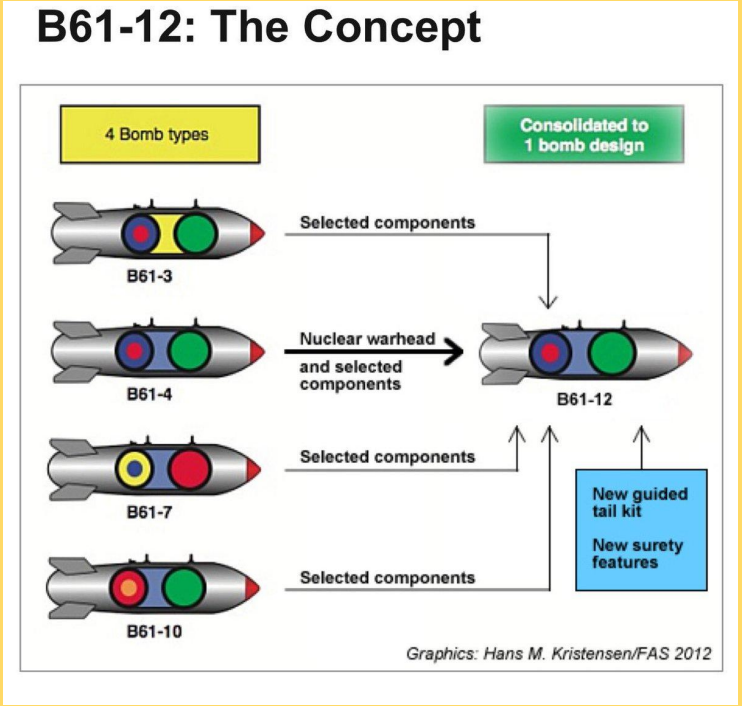
But that has not stopped these weapons from being produced, and now they have fallen in the hands of terrorist organizations.

It Does The Damage, Where The Damage is Needed

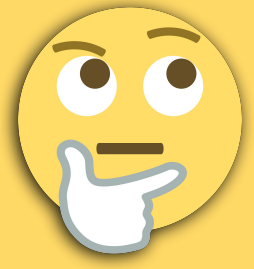
- Of course, the overall objective of chemical and biological weaponry is to effectively target a large population of people or land. With the advancement of chemical research specifically, we are able to produce nuclear bombs that can be helpful in the cases where we are attacked or if we need to take action on a certain country that is posing a threat. Currently North Korea tested a bomb which is recorded as the most powerful nuclear bomb yet which registered a 6.3 - magnitude earthquake according to the U.S Geological Survey.
- *WOULD YOU RATHER HAVE THEM HAVE IT OR US?*
- With the advancement of biological weapons research we have been able to produce weapons that can kill millions of people with just a single gram of a certain toxin.

You thought this was BADA**??😂





In case you were curious…



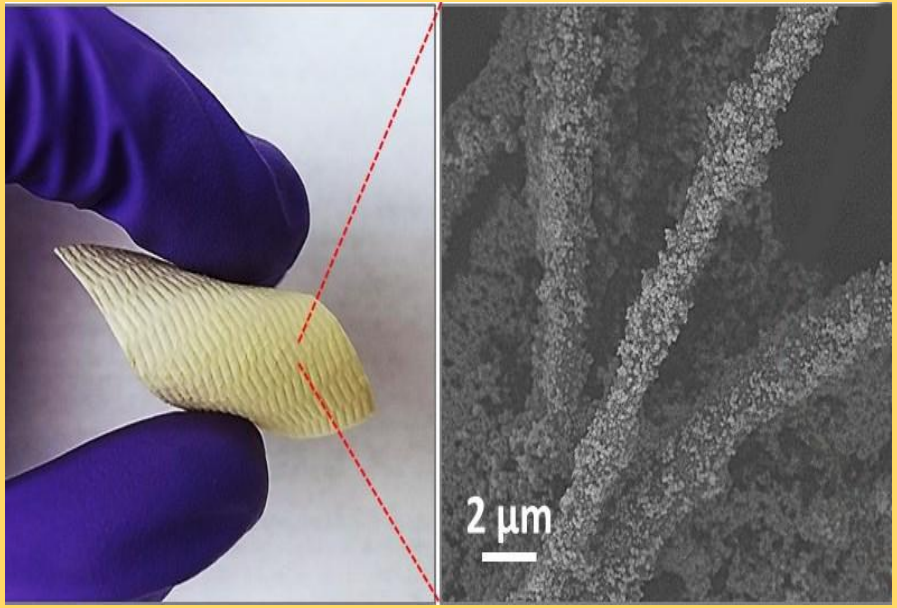
- Although the United States gave up its biological weapons program in 1969 and was asked to destroy all of its BW agents between 1971 and 1973… the United States currently conducts research as part of its biodefense program.
- Allegations: “According to a compliance report published by the Russian government in August of 2010, the United States is undertaking research on smallpox which is prohibited by the World Health Organization.”
- Russia also accused the United states of undertaking “BW research in order to improve defenses against bioterror attacks which is questionable from the standpoint of Article 1 of the BTWC” (The Biological Weapons Convention).
- The United States has destroyed all of weapons from category 2 and 3 and is said to destroy all weapons from category 1 in 2023.

Is victory worth innocent lives?

- “On the average, half of the deaths caused by war happened to civilians, only some of whom were killed by famine associated with war...” - William Eckhardt, a lawyer involved in prosecuting those responsible for the My Lai Massacre during the Vietnam War, speaking about civilian war deaths in 1989.
- Recent Syrian chemical attack (August 21st, 2013): Syrian government sanctioned attack on a rebel-held city.
- U.S. Intelligence estimated 1429 civilian deaths, including 426 children.
- How could this kind of catastrophe be prevented in the future?

Possibility of saving innocent lives: a vest?

- Scientists have found a process to bond a lightweight coating onto fabrics capable of neutralizing toxins that attack through the skin (such as sarin, the agent believed to be used in the 2013 Syria attacks).
- This is possible through zirconium-based metal-organic framework powders (MOF), which are tiny porous structures with large surface areas that are capable of absorbing large amounts of gases and other substances, which the zirconium then destroys.
- These are grown onto fabrics (in this case, the same fabric used for reusable shopping bags) by exposing the fabric to the MOF, a solvent and two binding agents, and spreading it evenly across the fabric with other elements.
- When tested against a chemical with a similar reactivity to sarin, the MOF-treated cloths deactivated it in less than 5 minutes.
- Possible applications include using it on the vests of soldiers and emergency personnel, as well as civilians.



In Conclusion…

Although our group does not wish for innocent lives to be taken nor do we wish to destroy land or nature, we do support the idea of the advancement of biological and chemical research because we believe it is always a smart idea to be ahead of the game with weaponry that can protect you or your nation.