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[2.2] 1945-1970: CW DEVELOPMENT IN THE WEST

* After the war, a large proportion of the chemical weapons stockpiled during the war were loaded onto old ships, taken out to the deep sea, and scuttled. The disposal of such large quantities of chemical weapons was widely publicized.

The Cold War was beginning, however, and secret research and development into the new nerve gases became a high priority on both sides of the Iron Curtain. The nerve gases became generally known by their German code designations: "GA" for tabun, "GB" for sarin, and "GD" for soman, with the "G" handily providing a reminder of their German origin. The Americans, British, and Canadians formed a three-member alliance called the "Tripartite Agreement" to investigate and develop techniques of warfare with the new "G agents". The Australians joined this alliance in 1965.

The British performed a series of experiments, mostly focusing on GB / sarin, through the late 1940s and into the 1950s. They never went into full production of nerve gases, though they did construct an experimental pilot plant. The British had historical reasons for disliking gas weapons, and besides, the war had exhausted Britain's financial resources.

The Americans had no such obstacles. Although there had been a major drawdown of the US military just after World War II, within a few years the Soviet threat led to another buildup. Intelligence that the Soviets had picked up German nerve gas technology and manufacturing facilities led the US to ramp up production of chemical agents again, focusing on GB / sarin.

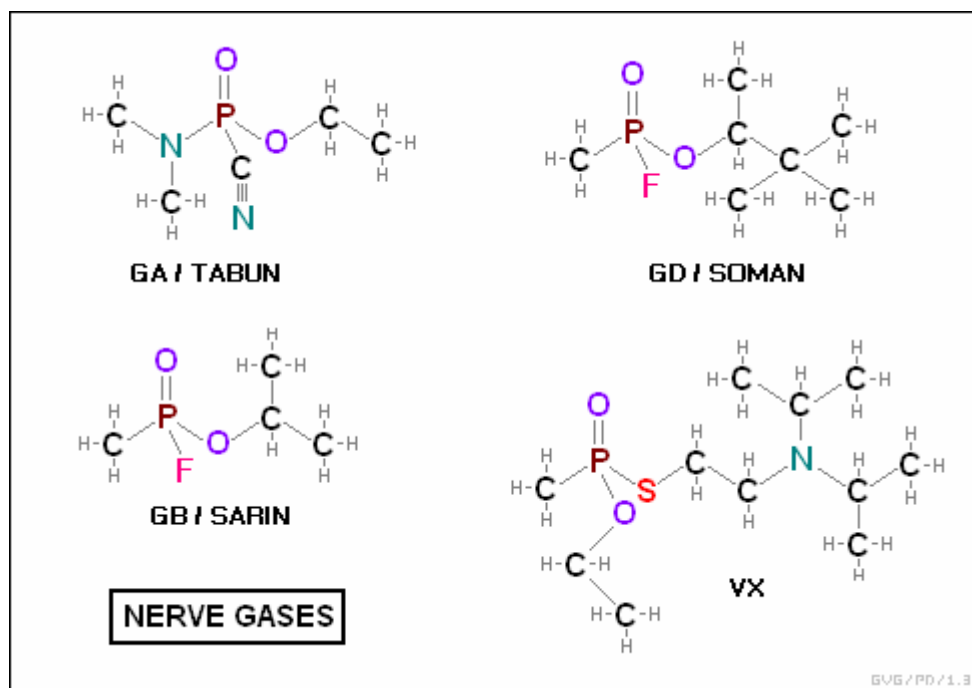
In 1953, the US Army "Chemical Corps", as the CWS had been renamed, built a plant in Alabama to manufacture the proper chemical precursor, and then completed production at the Rocky Mountain Arsenal. The Dugway Proving Ground in Utah, which had been shut down after the war, was reopened in 1950 and expanded for renewed chemical and biological weapon tests.

* By the early 1960s, the US had a huge arsenal of chemical weapons, and in fact had begun production of a new poison gas. In 1952, in an odd echo of Schrader's discovery of tabun, Dr. Ranajit Ghosh of Britain's Imperial Chemical Industries discovered a new and deadly nerve agent while performing research into pesticides. The chemical was too dangerous to use as a pesticide, so Dr. Ghosh passed it on to the British government.

The British had already committed to pilot production of GA / tabun and GB / sarin and did not need a new agent, so they passed it on to the Americans. As mentioned, the British never went into full production of nerve gases, and finally renounced use of offensive CW in 1956.

The Americans developed the formula into a weapon, designated "VX". The older G agents were volatile and tended to evaporate rapidly. They were not persistent. VX, in contrast, had the viscosity of motor oil, and like mustard gas would puddle up on the ground after an attack and stay there. VX was persistent and much more toxic than GB / sarin. The US opened a plant in Newport, Indiana, to produce VX in volume. By 1967, the Americans had thousands of tonnes of VX. A range of other "V agents" were developed, with the "V" providing a handy reminder of their viscous nature, but VX was the most popular and prominent.

Other work was performed on delivery systems, including artillery shells, the M-23 gas landmine, the M-55 unguided gas rocket, and the Mark 116 "Weteye" air-dropped gas bomb. Defensive systems were not ignored, either, with development of new gas masks, protective clothing, decontamination systems and kits, and primitive detection systems. A nerve gas antidote, known as "atropine", was also evaluated, and atropine hypodermic auto-injector kits were produced in quantity. Atropine is an anti-spasmodic drug that is incidentally used by optometrists to dilate the pupils of patients for inspection of their eyes, and is a derivative of the natural toxin belladonna obtained from the nightshade plant.



* The Americans also investigated gases based on hallucinogens. In 1943, a researcher named Dr. Albert Hoffman at the Sandoz drug firm in Switzerland was investigating drugs derived from ergot, a fungus that infects wheat, when he spontaneously went into wild hallucinations. Dr. Hoffman had accidentally discovered the hallucinogenic drug "LSD".

In the postwar period, the Chemical Corps wondered if hallucinogens might make effective "humane" weapons that would not kill enemy soldiers, simply eliminate their will to fight -- or, as it might have been put in the somewhat later era when hallucinogens became recreational drugs, persuade them to "make love not war". During the mid-1950s, experiments were conducted on volunteers, as well as unwitting patients in psychiatric institutions, with mind-altering drugs.

The results of these tests were encouraging, but LSD itself was not appropriate for military use. It was much too expensive to synthesize in volume, and was not a very good aerosol. The Army finally found a substance named "BZ" that was cheap and could be dispersed in clouds over the battlefield. BZ, nicknamed "Agent Buzz" for obvious reasons, was also chemically related to belladonna. It made its victims somewhat ill, causing them to vomit or stagger around. They might later suffer memory lapses and hallucinations. During one test, according to a story, a soldier under the influence of BZ offered a second soldier who was just as intoxicated an

imaginary cigarette. The second soldier turned him down, saying it was the last in the pack. Effects could persist for up to two weeks.

BZ was produced in pilot quantities, but then the Army had second thoughts. It was too toxic, and an enemy soldier on hallucinogens was just as likely to do suicidally crazy and dangerous things as become happy and agreeable, and the Army didn't want to use such an unpredictable agent. BZ was discarded.

The concept of BZ poses an obvious question: why didn't the Army develop a nonlethal agent that simply put enemy soldiers to sleep? In fact, the idea of "knockout" gases has been around a long time, but it's not as easy as it sounds. A gas could be made of opiates or some class of tranquilizer, but there would be no way to administer such a gas in a controlled fashion, leading to overdoses and fatalities, particularly with small children and people in weak health. Exactly what work was done by the US Army on knockout gases is unclear. What is apparent is that the Army never obtained them in any quantity.

Incidentally, the Soviets did deploy knockout gases, a fact that came to light in 2002. On 23 October of that year, a band of Chechen terrorists seized a Moscow theater and took over 800 people hostage. On 26 October Russian security forces, believing that the terrorists were about to start killing the hostages, pumped knockout gas into the theater's ventilation system. The security forces were able to regain control of the theater from the terrorists, but at least 115 of the hostages were killed by the gas. Some observers speculated that the gas might have been aerosolized Valium or even BZ, but the Russians were very tight-lipped about the nature of the agent.

* The US military did actually use "less lethal" chemical agents in Vietnam. In World War 2, the British and Americans had cooperated on powerful herbicides in their chemical weapons development programs, and devised spray systems and cluster bombs that could be potentially used with devastating effect against an adversary's croplands.

Such weapons were not used against the Axis, but after the war the British used a herbicide developed by the Americans, known as "245T", during their war against Communist insurgents in Malaya in the late 1940s and the early 1950s. The British sprayed 245T onto areas where they thought insurgents might be growing food or hiding under jungle cover.

In the early 1960s, as the US became more involved in Southeast Asia and jungle warfare, the Americans considered the British experience in Malaya and decided to resurrect it in a big way. In late 1961, three C-123 Provider cargo planes were fitted with tanks and spray gear and sent to South Vietnam to begin OPERATION RANCH HAND, a program intended to deprive the Viet Cong (Vietnamese Communist, or simply VC) guerrillas of jungle cover and food supplies.

The Americans came up with six different herbicides for use in South Vietnam, designated Agents "Green", "Pink", "Purple", "White", "Blue", and "Orange" in accordance with the color code painted on the drums of chemicals. RANCH HAND proved successful and ramped up into a massive chemical warfare operation against plants over much of Southeast Asia. Sprayer units proudly displayed the slogan: ONLY WE CAN PREVENT FORESTS.

The most potent of the herbicides was Agent Orange, which consisted of a mix of 245T and small quantities of dioxin, a substance with some toxicity to humans. Agent Orange was used on

the densest areas of forest, and caused vegetation to grow wildly until it died and rotted. So much herbicide was used in Vietnam that in 1968 there was a shortage of household weedkillers in the United States. The heavy use of Agent Orange was tentatively linked to birth defects in the Vietnamese population, and maladies such as cancers among troops exposed to the chemical. Agent Orange would become a major cause of dispute between the US government and Vietnam veterans after the war.

The Americans also used CS powder in combat. In 1965, the Americans began using CS to flush VC guerrillas out of their hiding holes in the ground, and eventually employed it in large quantities. The Americans were accused of conducting chemical warfare over the use of herbicides and CS, and a legalistic argument followed. The critics conceded that the chemicals used were not in the same league as traditional poison gases, much less with nerve gases, but pointed out that use of such nonlethal toxins was a step that could quickly escalate towards the use of nastier poisons and established a dangerous precedent. In fact, rumors have persisted that the Americans evaluated lethal chemical weapons in combat during the Vietnam war, but no solid evidence has ever been found to back up these claims.

* The controversy over the American use of nonlethal chemical weapons in Vietnam helped keep the fact that the US had large stockpiles of lethal chemical weapons in the international spotlight. The US government found their stockpiles of chemical weapons an embarrassment. World opinion was solidly against chemical weapons and there was no way the Americans could use poison gases, except in retaliation. The US had the nuclear deterrent, making the need for lethal chemical weapons arguable.

There was also a frightening incident that raised public fears. On 13 March 1968, an F-4 Phantom strike aircraft flew a test mission over the Dugway Proving Ground with chemical dispensers containing VX. One of the dispensers wasn't completely emptied during the test, and as the F-4 gained altitude after its bombing run, VX trickled out in a trail behind the aircraft to drift into Skull Valley, north of the proving ground, and settle over a huge flock of sheep. 6,000 sheep were killed, and the incident provoked national attention at a time of high public political unrest and suspicion of the government. In the summer of 1969, a leaky VX munition stored at a US military installation on Okinawa sent 23 servicemen to the hospital. The Japanese government had not even known chemical weapons were being stockpiled on Japanese soil.

In 1970, US President Richard M. Nixon announced a moratorium on the development and production of new chemical weapons, though work on defensive measures continued. This was a step in the right direction, if not an outright ban. The United States also belatedly ratified the 1925 Geneva Protocol in 1975, and the next year began discussions with the USSR on additional measures to limit chemical weapons. However, chemical weapons showed no sign of dying out.