

## THE MANKIND STILL HAS 15 % OF DECLARED CHEMICAL WEAPONS TO BE DESTROYED

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**ABSTRACT**— *More than 2,500 ago in Ancient Greece a lighter mixture of wood, pitch and sulphur were used to incapacitate a beleaguered Athenian force in a city prior to assault. In 1675 (Strasbourg) an Agreement between French and German armies directed that neither side use poisoned bullets. This was the first international agreement in modern history in which use of such weapons was prohibited. In 1899, The Hague Conventions was ratified by 27 states and the signatory states pledged to “abstain” from using projectiles that could spread “asphyxiating or deleterious gases”. Again in 1907, The Hague Convention outlaws chemical weapons. Chemical weapons were cruel instruments of destruction and terror during the World War I (1914 - 1918). After conclusion that chemical weapons killed over 90, 000 soldiers many nations demanded that chemical warfare must never occur. 1925, The Geneva Protocol prohibits the use of biological and chemical weapons in war. The global ban on chemical weapons, or the “Chemical Weapons Convention” became international law in 1997 demanding the world’s stockpile of chemical weapons to be destroyed in the period 1997 - 2007. Nowadays, the mankind still has 15% of declared chemical weapons to be destroyed.*

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Chemical weapons are weapons of the twentieth century, though some chemicals subsequently used as toxic agents were already discovered in the nineteenth century (1). Chemical Weapons are lethal, human-made substances that can be disseminated as gases, liquids or solids. Chemical weapons use the toxic properties of chemical substances rather than their explosive properties, to produce physical or physiological effects on an enemy. Chemical weapons have always had features of weapons of mass destruction and the civilian population could therefore not be excluded from their range of coverage. For this reason they could never be treated as a means of attacking only troops.

Throughout history armies have used toxic chemicals as means of warfare.

Some facts in a chronological order:

**600 BC** Solon, the legislator of the Athenians, contaminated the River Pleisthenes with helleboros to give the defenders of Kirha violent diarrhea which led to their defeat.

**500 BC** Special forces employed a lighter mixture of wood, pitch and sulphur to incapacitate a beleaguered Athenian force in a city prior to assault.

**431-404 BC** The Spartans are reported to have used arsenic smoke during the Peloponnesian War during battle of Plataea (429-427) and Belium (424).

**200 BC** Carthago defeated Maharbal using a poison to incapacitate the enemy.

**187 BC** During the siege of Ambrajia, Inhabitants used toxic smoke to drive off Romans who were sapping the walls.

**82-72 BC** The Romans used toxic smoke against the Charakitanes in Spain causing pulmonary problems and blindness, leading to their defeat in 2 days.

**673 AD** The Byzantine Greeks are reported to have used Greek Fire at the siege of Constantinople. It was said to have been invented by Callinicus and was the forerunner of the flamethrower. This weapon remained in general use in one form or another until well after the year 1500 and was manufactured from a mix of petroleum, pitch, various resins, sulphur and quicklime. Fioravanti of Boronia constructed bombs with a filling of oil distilled from sulphur, asafoetida, turpentine, human feces and blood.

Obviously these early uses of chemical weapons were isolated incidents, often using toxic (or infectious) local materials - arrows and bullets could easily be poisoned to increase their lethal effects.

**1155** Siege of Tortona, Italy. Kaiser Frederik Barbarossa conquered the town after poisoning the water supply and using tar and sulphur.

**1289** At the Siege of Acron 300 catapults were used to destroy the town with “Greek Fire” as a result of which many inhabitants were asphyxiated.

**1456** City of Belgrade defeats invading Turks by igniting rags dipped in poison to create a toxic cloud.

**Mid- 1600** Turpentine and nitric acid were used to make incendiary bombs designed by Leonardo da Vinci, Leibnitz and Johann Rudolf Glauber.

**1672** Bishop of Munster against city of Groningen (arsenicals).

Even in ancient times the use of poisoned weapons in war was condemned, but concrete efforts to prohibit them started much later. The first international agreement condemning the use of poisoned weapons was the French- German agreement drawn up in Strasbourg in 1675.

**1675** Article 57 of Strasbourg Agreement between French and German armies directed that neither side use poisoned bullets. This was the first international agreement in modern history in which use of such weapons was prohibited.

**1670-1680** Inquisitor of Dauphine (France) against Huguenots.

**1701** Charles XII of Sweden used specially manufactured smoke screen (artificial fog) to force the Duma River crossing against the Russians.

**1797** Napoleon attempted to infect the inhabitants of the besieged city of Mantua with swamp fever during his Italian campaign.

**1812** Captain Cochrane RN submitted his plan for CW to be used in the Napoleonic War to a secret committee headed by Duke of York. This committee included Colonel Sir William Congreve, inventor of the Artillery rocket. The committee recommended that the plan should be sealed up and not used, taking the view that - "it was perfectly new that we cannot venture an opinion on it".

**1830** Invention of "obus asphyxiant incendiaire" by the French pharmacist Lefortier, in Sevres. This invention was never applied in practice.

**1845** Massacre of Kabul tribe by General Pilissier in Ouled Ria resulting from his use of "green wood smoke".

**1846** Earl of Dunndonald ( formally Lord Cochrane) submitted a new plan involving among other things, the use of shells containing cacodil and cacodyl oxide mixed with self-igniting liquid. This time the committee, endorsed by Duke of Wellington, suppressed the plan on the grounds that - "it would not accord with the feelings and principles of civilized warfare".

**1855** British War Department investigated the use of shells containing cacodyl and cacodyl oxide mixed with self-igniting liquid for use in Crimean War. Again Lord Dunndonald proposed the use of ships to disperse poison gas based on sulfur and charcoal during the siege of the Russian garrison at Sevastopol. Both Lord Palmerston and Panmure gave support to the plan but in this case it failed on technological grounds ( delivery system) rather than moral ones. ( It is also interesting that similar plans were considered for application during the American civil war but turned down for same reason (2).

**April 24, 1863** The US War Department issues General Order 100, proclaiming, "the use of poison in any manner to poison wells, or foods, or arms, is wholly excluded from modern warfare".

**July 1863** In the American Civil war during General Jonson' retreat from Vicksburg in July, General Sherman's pursuing troops found the water supply poisoned (3).

**1868** Declaration of St.Petesburg. Obligatory upon contacting parties in the event of going to war. Twenty signatories participated , of which the UK, France, and Germany are still adherent.

**1874** Conference of Brussels, held as a result of Russian initiative, reach an agreement prohibiting the use of poisons or poisonous weapons.

**1899** The Hague Gas Declaration. 27 states finally ratified this treaty, including Russia (although no longer bound) and UK which finally signed in 1907. The USA refused to sign. Restriction on the development of such weapons were agreed, at which the signatory states pledged to "abstain" from using projectiles that could spread "asphyxiating or deleterious gases".

**1907** Second Hague International Conference, again convened under Russian initiative. The Hague Convention outlaws chemical weapons, but U.S. does not participate.

This convention also contained a clause prohibiting the use of means that could cause unnecessary suffering. This clause was often invoked when the legality of using toxic chemicals as a form of warfare was discussed. Unfortunately, this agreement did not prevent the signatories to the Convention from using chemical weapons during World War I (1914 -1918).

**August 1914** First use of gas in World War I (October), by French using 26 mm gas grenade containing irritants. This was ineffective in open area and was soon discarded by French as worthless. Germans retaliate with tear gas in artillery shells.

**31 January 1915** First proper use of chemicals shell, against Russians at Bolimov where over 18,000 “ T-shells “ containing Xylyl-bromide were fired on Russian position. Low temperatures negated the effect and the German attack was repulsed with heavily casualties (4).

**March 1915** Germans again used T-shells, this time on Western Front and the French responded with grenades against the Germans (5).

**April 22, 1915** Following a number of experiments in the use of of harassing chemicals and poison gas, German troops launched the first large scale poison gas attack at Ypres, Belgium, using 6,000 cylinders to release 168 tonnes of chlorine gas on both soldiers and civilians. The chlorine floated in a huge cloud toward the Allies until it reached the Allied lines causing men to die from the effects of the chlorine gas. Because of the large amounts of gas released the chlorine caused large amounts of yellowish fluid to form in the lungs of its victim, also causing eye, nose, and throat burning before ultimately causing death by choking. It is known that the total surprise was achieved, but the German High Command failed to provide sufficient reserves to exploit its success in routing 2 French Colonial divisions. Over 5,000 allied troops died in that attack and in a second attack at Ypres two days later, another 500 soldiers died due to the chlorine gas. Both attacks wounded about 15,000 men (6).

**1915** Phosgene was used for the first time in 1915, and it accounted for.

**September 25, 1915** First British chemical weapons attack; chlorine gas is used against Germans at the Battle of Loos.

**July 1917** The Germans used mustard shells for the first time at Ypres, Belgium.

**February 26, 1918** Germans launch the first projectile attack against US troops with Phosgene and Chloropicrin shells. The first major use of gas against American forces.

**June 1918** First US use of gas in warfare.

**Late 1918** Lewisite was produced to be used in World War I, but its production was too late for it to be used in the war.

It is very important to underline that in World War I an average of **100 Kg** of agent was necessary to **kill just one soldier**. Chemical weapons caused 5 percent of the casualties.

After World War I many governments wished to ban chemical weapons because of the horrendous means by which they killed and injured people.

## Tons of Toxic Agents used in World War I

Country	1915	1916	1917	1918	Total
Russia	200	2 ,000	3 ,000	-	5 200
Germany	2150	7 200	16 200	30 500	56050
France	350	3 800	8 200	16 500	28850
Britain	170	1 705	5 365	8 460	15700
USA	-	-	-	1 100	1100
Austria	0	880	3 020	4 900	8800
Italy	0	450	2 800	3 700	6950
<b>Total</b>	<b>2870</b>	<b>16035</b>	<b>38585</b>	<b>65160</b>	<b>122650</b>

## Gas casualties in the World War I

Country	Casualties	Fatalities	% Fatal
Russia	475 340	56 ,000	12
Germany	200 ,000	9 ,000	4.5
France	190 ,000	8 ,000	4.2
Britain	188 706	8 109	4.3
Austria/Hungary	100 ,000	3 ,000	3
USA	72 807	1 462	2
Italy	60 ,000	4 627	7.7
Others	10 ,000	1 ,000	10
<b>Total</b>	<b>1 296 853</b>	<b>91 198</b>	<b>7.0</b>

**1920** Britain uses chemical weapons in Iraq "as an experiment" against Kurdish rebels seeking independence.

**1922- 1927** The Spanish use chemical weapons against the rebels in Spanish Morocco.

Analyzing the above mentioned information it is worth to underline that the old rules against the use of poison and the 1899 Hague prohibition as confirmed at the 1907 Hague Conference, did not succeed in preventing gas warfare during World War I. From mid-1917 on wards, especially, gas played a major role in the hostilities in the European battlefields. The large-scale use of gas during the war was a traumatic experience and, together with other factors, reinforced popular demands for a ban on such methods of warfare. On the other hand chemical weapons had for the first time proved their military value in a major war, at least against unprotected soldiers: this would make it more difficult to reach an international agreement to give up their use.

On initiative of the League of Nations, an international conference to consider the effects of the arms trade was convened in **Geneva, 1925**. The Geneva Protocol prohibits the use of biological and chemical weapons in war.

However, the conference did not achieve its main purpose, but produced as aside result the "Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of all analogous liquids, materials or devices, and Bacteriological Methods of warfare".

This Protocol, unlike the CWC, is a brief text, written a literary yet abrupt tone. It is aimed at incorporating the prohibition into international law as well as imposing this ban on international conscience and practice.

As the Protocol is still valid it is useful to analyze briefly its contents. Its limits are first related to its universality: it was necessary to wait till Paris Conference in 1989 to register 140 States Parties. Also, some difficulties of interpretation and limits come from the lack of a precise definition concerning the types of weapons covered by the Protocol.

But there are three essential problems with the Geneva Protocol:

- The prohibition of use is limited to the period of war, and for certain States Parties , to the war between Parties; the issue of internal use is not covered.
- There is no prohibition of production, distribution, storage as well as their inclusion in military arsenals.
- The prohibition of use was limited to the first use by a large number States Parties, those States reserving the possibility of retaliating in kind.

**1935** Italy begins conquest of Abyssinia (Ethiopia), using mustard gas.

**1936** During studies of possible pesticides, the German chemist Gerhard Schrader discovered what he called “Tabun” or GA.

**1936** Japan invades China, uses Chemical Weapons in war.

**1938** Gerhard Schrader discovered the nerve agent Sarin or GB.

**1939** World War II begins; neither side uses bio-chemical arms, due to fears of retaliation in kind.

**1942** Nazis begin using Zyklon B (Hydrocyanic acid) in gas chambers for the mass murder of concentration camp prisoners.

**December, 1943** A US ship loaded with mustard bombs is attacked by Germans in the port of Bari, Italy; 83 US troops die in poisoned waters.

**April, 1945** Germans manufacture and stockpile large amounts of Tabun and sarin nerve gases but do not use them.

**1953** UK scientists discovered another category of nerve agents, the V-agents.

**1960** UK scientists discovered another category of nerve agents, the V-agents.

**1962** Chemical weapons loaded on U.S. planes during Cuban missile crisis.

**1962-1970** US uses treat gas and four types of defoliant, including Agent Orange, in Vietnam.

The negotiations about the use of herbicides and riot control agents during the Viet Nam War urged the United Nations to create a multilateral convention prohibiting not only the use, but also the possession of chemical weapons. Additional to this was the brave step to establish on field verification regime. The Geneva Protocol had lacked the verification regime, which would provide for the complete elimination of this category of weapons of mass destruction. As a consequence a resolution of the United Nations General Assembly in 1961 established a body for disarmament known as the Eighteen Nations Disarmament Committee (ENDC). Later its name was consequently changed to the Conference of the Committee on Disarmament (CCD), then to the Committee on Disarmament and to the Conference on Disarmament (CD).

The negotiations on chemical and biological weapons disarmament continued. Although the two types of weapon had traditionally been treated as a single issue, by the end of the 1960s it was clear that, although the time was ripe for a comprehensive ban on biological weapons, a similar prohibition on chemical weapons would be a more complex undertaking.

**1963 -1967** Egypt uses chemical weapons (phosgene, mustard) against Yemen.

**1969** Dugway, Utah chemical weapons accident kills 6,000 sheep.

**1971** U.S. ends direct use of herbicides such as Agent Orange; had spread over Indochina forests, and destroyed at least six percent of South Vietnamese cropland.

The Geneva negotiators therefore agreed on a step-by-step approach, which resulted in the conclusion of a treaty on biological disarmament in 1971 by the Conference of the Committee on Disarmament.

**10 April 1972 United Nations General Assembly** - The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxin Weapons and on Their Destruction was opened for signature.

**26 March 1975** The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxin Weapons and on Their Destruction. Although the Convention was fundamental to the progress of disarmament, did not provide conditions for a real verification regime. Negotiations on chemical disarmament continued throughout the 1970s and 1980s.

After concluding the Biological Weapons Convention, the negotiators in Geneva focused on a chemical weapons ban. Various draft conventions were proposed by individual countries, including Japan in 1974 and the United Kingdom in 1976.

**1974 Japan** proposed draft convention on chemical weapons ban.

**1976 United Kingdom** proposed draft convention on chemical weapons ban.

**1980** U.S. intelligence officials allege Soviet chemical use in Afghanistan, while admitting "no confirmation." Congress approves nerve gas facility in Pine Bluff, Arkansas.

In 1980 the Conference on Disarmament began to work seriously on a convention banning chemical weapons. As agreements were reached between 1984 and 1992, all of the agreed elements of the text, as well as the more controversial ones, and indications of the nature of the remaining disagreements, were recorded in a so-called "rolling text". Updated versions of this progressively expanding draft of the Convention were produced twice annually between 1980 and 1986. Although some additions were made during the negotiations, the overall structure of the Convention was retained as initially proposed. The negotiations were related to the structure, the scope, the verification mechanism and the institutions.

**August, 1983** Iraq begins using chemical weapons (mustard gas), Iran-Iraq War.

**1984** First ever use of nerve agent tabun on the battlefield, by Iraq during Iran-Iraq War.

**1984** Bhopal fertilizer plant accident in India kills 2,000; shows risks of chemical plants being damaged in warfare.

**1984** The Reagan administration presents a draft treaty to ban the production and storage of chemical weapons to the Conference on Disarmament in Geneva. The US draft included provisions for a mandatory challenge inspection mechanism, although these were rejected by the Soviet Union and its allies. The means of verifying the Convention was a major issue in the negotiations, and a wide range of routine verification provisions were designed over the years.

**1987** The Soviet Union accepted the principle of short-notice challenge inspections during bilateral negotiations with the United States. After that, the questions related to the challenge inspections and verification within the chemical industry was negotiated until the last moment.

**March, 1988** Iraq uses chemical weapons against Kurdish minority in Halabjah; notably when it killed about 5,000 Kurds.

**23 September 1989** Wyoming Memorandum of Understanding (MOU), which called for a bilateral (USA and Soviet Union) exchange of information and verification inspections for chemical weapons. This agreement, gave a further boost to the negotiations. It also provided an additional comprehensive framework for the United States, and later for Russia, to destroy all chemical weapons in their respective arsenals.

**1989, Paris** The Conference called for a determined effort to finalise the concept of a Convention on the Prohibition of Chemical Weapons. The use of chemical weapons during the Iran-Iraq War in the late 1980s reinforced the perception that a comprehensive international agreement banning chemical weapons was urgently needed.

**1990** In 1990, the United States and the Soviet Union signed a bilateral agreement on the non-production and destruction of chemical weapons.

U.S., Soviets pledge to reduce chemical weapons stockpiles to 20 percent of current U.S. supply by 2002, and to eliminate poison gas weapons when all nations have signed future Geneva treaty. Israel admits possession of chemical weapons; Iraq threatens to use chemical weapons on Israel if it is attacked.

**1991** U.S. and Coalition forces bomb at least 28 alleged bio- chemical production or storage sites in Iraq during Gulf War, including fertilizer and other civilian plants. U.S. troops use explosives to destroy Iraqi chemical weapons storage bunkers after the war.

**1992** Australia developed a proposal for a draft Convention which was the product of intensive bilateral consultations with a number of interested states. This led to a phase of intensive negotiations at ambassadorial level, in which some of the issues were resolved or were brought close to resolution by June 1992. This text formed the basis for the final draft which was presented by the Ad Hoc Committee to the Conference on Disarmament for submission to the UN General Assembly.

**3 September 1992, Geneva** After two decades of negotiations, The Convention on the Prohibition of Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction was accepted by the Conference on Disarmament.

**13 January 1993, Paris** The UN General Assembly adopted the text by consensus through a resolution, and the Chemical Weapons Convention was opened for signature in Paris. It was immediately signed by 130 States within the first two days and it was subsequently deposited with the United Nations Secretary-General in New York.

The idea of a "Conference of the States Parties" was adopted during the early days of negotiations, and was subsequently followed by the notion of an "Executive Council". The need

for extensive verification measures finally led to the establishment of an international organization called the Organization for the Prohibition of Chemical Weapons (OPCW), including a Secretariat.

**8 February 1993, The Hague, the Netherlands** - The inaugural session of the Preparatory Commission for the future Organization for the Prohibition of Chemical Weapons. The Preparatory Commission immediately established a Provisional Technical Secretariat to assist its work, and to prepare for the Secretariat of the OPCW. The Preparatory Commission existed from February 1993 until shortly after the Convention entered into force on 29 April 1997.

**March 20, 1995** In the first terrorist attack using chemical weapons, members of Aum Shinrikyo, a Japanese religious cult, release Sarin nerve gas in the Tokyo subway, killing 12 people and injuring more than 5,000.

**1996** Hungary ratified the Convention ( became 65th country to ratify the Convention).

**April 29, 1997** The Chemical Weapons Convention entered into force with 87 States Parties - becoming binding international law. (An additional 22 countries had ratified the treaty in the 180 days between Hungary's ratification and entry into force)

Until this day, the OPCW Member States represent about 98% of the global population and landmass, as well as 98% of the worldwide chemical industry. From the 96 Chemical Weapons production facilities declared, 43 have been destroyed and 22 converted. 190 States Parties covering , 98% of the global population.

84.95% of the world's declared stockpile of 72,524 metric tonnes of chemical agent have been destroyed.

5,545 inspections have taken place at 265 chemical weapon-related and 2,024 industrial sites on the territory of 86 States Parties since April 1997. Additional 4,913 industrial facilities are liable to inspection.

However, about 15% of the world's declared chemical agent must be destroyed.

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