

THE SYRIAN ARAB REPUBLIC'S USE OF CHEMICAL WEAPONS  
&  
THE CHEMICAL WEAPONS CONVENTION

by

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Dulce Et Decorum Est

“...Gas! GAS! Quick, boys! -- An ecstasy of fumbling,  
Fitting the clumsy helmets just in time;  
But someone still was yelling out and stumbling,  
And flound'ring like a man in fire or lime...  
Dim, through the misty panes and thick green light,  
As under a green sea, I saw him drowning.  
In all my dreams, before my helpless sight,  
He plunges at me, guttering, choking, drowning.”  
----- Wilfred Owen, 1917/18

The topic of chemical weapons has seen little light in the last decades except for a few rare appearances. The main reason for this is because the majority of States in the world have denounced the use of chemical weapons as a method of warfare. Since the overwhelming and shocking use of chemical weapons in the First World War, several treaties have come into effect which prohibit the use of chemical weapons in warfare. As demonstrated in that first “Great War”, chemical weapons have a devastating effect on all life in the vicinity of where they are detonated. The list of those affected by chemical weapons is long: the military forces on both sides, the local farmers and laborers, anyone living near or passing by the area where chemical weapons have been used, those involved with the manufacture of chemical weapons, the families of those affected, plus all the animals such as horses, birds, rabbits which are on or close to the battlefields. Depending on the type of chemicals contained in the chemical weapon, pools of water and agricultural fields may also be affected.

We are now seeing a resurgence in the use of chemical weapons to inflict death and injuries on a large number of women, men and children in the armed conflict which has been taking place in the Syrian Arab Republic. During 2012 and 2013 there were numerous reports from the Syrian Arab Republic that one or more sides involved in the civil war were detonating chemical weapons against the opposing fighting forces. In August 2013, reports of chemical attacks became more frequent. Investigating the facts surrounding the chemical attacks substantiated that the Syrian government under President Bashar al-Assad was responsible for the chemical attacks against its own people, many of whom were civilians not directly involved in the armed conflict. There was and continues to be international outrage about the use of these chemical weapons.

A year earlier on August 20, 2012, President Obama of the United States was asked by a reporter whether he envisioned using the U.S. military in Syria if, for nothing else, for the safekeeping of the chemical weapons and if he was confident that the chemical weapons were safe? President Obama replied that he had not, at that point, ordered military engagement in the situation but felt the point made about chemical weapons [and biological]

weapons was critical. He went on to say, “a red line for us is we start seeing a whole bunch of chemical weapons moving around or being utilized. That would change my calculus...change my equation.” When the August 2013 attacks were reported, President Obama was put in a precarious political position. Many felt that the chemical attack made by the Syrian government created the type of red-line situation that the president referred to a year earlier. Those whose sympathies laid with the opposition fighters of the Syrian government were hopeful that this would be a turning point for American involvement in the civil war, either directly or indirectly.

It was only through the intervention by the Russian Federation that President Obama was provided with a way out of his political dilemma. This intervention reportedly occurred on the back of an earlier remark made by John Kerry, the U.S. Secretary of State, on 9 September 2013. Secretary Kerry said that if President Bashar al-Assad of the Syrian Arab Republic would turn over his State’s complete stockpile of chemical weapons within the next week, Syria could avoid a U.S. attack. Following Kerry’s remark, President Putin of the Russian Federation proposed to the Syrian government that it hand over control of all of its chemical arsenal to the international community. On 10 September 2013, the Syrian Foreign Minister Walid Muallern announced, “We fully support Russia’s initiative and we are ready to cooperate.” He added, “We intend to give up chemical weapons altogether.” On 14 October 2013, the Syrian instrument of legal accession was recognized by the United Nations, making Syria a legal party to the Convention on the Prohibition of the Development, Production, Stockpiling & Use of Chemical Weapons and on Their Destruction (the Chemical Weapons Convention).

This article looks at the development of chemical weapons used in war, reviews several past treaties that prohibit the use of chemical warfare, and discusses the current status of the disarmament process of all prohibited chemical weapons. The main focus of this article is on the Chemical Weapons Convention to which Syria recently became a State party.

### Definition of Chemical Weapons

Article II of the Chemical Weapons Convention, in legal effect since 1997, gives the following definitions for “chemical weapons”, “toxic chemical” and “precursor”.

“Chemical Weapons” means the following, together or separately:

- (a) Toxic chemicals and their precursors, except where intended for purposes not prohibited under this Convention, as long as the types and quantities are consistent with such purposes;
- (b) Munitions and devices, specifically designed to cause death or other harm through the toxic properties of those toxic chemicals specified in subparagraph (a), which would be released as a result of the employment of such munitions and devices;
- (c) Any equipment specifically designed for use directly in connection with the employment of munitions and devices specified in subparagraph (b).

“Toxic Chemical” is any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals. This includes all such chemicals, regardless of their origin or their method of production and regardless of whether they are produced in facilities, in munitions or elsewhere.

“Precursor” is any chemical reactant which takes part at any stage in the production by whatever method of a toxic chemical. This includes any key component of a binary or multicomponent chemical system.

## The Development and Use of Chemical Weapons in War

### A. -The First World War (1914–1918)-

Chemicals have been used as weapons throughout the centuries albeit on a fairly primitive level. Chemical weapons used in the past include boiling tar or oil which was then poured on foes; poisoned arrows; and smoke for temporarily blinding opponents and/or hiding one's movements. However, it was not until the turn of the 20th Century and the start of the First World War that the true genesis of modern chemical warfare arrived. By the beginning of the 1900's, chlorine and phosgene gases were being manufactured in great quantities. Both of these gases are known as lung irritants because they destroy the lining of the lungs, causing death by asphyxiation.

The First World War initially saw the German and the Austria-Hungary Empire forces fighting together as the "Central Powers" while the opposing forces, "the Allies", were composed of forces from Great Britain (including its colonies such as Canada, India and Australia), France (and its colonial forces such as Albania and Morocco), and the Russian Empire. Later in the war, the Ottoman Empire and Bulgaria joined the Central Powers while Italy, Japan and the United States joined the Allied forces.

In 1914, at the beginning of the First World War, Germany was the world leader in science and the guiding force of academic and industrial chemistry. As the war began, Germany moved decisively into the research and production of chemical agents. Despite this, France was the first country to use a chemical weapon in this war. In August 1914, France fired tear-gas grenades against the German forces. There were not any decisive gains. Although Germany had ineffectively used a sneezing gas in October 1914, it was in April 1915 that Germany made its first large-scale chemical attack. During the second battle being fought near Ypres, Belgium, the German forces, fighting from higher ground, exploded some 5,700 canisters of chlorine gas (168 tons) in battle against the opposing Allied military forces. When released, this yellow-green coloured gas affected some four miles of the front lines of the Allied forces. Within ten minutes of the chlorine gas reaching the front line, more than half of the estimated 10,000 French Algerian, French Moroccan, British and Canadian Allied soldiers were dead while another estimated 4,000 soldiers became casualties of the gas attack. Chlorine gas is noted for its colour, it smells similar to a mix between pepper and pineapple and results in chest pain, vomiting, coughing, difficulty breathing and fluid on the lungs.

Germany shocked the world by introducing chemical weapons on such a large scale to the battlefield. There was widespread condemnation following the attack at Ypres. In deciding to use chemical weapons, Germany was not unduly deterred by two international treaties it had agreed to earlier. These treaties were the Hague Declaration of 1899 and the Hague Convention of 1907, forbidding the use of "poison or poisonous weapons" in warfare. Neither of these treaties prevented the production by the end of the war of more than 119,000 tons of poisonous gas by those major countries involved in the war.

The use of gas was a tactical and strategic decision by the German government. With the First World War being overall a stagnant one with opposing sides fighting and living in facing trenches, there was little face-to-face combat. Gas poisoning was used as a means of decreasing the number of men the other side had in its frontline. States such as France and Britain were forced to remove all their men from the frontlines who were suffering any type of gas poisoning to allow them to recover. Generally, most of the injured recovered from exposure to chlorine gas in sixty days and to phosgene gas in forty-five days. In addition to needing to replace the gas casualties, national resources had to be used to take care of these men while they were recuperating.

As can be imagined from their natural state, gases are always difficult and dangerous to use because they are uncontrollable. Gases are certainly not able to distinguish “the enemy” but instead affect everything in their vicinity. The Germans did what they could to determine where the released toxic gas would be headed by turning to their meteorologists prior to releasing the gases. They would know in what direction the wind was expected to be blowing. This was also a safety move for their own troops to ensure that the gases would not be swept back towards the German troops. No matter how careful the military forces were, any change of wind direction meant the released gases would move undeterred towards one’s own troops instead of wafting towards the enemy as intended. All the major forces of Germany, Great Britain and France suffered similar self-inflicted gas poisoning. The first time the British troops used gas warfare was a disaster. In the second battle of Artois in 1915, the British set-off some 140 tons of chlorine gas towards the German troops. Soon after the wind changed direction, sending the chlorine gas back towards the British trenches. That day, the British suffered more gas casualties than the Germans did.

Historians have referred to the First World War as the “Chemists’ War” because of the scientific and engineering efforts by the major states involved. Chemical weapons were used on a large scale in almost every place during the war. Whilst Germany had utilized resources including scientists and laboratories to develop different gases for warfare, both Britain and France were caught by surprise by the extensive gas attacks during the Ypres battles of 1915. After Ypres, the Allies’ initial efforts went towards developing defensive measures against the gases including antidotes and effective gas masks. Having protective breathing apparatus for military troops meant the number of deaths from the chlorine gas decreased significantly. By the Summer and early Autumn of 1915, the Allied troops were developing their own chlorine gas to be used against the Central Powers.

Following on from the use of chlorine gas, the French developed a gas called phosgene which was used for the first time against the Germans in 1915. Phosgene proved to be a highly toxic, irritating and corrosive gas which upon inhalation caused fatal respiratory damage. This gas is colourless with a faint odor of freshly cut hay or grass. Because there was less coughing with this gas, more was inhaled. This, plus the fact that there was often a delayed reaction to the gas of as much as 48 hours after coming into contact with it meant it was a new and lethal weapon. The Germans turned around and used it against the British forces on Christmas 1915. Phosgene was the second most produced gas during the First World War after chlorine. In the last years of the war, phosgene was combined with chlorine to make it even more lethal. Phosgene proved to be the deadliest gas of the conflict, causing around 85% of all deaths linked to chemical weapons. Two factors made it less effective: protective clothing, especially gas masks, and dispersal by wind or breeze.

In 1917, the German military forces released mustard gas for the first time. Mustard gas became notorious for the rest of the war. It was known as the “King of Battle Gases” as it came to be widely used by both sides. While chlorine gas caused burns and destroyed lung tissue, mustard gas caused painful chemical blisters on the skin, eyes and airways. The blisters, developing both externally and internally in the body, were extremely slow to heal. Mustard gas caused lung damage and also temporary blindness (caused by severe conjunctivitis) in most of those individuals unlucky to be caught in it. Gas masks were not much use as it affected all exposed and most unexposed skin. Mustard gas was so effective because the soldiers (or anyone) caught in the gas did not feel any immediate sensation on their skin. Instead, symptoms normally did not appear until several hours after exposure. At incapacitating levels this could be as long as twelve hours. If the infected forces knew they had been close to the gas, they could get out of their clothes and shower to limit the damage but this did not generally happen. Rather the infected material of the soldiers’ uniforms covered their skin for the next hours causing more and more damage. Mustard gas and Lewisite (discussed below) are referred to as “vesicants”.



“Gassed” – John Singer Sargent

One problem (or advantage if you released it) with mustard gas was that it settled where it was released. Being heavier than air or water meant that it settled in puddles and ditches thus presenting an environmental hazard for troops, civilians, and animals. With the gas settling in the trenches meant that those troops standing up above the ground suffered less damage than individuals who were injured and lying on the ground or who were unable to leave the trenches. Once released, the gas was known to remain active and dangerous for days and even weeks. By 1917 when the number of gas attacks escalated, the psychological effects of the gas – gas fright – also escalated. The psychological fear of being gassed on top of numerous attacks, gas mask practice, constant bombing meant that doctors were uncertain whether victims were suffering from actual gas effects or gas fright.

Although Germany shocked the world with its initial gas attacks in 1915, by 1917 all of the major States involved in the war were producing and/or using gases against the opposing military forces. The entry of the United States into the war in April 1917 meant that there were more supplies of mustard gas available. The United States worked hard to develop a new gas called lewisite. This gas was similar to mustard gas but was able to penetrate protective clothing. The United States planned to start using lewisite in 1919 against German forces but the end of the war came before this toxic and debilitating gas could be used.

Casualties didn't occur only on the battlefields. Further casualties occurred during the manufacture of the different chemicals. Although the Germans had a good safety record of looking after the workers, the British and French workers suffered. This was especially true when producing mustard gas. During the early development of these chemical weapons, both the use and efficiency of protective clothing were fairly primitive. The British finally had to give their workers one week off after every twenty days to enable them to recuperate. Symptoms of gas poisoning included listlessness, nervous debility, headaches, indigestion, spasms of eyelids, breathlessness, bronchitis, asthmas, throat and lung infections, chest and heart problems, and depression. For those close to the battlefields and within range to be affected by the gas attacks, it is believed that 100,000 to 260,000 civilian casualties were caused by chemical weapons.

Despite the prevalence of chemical weapons in the First World War, the percentage of deaths due to gassing compared to the total war deaths was relatively low—approximately 4% of the total war deaths. Chlorine, phosgene and mustard gases caused some 90,000+ deaths and 1,200,000 (1.2 million) casualties. Mustard gas was the main culprit for causing casualties; it caused more chemical casualties than all the other gases put together for the war years of 1914 to 1918. Of the some 188,000 British gas casualties, 80% were caused by exposure to mustard gas. However, it was phosgene gas that was the killing gas. Phosgene was responsible for 85% of all chemical gas deaths during the First World War. Overall, it was the Russians who especially suffered during the war. This was due to poor

countermeasures and inadequate protective equipment. They suffered more than half of all the deaths caused by chemical gases, i.e., approximately 56,000 deaths compared with a total of 90,000+ chemical deaths. Their high number of deaths (and casualties) was even more remarkable as the Russian forces left the war in 1917 as revolution swept their country at home.

Most of those soldiers surviving the First World War gas attacks suffered the effects of gas poisoning for their whole life. Many gas victims were too incapacitated to ever hold down any work after the war. The worse hit by chemical weapons used in the First World War were those casualties occurring early in the war before any type of treatment and/or protection was developed.

#### B. -Between 1918 & 1939-

Both during the war and after, the public expressed strong indignation about the use of chemical weapons. This indignation and abhorrence of chemical weapons continued long after the armistice was agreed in 1918. The evidence of the gas attacks was all around with former soldiers who never returned to good health to the millions of munitions abandoned on the former battlegrounds of Belgium and northern France. Between 1918 and 1933, several international conferences were held to discuss limiting or even prohibiting the use of chemical weapons in future warfare. As mentioned above, one result was the international agreement, the “1925 Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare” (the Geneva Protocol of 1925). The Geneva Protocol of 1925 entered into force in 1928. As of September 2014, there are 138 State parties to this treaty including the Syrian Arab Republic.

Although the Geneva Protocol of 1925 was a step forward it also had its weaknesses. The United Nations Office of Disarmament Affairs (UNODA)\*\* commented on the treaty's shortcomings saying that although the Geneva Protocol of 1925 prohibited the use of chemical and biological weapons in warfare, it did not go far enough in prohibiting the development, production or stockpiling of these weapons. Another weakness of this treaty was due to many of the member States reserving the right to use chemical weapons against any State that either had not signed the Geneva Protocol of 1925 or that had attacked them using chemical weapons.

Generally, between the two world wars, chemical weapons were used against civilians in colonial territories. The best-known and most egregious example was Italy using aerial spraying against Ethiopian soldiers and civilians in the Second Italo-Abyssinian War (1935-36). Another example would be the French and Spain forces using gas against the Rif tribes in North Africa. During this period, the chemical weapons being used were the “classic” chemical compounds; relatively simple substances from either common industrial chemicals or their derivatives. These gases included chlorine and phosgene gas, both used in the First World War. Again, they were lung irritants, attacking the eyes and respiratory tracts. Phosgene was also used as an industrial compound used as a chlorinating material. The use of these classic chemical agents would only be marginally useful in modern warfare and generally only against an opponent with rudimentary defense systems.

The United States signed the Geneva Protocol of 1925 but did not ratify it until 1972. Initially, the reason for not ratifying this treaty was because by 1925, America moved into an isolationist position. The Great Depression of the 1930's occurred and struck the American economy quite severely. Another reason was that there was a clear refusal by the U.S. government to eliminate chemical weapons based on strategic considerations. Although all major governments dramatically scaled back their chemical weapon programs between the two World Wars, there were also new chemical and weaponry developments. These

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\*\* site found at, <https://www.un.org/disarmament/WMD/Bio/1925GenevaProtocol.shtml>

included the development of munitions containing chemicals that could be dropped by aircraft and also the exploitation of lewisite gas. Tactically, lewisite had certain advantages over mustard gas in that it produced instantaneous blistering, was difficult to detect and rapidly dissipated. From a battlefield perspective, mustard gas was more potent but slower in producing casualties. In 1936, Gerhard Schrader, a German chemist, discovered "tabun" or GA while looking for possible chemical pesticides. Two years later, he discovered the more toxic "sarin" or GB. Both these compounds were orders of magnitude more toxic than any of the gases used in the First World War. Both tabun and sarin became known as nerve agents and differed greatly from the earlier, simpler chemical compounds. Nerve agents are not gases but liquids at room temperature; they inhibit an enzyme (acetylcholinesterase) that is necessary for functions of the central nervous system, hence the name. Nerve agents are generally divided rather arbitrarily into G- and V-agents, although there are numerous structural variants that are potent cholinesterase inhibitors. To date, all known nerve agents for warfare are organo-phosphorus compounds. They are similar in how they act to pesticides and are lethal in much lower quantities than classic gases. The nerve gases affect individuals through inhalation, absorption through the skin or through both means.

#### C. -The Second World War (1939-1945)-

During the Second World War, chemical weapons were used but nowhere near the scale of the First World War. One reason Germany did not use chemical weapons was because of a fear of reprisals. A second reason was due to Adolph Hitler. Hitler was a victim of a mustard gas attack while serving in the German army in Belgium during the First World War. He refused to deploy chemical weapons in warfare during the Second World War. The UNODA website (given above) states that chemical weapons were used in Nazi concentration camps and in Asia but not used on European battlefields. The Italians, Hungarians, Japanese, French, British, Russians and Americans, as well as the Germans, all perfected mustard, phosgene, and similar agents during the Second World War. Fortunately for the Allies, the Germans did not use either tabun or sarin against them, although they did produce a large number of tabun-filled munitions.

#### D. -After 1945 and the Cold War-

Although most of these gases and chemically-based munitions were hardly used in the Second World War, the different nations amassed huge quantities of them. This presented practical problems in their disposal. The disposal methods used following the Second World War would no longer be acceptable in today's more environmentally-conscious world. These munitions were simply jettisoned to the bottom of most of the world's oceans in the holds of expendable ships or encased in concrete. Some of these munitions went back to the First World War.

The Cold War between the Soviet Union and the Western powers (from 1945 to 1990) saw the Soviet Union, the United States, the North Atlantic Treaty Organization (NATO) and the Warsaw Pact allies developing new chemical weapons based on the German nerve agents such as sarin (GB). Sarin turned out to be one of the best of the respiratory agents, being volatile as well as exceedingly toxic. During the Second World War, Britain had captured small stocks of sarin and began to investigate its potential. The Soviet Union removed the Germans' sarin production plant to its own territory.

In 1946 a tripartite agreement was signed between Canada, Great Britain and the United States to share research on chemical weapons. The French, British, and Canadians all built small-scale facilities to produce sarin for testing while the United States entered into full-scale production of sarin gas with the Russians following shortly after. The Russians also produced soman (GD), an agent the U.S. government decided not to develop as it was impossible to treat if more than a single lethal dose was administered. Instead, the U.S. designed a cluster bomb to exploit the characteristics of sarin and followed this with

numerous adaptations of munitions. Artillery rockets were produced as were bombs, projectiles, and spray tanks.

In the late 1950's, British scientists discovered another category of nerve agents, the V-agents. These were very effective at being absorbed through the skin which circumvented the protection of gas masks. The United States and Great Britain each pursued a form of V-agent called VX which was produced by entirely different processes.

In the 1960's, there was an extreme interest in developing incapacitating agents designed to produce temporary incapacitation through action on the central nervous system. These were initially seen by some as a panacea to make warfare safe and humane. There were many possibilities but only one -- a mental incapacitant -- called 3-Quinuclidinyl benzilate (BZ) was ever standardized. BZ is one of the prohibited chemicals listed in the Schedule 2 of the Chemical Weapons Convention (discussed below) and is now obsolete. The main problem with the mental incapacitants was the long-onset time with unpredictable symptoms. A victim of BZ became confused and generally incapable of making decisions. With the confusion and indecisiveness lasting some 48 hours, this meant that control of the individual was difficult. The 1960's also saw the development of nonlethal agents to be used as riot control agents in addition to tear gas which was developed earlier in the 1900's.

At this time there was also the evolution of binary chemical weapons due to the danger of storing and transporting highly toxic chemicals. Binary chemical weapons involve generally harmless chemicals, i.e., precursors, rather than toxic chemicals. The dangerousness of the chemicals occurred only when they were combined. In a warhead, the chemicals would combine when it was fired or exploded. The U.S. produced a sarin (GB) binary nerve agent weapon, the M687 projectile (a 155-mm artillery shell) and was in the late stages of developing two other binary weapons when its offensive chemical weapons programme was terminated. The Russians have been publicly accused by dissidents within their own agencies of developing new binary agents while the Iraqis under Saddam Hussein were known to have constructed binary bombs and missile warheads, albeit with crude manual mixing of the reactants. Despite the new discoveries, the United States demonstrated a shift in policies as it moved towards a partial disarmament of chemical weapons in the 1960's.

#### E. -1980's to Current-

In the late 1980's in response to its NATO allies and the Soviet Union, the United States began wholesale destruction of much of its chemical weapons stockpile in an effort to disarm and destroy older weapons which had become unstable. In 1988, Iraq appeared to use mustard gas and nerve agents against Kurdish people of Halabja. At the time this attack occurred, a chemical weapons treaty was being negotiated in Geneva, Switzerland. Until the March 1995, virtually all uses of chemical weapons had been used by nations, not individuals. In March 1995, the Japanese doomsday cult, Aum Shinrikyo, exploded canisters containing sarin gas on several lines of the Tokyo subway. These attacks resulted in thirteen people dead and fifty people severely injured.

#### Treaties covering nuclear, biological & chemical weapons

The treaties governing nuclear, chemical, radiological and biological weapons require regular reviews by science and political factors for the impact of advances in science and technology. In drafting these treaties, the scope—including future developments in many areas – must be considered, and there should be some type of verification scheme run and overseen by objective and outside experts to ensure each State does what it has agreed to do. For any of these types of agreement, reviews should be undertaken by State parties to each treaty, international treaty bodies set-up under each treaty as required as well as scientific advisory boards and external non-governmental organizations. In 2004, the United Nations stepped out of its advisory role to declare that there were certain legal obligations on

each State regarding the non-proliferation of nuclear, chemical, and biological weapons. This Security Council Mandate No. 1540 is discussed below in the Chemical Weapons Convention section.

With each type of weapon, advice and council are needed from two different communities: science and arms control. As can be imagined, one community does not always understand the other. The scientific community needs to report on the pace and complexity of scientific advances, review the connection with cutting-edge science and technology, and provide feedback to the community. Arms control experts will be looking at numerous issues and questions such as what happens with nuclear or chemical waste; how long will nuclear or chemical weapons remain stable; if they are unstable, how does a State proceed in either restabilizing them or in destroying them in an environmentally-safe and proficient way?

The different major treaties for each of these types of weapons are as follows:

Nuclear: UN treaties: "Treaty on Non-Proliferation of Nuclear Weapons" entered into force 5 March 1970 [189 State parties]; "The Comprehensive Nuclear-Test-Ban Treaty", is not yet in force [163 State parties].

Between the Russian Federation & the United States: "New Strategic Arms Reduction Treaty" (New START) signed April 2010/entered into force February 2011.

Biological: UN treaties: "Convention on the Prohibition of the Development, Production & Stockpiling of Bacterial (Biological) and Toxin Weapons and Their Destruction" entered into force March 1975 [170 State parties].

Chemical: Under the League of Nations: "1925 Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare" entered into force February 1928 [138 State parties].

UN treaties: "Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction" entered into force April 1997 [190 State parties].

#### The Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction (Chemical Weapons Convention)

The basis of the Chemical Weapons Convention stemmed from two earlier events. In 1968, Great Britain put forth the proposal that biological weapons and chemical weapons be treated separately. This led to the first treaty being negotiated and drafted only for biological weapons (i.e., the Convention on the Prohibition of the Development, Production & Stockpiling of Bacterial (Biological) and Toxin Weapons and Their Destruction) which entered into legal force in March 1975. The second event or trigger was a joint initiation sought in 1974 by the U.S.S.R. (of which the current Russian Federation formed a large part of) and the United States. Due to the Cold War, these two countries had by far the majority of all stockpiled chemical weapons, both nerve agents and vesicants. It was estimated that the U.S.S.R. and the United States held respectively 40,000 and 29,000 agent tons. The two States were able to come up with a basic outline of provisions but found the issue of verification a sticking point. The provisions agreed by the two countries later formed the key provisions of the Chemical Weapons Convention. In 1980, the U.S.S.R. invaded Afghanistan, putting all international negotiations on hold. With the reemergence of chemical weapons in the Iraq/Iran war of 1984 (both mustard gas and a nerve agent were used), the United States produced a working paper for the prohibition of certain chemical weapons. It was not until 1989 that a "Memorandum of Understanding" concerning bilateral verification and data exchange of information regarding chemical weapons was finally signed between the U.S.S.R. and the United States. In 1990, the U.S.S.R. and the United States signed an "Agreement . . . on Destruction and Non-Production of Chemical Weapons and on Measures to Facilitate the Multi-lateral Convention on Banning Chemical Weapons". This convention called for the cessation of the production of chemical weapons.

It is from these earlier agreements that the Chemical Weapons Convention evolved. After some twelve years of negotiation, the Chemical Weapons Convention was opened for signature on 3 September 1992. It came into legal force and effect on 29 April 1997, six months after 65 States had signed and ratified or ascended to it. As reflected by its full title, the Chemical Weapons Convention was drafted with the intention to prevent any future development of chemical weapons; to destroy all chemical weapons stockpiled by State parties; to destroy those chemicals regarded as being solely used for the production of chemical weapons (having no other legitimate use or other functions), and to destroy all facilities used to create the prohibited chemical weapons.

Initially, those governments who agreed to the Chemical Weapons Convention did so generally for political reasons. This was because at the time the convention opened for signature, there was only a small number of States who actually possessed chemical weapons or had the chemicals necessary for producing chemical weapons. It was felt by a majority of States that since they neither possessed nor produced chemical weapons that this convention had little, if any, impact on them. It is possible that certain States agreed the Chemical Weapons Convention to show support for those few States declaring they had chemical weapons. It was only a few years later that there was a noticeable change in how the Chemical Weapons Convention was perceived, especially in what it was attempting to accomplish. On 11 September 2001, there were shocking and massive terrorist attacks on New York City and on the Pentagon in Washington, D.C., both in the United States. In 2004 there was a shocking terrorist attack on Madrid, Spain. The result was the urgent need to limit the actions of non-State actors. Here, a non-State actor using violence would be a person or entity not affiliated or condoned by a sovereign government but who uses violence to achieve its goals.

In 2003, the international community of States began discussing in earnest the need to limit the actions of non-State actors. In 2004, the United Nation's Security Council passed mandate no. 1540, placing the following obligations on all member States: 1) "to refrain from providing any form of support to non-State actors attempting to develop, acquire, manufacture, possess, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery"; 2) "to adopt and enforce appropriate and effective laws which prohibit any non-State actor to manufacture, acquire, possess, develop, transport transfer or use nuclear, chemical or biological weapons and their means of delivery"; and 3) "to take and enforce effective measures to establish domestic controls to prevent the proliferation of nuclear, chemical, or biological weapons and their means of delivery." This mandate put an obligation on States to take these steps if they hadn't done so before. This included the obligation to sign and ratify or ascend to the Chemical Weapons Convention while implementing the necessary domestic laws to do so.

As of the date of this article, there are 190 States which are legal parties to the Chemical Weapons Convention. The last countries to agree to the Chemical Weapons Convention were Somalia and the Syrian Arab Republic; both joining the convention in 2013 by accession. There remains only a handful of States that have not legally agreed the Chemical Weapons Convention. These States are Israel and Myanmar (both of which have taken the initial step of signing the CWC but not yet ratified it), Angola, Egypt, North Korea and South Sudan. When it was one, unified state, Sudan signed the CWC but it does not appear that the CWC is one which South Sudan has this writer is uncertain as to the procedure and the rights and/or obligations South Sudan may have after splitting off from Sudan.

#### What the Convention on Chemical Weapons sets out to do

One of the key aspects underlying the Chemical Weapons Convention (CWC) is the dual-use and nature of chemicals and equipment. Besides being used in warfare, chemicals also have a necessary and legitimate purpose in the peaceful world. Among other things,

chemicals are required for medical purposes, for agriculture and for commercial use. In recognition of the useful and necessary side of chemical development and production, the CWC distinguishes it from the development and production of particular chemicals used mainly or solely for weapons of warfare. Certain parts of the chemical industry have historically played a major role in the production of chemical weapons. Most chemicals used for chemical weapons had their origins from the civilian chemical industry, not the military establishment. The success of the CWC is due in part to the constructive inclusion of the chemical industry before and during the negotiations of the draft CWC document.

The CWC focuses on the destruction and non-production, inter alia, of those chemicals used mainly or solely for warfare. As reflected by its first Article (and by its title), the CWC covers the total destruction of all existing stockpiles of chemical weapons and all chemical production facilities. As important, it stipulates that State parties never develop, acquire or transfer any chemical weapons in the future. The CWC also sets out elements for determining which State will be held responsible for the destruction of abandoned or dumped chemical weapons in the last century.

The first part of the CWC which includes the Preamble and Articles I through XXIV sets out the general structure of the convention and includes the following: the States' obligations; details of setting up and running the integral organisation underpinning the CWC called the "Organisation for the Prohibition of Chemical Weapons"; the process for States to agree to the CWC; amendments; and the status of the annexes. There are three Annexes which make up the bulk of the CWC. The first Annex contains a list of chemicals covered under the CWC and how they should be identified. The largest annex is the second Annex which sets out the implementation and verification procedures of the CWC. The last Annex details the duration of the convention and the effect of withdrawing from the convention.

What makes this treaty exceptional is the strong framework it provides to ensure that all obligations and responsibilities under the CWC are met by all the States who are party to this convention.

#### The Organisation for the Prohibition of Chemical Weapons (OPCW)\*\*\*

The main reason that the CWC has been successful in attaining most of its goals is due to the establishment of the Organisation for the Prohibition of Chemical Weapons (OPCW). Article VIII of the CWC provides the details for OPCW as the implementing organisation for the convention and sets out specific details of the OPCW's operating organs. In February 1993, a body called the Preparatory Commission held its first session in The Hague, The Netherlands. This initial session was the first of many necessary meetings for the discussion, planning and realization of the OPCW in accordance with the CWC. The OPCW and especially its Technical Secretariat had to be ready to start working at a very high level as soon as the CWC came into force. Those involved with defining and setting up the OPCW had an overwhelming number of things to start and complete to make this happen. Once the required number of State signatures was reached, the Preparatory Commission would have only 180 days before the CWC (and the OPCW) came into legal force. At this point, the Commission would be down-to-the wire. The OPCW enables the achievement of the CWC's objectives, ensures the implementation of its provisions, and, finally, provides a forum for consultation and cooperation among its State parties.

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\*\*\* Any information on the OPCW not found in the CWC is found in "The Creation of the Organisation for the Prohibition of Chemical Weapons edited by Ian R. Kenyon & Daniel Feakes (T.M.C. Asser Press) 2007.

In accordance with the CWC, the OPCW is made up of three different organs:

- a. The Conference of the States Parties is made up of all States who are party to the CWC. It is the principal organ of the OPCW and oversees both the Executive Council and the Technical Secretariat. The Conference can issue guidelines to both of these areas. It holds an annual session to discuss the business of the OPCW. It reviews scientific and technological developments that could affect the CWC's application. It deals with monetary issues including the OPCW budget and the voluntary fund which is for assistance and protection against chemical weapons (described in Article X of the CWC).
- b. The Executive Council is made up of 41 State members who each serve a term of 2 years. The CWC details how many State members can be elected from 6 specific regions in the worlds. The Executive Council is the executive organ of the OPCW. It drafts the budget, the annual report and concludes agreements with States and international organizations; all of which must be approved by the Conference. The Executive Council can by-pass the Conference in matters of particular urgency and gravity and go directly to the United Nations General Assembly and the United Nations Security Council.
- c. The Technical Secretariat is responsible for the verification measures set-out in the CWC. It provides technical assistance and technical evaluation to the State members. It also provides the administrative and technical support to the Conference, the Executive Council and subsidiary organs. This area is the least detailed one in Article VIII of the CWC although it is the most important in terms of technical responsibility for all chemical disarmament. However, its actual work, including to oversee, is discussed in Article III (Declarations), Article IV (Chemical Weapons) and Article V (Chemical Weapons Production Facilities) of the CWC.

Some of the issues which were dealt initially by the Preparatory Commission and now by the OPCW include rules for the conduct of on-site chemical inspections; developing a health and safety policy including developing treatment for exposure to the prohibited chemicals; determining which safety standards shall apply during inspections; developing strict rules for the preservation of each State's confidential information; setting up laboratories to be operated at the highest level for the testing of declared chemicals; developing a means of transporting the toxic chemicals to the laboratories; establishing expert groups; planning routine inspections; verifying the declared chemicals and ensuring their subsequent destruction.

The OPCW's core objectives are and remain:

- elimination of chemical weapons stockpiles and chemical weapons product facilities;
- non-proliferation of chemical weapons;
- assistance & protection against chemical weapons, their use or threat of use;
- economic & technological development through international cooperation in the field of chemical activities for purposes not prohibited under the convention;
- universal adherence to the convention;
- full & effective implementation by States parties of the provision of Article VII, "National Implementation Measures"; and
- full, effective & non-discriminatory implementation of all provisions of the OPCW.

The OPCW is an international organization that is independent and autonomous with a working relationship with the United Nations. In December 2013, the OPCW received a Nobel Peace Prize "for its extensive efforts to eliminate chemical weapons".

### Specifics of the CWC

The obligations of each State party to the CWC are found in Article I of the convention. These obligations are considered to be wide ones as the CWC not only applies to recent chemical weapons but it also applies to certain chemical weapons going back as far as 1925 in the case of being abandoned or dumped weapons. Each State party to the CWC is

obligated to destroy all chemical weapons: a) it owns or possesses or which are located in any place under its jurisdiction or control, or 2) which it abandoned on another State party's territory. Further, all chemical weapons production facilities must be destroyed which are under the ownership or possession of a State party or, again, are in any territory under its jurisdiction and control. Finally, under the CWC those chemicals recognized as riot control agents are not prohibited but each State party undertakes not to use these as a method of warfare. This last point would apply to chemicals such as tear gas.

“Chemical weapon” both here and in the CWC includes the toxic chemicals, the munitions and any associated, specifically designed equipment all of which may be being destroyed either separately or together. An empty chemical munition is still considered to be a chemical weapon.

The language of Article I of the CWC is specific and totally prohibitive: “Each State Party to this Convention undertakes never under any circumstances...”. Following these words, the prohibited actions for each State party are spelled out: [not] “to develop, produce, otherwise acquire, stockpile or retain chemical weapons, or transfer, directly or indirectly, chemical weapons to anyone; to use chemical weapons [including engaging in military preparations to use chemical weapons]. Indeed, Article I takes a further step by prohibiting State parties from even “assisting, encouraging or inducing, in any way, anyone to engage in any activity prohibited to a State Party under this convention”. Thus, language for both disarmament and non-proliferation of chemical weapons is provided by the CWC.

#### A. -Declarations of Chemical Weapons and/or Chemical Weapons Production Facilities-

When a State becomes a party to the CWC, it is legally obligated to make a declaration about whether it owns or possesses any chemical weapons and/or chemical weapons production facilities. Article III of the CWC sets out the circumstances when this obligation to make a declaration is triggered.

##### 1. *Specific requirements of each declaration*

When making a declaration, a State is required to give specific information that is listed in Part IV of the “Annex on Implementation and Verification” (the Verification Annex) to the CWC. Part IV (A), “Destruction of Chemical Weapons and its Verification Pursuant to Article IV” covers chemical weapons and their destruction. Part IV (A) sets out the information required on each declaration including the quantity of each chemical, how the chemicals should be identified (i.e., by which international nomenclature), what should be done about chemical compounds as to the identity and the toxicity of either the precursors or the final compounds. Separate instructions are given for binary chemical weapons. Part IV (A) also requires the precise physical location of each chemical weapons storage facility by name, geographical coordinates and a detailed site diagram. A detailed inventory for each chemical weapons storage facility will include the defined chemicals, unfilled munitions and devices, and chemicals specifically designed for use with such munitions and devices. Filled munitions will be identified with the type of chemical, size, number of items and the nominal weight of chemical per item.

Part IV (B) of the Verification Annex under the CWC covers old and abandoned chemical weapons. A State party will be responsible for chemical weapons produced before 1925 if they continue to be intact. Further, chemical weapons produced between 1925 and 1946 are covered if they are no longer considered to be viable. For example, France continues to find and recover chemical weapons on its territory abandoned during the First World War. The responsibility of these old chemical weapons falls to both France and to the country which initially owned and used the chemical weapon. This could be Germany, Great Britain, Canada, France or the United States.

Each declaration must also state whether any chemical weapons production facility is located in any territory which the declaring State owns, possesses or has control over. If so, then that State must also provide specific information regarding each production facility as described in Part V of the Verification Annex. The information provided must include details such as the name of the facility, the owners of the facility, and the precise location, including address of the facility. The declaration must state whether the facility is used to manufacture chemicals and/or for filling chemical munitions. Again, specific chemicals must be identified in accordance with the CWC.

Last, each State also has a legal obligation to declare any chemical weapons it has transferred or received, directly or indirectly, since 1 January 1946 if the amount transferred or received exceeded 1 ton per chemical in bulk and/or munition form (see Article III, para.1(a)(iv)). As can be seen, these declarations made by each State are at the heart of the CWC and are of utmost importance.

## *2. Identifying each toxic chemical*

The identity of each specific chemical used in a chemical weapon is fundamental to how the CWC has been structured and how it is to be applied. The timeline of destruction for each chemical weapon under the CWC depends upon what chemical schedule it belongs to. The CWC sets out three different schedules of actual chemicals, ranging from Schedule 1 to Schedule 3 in its "Annex on Chemicals" (Chemical Annex). These schedules are according to toxicity with Schedule 1 chemicals being more toxic than Schedule 2 and Schedule 3 chemicals. All schedules cover chemicals that have been produced, stockpiled or used as chemical weapons.

A declared chemical will be identified as a Schedule I chemical by taking into consideration the following criteria: a) if "it has been developed, produced, stockpiled or used as a chemical weapon as defined in Article II"; b) "poses a high risk by virtue of its high potential for use in activities prohibited by the CWC because one or more conditions are met: (1) it possesses a chemical structure closely related to the toxic chemicals listed in Schedule 1, (2) it possesses such lethal or incapacitating toxicity that enables it to be used as a chemical weapon, and (3) it may be used as a precursor in the production of a toxic chemical listed in Schedule I; c) "it has little or no use for purposes not prohibited by the CWC."

Examples of Schedule I toxic chemicals include sarin & soman (both methylphosphonofluoridates); tabun (a phosphoramidocyanidate); VX (a phosphonothiolate); sulfur gases, lewisites and nitrogen mustard gases (containing chlorine); saxitoxin and Recin; with 4 additional precursors listed.

In determining inclusion of a chemical into Schedule 2, the following criteria is taken into account: a) these chemicals pose a significant risk because they have such lethal or incapacitating toxicity as well as other properties that could enable them to be used as a chemical weapon; b) the chemical may be used as a precursor in one of the chemical reactions in the final stage of formation of a chemical listed in Schedule 1 or 2; and c) poses a significant risk under the CWC by its importance in the production of a chemical listed in Schedule 1 or 2; and d) the chemical is not produced in large commercial quantities for non-prohibited purposes.

Examples of Schedule 2 toxic chemicals include Amiton (a phosphorothiolate & corresponding alkylated or protonated salts); PFIB (a trifluoromethyl); BZ (a benzilate). There are 11 precursors in Schedule 2 including arsenic trichloride.

Schedule 3 chemicals must be determined using the following criteria: a) it has been produced, stockpiled or used as a chemical weapon; b) it poses a risk because it possesses such lethal or incapacitating toxicity as well as other properties that could enable the use of it in a chemical weapon; c) it poses a risk by virtue of its importance in the production of a

chemical found in Schedule 1 or 2, part B; and d) it may be produced in large commercial quantities for non-prohibited purposes.

Examples of Schedule 3 include Phosgene (Carbonyl dichloride); cyanogen chloride; hydrogen cyanide; Chloropicrin (Trichloronitronmethane). There are also 13 precursors including sulfur dichloride under Schedule 3.

It is a fundamental requisite of the CWC that each State's declaration for chemical weapons and/or chemical weapons production facilities must list each relevant chemical according to one of these schedules. Once the chemical schedule is identified, then it can be determined as to which category that particular schedule falls under. These categories will decide the timing of the destruction of each chemical weapon being declared. The categories are discussed in the section below.

#### B. -Plans for Destruction of Chemical Weapons and Chemical Weapons Storage and Production Facilities-

Once a State party has submitted its declaration regarding chemical weapons (including any chemical weapons storage facilities) and/or chemical weapons production facilities it owns, possesses or controls, this declaration will be reviewed by the OPCW's Executive Council. At the same time a State party submits its declaration, it must also submit to OPCW an annual general plan for the destruction of all the chemical weapons and/or all chemical weapons' facilities it has declared.

The CWC states that the "destruction of chemical weapons means a process by which chemicals are converted in an essentially irreversible way to a form unsuitable for production of chemical weapons, and which in an irreversible manner renders munitions and other devices unusable as such." Each State's national destruction plan must contain a general schedule for destruction, giving types and approximate quantities of chemical weapons planned to be destroyed in each annual destruction period. Each State must determine how it will destroy its chemical weapons although this is subject to review and verification by the OPCW inspectors. Chemical weapons are destroyed in accordance with the agreed rate and sequence of destruction given in the Annex of the CWC and discussed below. Along with each State being responsible for the destruction of all of its chemical weapons and chemical weapons facilities, it is also responsible for all the costs associated with the destruction.

##### 1. *Destruction of chemical weapons*

The timing of the destruction will depend on the type of chemical weapon involved. As discussed above, the CWC attempts to differentiate between chemicals used for weapons of warfare with little commercial need or use; those chemicals used mainly for industry and commerce; and all chemicals which are balanced between the two extremes. The first step with each chemical weapon will be to determine which of three schedules it belongs to. Once a schedule is designated, one goes to Part IV(A)C of the Annex on Implementation and Verification (Verification Annex) to establish which category the designated schedule falls into. These categories pertain to the order in which all declared chemicals are to be destroyed. The categories are:

Category I – contains Schedule I chemicals (discussed above) which are toxic chemicals or their precursors;

Category II – contains all other chemicals, including their precursors; and

Category III -- unfilled munitions and devices, and equipment specially designed for use directly in connection with the employment of chemical weapons.

The CWC sets out its timeline for the destruction of all chemical weapons which requires the utilization of these categories despite seeming to add an extra and, perhaps, unnecessary level to the process of classification. Article IV, Part 6 of the CWC states that the destruction of all chemical weapons (excepting old and abandoned chemical weapons) must begin within two years of and be completed within ten years of the date the CWC comes into force (the

CWC came into force 1997). The specific details for the agreed rate and sequence of destruction are set-out in Part IV(C) of the Verification Annex. The destruction of Category I chemical weapons must be completed no later than ten years after the convention has come into force. The rate of destruction of all declared Category I chemical weapons must be phased out with a certain percentage required to be within 3 years, 5 years, 7 years and then 10 years after the CWC entered into force.

There appears to be a discrepancy in the CWC between its text and its Verification Annex regarding the timeline for destruction of both Category II and Category III chemicals. As seen above, Article IV, Part 6 of the CWC states that all chemical weapons must start within two years of and be completed within ten years of the 1997 entry-into-force date. In the Verification Annex, Part IV(C) states that the destruction of Category II and Category III shall begin no later than one year after the CWC enters into force and must be completed within five years of the date the CWC came into force.

Any State party is, of course, able to follow a shorter destruction timeline than the timeline provided by the convention. In the case of a State becoming party to the CWC after 2007, it must destroy its declared chemical weapons as soon as possible with the order of destruction and procedures for verification of such being determined by OPCW's Executive Council.

Any State's request for an extension of its deadline to complete the destruction of its chemical weapons will be reviewed and considered by the Conference of OPCW, at the recommendation of the Executive Council. The Verification Annex provides in Part IV(C) subsection 26 that any extension given will be the minimum necessary with no extension for destruction being more than five years longer than provided by the CWC. As 2007 is the date all Category I chemicals must be destroyed, no extension was to be granted to any State past 2012.

## *2. Destruction of chemical weapons production facilities*

The CWC requires that State parties close all chemical weapons production facilities within 90 days of the CWC coming into force. These facilities along with their associated buildings and support facilities were required to be destroyed by 2007. Article V of the CWC provides specific information regarding the destruction of declared chemical weapons production facilities. Article V has a sister annex, Part V of the Verification Annex, which sets out the specific, detailed information required of each State party. The CWC provides for a temporary conversion of a chemical weapons production facility into a chemical weapons destruction facility. It is only under exceptional circumstances that a State is allowed to convert a chemical weapons production facility to a use not prohibited by the CWC.

### **C. -Verification regime under the CWC-**

Once the OPCW receives a State's declaration and a destruction plan for its chemical weapons and/or chemical weapons facilities, the inspectors of the Technical Secretariat will promptly conduct their first verification visit. The Technical Secretariat follows the procedures set out in the CWC as to how each verification visit should be conducted. Inspectors from the Technical Secretariat are responsible for verifying the existence, location and quantity of the declared chemical weapons as well as visiting all chemical weapons production facilities. Specific procedures include how the inspectors are to take samples of the chemicals to be destroyed, how to ensure that these samples are sealed and protected from any outside interference or tampering and how the samples will be tested and at which laboratories. All locations where chemical weapons are stored (chemical weapons storage facilities), where they are produced (chemical weapons production facilities) or are to be destroyed (chemical weapons destruction facilities) are subject to systematic verification by inspectors from the Technical Secretariat. The verification/inspection visits to a State are set-up in such a way as to be unpredictable. The Technical Secretariat will give notice to a

State party of its decision to inspect or visit a storage facility only 48 hours before the planned arrival of the inspection team. Under a facility agreement signed between the OPCW and each State party, the inspectors have the right of unimpeded access to all parts of any chemical weapons storage facility.

The Technical Secretariat is also responsible for verifying and confirming that the intended destruction of all of a State's declared chemical weapons and chemical weapons facilities has actually occurred.

#### D. -Additional provisions of the CWC-

Through its Technical Secretariat, OPCW also provides any State party with assistance and protection against chemical weapons (Article X of the CWC). Such assistance may be in the form of detection equipment and alarm systems; protective equipment; decontamination equipment; and medical antidotes and treatments. It could also be having the Technical Secretariat offer expert advice on implementing a protective capacity. The Technical Secretariat is responsible under the CWC for setting up a data bank containing free and available information for all State parties to the convention covering the means of protection against chemical weapons.

Article VI of the CWC provides that activities not prohibited by the convention are allowed. State parties have the right to develop, produce, acquire, transfer and use toxic chemicals and their precursors for any use not prohibited by the CWC. The duration of the CWC is unlimited.

### The Current Position of State Parties under the CWC

Before the Syrian Arab Republic became a legal party to the CWC in October 2013, only 7 State parties had declared that they possessed chemical weapons. These 7 States were: Albania, India, Iraq, Libya, the Russian Federation, the United States, and "a State Party". The States with the largest stockpiles were and are the Russian Federation and the United States. Although April 2007 was the original end-date for the destruction of all declared chemical weapons and chemical facilities, the CWC provided for one five-year extension thus moving the end-date to April 2012. As this new date approached, several States, including the Russian Federation and the United States reported that they would not be able to complete the total destruction of their weapons and facilities by April 2012. Two other States, Iraq and Libya, were also not able to meet either the ten-year or the fifteen-year deadline but for different reasons. All of these four countries had to request further extensions past April 2012.

In August 2014, the latest annual summary report for the year ending 31 December 2013 was published by OPCW. At the end of 2013, the OPCW reported that 81.10% of the world's stockpiled chemicals had been verifiably destroyed and 57.32% of chemical munitions and containers covered by the CWC had also been destroyed. Now, almost a year later, it is a good possibility that more chemicals and chemical munitions have been destroyed. As of 31 December 2013, Albania, India and "a State Party" had each destroyed their entire stockpile of chemical weapons. Regarding the other declared stockpiles, OPCW verified that the following Category I chemical weapon stockpiles were destroyed: Libya had destroyed 87% of its stockpiles; the Russian Federation had destroyed 78% of its stockpiles while the United States had destroyed 90% of its chemical stockpiles. Libya had further destroyed 40% of its Category 2 stockpiled chemical weapons and had destroyed the remainder of its Category 3 ones. The OPCW also reported that the United States had destroyed all of its Category 2 and Category 3 chemical weapons.

Again, before Syria agreed to the CWC, 14 State parties had made declarations of owning or possessing chemical weapons production facilities. These States were Bosnia,

Herzegovina, China, France, India, the Islamic Republic of Iran, Iraq, Japan, the Libyan Arab Jamahiriya, the Russian Federation, Serbia, the United Kingdom, the United States and another State Party. As of 31 December 2013, of the 96 declared chemical weapons production facilities, 43 were destroyed while another 22 facilities were converted into something harmless. At the end of 2013, 31 facilities remained to be destroyed or converted.

#### Current Assessment of the Syrian Arab Republic

Syria has possessed one of the most advanced chemical warfare capabilities in the Middle East. President Hafez al-Assad, the father of the current President Bashar al-Assad, collected and stockpiled chemical weapons while he was president. Once Syria legally became a party to the Chemical Weapons Convention in October 2013, the OPCW started working on how and where to destroy the Syrian chemical weapons. In the Spring of 2014, the OPCW confirmed that it had removed all of Syria's declared chemical weapons to facilities located outside of Syria for their destruction. This removal of chemicals from Syria was done for several reasons including the relative ease of verifying the destruction process outside the worn-torn State and also to ensure that all declared chemicals were accounted for. The three countries currently involved in the destruction of the Syrian chemical weapons are Finland, the United States and the United Kingdom. Germany has also been mentioned in connection with this destruction in the future.

On 28 August 2014, the OPCW announced that 100% of all Category I chemicals (1,040 tons) owned by Syria have now been verified as being destroyed. About 70% of Syria's Category II chemicals (260 tons) have also been destroyed. Destruction of the remaining Syrian chemicals continues with approximately 25% of the entire Syrian stockpile of chemical weapons still waiting to be destroyed. The Syrian chemicals already destroyed have been mainly chemical precursors.

While the destruction of Syria's chemical weapons is almost complete, the path has not been a smooth one. The Syria Arab Republic has not met certain goals regarding the destruction of its chemical weapons and production facilities. The goal set for Syria was the complete elimination of Syria's entire chemical weapons programme by 30 June 2014. This goal has not been met.

Even before the final completion date came and went, Syria failed to comply with its 15 March 2014 date for the destruction of 12 chemical weapons production facilities. In March, Syria presented a proposal to the OPCW requesting that instead of destroying all of its production facilities as required by the CWC that there only be a change of use for many of its production facilities. The proposed change of use was to a military function. The OPCW rejected this. Syria then made some revisions to its March proposal but has continue to seek substantially lower destruction standards than the CWC demands. On June 27 and 28, 2014, a meeting was held in Moscow to discuss the progress being made regarding Syria's chemical weapons and to discuss Syria's new proposal. The Technical Secretary of OPCW presented a compromise proposal to the one put forth by Syria. On 24 July 2014, the OPCW reported that the destruction of the Syrian chemical weapons production facilities was to begin within sixty days. This will be verified by OPCW in the future.

The United States stated that it is prepared to accept this compromise but that it is finished with haggling with Syria over its refusal to demolish its chemical weapons production facilities. The United States stated that if Syria does not agree to the OPCW compromise there would be consequences. The United States took such a hard stance because of recent reports of chlorine gas attacks in April and May 2014 in northern Syria. These provinces are all ones that the Syrian Government does not consider to be under its effective control.

On 29 April 2014, the OPCW announced it was setting-up a fact-finding mission (the Fact-Finding Team) to go to the Syrian Arab Republic regarding chlorine gas attacks on the villages of Talmanes, Al Tamanah and Kafr Zeta. OPCW hoped that its investigation would determine the type of gas being used in the attacks and, more importantly, which side was responsible for the gas attacks, the Syrian Government or the opposition troops. The Fact-Finding Team intended to investigate the sites of the gas attacks and collect samples, speak to people on the ground in those areas including the medical workers, and review and analyze the munitions on the sites.

By 18 May 2014, the full OPCW Fact-Finding Team was in Damascus. On 19 May another gas attack was made on Kafr Zeyta (this town has been attacked using chemical weapons several times) and on 21 May 2014, a chemical attack was made on the nearby town of Al-Lataminah. In response to the gas attacks, the Fact-Finding Team made plans to visit the Kafr Zeyta site on 27 May 2014. Both sides in the Syrian struggle agreed in writing to a ceasefire to enable the investigation of the attack area. The Syrian Government sent the Fact-Finding Team a letter dated 25 May 2014 informing them that an armed group had tested a "locally made rocket with a gas cylinder warhead". It also claimed that the Syrian Government had come across barrels containing chlorine gas in a house owned by someone in Kafr Zeyta.

Unfortunately, the Fact-Finding Team was attacked on its way to meet the opposition escort near the village of Al-Lataminah. One of the team's vehicles suffered severe damage and was abandoned. Soon after this and in retreat, all but one of remaining vehicles carrying the Fact-Finding Team were fired upon before the members of the team were detained by armed gunmen. Several hours later, they were released unharmed. Needless to say, this field mission was aborted.

While the attack on the Fact-Finding Team prevented OPCW from making a definitive report, it was still able to set out several assumptions based on several similar incidents. The gas used in all of these attacks seems most likely to be a pulmonary irritating agent such as chlorine. A free-lance photographer working with Reuters reported that an hour after the attack on Kafr Zeyta, the smell of chlorine was obvious. There were many reports of a yellow-green cloud of gas during the attacks. Hamish de Bretton-Gordon (a former head of Britain's chemical warfare forces) said that the latest footage showed, "It is all consistent with chlorine. The evidence we have is that they are dropping 50kg barrels of chlorine." As with previous attacks, industrial gas canisters, adapted with detonation cords to blow them open, and launched in steel barrels from helicopters have been recovered and photographed by reporters in the areas of attack.

On 10 September 2014, the OPCW has now come out with a second report regarding these chlorine gas attacks. From all the interviews and evidence gathered, the OPCW is able to make a compelling confirmation, with a high degree of confidence that these attacks have been made by the Syrian Government. Chlorine gas is readily available for industrial and commercial use. The use of the industrial gas munitions seem to be primitive replacements for more sophisticated munitions which may have been removed from Syria by the OPCW. There are no reports of the opposition forces owning or using helicopters while the Syrian Government has many helicopters. Last, these attacks all occurred in areas the Syrian Government says it has no control over. For tactical reasons alone, it is logical that the Syrian Government is attacking these areas, not the opposition forces which control them. The OPCW has stated that following the establishment of the Fact-Finding Team in April there had been a marked reduction in reported chlorine attacks in May, June and July in Syria. Unfortunately, there have been new allegations of chlorine gas attacks occurring again in August and September. The OPCW has said that the Fact-Finding Team will continue its work.

Any type of chemical attack, including using chlorine gas, by the Syrian Government would be a breach of the 1925 Geneva Protocol of which Syria became a member in 1968. These attacks contravene the Chemical Weapons Convention. Ironically, the May chemical attacks came on the day that China and the Russian Federation vetoed a U.N. Security Council's resolution to refer human rights abuses by all sides in the Syrian conflict to the International Criminal Court.

### Comments on the Chemical Weapons Convention

As of the date of this article, there are currently 190 State parties to the Chemical Weapons Convention. A total of 8 State parties have made declarations of chemical weapons while a total of 15 State parties have declared having chemical weapons production facilities. The Syrian Arab Republic is included as a State party for these numbers.

Overall, the Chemical Weapons Convention has been successful in setting up an almost world-wide verification scheme to ensure that chemical weapons are not being stockpiled, produced or transferred by its 190 State parties. The verification system makes this convention stand out from most other conventions and treaties in its effectiveness. It is through the compulsory State declarations and the OPCW's ability to verify the type, quantity, location and toxicity of all declared chemicals that has instilled confidence in the system set-up by the Chemical Weapons Convention. Much of this confidence springs from the Chemical Weapons Convention's verification procedures. There is assurance that the chemicals each State has declared are what they are said to be and in reported quantities. Also, there is verification that stockpiles of chemical weapons and chemical weapons production and storage facilities have been destroyed. As stockpiles diminish and with the production of new chemical weapons prohibited, the world will be reassured that there is one less lethal weapon to be used on the general populace. At the same time, if the OPCW allows a compromise for the destruction of Syrian chemical weapons production facilities, the OPCW and the world must be vigilant in observing and monitoring Syria in the future.

The shortcomings of the Chemical Weapons Convention are few. Any new State which becomes a party to the convention in the future will have less time than the original State parties had to destroy its chemical weapons stockpiles and/or chemical weapons facilities. For new States joining the Chemical Weapons Convention, the convention says that all of each State's chemical weapons and chemical weapons facilities must be destroyed as soon as possible. A second point is that the use of both 'schedules' and 'categories' for defining different chemical weapons appears to be confusing and maybe unnecessary. That the OPCW has achieved as much as it has since 1997 is probably a testimony that it can work despite having two separate layers of classification. Last, there are still 7 States which have not yet agreed to the Chemical Weapons Convention. These States are, Israel, Myanmar, Egypt, Angola, North Korea and South Sudan. This is not a shortcoming of the convention but these States need to be encouraged to join it.

The Chemical Weapons Convention gives a sense of control over toxic chemicals which are used purely or mainly for chemical weapons. At the same time, as has been seen in the last year or so, it only takes one State using chemical weapons, either in breach of the convention or not a State Party to the CWC, to upset this sense of safety and equilibrium.

--THE END--