



Iran-Iraq War: The Employment of Chemical Weapons

Seçil Özdemir*

Abstract

The use of chemical weapons as a method of warfare can be traced back to the earliest dates of human history. However, modern historians accept that chemical substances have been used as weapons of mass destruction (WMDs) since the early twentieth century. Although the first convention which banned the use of chemicals as a tool of warfare was the Strasbourg Agreement in 1675, the chemical weapons (CWs) were used on a mass scale in the First World War and repeatedly thereafter. The Iran-Iraq war in the 1980s was an experiment in the use of CWs and it was during this war that CWs started to be used as conventional weapons of war. In this study, examples of chemical attacks during the Iran-Iraq War are discussed. The development of CWs such as the armaments deployed in the Middle East cannot be isolated from international politics, and should therefore not be studied without taking the major world powers into consideration. Therefore, attitudes of the US, the UK, France, Israel, Germany, Italy and Russia, none of which were participants in this war, are also to be examined. In order to create the chronological and informational groundwork of this study, a literature review was conducted and printed works were used. US national intelligence reports and diplomatic correspondence were examined. The media during the period, statements by politicians, and United Nations Security Council reports, and the memories of witnesses exposed to chemical attacks during the war are included to advance the study.

Keywords: Middle East, Iran-Iraq War, Weapons of Mass Destruction, Chemical Weapons, Halabja.

* Dr., Bartın University, Department of the Principles of Atatürk and Turkish Revolution History, Bartın, Türkiye, secilozdemirr@gmail.com, ORCID: 0000-0002-0488-1314; Visiting Scholar, The Johns Hopkins University /SAIS, Washington D.C., USA, sozdemi6@jh.edu



İran-İrak Savaşı: Kimyasal Silahların Kullanımı

Seçil Özdemir*

Öz

Kimyasal silahların bir savaş yöntemi olarak kullanılması, insanlık tarihinin ilk zamanlarına kadar tarihlendirilebilir. Kimyasal maddelerin yirminci yüzyılın başlarından itibaren kitle imha silahları (KİS) olarak kullanıldığı modern dönem tarihçileri tarafından kabul etmektedir. Kimyasalların bir savaş aracı olarak kullanılmasını yasaklayan ilk sözleşme, 1675 yılında imzalanan Strasburg Anlaşması olmasına rağmen bu silahlar Birinci Dünya Savaşı'nda kitlesel ölçekte ve sonrasında tekrar eden şekilde kullanılmıştır. 1980'li yıllarda İran-İrak Savaşı kimyasal silahların kullanımında bir deney süreci gibidir ve bu savaş sırasında kimyasal silahlar geleneksel savaş silahları olarak kullanılmaya başlamıştır. Bu çalışmada İran-İrak Savaşı sırasındaki kimyasal saldırı örnekleri ele alınmıştır. Ortadoğu'da konuşlandırılan silahlar gibi kimyasal silahların gelişimi de uluslararası politikadan izole edilemez bu nedenle büyük dünya güçlerinin politikaları dikkate alınarak bu süreci incelemek gerekmektedir. Bu çalışmada İran-İrak Savaşı'nın resmi olarak tarafı olmayan ABD, İngiltere (Büyük Britanya), Fransa, İsrail, Almanya, İtalya ve Rusya'nın kimyasal silah üretimi ve kullanımına yönelik tutumları da değerlendirilmiştir. Çalışmanın kronolojik ve bilgisel alt yapısını oluşturmak için literatür taraması yapılmış ve basılı eserlerden yararlanılmıştır. ABD Ulusal istihbarat raporları ve bazı diplomatik yazışmalar incelenmiş, dönem medyası, politikacıların açıklamaları ve Birleşmiş Milletler Güvenlik Konseyi raporları ile savaş sırasında kimyasal saldırılara maruz kalan tankların ifadelerine çalışmayı geliştirmek için yer verilmiştir.

Anahtar Kelimeler: Ortadoğu, İran-İrak Savaşı, Kitle İmha Silahları, Kimyasal Silahlar, Halepçe.

* Dr., Bartın Üniversitesi, Atatürk İlkeleri ve İnkılap Tarihi Bölümü, Bartın, Türkiye, secilozdemir@gmail.com, ORCID: 0000-0002-0488-1314; Misafir Araştırmacı, The Johns Hopkins Üniversitesi /SAIS, Washington D.C., ABD, sozdemir6@jh.edu

1. Introduction

Poisoned arrows, arsenic smoke and tar have been used during conflicts since the earliest historical periods (Organization for the Prohibition of Chemical Weapons [OPCW], 2006) and the sense that the use of these poisons was not an appropriate or honorable tactic of warfare is also an old one: Julian Perry Robinson wrote in his history of the subject that “the earliest example of that idea might possibly be found in ancient Indian epics. Also, in Greek mythology, the use of poison as a weapon of war was often considered cowardly, a tricky technique used by those who were not heroes” (Rothman, 2018, Parag. 7). In a similar vein, after the German gas attack on Ypres in April 1915, the use of the CW was denounced by *The Times* as a “felon method of warfare” (Douglas, 2009, p. 859).

The first examples of the use of CWs as a means of mass destruction occurred around the middle of the nineteenth century (Everts, 2015, parag. 14). Specifically, however, the First World War is considered to have been a turning point for the use of these weapons against massed opponents. The process which started with poisoned arrows became far more planned and practical with a wide range of tools such as chemical bombs, land mines enriched with toxic gases, vessels pulverizing chemical lava, chemical missile warheads and other devices (OPCW, 2006, parag. 6). Since the First World War, CWs have caused more than one million casualties worldwide (United Nations Office for Disarmament Affairs, n.d., parag. 1).

Taken together, all these tools designed for biological and chemical slaughter are called ‘weapons of mass destruction’ (WMDs) and “constitute a class of weaponry with the potential to, in a single moment, kill millions of civilians, jeopardize the natural environment, and fundamentally alter the world and the lives of future generations through their catastrophic effects” (United Nations Regional Centre for Peace and Disarmament in Asia and the Pacific [UNRCPD], 2013, parag. 3).

The first convention which banned the use of chemicals as a tool of warfare was the Strasbourg Agreement of 1675. The Brussels Convention was drawn up about 200 years later (American Chemical Society, 2014, parag. 3). In The Hague Convention of 1899, it was agreed that weapons spreading toxic and harmful gas should be forbidden in wars which might break out between two or more countries, and this convention banned

the use of substances which would cause people to suffer clearly and unnecessarily (Byrnes et al., 2000, p. 19-20; see also Schmidt, 2017). Since The Hague Convention, both formal and informal expressions of opinion by international powers have branded the use of chemical weapons as illegitimate (Linstrum, 2019, p. 557).

The damage caused by these weapons during the First World War was subsequently evaluated and the League of Nations issued its decision on the matter in article 39 of the Disarmament Agreements of 1925 and 1930. The production, development, storage and transfer of toxic and bacterial weapons were banned in an addendum to decision 2827 at a meeting of the UN General Council in 1971, but the intended purpose of using them to achieve peace was excluded from this document (United Nations, 1971). The Soviet Union signed the decision to prohibit CWs in 1928, and the US signed it in 1975 (Türk Basınında İran- Irak Savaşı, 1984, p. 187; Bar-Yaacov, 2015; see also McCamley, 2006). The first use of CWs in the Middle East was by Egypt during the 1963-67 Yemen War. Hajjar (1998, p.6), indicated that continuing competition in the Middle East region led to the further development of these weapons.

The Iran-Iraq war is an example of a conflict in which CWs were most intensively used. According to (Cordesman, 2014) many western researchers monitoring this war underrated the deadly capacity of CWs. The general understanding of the issue during the Iran-Iraq War was that it was more acceptable to ensure security through CWs than through the possession or use of nuclear weapons (Cordesman, 2014, p. 30). CWs are also accepted as WMDs even they are cheaper and more easily acquire than nuclear weapons (Russel, 2005, p. 188). As stated by a United States Intelligence analysis which was reported to the President in 2005 “Even when unintentionally released, poisonous chemicals can have terrible effects. Deliberate chemical attacks, of course, have the potential to be even worse but easy to use. Many small-scale chemical production facilities can be concealed in nondescript facilities that are not easily detectable through conventional collection means, such as imagery. (Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, 2005, p. 520-521).

There is little research reported in the literature about the use of CWs specifically addressing the Iran-Iraq war. Those studies which are available

were used as the basis for this current study but the war between Iran and Iraq is also examined in this paper in relation to external forces which were not included in the official sides of the war. In addition to that, the memories of victims of chemical attacks are used in this paper in order to describe the negative impact of CWs on humanity and some of the attacks are presented through the statements of eyewitnesses.

Much of the literature has been focused on the Iran-Iraq conflict and its effect on United States and USSR rivalry and has evaluated the chronological development of the war (Karsh, 2002; Renfrew, 1987). Tarock, (1998) evaluated the role of the superpowers during the Iran-Iraq war in detail, but did not provide enough data about the use of CWs. Unlike the Iran-Iraq War, the employment of the CWs was generally neglected as a part of the literature, therefore there is little research reported in the literature about the use of CWs specifically addressing the Iran-Iraq War. These studies in the literature were used as the basis for this current study.

The following studies are the most significant examples of research focused on chemical attacks during the Iran-Iraq War: a detailed study about the gassing of Halabja and the Iran-Iraq War (Hiltermann, 2007); sample of using CWs during the Iran-Iraq war (Ali, 2001); and (Bar-Yaacov, 2015) described the CWs used in the Middle East and the features of these weapons in detail; (Segal, 1988) focused on the period of conflict between Iran and Iraq and the military stages of the war; (Sassoon, 2014) investigated bilateral relations between the Democratic Republic of East Germany and Iraq between 1968 and 1989 and commented on the role played by the former in the CW development process of the latter; (Woods et al., 2009) carried out an important study assessing the role of CWs during the Iran-Iraq war and suggested that these weapons ensured the continuation of the war and that Iran developed defensive preparations to deal with CWs over time. Additionally, anecdotes from the period and an interview with the Iraqi general Hamdani were included in Woods's work. (Hajjar, 1998) evaluated the development and use of chemical, nuclear and biological weapons in the Middle East and described the development process for these weapons in Iraq and Iran. In addition to these works, a bibliographic study encompassing research into chemical and biological weapons completed up to 1991 was prepared by the US Defense Technical Information Center. And there is an article by Gay H. (1987) assessing international talks about the use of chemical and biological weapons.

The studies listed above were used as the basis for this current study but the war between Iran and Iraq is also examined in this study in relation to external forces which were not included in the official sides of the war. The reports and meetings of the UN on the usage of CWs during the war were examined chronologically. Diplomatic documents during this period, accusations and counter-accusations by the belligerents and documents published in the press about the use of CWs were also compared. In addition to this, US experts interviews with refugees who fled to Turkey as a consequence of Saddam Hussein's attacks and eye-witness testimonies about the CWs in reports compiled after these interviews present the most indubitable proof and are stated to be convincing (The United States Congress, 1988). Also, Nuclear Biological and Chemical Weapons Units (NBCWUs) were established in 1985 at Iran. Verbal histories gathered from nurses employed in these units who assisted patients who had been exposed to chemical attacks are very notable in terms of communicating the experiences of personnel employed at the front (Firouzkouhi et al., 2013).

The intention of this research format is to contribute to the literature by taking a holistic approach. It is concluded that there were serious and long-lasting negative impacts of CWs used on civilian masses and that the international community was not very successful in controlling and limiting the production, trade and use of CWs in the case of the Iran-Iraq war. This study evaluates the attitudes of the parties in the Iran-Iraq War towards the production and deployment of CWs. The aim of the study is to highlight the difficulty of controlling CWs, which are cheap and easily available, and to emphasize that the damage caused by this threat is not a thing of the past.

The research questions addressed in the study are: What was the attitude of international forces towards the use of chemical weapons during the Iran-Iraq War? Although there are conventions on the prohibition of weapons of mass destruction, were they applicable in practice during the Iran-Iraq War? Did the effects of weapons of mass destruction disappear when the Iran-Iraq War was officially over?

In this study, it is concluded that during the Iran-Iraq war although international agreements and there were known facts about long-lasting negative impacts of CWs used on civilian masses and that the international

community was not successful in controlling and limiting the production, trade and use of these weapons. It is also observed that the war-zones in which CWs were used became transformed into experimental laboratories in which the impacts, capacities and side effects of these weapons were tested.

2. Chemical Weapons during the Iran-Iraq War (1980-1988)

Despite the 1975 Algiers Agreement, the rivalry between Iran and Iraq stemming particularly from their disagreement over the Shatt Al-Arab waterway did not end. Nevertheless, the Algiers Agreement did prevent both parties from intervening in each other's domestic politics and there was a decrease in provocative activities targeting the Kurdish and Turkmen groups living intensively in the border areas of both countries until 1979 (Renfrew, 1987, p. 98-99).

Despite the long-standing tensions between Iran and Iraq, the two sides had not fought one another for centuries. In 1975, Saddam Hussein broke this tradition of carefully managing the potential crisis and for the first time in three centuries launched the two countries into all-out war (Bakhash, 2006, p. 11). Researchers also consider the war to have been a conflict between NATO and the Warsaw Treaty Organization (Ali, 2001, p. 44). The reason for this is that both sides obtained the required military and technical support from external powers to start the war. In 1987, the Russian leader Mikhail Gorbachev stated that "in regard to medium-range nuclear missiles in Europe, an agreement that will be settled between the US and my own country is a critical step generally for other disarmament areas and for settling the regional conflicts" (Conference on Disarmament, 1987, p.10). Gorbachev's words show how the rivalry between the two powers could be reflected in other parts of the world.

Some researchers have suggested that after suffering heavy losses against Iran, the Iraqi administration focused on using CWs in 1983-84. Iraq also built huge dugout shelters to protect civilian advisers and military personnel during this period (Segal, 1988, p. 956). In 1981, however, Iran had claimed that Iraq had killed thousands of civilians by using CWs and napalm bombs. Kelidar (1992, p.790) stated that "Iran attempted to overwhelm the Iraqis by human wave attacks and the Iraqis resorted to

chemical weapons to terminate them”. The use of napalm bombs by Iraq on the Iranian cities of Khorramshahr and Penjwin was admitted by one of the Iraqi air force generals, Alwan al-Abousi (Woods et al., 2009, p. 203).

Even though the Geneva Protocol had been signed in 1925 and had banned the use of CWs, the belligerents’ mutual accusations were about the use of CWs during the war. It has therefore been accepted as proven by the major powers of the world and by the UN that the protocol was not in force throughout the war (Segal, 1988, p. 956). Iraq not only massacred people in Iran, but also opponents of its own domestic politics under the guise of the war. Although these claims appear to be true almost from the beginning of the war, the UN did not warn Iraq directly. However, Protocol 1 of the Geneva Convention of 1949 states that “In any armed conflict, the right of the Parties to the conflict to choose methods or means of warfare is not unlimited”. Another critical rule under the Convention is the principle that civilians and military forces should be clearly distinguished and that civilians should never be a target of military attack (Saribeyoğlu, 2004, p. 30-35).

The fact is that almost none of the dominant powers imposed resolute sanctions against the weapons sold to supporters of war throughout the conflict. The trade in chemical and biological weapons therefore reinforces the perception that Iraq was supported by the western countries which produced these weapons (Segal, 1988, p. 241). David Walker (2017) viewed 1982 as a year of experimentation since no extensive deployment of such weapons occurred. Also, by 1983 Iraq had managed to build at least two plants which produced blister agents.

In 1982, the US was in a position to restrict the endeavors of the CW program led by Iraq in order to end surveillance, and also believed that the possibility of reaching a satisfactory outcome was not high. However, US government was unable to convince the parties with a sufficient level of consideration and power to influence the Iraqi government (Walker, 2017, p. 183). In the disarmament conferences held by western countries, they made statements that sanctions related to CWs and global restrictions needed to be increased. In 1984, the American representative L.G. Field said at the International Disarmament Conference that humankind should not be afraid of terrifying weapons (United Nations, 1984, p. 25). The Iranian representative Kazemi Kamyab stated at the same conference that

these weapons hindered international peace and environments of trust, and thus the use of these weapons should be avoided. Kamyab also emphasized that these chemicals had been known as WMDs since the First World War and added that the use of them was “dramatic fact” and that chemicals such as mustard gas resulted in painful death or chronic illnesses and damaged the ecological system. He further stated that it was difficult to imagine the effects of CWs on human psychology and that the Stockholm International Peace Research Institute (SIPRI) had revealed that the Iraqi administration had used CWs against the Kurds who lived in the northern part of the country. On 16 February 1984, the Iranian Minister of Foreign Affairs stated that evidence was clear, by pointing to fragments of CWs, that Iraq had started to use these weapons more intensively. Kamyab claimed that according to research carried out at a laboratory in Belgium, Iraq had used “yellow rain” (Guthrie, 1984, p. 4-13). In the same period, reports by American authorities emphasized that Iraq was determined to continue to use CWs. Iraq’s capacity to ensure nerve-agent production was not strong enough and it also had fewer conventional weapons. If the chemical factory at Samarra did not suffer any bomb attacks and if no mistakes were made in regard to its products, the factory was expected to reach full production by the end of that summer. According to same report Iraq was expected to manufacture nerve agents in sufficient quantities to meet the needs of bombs, which was about 250 kilograms a day (Central Intelligence Agency Archive, 1984a). According to the documents it was during negotiations that the Reagan administration realized the extent and significance of CWs in Iraq (Walker, 2017, p. 76).

Reports by US officials stated that Iraq had been using blister and nerve agents against Iranian soldiers since 1983. This situation was also stated in UN reports, and Iraqi officials, including the Minister for Foreign Affairs, admitted that they had used CWs. In spite of all this, Iraq continued to use these weapons without any political or economic sanctions in terms of relations with other countries. The international silence about the previous use of CWs by Iraq was a factor in Iraq choosing to use these weapons again. The Reagan administration condemned Iraq’s use of CWs but took no action to prevent it (The United States Congress, 1988, p. 13903).

On the other side, Saddam Hussein claimed that these weapons were being used by Iran. In 1985, Iran had acquired Scud missiles from Syria and

Lebanon, which were also being deployed by Saddam Hussein (McNaugher, 1990, p. 9). Towards the middle of the war, the Iran-Contra scandal, which emerged in the US, Israel and Iran, showed that weapon shipments were maintained between these countries. It can also be stated that Russia, North Korea, China, Syria and Lebanon were involved in the supply of weapons to Iran in the subsequent period (Segal, 1988, p. 241-42).

An Iraqi report of April 1987 claimed that Iran had used phosgene gas which had killed twelve people and injured 156 more (Central Intelligence Agency Archive, 1984a). Phosgene gas, which is six times more deadly than chlorine gas, is a colorless gas which causes slower and more painful death, so those who were exposed to attacks with this gas did not initially realize that they have actually been subjected to a deadly attack (Everts, 2015, parag. 16).

Other studies evaluating the same period raised suspicions that Iran had provided chemical materials to Libya for use against Chad in 1987. According to some research by 1988, both Iran and Iraq were routinely using chemical agents (Schillare, 1990, p. 9-10). In spite of that there is no information fully proving the accusations about Iran's use of CWs during the war but there are overlapping allegations by different researchers and in various documents. It is obvious that having used CWs since the beginning of the war, Iraq would respond to this attack. One of the most widely known massacres of this war, at Halabja, was one of the most terrifying attacks carried out during the war. In a statement, the Iranian Foreign Affairs Minister Ali Ekber Velayeti maintained that Iraqi aircraft had dropped chemical bombs on Hormal and Halabja, killing five thousand people and injuring seventy-four thousand. Iraq's response to these accusations was that the side which had used CWs was Iran (Diş Haberler Servisi, 1988). Despite this counter-accusation, by sending journalists to the region during the Halabja massacre, Iran enabled the whole world to witness the massacre (Karsh, 2002, p. 55). According to interviews with eyewitnesses and soldiers about the use of CWs throughout the Iran-Iraq war, it was Iraq which had used them (Hiltermann, 2007, p. 36). On the other side Iran's Supreme Leader Ayatollah Khomeini declared that CWs were contrary to Islam and that the use of WMDs was a sin and against Islam so Iran would never use them, and throughout the war, he maintained this principle, despite numerous chemical attacks on Iranian troops and

despite the existence of chemical stockpiles left over from the Shah's regime (Ghazvinian, 2020, p. 20-21).

Throughout this bloody rivalry, communities living in border areas were subjected to most attacks. Iraq's Kurds were targeted by Iran and Iran's Kurds were targeted by Iraq during the war, and when the war was over, both countries developed a strict attitude towards these groups as they saw them as being traitors within their own borders (Tuşalp, 1989, p. 50-52). Saddam Hussein took an extremely harsh stand on this issue during the war and had begun to massacre this population using CWs towards the end of the war. Iraq's attitude to the use of CWs was influential in Iran's acceptance of a ceasefire in 1988.

3. The Role of External Powers and the UN

Throughout the war, Iranian and Iraqi authorities made many claims about the countries from which the other had obtained CWs and about places where these weapons were manufactured in the Middle East. Iran claimed that Iraq had obtained CWs from the UK, but the British media reported that there were three secret underground factories in Iraq and that these factories, ostensibly producing insecticides, had actually been built with the support of Italy. It was also ascertained that facilities in Libya, again apparently producing insecticides, in Rabta near Tripolitania were in fact poison gas plants (DeShazer, 1990, p. 5; Türk Basınında İran- Irak Savaşı, 1984, p. 166-78). The UK was one of the countries which declared neutrality when the Iran-Iraq War broke out. In February 1984, the UK stated that it was going to send a warship to the south of the Gulf to maintain its own security because this was necessary for the transfer of petroleum oil (U.S. National Security Archive, 1984, p. 27). When Iran pushed forward during the war, however, it became apparent that the UK had sent substances which Iraq could use for the production of CWs. On 6 April 1984, *The Guardian* reported that some British firms had recently sold to Iraq some ingredients to make mustard gas, as well as the nerve agent sarin. The British firms were reportedly under the impression that these chemicals would be used for the manufacture of agricultural pesticides (U.S. National Security Archive, 1984, p. 27). The UK, which had previously accused Italy of building arms production centers in facilities which ostensibly produced insecticides,

used the same excuse that these agricultural pesticides were insecticides when it became involved in the situation. In fact, biological and medical allegations such as these were the most notorious cover-ups for the trade in CWs. An Iraqi general Mahir Abdulresit said that “all invaders must know that there is devastating poison for every pest no matter how many they are, and Iraq has these insecticides”, a comment which shows how these chemical materials were disguised (Hiltermann, 2007, p. 79).

France was the other country which declared neutrality at the beginning of the war but after 1981, French nuclear physicists went to Iraq to build a nuclear reactor. Iraq’s purchase of yellow cake from Nigeria at the same time is considered to have been linked to these movements. The remarkable point here is that the reactor at Osirak which the French built near Baghdad was hit by Israel in June 1981. Furthermore, the gas drenching of civilians by French/Soviet made aircraft was considered to have a kind of support by France for Iraq in terms of CWs (U.S. National Security Archive, 1984, p. 28-30; Ozdemir, 2017, p. 246-247). As a reaction to this, the Air France office located in London was occupied by Iraqis in 1988 and the occupiers stated their opposition to the sale of CWs by France to Iraq (Kimyasal Silaha Gözaltı, 1988, p. 4). Moreover, after the foundation of Israel, it had developed nuclear weapons to protect its own security in response to the over-population of Arab countries and their large armies. Arab countries and Iran considered that Israel’s nuclear deterrent had to be balanced by chemical and biological weapons, considered by many as the “poor man’s nuclear weapon”, in the short term (Russel, 2005, p. 191; Pelletiere et al., 1991, p. 102).

It was reported by Belgian authorities that yellow rain, which had been used by Russia in Laos, Cambodia and Afghanistan, was also used in Iraq (Ozdemir, 2017, p. 246-47). On the other hand, it is known that CW practices were carried out in the north of Iraq and that Russia had been using the region to test the logistics of CWs since 1967 (DeShazer, 1990, p. 9). Iraq had started to study CWs by taking samples from Russia in 1965 (Hiltermann, 2007, p. 66).

Additionally, large arms manufacturers ensured the proliferation of these weapons in developing countries and from there to other countries. For example, Russia had supplied CW agents to Egypt and these weapons are known to have reached Syria from Egypt and then Iran from Syria (Smart

et al., 1997, p. 131-32). Egypt was effective in the continuation of the war by indirectly ensuring that CWs reached Iraq. In fact, Iraq had obtained the necessary ammunition, equipment and specialists for the production of mustard gas and nerve agents from western Europe and Egypt (Central Intelligence Agency Archive, 1984b).

With regard to the CWs used by Iraq, it is known that in the first years of the war, Iraq obtained thiodiglycol, which is a gas belonging to the sulfur and mustard gas family, from western Europe and the US. Through this trade being maintained intensively in the first years of the war, Iraq had enough raw materials to produce CWs by the middle of the war. It is also evident that the international pressures and controls which were implemented meant nothing at this point (Ali, 2001, p. 46-47). Taha Yasin Ramadan, a member of the Revolutionary Command Council and Iraq's first deputy prime minister, visited East Germany in March 1981 and four months later paid a visit to West Germany. Following that second visit, a West German company based near Frankfurt cooperated with the Iraq administration in the construction of a CW complex and helped to bolster the Iraqi armament program. In the late 1980s, another West German company, with the help of a British company, aided the Iraqi administration, this time over the construction of a 'super-gun', an extraordinarily and unprecedentedly large piece of artillery. Cooperation between Iraq and West Germany continued in the field of developing CW capabilities. A delegation from the Division of Chemical Services of the Ministry for National Defense from West Germany spent three weeks from late September to mid-October in 1985 reviewing conditions at a chemical services training site in Iraq (Sassoon, 2014, p. 14-18).

Iraq accelerated its operations in CW production facilities which had existed since the 1960s with the support of Germany in the 1980s. US documents state that the Muthanna facility, the most famous CW production facility built as a part of the CW program named Project 922 in Iraq, was also developed with German support. The name Project 922 was changed to the Al Muthanna State Establishment (MSE) in 1986. By these activities, Iraq was able to deploy mustard gas between 1978 and 1981 and started to produce the nerve agents tabun and sarin in 1984; it also produced VX in 1988 (U.S. Government Office, 2004).

In 1984, Iraq was achieving production of at least two tons of blister agents and nerve agents every day. Iraq's CW stock reached hundreds of tons and

it became one of the countries with the most aggressive CW capacity in the world. This problem, integrated with international tolerance, increased the chances of more frequent use of CWs. The basic problem worrying the international public was what would happen to these stocks and production capabilities in Iraq after the war (Central Intelligence Agency Archive, 1984b). Iraq had started to use nerve gas after 1984. Nerve agents are more virulent and victims die quickly if they do not receive immediate medical attention. Atropine injections, one of protective measures against gas attacks, were sold by European producers to Iran. This demonstrates that nerve gas was used during the Iran-Iraq war (Hiltermann, 2007, p. 74-6).

In 1984, the General Secretary of the United Nations (UN), Javier Pérez de Cuellar, sent a committee to Iran to determine and observe the use of CWs which had been obvious since the beginning of the war. As a result of these observations, the UN did not warn Iraq directly, even though it had condemned the use of CWs in 1984. Two months later, the UN Security Council met again, this time because of attacks by Iran against merchant ships in the Gulf, and this time Iran was condemned under UN Security Council Resolution No. 552 (United Nations [UN] Security Council, 1984). This reinforced the assertion that Iraq had been protected since the beginning of the war. However, Iran rejected this resolution and declared that it was a unilateral assertion by the UN Security Council.

Chemical attacks against Iranian soldiers were reported by UN experts in April 1985. This time, the UN warned both Iran and Iraq not to use CWs. Both countries responded to this resolution with accusatory explanations stating that the resolution was related to the previous one. Even though the UN adopted Resolution No. 582 in 1986, Iran did not accept an agreement without confirmation that Iraq was the aggressor (Ferretti, 1990, p. 217-19).

It was revealed in UN¹ reports published in 1987 that both sides had used CWs (Kimyasal Suçlama, 1987, p. 5). At a meeting in Germany, the Iraqi Foreign Affairs Minister Tariq Aziz responded to questions related to the use of CWs by stating that the UN was two-faced and that Iran had been

¹ For the US proposal, negotiations and decisions on the USSR's restriction on the use of chemical weapons during the Iran-Iraq War, see (1986), "Chemical Weapons", *Survival*, 28(5), 463-472, 10.1080/00396338608442327

the first to use them. This statement was virtually a confession that Iraq had used CWs during the war (Irak'tan itiraf, 1988, p. 5; U.S. National Security Archive, 1984, p. 55)

There are several reports which show operations by Iran which involved CWs during the war. As Iran's purpose for developing CWs was self-sufficiency, it can be concluded that the international trade was being maintained at this point. The concern about this issue, as stated in the US reports, was not related to the use of these weapons by Iran but about Iran reaching a level to become self-sufficient in terms of possession of the technical substances required for CW production (U.S. Government Printing Office, 2000).

As for the situation in Iraq, the answer given by Aziz to the question of why Iraq was continuing to develop bio-material is revealing: Iraq had started to develop its own weapons because of the bloody war with Iran. He further stated that the Iraqi government had given permission to the Military Industrialization Commission to produce chemical and biological weapons during the war with Iran. He also emphasized that having these weapons within their armory was a matter of security and of defending their state against the Israeli threat.

Finally, Aziz's thinking and his statements with regard to the use of CWs in the Iran conflict were as follows: "Forbidden internationally, not forbidden internationally, a breach to international treaties or not, this is another subject because the party we were facing was an outlawed party, out of the treaties, out of the epoch, out of this planet" (Woods et al., 2009, p. 26-32). This is simply an admission that banning the use of CWs by international laws did not apply to the Iranian case as Iraq was facing an outlaw rival which did not recognize any of the international treaties. According to Kelidar (1992, p. 795), during the war Europe and the US provided moral and material support and assistance to Saddam Hussein. In addition, "Arab financial aid, Soviet arms, and Western technology liberally supplied to Saddam during the war allowed him to build a formidable war machine with chemical, biological and potentially nuclear weapons".

Eventually, in 1988, a UN Security Council report stressed that both sides had continued to use CWs more intensively than before. The UN authorities, aware of the situation in 1988, stated that the conflict maintained

with such weapons could lead to insoluble problems and that there was a serious increase in the number of civilians being killed by mustard gas (UN Security Council, 1988a, parag. 19-30). UN Resolution No. 612 was the first UN report to reveal the problem directly, and the accuracy of the statements made by observers was stressed in this resolution. Resolution No. 612 stated that both sides had used weapons banned by the Geneva Protocol of 1925, and that the weapons used were asphyxiants, poisons and other harmful gases as well as bacteriological or biological weapons. However, Resolution No. 620 expressed concern about the use of these weapons in the future (UN Security Council, 1988b, p. 10; UN Security Council, 1988c; Ferretti, 1990, p. 232). The justification for the UN's concern is shown in the atmosphere of conflict persisting into the twenty-first century.

4. Halabja and the General Post-War Impact of CWs

Saddam Hussein did not only attack Iranian troops during the war with Iran, but also the Kurds who were officially Iraqi citizens and who lived in the north of Iraq. Attacks in the border regions and the Halabja massacre are examples of this. Those who survived the Halabja massacre referred to "clouds filled with poison". The use of these destructive clouds was contrary to international law because they killed so many people indiscriminately. Although people were able to resist conventional attacks, it was not actually possible to fight against these chemical clouds. Even if some soldiers were able to use breathing apparatus, they were still not able to endure the gas for long (Cook, 2000, p. 48-49).

According to the statements of people who survived the massacre by running in the opposite direction to the wind, those who fell were unable to stand up. It was later realized that the primary effect of these weapons was suffocation. Transient blindness, dizziness, vomiting and sensitive skin were some of the effects on those who survived the massacre. Some of the survivors of the Halabja massacre stated that a blue liquid fell from the sky and burned as soon as it touched the ground; others said that at first the smoke smelled like sour apples, and then like rotten onions, and that those who were caught by this smoke were unable to get away from it. Another witness reported experiencing smoke of every color like a rainbow which

smelled like a match (DeShazer, 1990, p. 5; Tuşalp, 1989, p. 52-59; Salaz, 2010). The fact that some statements reported pleasant smells or impressive images such as a rainbow suggests attempts to mislead the victims and to ensure precision in carrying out a massacre. CWs make less noise than other weapons and this prevented victims from saving each other by escaping from the area earlier. In 1984, Abdolsamad Rajabi Dehkordi, who was in the Besic Forces in Iran and had survived one of these attacks, stated that at first they thought that the bombs dropped on them had not exploded, but when a cloud of gas had surrounded them, they realized what was happening. Almost all of the eyewitnesses who were exposed to chemical bombs and survived stated that these bombs did not look like traditional bombs. Chemical attacks affect the victims with a gas which is insidious, silent and unpredictable, so if victims do not see the aircraft or the moment when bombs are dropped, they do not generally have any chance to escape (Lewis, 2015). Poisonous gas created severe discomfort among victims because it prevented them from inhaling (Cook, 2000, p. 48-49).

When nerve gas was being developed, the survivors' experiences of previous attacks were taken into consideration. As chemical attacks were repeated, the Iraqis gained more experience and each attack became more efficient than the previous one (Pelletiere et al., 1991, p. 99-100). In an interview, one of Saddam Hussein's generals, Hamdani, stated that "We used to wonder whether using gas was effective. We asked the Iranian prisoners about the effectiveness of gas; most of their comments indicated it was not, because the weapons used were of the volatile type. Such use of CWs was not practical, because it required information such as the speed of wind" (Woods et al., 2011, p. 47). Additionally, wind direction at the time of use was very important and if the wind blew in the opposite direction, their own military forces might be affected, even if they were wearing gas masks. Hamdani stated that they had created a "special higher headquarters" for the use of weapons of this type (Woods et al., 2009, p. 55-56).

Hashemi Rafsanjani stated that the use of these weapons was determinative in the continuation of the war and that "all the moral teachings of the world are not very effective when war reaches a serious position" (Chubin, 1989, p.12) and "the [Iran-Iraq] war taught us that international laws are only scraps of paper" (Eisenstadt, 1994, p. 110). A decade after the Iran-Iraq

war, there were more than thirty thousand people struggling to live with the effect of these chemicals in Iran or who had lost their lives (OPCW, 2006, p. 9).

Insecurity and armed conflict continued among the countries in the region after the war, and an arms race began to gather pace rapidly throughout the Middle East. At the end of the war, there was no peace treaty, there was just an armistice, and this represented an acknowledgement of the law of diminishing returns and of mutual exhaustion. As a result, it cannot be said that the conflicts were resolved, or that high emotions were calmed (Hiltermann, 2010, p. 7).

With regard to the chemicals used during the war, the American media stated that the poisonous gases used by the Iraqis had the capacity to kill people within one or two minutes by causing hematoceles (tumors filled with blood). It was also stressed in the reports that the Iraqis did not even try to hide the fact that they had used these weapons during the war. Although the British media reported that nerve gas had been used, the German media stated that it was mustard gas which had been deployed (Türk Basımında İran- Irak Savaşı, 1984, p. 166-178). The treatment of the injured soldiers in Europe provided the rest of the world with evidence that Iraq was using these weapons (Sidell & Franz, 1997, p. 19). Additionally, in 1985, Iran had established Nuclear Biological and Chemical Weapons Units (NBCWUs) to protect its own military personnel from these attacks. The basic purpose of this organization was to train teams to reduce the effects of chemical attacks. Some of these units informed and warned those in the war-torn regions about chemicals and the use of gas masks, and others cleaned up the residue after attacks to reduce the effect of chemical attacks to a minimum, and transferred the wounded to newly-established chemical emergency service departments and field hospitals. These units in Iran were staffed by doctors and nurses who gained experience with chemical injuries over time (Firouzkouhi et al., 2013, p. 123-128). However, a reality revealed by this current study is that although the lives of people exposed to chemical attacks might be saved, in the long term it is not possible to fully resolve either the psychological or the physical effects of the chemicals. For example, one of the nurses working in Iran's NBCWU units spoke about her experience of dealing with patients, saying "I felt that I had to take off my shoes in order to be able to walk easily

among the injured to take care of them, otherwise I would hurt them. At the end of the day, I found blisters on my feet since they had been contaminated by mustard. I am still affected by those complications” (Firouzkouhi et al., 2013, p. 127). These long-term effects not only affect the people exposed to chemical attacks but drag their families and social circles into similar traumatic psychological states (Ahmadi et al., 2011, p. 171).

According to reports of the US Department of Defense in 1990, twenty countries had the capacity to produce their own chemical and biological weapons and Iraq, Egypt, Israel, Syria and Lebanon were among them. CWs became even more dangerous in the Middle East when they started to be used with ballistic missile warheads and there is a possibility that these weapons might be used by terrorist groups. This mitigates against the creation of a secure international atmosphere and it is extremely threatening (DeShazer, 1990, p. 9). In 1996, at a conference of western countries gathered to prevent chemical and biological weapons, anxieties were revealed about some countries because of the weapons which they produced. These countries were North Korea, Iran, Iraq, Lebanon and Syria. These countries were also considered to be countries sponsoring terrorism and it was demonstrated that they were collaborating with terrorist groups. Furthermore, it was stated at the same conference that although thousands of people had been killed in the Iran-Iraq war, Iran’s attempts to produce biological weapons since the early 1980s were close to an end (Deutch, 1996, parag. 20).

Official Iraqi records captured by US soldiers after the invasion of Iraq showed that Iraq had obtained and used CWs and that Saddam Hussein was quite enthusiastic about the repeated use of these weapons: “Iraq has chemical weapons and has successfully used them on Iranians, and Iraq won’t think twice about striking Israel with chemical weapons” (Woods, 2007, p. 23). These words of Saddam Hussein confirmed the view of John F. Reichart that “America is concluding that potential adversaries view these not as ‘weapons of last resort’ but rather as tactically and strategically useful. Deterring NBC use may be more difficult than it was during the Cold War.” The convenience of the use of CWs increased requirements for more complicated defense systems. Not only is a well-prepared army necessary, an educated public health infrastructure is also required (2001, p. 1). These weapons were not a last resort: General Hamdani stated that

Iraq had no choice other than the use of CWs in regions such as south of Fao island where Iraqi units had difficulties during the war and with defense because of the geographical conditions, and he stated that the Kurdish people had been warned about the attack on Halabja one month in advance. Although the principal target of that attack was Iranian units, he stated that the Kurds who had not evacuated or followed orders were harmed by it (Woods et. al., 2009, p. 56-57).

Iraq came to the fore due to its aggressive stance during the war, hence Iran realized that it too needed these weapons to defend itself. Iran made considerable investments to develop its own capabilities against Iraq's chemical attacks believing that this would be a deterrent against Iraq's use of CWs (Eisenstadt, 1994, p. 110-11). Moreover, there appears to have been a consensus that Iraq could covertly rebuild its chemical arsenal to a militarily significant size - at least a few hundred tons of mustard agent within a year. There was speculation that there was a high casualty rate among CW technicians in Iraq, suggesting that Iraq would continue to sustain its chemical capability in the future despite such risks. On the basis of Saddam Hussein's behavior, and given the arms build-up in Iran, it must be assumed that Iraq would again, if not prevented, pursue the acquisition of new CWs once unencumbered by UN-imposed sanctions and Resolution 687 (Eisenstein, 1994). The fact that there was a gradual increase in the diversity and impact of CWs throughout this period, and the lack of any deterrent attitudes among the dominant powers and the UN, make it possible that another name for this war is actually an experiment with CWs.

5. Conclusion

The Iran-Iraq war was a conflict which broke out in parallel with a long-standing power struggle and rivalry in the Middle East. It can therefore be said that there were more than two sides in the war even though the conflict appeared to flare up between the two countries. The strategic significance of the Iran-Iraq war, as it took place in the final stage of the Cold War, and the evaluation of the issue from many different perspectives make it necessary to review the process.

Although the war ended in 1988, full peace was not completely experienced

in the region. The outcomes of the war not only affected Iran and Iraq but also particularly affected other Gulf countries, Middle Eastern countries and major international powers. The Iran-Iraq war lasted from 1980 to 1988 and constituted a turning point in the intensive deployment of CWs. During the war, UN observers' reports, US intelligence reports, media sources, statements made by officials from both sides of the conflict and the official speeches of politicians all shows that CWs were used. The effects of the use of CWs on people, military and civilian alike, have also been explored in this paper through statements by victims of these attacks, and the statements of eyewitnesses confirm the use of these weapons during the war.

The UN has always claimed that it has responsibilities such as disarmament and dealing with threats to peace, but during the Iran-Iraq war the UN was observed to act quite ineffectively in terms of handling the issue. Since 1985, UN observers had reported that CWs were being used and that both sides used these weapons in 1987. During that period, the Iraqi Minister of Foreign Affairs even explicitly stated at international meetings that Iraq had used CWs during the war. Despite the results showing that these weapons, banned by international agreements, were used and were even traded, no preventive measures were taken and no sanctions were imposed. In this respect, the fact that the international community ignored the issue caused the increased use of CWs.

The area of destruction caused by armaments such as biological, chemical and nuclear weapons is vast and their effects are long-term. These weapons have been banned since the seventeenth century but they have been developed, sold and used by the very powers which adopted these bans. However, CWs with unique intensity and diversity were used in the Iran-Iraq war. The fact that there were no strict sanctions imposed throughout this war caused concerns within the international system which nevertheless continued and even accelerated armament supplies.

Eyes and ears were shut to the use of CWs with long-term effects and the capacity for the destruction of both military forces and civilians throughout the war. In consequence, unforgettable wounds were inflicted on populations during the war and the grounds for continuing conflict were established. Another fact revealed by this war is that CWs have more effects than conventional weapons: their effects on unborn babies and on

the ecological system are long-term. It is therefore necessary for the whole of humankind to gain a fuller awareness of weapons of this kind which are still being used in international conflicts, and to develop preventive and protective methods. It is a fact, however, that international forces regard these weapons as more preferable than nuclear weapons. There is also a need to apply stricter controls since producing CWs does not require either superior technology or high costs.

Finally, the terms *terrorism* and *terror operations* appeared after the Iran-Iraq war and terms such as biological and chemical terror were added to the literature. These weapons have also led to very real concern because they could be used by terrorist groups from now on. In conclusion, in the twenty-first century, providing a secure atmosphere does not seem possible in the international arena, and compliance with international rules and the strict control of nuclear, chemical and biological weapons for the sake of the whole world seems to be required for the continuity of mankind.

Disclosure

The article is exempt from the Ethics Committee Decision. There are no participants. The author acknowledges the support received from TÜBİTAK under grant 2219 post-doctoral fellowship and there's no conflict of interest. No material subject to copyright is included.

Beyan

Bu makale etik kurul kararından muaftır. Çalışmada katılımcı bulunmamaktadır. Çalışma için yazar TÜBİTAK 2219 doktora sonrası araştırma bursundan yararlanmıştır. Çalışmada kişiler ve kurumlar arası çıkar çatışması bulunmamaktadır. Telif hakkına sebep olacak bir materyal kullanılmamıştır.

References

- Ahmadi, K., Reshadatjoo, M., Karami, G., Sepehrvand, N., Ahmadi, P., & Bazargan-Hejazi, S. (2011). Evaluation of secondary post-traumatic stress disorder symptoms in the spouses of chemical warfare victims 20 years after the Iran–Iraq war. *The Psychiatrist*, 35(5), 168-175. <https://doi.org/10.1192/pb.bp.110.029587>
- Ali, J. (2001). Chemical weapons and the Iran-Iraq War: A case study in noncompliance. *The Nonproliferation Review*, 8(1), 43-58, <https://doi.org/10.1080/10736700108436837>
- American Chemical Society. (2014). *Origins of the chemical weapons convention and the OPCW*. <https://www.acs.org/content/dam/acsorg/events/program-in-a-box/documents/2016-global-security/cw-history.pdf>
- Bakhash, S. (2006). The troubled relationship: Iran and Iraq: 1930-80. In Lawrence G. Potter & Gary G. Sick (Eds.), *Iran, Iraq and the legacies of war* (pp. 11-27). Palgrave MacMillan. https://doi.org/10.1057/9781403980427_2
- Bar-Yaacov, N. (2015). Achieving universality of the chemical weapons convention in the Middle East. *Survival*, 57(6), 159-180. <https://doi.org/10.1080/00396338.2015.1116162>
- Bothe, M. (1992). *Convention on the prohibition of the development, production, stockpiling and use of chemical weapons and on their destruction*. United Nations Audiovisual Library of International Law. <http://legal.un.org/avl/ha/cpdpsucw/cpdpsucw.html>
- Byrnes, M. E., David A., King Philip., & M, Tierno. (Eds.). (2000). *Nuclear, chemical and biological terrorism*. Lewis Publishers.
- Central Intelligence Agency Archive. (1984a). *Iran-Iraq Military Situation Report 3*. (Document Number: CIA-RDP86M00886R001100090010-3). <https://www.cia.gov/readingroom/docs/CIA-RDP85T00287R001300900001-0.pdf>
- Central Intelligence Agency Archive. (1984b). *Prospects for use of chemical weapons by Iraq against Iran over the next six months*. (Document Number: CIA-RDP86M00886R001100090010-3). <https://www.cia.gov/readingroom/document/cia-rdp86m00886r001100090010-3>.

- Chubin, S. (1989). The last phase of the Iran-Iraq war: from stalemate to ceasefire, *Third World Quarterly*, 11(2), 1-14. <https://doi.org/10.1080/01436598908420154>
- Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction. (2005). *Unclassified Version of the Report of the Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction*. <https://www.govinfo.gov/app/details/GPO-WMD>
- Conference on Disarmament. (1987). *Final record of the 393rd plenary meeting held at the Palais des Nations*. (CD/PV. 393) UN Library.
- Cook, T. (2000). Against god-inspired conscience: the perception of gas warfare as a weapon of mass destruction, 1915–1939, *War & Society*, 18(1), 47-69. <https://doi.org/10.1179/072924700791201379>
- Cordesman, A. H. (2014). *Iran's rocket and missile forces and strategic options*. Center for Strategic & International Studies. <https://www.csis.org/analysis/iran%E2%80%99s-rocket-and-missile-forces-and-strategic-options-0>
- DeShazer, M. (1990). *Chemical weapons proliferation in the Middle East*. U.S. Army War College.
- Deutch, M. J. (1996). *Conference on nuclear, biological, chemical weapons proliferation and terrorism*. Central Intelligence Agency. https://irp.fas.org/cia/product/dci_speech_052396.html
- Dış Haberler Servisi. (1988, March 22). *Milliyet*. p. 4.
- Douglas, M. R. (2009). Did Britain use chemical weapons in mandatory Iraq? *The Journal of Modern History*, 81(4), 859-887. <https://doi.org/10.1086/605488>
- Eisenstadt, M. (1994). Deja vu all over again? An assessment of Iran's military buildup. In P. Clawson (Ed.), *Iran's strategic intentions and capabilities* (pp. 93-153). Institute for National Strategic Studies. <https://apps.dtic.mil/dtic/tr/fulltext/u2/a278559.pdf>
- Eisenstein, M. (1993). *Countering the proliferation of chemical weapons*. RAND Institution. https://www.rand.org/content/dam/rand/pubs/monograph_reports/2006/MR207.pdf.

- Everts, S. (2015). *A brief history of chemical war*. Distillations Science History Institute. <https://www.sciencehistory.org/distillations/a-brief-history-of-chemical-war>.
- Ferretti, M. (1990). The Iran-Iraq war: United Nations resolution of armed conflict. *Villanova Law Review* 35(1), 197-252. <https://digitalcommons.law.villanova.edu/cgi/viewcontent.cgi?article=2908&context=vlr>
- Firouzkouhi, M., Zargham-Boroujeni, A., Nouraei, M., Yousefi, H., & Holmes, C. A. (2013). Nurses experiences in chemical emergency departments: Iran-Iraq war 1980-1988, *International Emergency Nursing*, 21(2), 123-128. <https://doi.org/10.1016/j.ienj.2012.03.002>
- Gay, H. (1987). Chemical and biological warfare. *The International History Review*, 9(3), 465-472, <https://doi.org/10.1080/07075332.1987.9640453>
- Ghazvinian, J. (2020). *America and Iran: A history 1720 to the present*. Oneworld Publications.
- Guthrie, R. (1984). A chronology of events relating to Iraq and chemical & biological warfare. <https://www.cbw-events.org.uk/EXIQ84Q1.PDF>
- Hajjar, S., G. (1998). *Security implications of the proliferation of weapons of mass destruction in the middle east*. The Strategic Studies Institute. <http://www.jstor.org/stable/resrep11596>
- Hiltermann, J. (2007). *A poisonous affair America, Iraq and the gassing of Halabja*. Cambridge University Press.
- Hiltermann, J. (2010). *Deep traumas, fresh ambitions: legacies of the Iran-Iraq war*. (Report No. 257). Middle East Research and Information Project (MERIP). <https://merip.org/2011/01/deep-traumas-fresh-ambitions/>
- Irak'tan itiraf. (1988, July 2). *Milliyet*. p. 5.
- Karsh, E. (2002). *The Iran-Iraq War 1980-1988*. Osprey Publication.
- Kelidar, A. (1992). The wars of Saddam Hussein. *Middle Eastern Studies*, 28(4), 778-798. <https://doi.org/10.1080/00263209208700928>
- Kimyasal Silaha Gözaltı. (1988, March 27). *Milliyet*. p. 4.
- Kimyasal Suçlama. (1987, May 14). *Milliyet*. p. 8.

- Lewis, E. (2015). Abdolsamad Rajabi Dehkordi. *Tehran Peace Museum*. <http://www.tehranpeacemuseum.org/index.php/en/oral-history/194-english/oral-history-en/1302-abdolsamad-rajab-dehkordi-oral-history-en.html>.
- Linstrum, E. (2019). Domesticating chemical weapons: tear gas and the militarization of policing in the British imperial world, 1919-1981. *The Journal of Modern History*, 91(3), 557–585. <https://doi.org/10.1086/704383>
- McCambley, N. J. (2006). *Secret history of chemical warfare*. Yorkshire, Pen and Sword Military.
- McNaugher, L. T. (1990). Ballistic missiles and chemical weapons: the legacy of the Iran-Iraq War. *International Security*, 15(2), 5-34. <https://doi.org/10.2307/2538864>
- Organization for The Prohibition of Chemical Weapons. (2006). *Remembering all victims of chemical warfare*. https://www.opcw.org/fileadmin/OPCW/Victims_Network/Just_Orange/01851.pdf
- Özdemir, S. (2017). *İran devrimi sürecinde İran- ABD ilişkileri*. (Kayıt No. 482182) [Doctoral dissertation, Istanbul University]. YOK Thesis Center.
- Pelletiere, S., Douglas C., & Johnson, V. (1991). *Lessons learned: Iran-Iraq war*. U.S Department of The Navy, Strategic Studies Institute. <https://apps.dtic.mil/sti/pdfs/ADA232451.pdf>
- Reichart, J. F. (2001). *Adversary use of nbc weapons: a neglected challenge*. (No. 187). Strategic Forum Institute for National Strategic Studies National Defense University. <https://wmdcenter.ndu.edu/Portals/97/Documents/Publications/Articles/Adversary-Use-of-NBC-Weapons.pdf>
- Renfrew, N. M. (1987). Who started the war. *Foreign Policy*, (66), 98-108. <https://doi.org/10.2307/1148666>
- Rothman, L. (2018, April 14). A long, brutal history of chemical weapons lies behind trump's decision to order airstrikes in Syria. *Time*.
- Russel, R. L. (2005). Iraq's chemical weapons legacy: what others might learn from Saddam. *Middle East Journal*, 59(2), 187- 208. <https://doi.org/10.3751/59.2.11>

- Salaz, N. (2010). *Ortadoğu'nun Hiroşması Halepçe*. Rezan Yayınları.
- Sarıbeyođlu, M. (2004). Kitle imha silahlarının kullanımının yasaklanmasına ilişkin uluslararası düzenlemeler. *İstanbul Ticaret Üniversitesi Dergisi*, 3(5), 21-53, <http://www.acarindex.com/dosyalar/makale/acarindex-1423905096.pdf>
- Sassoon, J. (2014). The east German ministry for state security and Iraq, 1968–1989. *Journal of Cold War Studies*, 16(1), 4-23. https://doi.org/10.1162/JCWS_a_00429
- Schillare, M. Q. W. (1990). *U. S. chemical defense and the third world threat*. School of Advanced Military Studies United States Army Command and General Staff College Fort Leavenworth.
- Schmidt, U. (2017). Preparing for poison warfare: the ethics and politics of Britain's chemical weapons program, 1915–1945. In Friedrich, B., Hoffmann, D., Renn, J., Schmaltz, F. & Wolf, M. (Eds.). *One hundred years of chemical warfare: research, deployment, Consequences* (pp. 77-104). Springer. https://doi.org/10.1007/978-3-319-51664-6_6
- Segal, D. (1988). The Iran- Iraq war: a military analysis. *Foreign Affairs*, (Summer). <https://www.foreignaffairs.com/articles/iran/1988-06-01/iran-iraq-war-military-analysis>
- Sidell, F. R., & Franz, D. R., (1997). Overview: Defense against the effects of chemical and biological warfare agents. In R. Zajtchuk (Ed.), *Medical aspects of chemical and biological warfare*. (pp. 1-9). The Office of The Surgeon General Department of the Army.
- Smart, J. K., Al Mauroni, Hill, B.A. & Kok, A.B (1997). History of the chemical threat, chemical terrorism, and its implications for military medicine. In R. Zajtchuk (Ed.), *Medical aspects of chemical and biological warfare*. The Office of the Surgeon General. Department of the Army.
- Tarock, A. (1998). *The superpowers involvement in the Iran-Iraq War*. Nova Science Publishers.
- The United States Congress. (1988). *Chemical weapons use in Kurdistan Iraq's final offensive: a staff report to the committee on foreign relations*. United States Senate, 100th Congress, 2nd Session, VIII-3, U.S Government Printing Office.

- Tuşalp, E. (1989). *Zehir yüklü bulutlar Halepçe'den Hakkari'ye*. Bilgi Yayınevi.
- Türk Basınında İran- Irak Savaşı. (1984). Kadioğlu Matbaası.
- United Nations. (1971). *Question of chemical and bacteriological (biological) weapons*. <https://documents-dds-ny.un.org/doc/RESOLUTION/GEN/NR0/328/43/IMG/NR032843.pdf?OpenElement>
- United Nations. (1984). *Report of conference on disarmament*. https://digitallibrary.un.org/record/697795/files/CD_540%5BAppendix%20III_Vol.II%5D-EN.pdf
- United Nations Office for Disarmament Affairs. (n.d.). *Chemical Weapons*. <https://www.un.org/disarmament/wmd/chemical/>
- United Nations Regional Centre for Peace and Disarmament in Asia and the Pacific. (2013). *Weapons of Mass Destruction*. <https://unrcpd.org/wmd/>
- United Nations Security Council. (1984). *Resolution 552*. <http://unscr.com/files/1984/00552.pdf>
- United Nations Security Council. (1986). *Resolution 582*. <http://unscr.com/en/resolutions/doc/582>
- United Nations Security Council. (1988a). *Report of the Mission dispatched by the Secretary-General to investigate allegations of the chemical weapons in the conflict between the Islamic Republic of Iran and Iraq*. <http://www.securitycouncilreport.org/atf/cf/%7B65BF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/Disarm%20S19823.pdf>
- United Nations Security Council. (1988b). *Resolution 612*. <http://unscr.com/en/resolutions/doc/612>
- United Nations Security Council. (1988c). *Resolution 620*. <http://unscr.com/en/resolutions/doc/620>
- U.S. Government Office. (2004). *Iraq's chemical warfare program. Comprehensive report of the special advisor to the DCI on Iraq's WMD with addendums*. <https://www.govinfo.gov/content/pkg/GPO-DUELFERREPORT/pdf/GPO-DUELFERREPORT-3.pdf>
- U.S. Government Printing Office. (2000). *Iran's ballistic missile and weapons of mass destruction programs*. <https://www.govinfo.gov/content/pkg/CHRG-106shrg68305/html/CHRG-106shrg68305.htm>

- U.S. National Security Archive. (1984). Document Number: CIA-RDP85-T00287R001300900001-0. <https://www.cia.gov/readingroom/docs/CIA-RDP85T00287R001300900001-0.pdf>
- Walker, M. D. (2017). An agonizing death: 1980s U.S. policy on Iraqi chemical weapons during the Iran-Iraq War, *The Journal of the Middle East and Africa*, 8(2), 175-196. <https://doi.org/10.1080/21520844.2017.1315554>
- Woods, K., Murray W., Holaday T., & Elkhamri M. (2009). *Saddam's war: An Iraqi military perspective of the Iran-Iraq War*. NDU Press.
- Woods, K., Murray W., Nathan E. A., Sabara L., & Venegas A. M. (2011). *Saddam's Generals: Perspectives of the Iran-Iraq War*. Institute for Defense Analyses.
- Woods, K. (2007). *Iraqi perspectives project primary source materials for Saddam and terrorism: Emerging insights from captured Iraqi documents*. Volume 4 (Redacted), Institute for Defense Analyses, <https://fas.org/irp/eprint/iraqi/v4.pdf>