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## Weapons of Mass Destruction Basics and the Issue of Proliferation in the Middle East

Kitle İmha Silahlarının Temelleri ve Ortadoğu'da Silahların Yayılma Sorunu

Şebnem UDUM

### Özet

*Bu çalışma kitle imha silahları, yani nükleer, kimyasal ve biyolojik silahlar ve bunların yayılmasının önlenmesi çabalarını kapsayan uluslararası rejimler hakkında temel bilgiler vermektedir. Çalışmanın bu noktadaki amacı Orta Doğu'da halihazırdaki başlıca meseleleri, yani İran'ın nükleer programı, İsrail'in nükleer yeteneği ve Suriye'de kimyasal silah kullanımı gibi konuları daha iyi anlayabilmektir.*

The efforts to prevent the spread of nuclear weapons started as early as the beginning of Cold War, but they failed. Until late 1960s, the United States, the Soviet Union, the United Kingdom, France and China acquired nuclear weapons.

### Abstract

*This piece introduces basic information on weapons of mass destruction, that is, nuclear, chemical and biological weapons, and the regimes that govern the efforts to prevent their spread. This is provided in order to broaden understanding of the current major issues in the Middle East, such as Iran's nuclear program, Israel's nuclear capability and the use of chemical weapons in Syria.*

**Keywords:** *Weapons of mass destruction, non-proliferation, international regime, nuclear weapons*

By its traditional definition, weapons of mass destruction (WMD) include nuclear, chemical and biological weapons, and ballistic missiles as the most notable delivery systems. They are also called "CBRN", the acronym for chemical, biological, radiological and nuclear weapons. The Middle East is where there is the highest concentration of WMD. The motivations to acquire and retain these weapons are numerous and they impact the efforts for disarmament and arms control in the region. WMD capabilities were acquired as a consequence of security and threat perceptions, or for prestige and status. These new postures in turn led to further proliferation and reinforced existing distrust, which is a major stumbling block for disarmament and arms control negotiations. This piece provides an overview of the issue of WMD proliferation in the region and outstanding issues regarding nonproliferation and disarmament. The uninformed reader deserves an introduction of the characteristics of WMD and the international regimes governing the efforts to prevent their spread, that is nonproliferation.

### Weapons of Mass Destruction: An Introduction

WMD are also referred to as unconventional weapons, because they indiscriminately kill living things and destroy buildings and infrastructure. They do not observe the distinction between military and civilian targets, like in traditional war. Second, they are lethal weapons and inflict mass casualties in a short span of time. Third, their impact remains in the environment and living things years after their use. Nuclear weapons grant their possessors strategic advantage, and chemical and biological weapons are preferred for limited goals, that is, tactical purposes.

Possession of nuclear weapons and use of nuclear technology for peaceful purposes are governed by the international nuclear nonproliferation regime that embodies treaties, conventions, international organizations, rules, laws and norms. Technologically, manufacturing a nuclear device is challenging: What provides the enormous destructive power of nuclear weapons is sustained fission, that is the split of the atom in chain reaction. Uranium-235 isotope of the Uranium element is unstable, and splits in a chain reaction when it absorbs a neutron. Plutonium-239, which does not exist in nature (but obtained when U-238 isotope absorbs a neutron), is also fissile, that is which splits. Natural uranium predominantly includes U-238 isotopes and only meager amount of U-235. To be used in a nuclear weapon, the proportion of U235 in natural uranium needs to be raised from 0.72% to levels above 90 %, which is called "enrichment." To be used in a light-water reactor for generating electricity, it needs to be enriched around 3-5 %, and for use in research reactors, the required level

is 20%. Uranium that is enriched above 20 % is called highly-enriched uranium, and above 90% is weapon-grade. Since the technology to enrich uranium for peaceful and military purposes is the same, this technology is considered to be “critical.”

There are nuclear reactors using natural uranium as fuel, and they are heavy-water reactors. The used fuel (spent fuel) contains Pu-239 (after U238 absorbs one neutron, it becomes Pu-239). It can be extracted out of spent fuel with a process called “reprocessing”, rendering it a “critical technology” as well. To make a simple nuclear weapon, 15 kg of weapons-grade uranium and 5 kg of plutonium are considered to be sufficient.<sup>1</sup> However, the manufacturing process should be followed by testing and the weapon needs to go through some stages to ensure successful delivery and secure stockpiling.

The efforts to prevent the spread of nuclear weapons started as early as the beginning of Cold War, but they failed. Until late 1960s, the United States, the Soviet Union, the United Kingdom, France and China acquired nuclear weapons. The Cuban missile crisis pushed concerned states for a treaty to prevent further spread of nuclear weapons. Hence, the Nuclear Nonproliferation Treaty was drafted and opened to signature in 1968. In 1953, US President D. Eisenhower’s “Atoms for Peace” speech had led to the establishment of the International Atomic Energy Agency (IAEA) to promote peaceful uses of nuclear technology and to oversee these nuclear activities.

The NPT is the cornerstone of the international nuclear nonproliferation regime and it embodies three goals: Nuclear nonproliferation, nuclear disarmament and peaceful use of nuclear energy (PUNE). They are governed respectively in Articles I and II, Article VI and Articles III and IV. The Treaty defines two categories of states: Nuclear-weapon states (those which detonated a nuclear device prior to January 1, 1967) and non-nuclear-weapon states. The first category states are the legal possessors of nuclear weapons and second category states pledge not to pursue

nuclear weapons. Articles I and II complement each other in this regard.

Articles III and IV deserve scrutiny: Article IV stipulates that non-nuclear-weapon states have the right to develop, research, produce and use nuclear energy for peaceful purposes. This “right” meets its “liability” in Article III, which requires non-nuclear-weapon states using nuclear energy for peaceful purposes to accept the safeguards of the IAEA, which is tasked to verify that states assume their obligations in order to prevent “the diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices.”<sup>2</sup>

In addition to the NPT and the IAEA, the other major elements of the regime are the Comprehensive Test Ban Treaty (CTBT), Nuclear Suppliers’ Group and Nuclear-Weapon-Free-Zones as regional initiatives. The regime is a strong one, but it has been facing the issue of non-members with nuclear capabilities, namely India, Israel and Pakistan. North Korea was a Party, but it withdrew from the NPT in 2003 and carried out several nuclear tests.

Chemical and biological weapons (CBW) are relatively easy to manufacture, and were used in the battlefield. Chemical weapons are developed from chemical agents, which are classified mainly as nerve agents (e.g. sarin, soman, VX), blister agents (e.g. mustard, lewisite), choking agents (e.g. chlorine, phosgene), blood agents (e.g. hydrogen cyanide) and riot control agents.<sup>3</sup> Biological weapons are toxins, bacteria and viruses<sup>4</sup> produced and weaponized with a malicious intent. Since they can also be used for peaceful purposes, such as medical research and pharmaceutical industry, the regime that governs their disarmament and nonproliferation faces the issue of dual-use. Different from the NPT, Chemical Weapons Convention (CWC) and Biological and Toxin Weapons Convention (BTWC) are disarmament treaties, that is, all signatories pledge not to develop, possess, stockpile or use these weapons. Their use was outlawed first by the 1925 Geneva Protocol, but it had not banned their possession. The Middle Eastern states





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which are not Party to the Conventions or have not yet ratified them are Egypt, Israel, Syria.

### **WMD Proliferation Issue in the Middle East**

The scope of the region includes the Middle East and North Africa as they are forming a security complex, hence covers Egypt, Iran, Iraq, Israel, Jordan, Lebanon, Libya, Saudi Arabia and Syria. Turkey is considered to be in NATO Europe, because its responses to proliferation in the region were mainly affected by the NATO defense commitment. This piece is not going to cover all the above-mentioned states, but the key actors in the current debates. The focus will be on Egypt, Iran, Israel and Syria.

Iraq after 2003 is no longer a state of concern. Its WMD were substantially dismantled by UNSCOM (United Nations Special Commission) between 1992 and 1998. It had also managed to

pursue a clandestine nuclear weapons program although it was a Party to the NPT. Iran and Iraq have been regional rivals and their WMD and ballistic missile programs were developed as a response to regional dynamics and to each other. In 1985, Iraq started an offensive biological weapons program, which included anthrax and botulinum toxin. It used chemical weapons during the Iran-Iraq War between 1980 and 1988, and to the Kurds in Iraq in the town of Halabja in 1988.<sup>5</sup> As a result of Iraq's use of chemical weapons during the war, Iran also embarked upon its own CW program, but it became a Party to the Chemical Weapons Convention (CWC) in 1997.<sup>6</sup>

The experience of Iraq left several lessons in 1990s and 2000s for nonproliferation efforts. In 1993, the IAEA launched the "93+2 Program" to address the issue of undeclared facilities through improved safeguards. It resulted in a Protocol

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Additional to the Safeguards Agreements (Additional Protocol-1997) signed between the IAEA and non-nuclear-weapon states with nuclear facilities. The Additional Protocol aims to reveal any hidden nuclear material or activity through more intrusive inspections, including collection of samples from air, land and water, and surprise inspections. It became an indicator of a State Party's commitment to the nonproliferation norms and the international nuclear nonproliferation regime.

As a matter of fact, the implementation of the Additional Protocol is at the core of the ongoing issue with Iran's nuclear program. Tehran emphasizes its right to enrich uranium while it underscores the counterpart of this "right," that is, allowing the IAEA to perform its verification tasks-one that has been "upgraded" with the Additional Protocol. It creates the perception whether Iran has other intents than civilian uses. Tehran vehemently denies that it seeks nuclear weapons capability, but seems to use its nuclear program and nuclear negotiations to enjoy "equal standing" with "great powers," and to be respected by them, particularly by the United States. These two themes are recurrent in Tehran's official statements,<sup>7</sup> because it believes that it deserves such respect but has been denied from it so far.

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Iran's nuclear program raised concerns particularly when Tehran's failure of declaring some nuclear facilities was revealed in 2002-2003. Compounded by the new threat perceptions and assessments after 9/11, Iran's intentions have been questioned. Its emphasis on its "inalienable right to enrich uranium" without implementing the Additional Protocol reinforced these suspicions. Afterwards, nuclear talks with Iran started with the EU-3 (France, Germany and the United Kingdom). They were joined by the United States, Russia and China, forming "P5+1." The talks were stalled in the point of "inalienable right to enrich uranium" because they had been demanding that Iran halt its enrichment activities. Although this demand is revised to allow enrichment to a certain level, the issue has not been entirely resolved. IAEA reports have drawn attention to the fact that the access and data that Iran provides have been insufficient for verification as Tehran does not implement the Additional Protocol.<sup>9</sup> Iran's resistance to allow more intrusive inspections have been interpreted to conflict with the nuclear nonproliferation norm, however from Iran's perspective, Tehran is concerned about transparency for national security reasons. These talks have been instrumental in bringing about the status of "equality" and "respect" that Tehran desires to receive from the international community.

Being motivated to acquire nuclear weapons and actually pursuing that path are two different processes. The motivations for Iran and Iraq to acquire nuclear weapons could stem from regional security issues, domestic reasons and leadership. Nuclear capability may also be sought for prestige and status, particularly to play a re-

gional leadership role. Nuclear weapons are the ultimate military capabilities. Considering that powerful leaders are attractive for the regional communities, decisionmakers may contemplate that nuclear weapons could be useful for domestic realm, that is for regime security and at the regional level, that is acquiring strategic advantage vis-à-vis rivals, and for leadership. Policy-making in the region is overwhelmingly affected by the Arab-Israeli conflict and the Palestinian issue. Israel is not recognized by some states, and drawing lessons from its history, Israel defines security in a stricter manner than others. For Tel Aviv, it is not tolerable to have “holes” in defense posture and due to the size of the country, its security policy is based on deterrence. Israel’s nuclear capability serves as a deterrent. On the other hand, territorial changes after the Arab-Israeli wars were not endorsed by all of the regional states. That is why reaching nuclear parity with Israel and challenging its security was considered as a way to seek regional leadership.

As far as Egypt is concerned, during 1950s and 1960s Cairo had a nuclear program, but the efforts were limited. It became a Party to the NPT in 1981. Egypt had used chemical weapons in Yemen and it has defensive chemical weapons capability. It is not a Party to the Chemical Weapons Convention as a reaction to Israel’s nuclear capability.<sup>10</sup> In 1990s, Egypt put forward a proposal for a nuclear-weapon-free zone in the Middle East that pointed at Israel’s nuclear capability. It was then put forward as a condition to extend the NPT in the 1995 Review and Extension Conference. However, it was not until the 2010 NPT Review Conference that it was tackled with great commitment. The proposal was extended to include all WMD, hence was renamed as a Weapons of Mass Destruction Free Zone in the Middle East. The conference in that regard was to be held in December 2012, but it was cancelled due to lack of commitment from key states and domestic turmoil in Egypt and Syria.

Syria, too, launched WMD programs mainly as a reaction to Israel’s military capabilities.<sup>11</sup> Syria possesses an advanced chemical weapon capability, which it started developing against Israel

with aid from Egypt. It then indigenously produced chemical weapons agents, such as mustard, sarin and VX. In 2007, Israel bombed a nuclear facility in Syria, which was believed to be a plutonium production reactor.<sup>12</sup>

Chemical weapons were used in Syria in August 2013, and the OPCW found that it was sarin. The process to dismantle Syria’s chemical weapons are ongoing as Damascus announced that it will become a Party to the Chemical Weapons Convention and sets an ambitious proposal to get rid of its chemical weapons by 2014. The process is expected to reveal the full spectrum of Damascus’ chemical weapons stockpiles and capabilities.

The initial response to chemical weapon use in Syria ranged between calls for a military operation to punish the Assad regime to condemnation. Obama administration was cautious about not repeating the same arguments prior to the war in Iraq in 2003, which had resulted in public perceptions that “WMDs are used as an excuse for military intervention to realize broader goals.” However, the international response to the chemical weapon use has condensed to relations between the United States and Russia over their strategic interests in the region. A positive outcome is the determination to disarm Syria of its chemical weapons, despite an ongoing disagreement over fallback options, such as the threat of military responses backed by UN Security Council resolution should Syria does not live up to its promises.

## Conclusion

As they give their possessors strategic and/or tactical advantage, WMD are still considered by many to have military utility. Conflicts and threat perceptions in the Middle East resulted in proliferation and use of these weapons. International regimes rest on norms which take shape in a long time. When they are undermined, the maintenance of regimes is jeopardized. Thus, it is essential to uphold international norms such as the ban on the use of chemical and biological weapons in war, and to improve those on their disarmament and non-use.



## ENDNOTES

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- Neap yapıyorsunuz burada böyle ?  
- İstihbarat paylaşıyoruz !