

**Committee/Council: Disarmament and International Security Committee**

**Issue: Preventing non-state actors from gaining access to weapons of mass-destruction**

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## Introduction

Weapons of Mass Destruction can kill thousands in only a few seconds and leave millions injured. Some years ago, weapons of mass destruction (WMD) were only a threat in theory, since they had been used only a few times in the past. Nowadays, their threat is constantly rising, because nuclear, biological and chemical weapons are becoming even more dangerous due to technological advancements. However, non-state actors (NSA), especially violent ones, such as terrorist organizations, have been getting hold of WMD, which has become one of the most important and serious threats to international security.



Figure 1: WMD hazard symbols for nuclear, biological, and chemical weapons, respectively. (Source: [http://usiraq.procon.org/view\\_resource.php?resourceID=000678](http://usiraq.procon.org/view_resource.php?resourceID=000678))

## Definition of Key-Terms

### Non-state actors (NSA)

The term non-state actors is defined as “An individual or organization that has significant political influence but is not allied to any particular country or state”<sup>1</sup>. Non-governmental organisations (NGOs) and multinational corporations (MNCs) are types of NSAs, but this study guide will focus on violent non-state actors, such as armed groups or criminal organizations.

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<sup>1</sup> Oxford Dictionaries. N.p., n.d. Web.

<[https://en.oxforddictionaries.com/definition/non-state\\_actor](https://en.oxforddictionaries.com/definition/non-state_actor)>.

## Weapons of mass destruction (WMD)

WMD include nuclear, chemical and biological weapons, however it is still being discussed if chemical weapons are WMD.

### Biological weapons

“Biological weapons use microorganisms and natural toxins to produce disease in humans, animals, or plants. Biological weapons can be derived from: bacteria (anthrax, plague, tularemia); viruses (smallpox, viral hemorrhagic fevers); rickettsia (Q fever and epidemic typhus); biological toxins (botulinum toxin, staphylococcus enterotoxin B); and fungi (San Joaquin Valley fever, mycotoxins). These agents can be deployed as biological weapons when paired with a delivery system, such as a missile or aerosol device.”<sup>2</sup>

### Chemical weapons

According to the Organisation for the Prohibition of Chemical Weapons (OPCW), a chemical weapon refers to “any toxic chemical or its precursor that can cause death, injury, temporary incapacitation or sensory irritation through its chemical action. Munitions or other delivery devices designed to deliver chemical weapons, whether filled or unfilled, are also considered weapons themselves.”<sup>3</sup>

### Nuclear weapons

“A device that releases nuclear energy in an explosive manner as the result of nuclear chain reactions involving fission, or fission and fusion, of atomic nuclei. Such weapons are also sometimes referred to as atomic bombs (a fission-based weapon); or boosted fission weapons (a fission-based weapon deriving a slightly higher yield from a small fusion reaction); or hydrogen bombs/thermonuclear weapons (a weapon deriving a significant portion of its energy from fusion reactions).”<sup>4</sup>

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<sup>2</sup> NTI. "Glossary | Learn | NTI." Nuclear Threat Initiative. James Martin Center for Nonproliferation Studies at the Monterey Institute of International Studies, n.d. Web. <<http://www.nti.org/learn/glossary/>>.

<sup>3</sup> "Brief Description of Chemical Weapons." Organisation for the Prohibition of Chemical Weapons. N.p., n.d. Web. <<https://www.opcw.org/about-chemical-weapons/what-is-a-chemical-weapon>>.

<sup>4</sup> NTI. "Glossary | Learn | NTI." Nuclear Threat Initiative. James Martin Center for Nonproliferation Studies at the Monterey Institute of International Studies, n.d. Web. <<http://www.nti.org/learn/glossary/>>.

## Background Information

### Nuclear

In order to properly understand the dangers that these weapons pose, it is very important to know their effects and development process:

#### How are weapons developed?

Creating nuclear weapons is a very complicated process, which requires financial and technical knowledge and at the same time human capital. There are 4 steps needed in order to build the weapons.

#### **1. Acquiring Fissile Material**

Obtaining the necessary and needed material is maybe the most important step, because nations have to enhance uranium and plutonium production. Enriching uranium can be done with the help of a gas centrifuge procedure and atoms need to be in the state of “supercritical mass”. This will later stop the bomb from detonating earlier than necessary. Uranium, on the other hand, is a very heavy material and this makes it harder to apply the necessary technology to the bombs. Plutonium, being lighter than uranium, solves this problem, though it also poses a problem of its own. Enriching plutonium to the level that it can be used for the production of nuclear weapons requires very specific facilities and building specific missile guidance systems.

#### **2. Weapons Fabrication**

People working to design nuclear weapons need a high-level knowledge of chemistry, electronics, explosives, metallurgy and physics. It is very easy to obtain most of the needed components, because of the dual-purpose nature of nuclear weapons. Lastly, supercomputers and advanced technology also aid proliferators.

#### **3. Testing**

In order to know if a nuclear weapon works, nations need to conduct various tests. Testing at full nuclear yield is not necessary, seeing as nations would have to create low-weight or thermonuclear weapons. 8 of the 9 states that possess nuclear weapons have carried out several nuclear tests and all of them except the DPRK currently comply with the testing moratoria (short-term prohibition of nuclear tests).

#### 4. Delivery Systems

Delivery systems of nuclear weapons can regulate when and against whom a country can use the weapons. The most common delivery method includes aerial means, because they are very quick, can travel large distances and transfer large quantities.

##### Effects

- Following the explosion of a nuclear bomb, a fireball of very hot gases is created, due to thermal radiation being a basic form of energy (almost 50%) from such an explosion, and human tissue in the near region is vaporized. This fireball is also known as the “mushroom cloud”. Nuclear radiation, mostly gamma and neutron radiation, also causes the death of people, this radiation, however, only makes up to 3% of the energy in an explosion.
- Buildings and infrastructures collapse following an explosion and people inside them are killed by the heat and the collapse and those who have survived in underground shelters are killed due to the lack of oxygen. Outside the main area of destruction, people suffer from burns, bleeding and blindness.
- Radioactive fall-out is the main cause of the remaining nuclear radiation. People suffer from hair loss, seizures, heart diseases, internal bleeding and more. Pregnant women often have problems with their pregnancy and the health of their babies.
- Many people suffer from cancer caused by the radiation, something that may occur many years after the explosion and children may suffer from leukemia and have abnormalities. Nuclear weapons also damage the environment.

##### How easy is it for violent NSA to acquire nuclear weapons?

Most heads of States from the international community recognize that the threat of nuclear terrorism is becoming more urgent day by day. As mentioned before, nuclear weapons need HEU or plutonium, however neither of them is found in nature and producing them is a very complex process. Thus, violent NSA resort to stealing HEU or plutonium. Nuclear waste from facilities, most of which use Low-Enriched Uranium, when reprocessed and reused can be used in nuclear weapons. This makes facilities, more specifically those fueled by HEU, vulnerable to theft by terrorist groups. However overall security of nuclear facilities has improved over the past years.

The IAEA’s Incident and Trafficking Database (ITDB) tracks such incidents. More specifically, at the end 2015, 2889 incidents were reported by members. They included unauthorized possession, theft or loss and other unauthorized activities. Attempts to sell related material show that there is high demand for it.

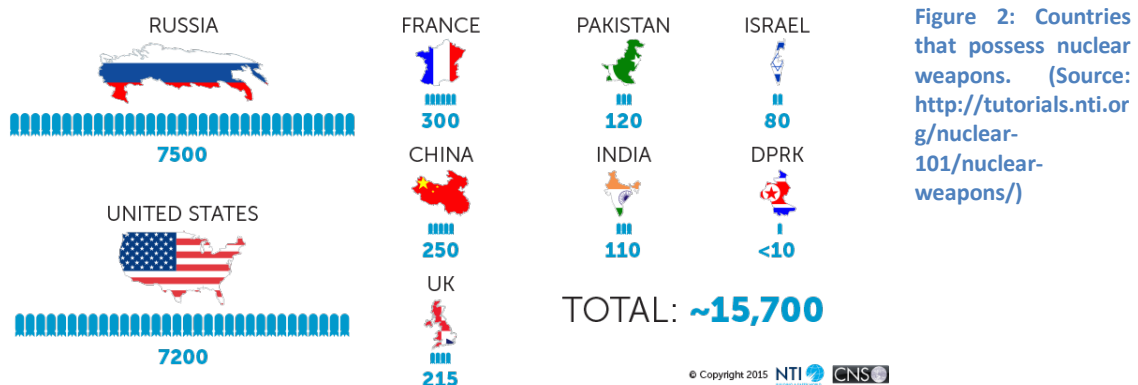
Following the attacks of 9/11, a special CIA team found out that al Qaeda was preparing a nuclear weapons program. Nowadays, however, more leaders are worried about the nuclear threat that the Islamic State (IS) poses, although there is no public evidence concerning its nuclear programme. In November 2015, police in Belgium found out that some IS workers had recorded hours of observation footage at the home of an important official of SKN-CEN, a nuclear research center located in Belgium with important amounts of HEU. According to the 9<sup>th</sup> issue of ISIS magazine 'Dabiq', the IS could easily purchase a nuclear device from Pakistan which will later reach the US. This is of course very far-fetched, but, this in combination with the nuclear character of the Brussels attacks, proves that the IS is getting closer to acquiring nuclear material.

What would happen if violent NSA detonated a nuclear bomb in a large city?

Answers to this question are endless, mainly because no one can surely know what kind of weapon the group would have. For example, if a nuclear bomb with yield of 10 kilotons, same yield as the one estimated of the last nuclear test of the DPRK, hundreds of thousands of people would be immediately killed and many more would be severely injured. Previous UN Secretary General Kofi Annan said in 2005 that such an attack “would stagger the world economy and thrust tens of millions of people into dire poverty”<sup>5</sup>. Lastly, an attack would, most probably, be followed by the ‘answers’ of nations with not known consequences.

Countries

Currently, there are 9 countries that possess nuclear weapons. These are: China, the Democratic People’s Republic of Korea (DPRK), France, India, Israel, Pakistan, Russia, the United States of America, and the United Kingdom.



<sup>5</sup> "Secretary-General's Keynote Address to the Closing Plenary of the International Summit on Democracy, Terrorism and Security - "A Global Strategy for Fighting Terrorism" Secretary-General." United Nations. United Nations, 10 Mar. 2005. Web. <<https://www.un.org/sg/en/content/sg/statement/2005-03-10/secretary-generals-keynote-address-closing-plenary-international>>.

### Have they been used?



Nuclear weapons have only been used twice during warfare, more specifically, in the bombings of Hiroshima and Nagasaki, Japan, during WWII.

Figure 3: The first atomic bomb was dropped by a United States aircraft on the Japanese city of Hiroshima on 6 August 1945. / HIROSHIMA PEACE MEMORIAL MUSEUM / AP/ (Source:

<http://www.bbc.com/news/in-pictures-33787169>)

### Chemical

In order to be as destructive as nuclear and biological weapons, chemical weapons have to be delivered in large quantities. Nevertheless, they can cause the deaths and injuries of large numbers of people depending on the type of chemical weapon.

#### How are weapons developed?

##### **1. Materials & expertise**

CW need specific chemicals, equipment and facilities. The needed materials and skills are often used for other purposes such as research.

##### **2. Small-batch production**

The small-batch production is done in order to assess the results of agents and to improve techniques.

##### **3. Scale-up production**

After checking small-batch production, states moves to scale-up production. Standard equipment is used in this stage.

##### **4. Stabilization of the agent**

This step is necessary for weaponizing the agents. When exposed to high temperatures, stabilizers prevent the degradation and destruction of CW.

## 5. Delivery system

During this step, states develop delivery systems and then the agent is paired with a system. CW are then tested under different conditions.

Roughly 6,000 industrial chemical facilities exist worldwide. Chemical weapons can be produced there.

### Effects

Chemical weapons' effects vary according to the type of agent used.

- **Nerve agents:** Examples include Tabun, Sarin, Soman and VX. Even in small quantities they can spread rapid death by disabling the human nervous system.
- **Blood agents:** Cyanide affects the body's oxygen supply thus killing those who are infected.
- **Blister agents/ vesicants:** Examples include mustard gas and Lewisite. These agents create blisters on the skin which can kill and injure the respiratory system severely.
- **Choking/pulmonary agents:** Chlorine gas and phosgene assault lung tissue, resulting in asphyxiation and respiratory problems.

### Which countries have programs?

Throughout WWII and the Cold War, powerful states developed their CW programs. The United States and Russia currently are in possession of the largest and most dangerous CW stockpiles. China, DPRK, Egypt, Iran, Israel and Syria are suspected of having ongoing programs.

### Have they been used?

Chemical weapons have been used before. During WWI 171t of chlorine gas resulted in the deaths of 5,000 people and in the injuries of many more. During WWII, Zyklon B was used by the Nazis in order to kill thousands of Jews and other victims in concentration camps. During the Vietnamese War (1962-1971) the U.S. spread



Figure 4: A tweet from the city of Raqqa showing pictures of the attack. (Source: <http://www.telegraph.co.uk/news/2017/06/11/us-led-forces-accused-dropping-white-phosphorous-raqqa/>)

a chemical called 'Agent Orange', which had a cancer-causing agent called dioxin. During the Chadian-Libyan conflict (1978-1987), the government of Chad accused the Libyan forces of using chemical weapons. Moreover, according to a UN investigation team, Iraq made use of chemicals during the Iraq-Iran War (1980-1988). Lastly, Iraqi chemical weapons attacks killed thousands of people in 1998. Many of those who survived developed skin cancer were born with defects or had nerve conditions. The Islamic State (IS) has previously used chemical weapons in Syria and Iraq, namely sulfur mustard. On Monday (12/06/2017) US sanctions on two IS experts in chemical weapons were announced. Moreover, the U.S.-led coalition revealed that it has used white phosphorus in Mosul, Iraq and in Raqqa, Syria.

#### How easy is it for violent NSA to acquire chemical weapons?

Availability of information combined with the increasing capabilities of terrorist groups makes the acquisition of CW even easier for non-state actors. Acquiring chemical weapons also depends on the chemical agents. Some chemicals, such as chlorine, are easily found in everyday life, however their effects are minimal. Other chemicals are not found easily or have a difficult weaponizing process, thus making it difficult to achieve the wanted results.

However, non-state actors have already used CW. In 1995, the Japanese cult Aum Shinrikyo attacked Tokyo's subway system with bags of Sarin resulting in the deaths of 13 people and injuries to 6,000. 20 years later, sufferers have vision and fatigue issues. More recently, it has been confirmed by US officials that the IS has used Sulfur Mustard, a dangerous chemical agent, in Syria and Iraq. It is still not known how the organization got hold of this agent. Either the militants manufactured the agent themselves or they got it through unofficial stocks in Syria.

#### What would happen if violent NSA released a chemical agent in a large city?

Answers to this question also vary, taking into consideration that the results of an attack depend on many factors. The sure thing is that if a chemical agent were to be released, many people would die due to the effects of the agent. Depending on what kind of chemical was used in the weapon, different sicknesses would also affect those who survived the attack.

#### Biological

Compared to nuclear weapons, biological weapons are extremely more economical; however, it is more difficult to build sophisticated weapons. For example, biological agents cannot withstand hot temperatures of missiles when flying.



### How are weapons developed?

BW development and production can be divided in 3 general steps.

#### **1. Selection and acquisition of the agent**

Choosing the agent is done while keeping in mind the wanted results, such as pathogenicity, incubation period, etc., of the attack. Agents can be acquired from nature or they can be created in laboratories. Storing and maintaining them depends on providing the needed conditions of every type of agent.

#### **2. Alteration of traits and characteristics of the organism**

Modifications of the microorganisms enable them to function in a specific way. Agents can be altered to have increased pathogenicity and less incubation period, leading to more severe and quicker-acting diseases. Alteration also makes relevant vaccines and known treatments pointless.

#### **3. Delivery**

Included in the delivery process is the preparation of agents so that they retain their characteristics when exposed to nature or other known factors. Activity can be influenced by factors such as temperature, humidity or ultraviolet radiation.

Development processes and techniques exist in scientific literature and the required equipment does not need any illegitimate actions to be obtained. This makes up the dual-use issue of BW, as is the case with nuclear weapons.

### Effects

Most biological weapons, in contrast to nuclear weapons, do not have immediate effects. Following an attack, people will be exposed to biological agents, but symptoms of an infection might not be evident immediately (time between exposure and symptoms appearance is called incubation period). Therefore, the main indicators of a BW attack are disease outbreaks. After the release of the BW, transmissible agents, e.g. smallpox or Ebola virus, the infection can also be spread to other people.

### Which countries have programs?

Currently, 16 countries and Taiwan are suspected or have had BW programs. These include: "Canada, China, Cuba, France, Germany, Iran, Iraq, Israel, Japan, Libya, North Korea, Russia, South Africa, Syria, the United Kingdom and the United States."<sup>6</sup>

### Have they been used?

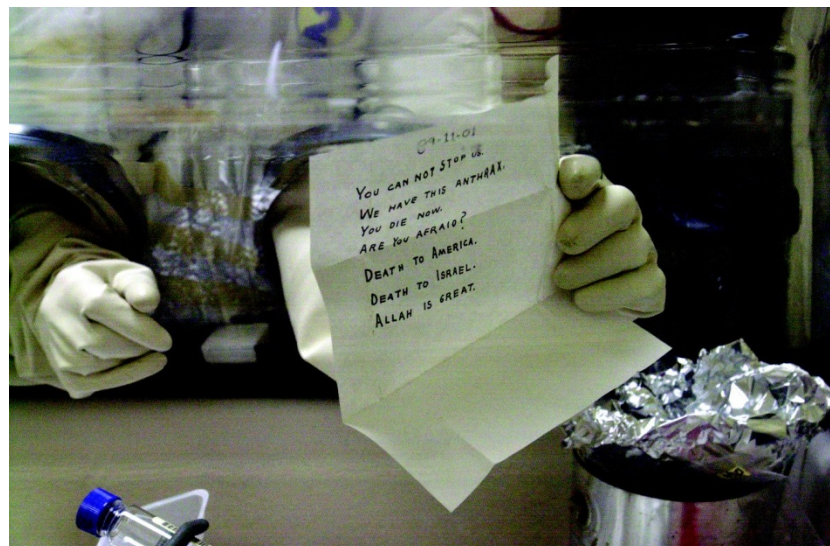
Biological weapons have been used many times throughout history. These weapons date back to the Roman Empire, where Romans poisoned their enemies' water supplies by using dead animals. During the Sino-Japanese War, the Japanese contaminated rice and wheat with plague-carrying fleas, resulting in the deaths of approximately 580,000 Chinese.

### How easy is it for violent NSA to acquire biological weapons?

Nowadays, BW are even more accessible to terrorist groups. Availability of related information on the internet, more specific teaching of biological sciences at universities and, generally, technological advancements are some of the factors that make acquiring BW easier. BW are cheap, can be delivered more easily than other weapons and have a strong psychological impact, making them more 'attractive' to terrorists.

Terrorist organizations have already attempted to use BW. After the 9/11 attacks, letters containing infectious anthrax spores began arriving in U.S. mail. 5 people died, out of which only 1 was an intended target, and 17 got sick. These incidents, also known as "Amerithrax", are considered the worst biological attacks in American history.

Figure 5: Laboratory technician holding the anthrax-laced letter addressed to Senator Leahy after safely opening it at the U.S. Army's Fort Detrick biomedical research laboratory in November 2001 (<https://www.fbi.gov/history/famous-cases/amerithrax-or-anthrax-investigation>)



### What would happen if a terrorist group released a biological agent in a large city?

<sup>6</sup>"The Biological Threat." Biological | NTI. N.p., n.d. Web. <<http://www.nti.org/learn/biological/>>.

The possibility of a biological attack is a widely discussed issue with varying opinions. According to the U.S. Office of the Director of National Intelligence and the National Intelligence Council (2008), biological attacks are more feasible than nuclear ones. On the other hand, according to defense experts, an attack is not possible, mainly due to the biological weapons' creation process. Nevertheless, most experts accept that the possibility of an attack is a serious issue that should not be disregarded. The sure thing is that an attack would kill large amounts of people and would leave many more severely injured.

## Major Countries and Organizations Involved

### United States of America (USA)

The U.S. has nuclear, biological and chemical weapons programs. It is recognized by the NPT as one of the five 'nuclear-weapons states' and both its biological as well as its chemical programs are not offensive. It is also a party to the BTWC, the CWC and other treaties concerning the control and the decrease of nuclear weapons. Nuclear reprocessing is banned in the U.S. since 1970. Moreover, the country had destroyed almost 90% of its declared chemical agents stockpile by 2013 and is still in the process of destruction.

Since the 9/11 attacks, terrorism is seen in the U.S. as the most important threat the country faces and, thus, its prevention has been one of the state's top priorities concerning foreign policy (Obama Administration). The country's overall strategy against WMD-related and nuclear terrorism focuses on:

1. Improving biological, chemical and nuclear material security,
2. Promoting the resilience of physical and social infrastructure,
3. Reducing weapons' material,
4. Aiding multilateral instruments,
5. Working with international organizations and external stakeholders.

The President of the U.S., Donald Trump, has said that he will upend the U.S.' non-proliferation policy, more specifically, he has declared that the country will expand its weapons capability. It is still unknown if the Trump Administration will follow these moves.

### The Russian Federation

With the collapse of the U.S.S.R., Russia was left with most of its WMD and it has, since then, proceeded to disassemble its arsenals and has made its inventory more transparent. Now, it focuses on modernizing nuclear weapons and their delivery systems. It is recognized by the NPT as one of the five 'nuclear-weapons states' and it has minimized its nuclear weapons stockpile. It has ratified the BTWC, but in 1991 it violated its terms. Biological facilities used for the creation of offensive agents seem to have remained in the country. It developed the world's biggest chemical weapons arsenal; however it has destroyed 84%, after the Russian Federation ratified the CWC. The country is expected to destroy all chemical stockpiles by 2020.

Russia's foreign policy (2016) focuses, among others, on:

1. Creating nuclear weapons- and WMD-free zones, mainly in the Middle-East
2. Reaffirming its stable policy towards non-proliferation of nuclear weapons, WMD and their delivery methods,
3. Complying with the NPT, BTWC, CWC,
4. Enforcing international laws on nuclear safety,
5. Strengthening cooperation among nations, most importantly among those with nuclear weapons,
6. Strengthening information security.

### Democratic People's Republic of Korea (DPRK)

The DPRK has not publicly declared anything concerning its nuclear weapons program. To this day, it has conducted 5 nuclear tests. It has also acceded to the BTWC and it has not signed the CWC. It is suspected that the country has both a biological weapons program as well as a chemical one.

The DPRK's economy is worsening, due to sanctions, and experts worry that the nation will sell nuclear and WMD technology information to non-state actors. The government has previously said that it will not denuclearize until all other nuclear-weapons states do so and until then the threat of nuclear facilities theft remains.

### Pakistan

Pakistan began its nuclear weapons program in 1970 and it still has weapons, in order to maintain the nation's security which is, according to the government, threatened by India. It has signed the BTWC and the CWC and it does not have any biological or chemical weapons programs. Instability in Pakistan combined with the existence of Pakistani Taliban in the region, threatens the security of its nuclear material.

## Timeline of Events

Date	Description of event
1925	The Geneva Protocol is open for signatures
1928	The Geneva Convention enters into force
1945	Nuclear bombings of Hiroshima & Nagasaki
5/03/1970	The NPT enters into force
1975	The BWC enters into force
8/02/1987	The CPPNM enters into force

1995	Tokyo's underground attack
1997	The CWC enters into force
September-October 2001	'Amerithrax'
28/09/2001	UNSC resolution 1373 is adopted
2004	UNSC resolution 1540 is adopted
07/07/2007	The Nuclear Terrorism Convention enters into force
27/08/2016	Libya successfully removes all CW
12/06/2017	US-led forces admit to using CW in Syria and Iraq

## Relevant UN Treaties, Resolutions and Events

### Treaty on the Non-Proliferation of Nuclear Weapons (NPT)

Commonly known as the NPT, this treaty aims to stop the increase of nuclear weapons, to promote international disarmament and the positive uses of nuclear energy.

Adopted: 12/06/1968

Entered into force: 5/03/1970

States Parties: 191 (<http://disarmament.un.org/treaties/t/npt> )

Full text: <https://www.un.org/disarmament/wmd/nuclear/npt/text>

### Comprehensive Nuclear-Test-Ban Treaty (CTBT)

It is a multilateral treaty banning all kinds of nuclear explosions. It has not entered into force because 44 "nuclear-capable states" have not ratified it yet.

Full text: [https://www.ctbto.org/fileadmin/content/treaty/treaty\\_text.pdf](https://www.ctbto.org/fileadmin/content/treaty/treaty_text.pdf)

### International Convention on the Suppression of Acts of Nuclear Terrorism/Nuclear Terrorism Convention

Aims to penalize nuclear terrorism acts.

Signed: 14/09/2005

Entered into force: 07/07/2007

States Parties: 99

Full Text: <https://treaties.un.org/doc/db/terrorism/english-18-15.pdf>

### Convention on the Physical Protection of Nuclear Material (CPPNM)

This convention includes measures concerning the prevention, discovery and penalization of felonies regarding nuclear material in international transport.

Entered into force: 8/02/1987

States Parties: 155

Full text: <https://www.iaea.org/sites/default/files/infcirc274r1.pdf>

### UNSC Resolution 1373

This resolution observes the connection between illicit transportation of nuclear material and international terrorism. It focuses on enhancing national and international partnership so as to create a stronger international response to the threat.

Adopted: 28/09/2001

Full text: <http://www-ns.iaea.org/downloads/conventions-codes-resolutions/unsr-1373-2001.pdf>

### Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxin Weapons and on their Destruction/ Biological Weapons Convention (BWC)/ Biological and Toxin Weapons Convention (BTWC)

It is a multilateral treaty banning any microbial or biological agents or toxins and all delivery systems of these agents or toxins.

Entered into force: 1975

States parties: 175

Full text: <https://unoda-web.s3-accelerate.amazonaws.com/wp-content/uploads/assets/media/C4048678A93B6934C1257188004848D0/file/BWC-text-English.pdf>

### Chemical Weapons Convention (CWC)

The CWC binds nations to not work on chemical weapons as a whole. Seven nations have successfully ended their CW programs and six are still in progress.

Entered into force: 1997

States parties:

Signatories: 175

### UNSC Resolution 1540

It binds states to adopt laws that will prohibit non-State actors to undergo any process concerning WMD and their delivery. It also obliges States to initiate controls in order to achieve non-proliferation.

Adopted: 2004

Full text: <http://www-ns.iaea.org/downloads/conventions-codes-resolutions/unsr-1540-2004.pdf>

### Geneva Protocol

It prohibits the use of biological and chemical weapons in times of international armed conflict.

Open for signatures: 1925

States Parties: 140

Full text: <http://www.nti.org/media/pdfs/aptgenev.pdf>

## Previous Attempts to solve the Issue

There have been numerous attempts in the past to solve the issue. Many treaties and conventions have been signed (see Relevant UN Treaties, Resolutions and Events). Moreover, many countries have abandoned their WMD programs. South Africa is the first country which has destroyed all of its nuclear power. Brazil and Argentina had begun developing secret nuclear programs, but both of the countries abandoned them. Concerning chemical weapons, Japan has begun the process of destroying 56.000 chemical weapons as stated by the Organization for the Prohibition of Chemical Weapons (OPCW). Moreover, the Nuclear Threat Initiative (NTI) has published the NTI Nuclear Security Index, which is a benchmarking project concerning the security of nuclear materials (Full text: [https://www.nti.org/media/pdfs/NTI\\_2016\\_Index\\_FINAL.pdf](https://www.nti.org/media/pdfs/NTI_2016_Index_FINAL.pdf))

## Possible Solutions

The effects of a nuclear attack are immediate and no one in a particular region would be able to survive one. Thus, it is very important to focus on the prevention of a nuclear attack. This can be done by:

- **Securing nuclear facilities:** NSA will not be able to steal the needed materials to create a nuclear weapon. The NTI Nuclear Security Index is available for all countries to evaluate the security of their facilities.
- **Minimizing HEU:** Technical advancements permit the replacement of HEU with LEU in most uses of HEU.
- **Banning nuclear reprocessing:** Reprocessing separates plutonium which can be used to create nuclear weapons, thus it is very important that countries stop reprocessing it, as it makes their facilities prone to theft.
- **Denuclearizing:** There are still 9 countries possessing nuclear weapons. In order to achieve global denuclearization, international cooperation is

required between nuclear-weapons-states and also states without nuclear arsenal.

- **Combatting nuclear smuggling:** Exchanging nuclear-related information among states, coordinating police and other organizations and training these organizations can minimize nuclear smuggling.
- **Signing and ratifying the NPT**

Preventing biological/chemical attacks can be done by:

- **Preparation and Prevention:** This includes international disarmament processes, supervised by relevant organizations, and inspections conducted by specialized organizations such as the UNODA. Through disarmament and inspections, hazardous agents' production will be limited. Moreover, nations can test their preparation for an attack through attacks simulations. Key weaknesses of preparation programs will then be exposed and worked upon. Disaster planning can minimize the impact of attacks and it could also stop non-state actors from committing an attack. This could happen because the nation will be so well prepared for an attack that it will not have the results that the attacker aimed for.
- **Improving security:** Increasing government funding in defense against chemical/biological attacks can prevent the acquisition of agents by non-state actors. Moreover, adopting obligatory safety laws for biological and chemical research facilities and laboratories is crucial in preventing the theft of facilities.
- **Signing and ratifying the BTWC and CWC:** Countries complying with the treaties are obliged to end their BW and CW programmes which means that there will not be any hazardous material left for non-state parties.

Of course, it is very important to be prepared for any attack at any time, so, thus, nations should be prepared and have a plan in case an attack happens.

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