Abstract

**Purpose:** As concerns are growing about terrorists' approach to biological weapons highlighted by the current COVID-19 crisis, it is important to better understand the historical development and past use of biological weapons. Since the World War, attempts to attack CBRN by state-sponsored terrorism and non-state terrorist groups have been constantly occurring. It is important to assess past cases in order to be able to cope well with potential CBRN threats and evaluate the current capabilities of extremists.

**Method:** Identify the theoretical background of bioactive and chemical agents, examine the use cases of biochemical weapons that have been used during World War, and assess the threat levels of CBRN terrorism recently. In particular, identify examples being attempted in Europe and look at the international response strategies of Europe and the United Nations. Specifically, we look at the CBRN terrorism international response system of Europol and UNCCT.

**Results:** The rise of ISIS in Europe and white nationalists in the U.S. have been constantly trying to threaten CBRN since then. The reason why terrorist groups, including ISIS, are attracted to CBRN is that it is not easy to produce agents and weapons, but it is possible to achieve the purpose of terrorism through mass murder. Nevertheless, jihadists and white nationalists in the U.S. do not abandon their plan to take over vulnerable security facilities dealing with CBRN-related materials to achieve their goals.

**Conclusion:** Biochemical weapons were used during the two World Wars, which inspired the post-Cold War New Territories. In addition, despite international regulatory cooperation such as the Vienna Treaty, several countries still produce CBRN secretly. Terrorist groups are diversifying their means of terrorism, including conventional weapons, vehicle thrusts, and biochemical weapons, targeting unspecified individuals. Security measures seem necessary to prevent terrorist groups and lone wolves from exploiting bio-terrorism in the current era of Corona.

**Keywords** CBRN, Biological and Chemical Agents, Bioterrorism, Chemical Warfare, New Terrorism

1. Introduction

Since 9/11, terrorism has been widely recognized as a significant political and social problem, with countries all over the world increasing their counterterrorism efforts[1]. CBRN terrorism is unlikely to succeed in the threat, but it can cause serious damage if it occurs. No country can be perfect for CBRN terrorism. Nevertheless, it is perceived by terrorist groups as a more attractive means of attack than conventional weapons[2]. Among CBRN materials, biological toxins can be obtained very easily. Simple bacterial culture system and plant toxin-specific extraction equipment are inexpensive and easy to obtain, and can be made at home[3]. Toxic diseases have sickened humans for thousands of years. They have been used in effective ways in war and terrorism. Unfortunately, the use of biological agents as a means of terrorism
has become a reality[4] and separating events of naturally occurring diseases from those of bioterrorism has become an important public health goal[5].

CBRN terrorism is a serious threat that can cause economic and social problems[6]. Through the knowledge and experience gained through past wars and terrorism, extremists perceive it as a useful means of terrorism, and accumulate knowledge of the acquisition and utilization of related materials.

In order to counter these threats, international norms require cooperation between countries, between countries and international organizations[7]. The United Nations and other international organizations, the United States and the EU are strengthening international cooperation.

In this paper, we introduced the evaluation and historical cases of the threat level of CBRN terrorism, identified the recent attempts of CBRN terrorism around Europe, and presented its response system.

2. Theoretical Background

2.1. Biological and chemical agents

Biological Weapons kill people using bacteria, viruses, or toxins contained in bacteria. There have been cases in which toxins were sprayed on wells in villages or bodies that were seriously infected with infectious diseases were used. In the 19th century, American Indians were infected with smallpox through donated blankets. Modern biological weapons will use strains of bacteria or viruses that can kill thousands of people.

A bioterrorism attack is the deliberate release of viruses, bacteria, toxins, or other harmful substances used to cause disease or death in humans, animals or plants. These agents are typically found in nature, but are likely to mutate or deform in order to increase the ability to cause illness, to be resistant to current drugs, or to increase the ability to propagate to the environment.

Biological agents can spread to air, water, or food. Terrorists tend to use biological agents because they are very difficult to detect and do not cause disease for hours or days. Some biological agents, such as the smallpox virus, can spread from person to person.

Biological toxins are attractive weapons because they can cause widespread social fear and panic beyond physical damage. But military leaders have found that as military assets there are some important limitations to bio-terrorism. It is difficult to use biological weapons in such a way that only the enemy is affected and friendly forces are not affected. But scientists have warned of the potential power genetic engineering will have for future bio-terrorists[8].

Chemical Weapons are weapons that kill people using manufactured chemicals. The first chemical weapon in history was chlorine gas. In World War I, German troops released tons of gas to the enemy[9]. Chemical weapons developed after World War II have the ability to kill more people[10]. For example, chemical weapons using ingredients similar to pesticides used in lawns were developed.

2.2. CBRN terrorism: interim threat assessment

Since the 1970s, the motivation behind the CBRN terrorist incident has changed over time. The main motivation from 1975 to 1989 was to protest government policy. But since 1990, the main motive has been for nationalist or separatist purposes and for retaliation or revenge. The apocalyptic prophecy also emerged as an important motivation in 1993 because of Aum Shinrikyo.

Since the end of the Cold War, terrorism for the traditional political purposes of national liberation or Marxist-Leninist ideology has decreased significantly, and terrorism, motivated by religious fanatics or ethnic identitarians, has increased[11][12]. On the surface, it can be seen as
using terrorism to achieve political purposes, but in essence, terrorism at this time was the act of maximum violence itself. "New Terrorism" features tactics to punish and destroy enemies they perceive rather than appeal to the broad constituency. According to terrorist analyst Brian Jenkins, "terrorists wanted a lot of people watching, not a lot of people dead." This is proof that terrorists hope to show their arguments effectively. In addition, the collapse of the Soviet Union, globalization and improved communication made CBRN materials and expertise easier to acquire than ever.

The CBRN offensive movement seems to be on the rise among the "new terrorism groups." Because of CBRN's asymmetrical potential, al-Qaida and ISIS also seem to have been interested in acquiring sophisticated CBRN devices to prove their power. ISIS has repeatedly attempted conventional and chlorine-bomb attacks to draw cooperation from its residents in Syria and Iraq. It is not easy to acquire or manufacture CBRN weapons. Nevertheless, the terrorist group was aware of the ability to destroy CBRN weapons, so it tried to secure these weapons in secret.

3. Historical Case of CBRN Attack

3.1. The rise of the age of modern CBRN weapons

Chemical weapons also appear in the history of ancient Greece, India and China. Poison arrows, poisoned water, hot peppers powder and sulfur gas were used in the attack. During World War I, the German army used several poison gas first developed to counter the Allies as a strategic weapon. In 1915, German troops attacked Russia with bromide gas and used chlorine gas to attack the French Allies. In December of that year, he used a phosgene against the British. In July 1917, the German army launched a Mustard gas attack against the Allies. During World War II, Nazi Germany killed more than a million people by running gas chambers using commercial cleaners and pesticides Zyklon B.

The age of modern biological weapons was opened through the development of microbiology and its use in international warfare. In World War I, attempts were made to use anthrax to target animal populations, and Germany sent secret agents to the United States and Russia to infect horses with the glanders.

The biological and chemical attacks carried out during World War I served as an occasion to draft the 1925 Geneva Agreement. The Geneva Convention prohibits the use of substances, including suffocation and toxicity, in war. Then Germany, Japan, the Union of the Soviet Socialist Republics and the United States launched a research program to eliminate the threat of biological weapons[13]. In 1969, under President Nixon, the United States began dismantling its aggressive bio-weapons program.

Accordingly, all biochemical research programs in the United States were defensive and the Geneva Convention was developed and ratified in 1972. But several countries that signed the convention continued aggressive research and production of biological agents until the mid-1990s. Also, from the mid-1980s to today, terrorist groups are increasing in the aggressive use of biological weapons.

3.2. CBRN weapons reserve and use after world war

In the Vietnam War, which began in 1965, the U.S. military used Napalm and Agent Orange. Agent Orange was sprinkled in the jungle and was a herbicide used to wither plants, but the release of dioxin killed more than 400,000 people in the long term since the war.

In 1984, in Oregon, U.S., followers of Bagwan Shree Rajneh tried to infect local residents with Salmonella typhimurium bacteria. Infected salad bars at 11 restaurants in Oregon, 751 people were seriously poisoned. In 1995, Aum Shinrikiyo members sprayed Sarin gas on the subway in Tokyo, Japan, causing 5,800 people to suffer. In the same year, there was an incident in the United States in which two people failed to use ricin against government officials and were
arrested. In 2001, there was an Anthrax attack in the United States, where letters containing infectious anthrax were found in the U.S. Congress and the media in September and October of that year, killing five people and having to pay $1 billion to decontaminate the building[14].

Numerous international agreements have been signed to restrict biological and chemical weapons, but many countries are still secretly continuing to develop them. Among them, the United States, Russia, and Iran have disclosed their chemical warfare agents, but 16 countries, including China, Egypt, India, Cuba and Albania, are believed to be secretly developing biological and chemical weapons at their shelters. Signatories of the Biological Weapons Convention(BWC) are developing more lethal biochemicals due to mutual distrust.

On the other hand, nuclear and radioactive materials have been appearing on the black market since the early 1990s in former Soviet countries of the Soviet Union. Nuclear power plants and nuclear weapons facilities in the EU are a major target of jihadists and groups. Chemical facilities and corporate agents are targeted for exploitation by terrorist groups and are relatively vulnerable to security[15].

4. CBRN Attack: Focusing on Europe

4.1. CBRN attack events

According to Europol, CBRN attacks are considered unlikely. Nevertheless, in some cases in 2015, there were attempts at malicious use of CBRN agents with unknown intent.

Two incidents involving attacks on chemical facilities took place in France in 2015. Although it was not specifically classified as a CBRN terrorist incident, it was an incident that revealed vulnerability from terrorist attacks. In 2015, two large simultaneous explosions at a petrochemical plant in southern France burned two petrochemical tanks. The incident shows that the chemical plant, which until now appears to be less well-known, is now the target of terrorist groups.

Nuclear power plants and nuclear weapons facilities in the EU are also potential targets for terrorists. In December of the same year, a high-ranking official of a nuclear research institute was found during a search for a suspected Parisian terrorism suspect in Belgium. The theft of radioactive materials is due to the monetary value of protective containers or devices and does not seem to be intended for use in terrorism. In the EU, the distribution of radioactive materials, such as nuclear materials, is strictly controlled, and trafficking is not prevalent.

However, nuclear and radioactive materials have continued to appear on the black market since the early 1990s in neighboring Soviet countries. In 2015, there were attempts to sell radioactive materials by organized crime groups in Ukraine, Moldova and Turkey. There is no information about the potential connection between the groups involved in the three incidents and the terrorist organization, but criminals who have access to the material could potentially serve to acquire and sell radioactive materials to terrorists.

The procurement of biological toxins such as avrin and lysine is taking place in the underground market of Darknet. In the past, Syria and Iraq had a chemical weapons program, fully equipped with production facilities and stockpiles, despite efforts by the international community and the OPCW. Even in Europe, the production, stockpiling and use of chemical weapons are prohibited, so the threat level is almost nonexistent. Also, CBRN materials are under strict government control, keeping threats at a minimum level.

So far, no major CBRN attacks in the EU by any terrorist group have been reported[16]. However, ISIS has improved its ability to manufacture improvised explosives by renovating existing military unit items that have been stolen or recovered from abandoned or conquered military facilities. There is also concern that they have accumulated knowledge to develop CBRN weapons that could later be used for attacks.
The threat of deliberately polluting food or water occurred in anarchist group in Italy in 2016. In June 2016, Italian anarchists acted in a supermarket in Lombardi mixing herbicides with groceries. In December of the same year, Greek anarchists issued a warning that claimed to have contaminated various food and beverage products from multinational corporations.

Three incidents involving the use of CBRN were reported in the EU in 2018. In May 2018, an Egyptian national was arrested in France on charges of preparing for terrorism. In his apartment in Paris, several guidelines were found explaining how to make black powder extracted from explosives and an improvised explosive device (IED) and how to use lysine to commit terrorism[17]. In June 2017, a terrorist plot using lysine was uncovered in Cologne, Germany. The suspect, allegedly inspired by IS, had planned to combine Lysine with ball bearings and bladed weapons.

4.2. Propaganda: CBRN terrorism threats

Since 2014, ISIS has led terrorist attacks in Europe, which have been carried out by organized terrorist organizations and lone wolves who are sympathizers. Also, jihadists and their sympathizers have regularly claimed CBRN-related threats to their propaganda[18]. Furthermore, CBRN-related topics have continued to appear in the propaganda of terrorism since 2015. Various jihadist media outlets used social media channels, especially Telegram, to express their intention to launch CBRN attacks, to share possible tactics against attacks and to propose targets. For example, in May 2016, a toxic extracted jihadist tutorial for solo actors was posted online. The subject of CBRN has reappeared in the online propaganda of terrorism. Online jihadist propaganda messages and guidelines[19] targeting sole actors, and easy-to-execute scenario suggestions for small CBRN attacks have increased compared to previous years.

In particular, in 2017, several jihadist media used social media channels to disclose their knowledge of chemical weapons and related terrorist tactics[20]. Several documents from the 2017 Knights of Lone Jihad series, published in English by the Hurat Willaya Channel, presented CBRN scenarios, especially including food and water pollution, as possible terrorist tactics for sole actors. Using available means, the proposed simple method allows untrained individuals, even lonely actors, to carry out attacks with CBRN data. The terrorist organization provides easier access to CBRN attacks with the intention of increasing the number of attempts in the hope that successful attacks can be carried out regardless of initial scientific knowledge or the actor’s experience by presenting a simple methodology.

5. International Response to CBRN Terrorism

5.1. Response strategies of the United Nations

The U.N. Global CBRN Terrorism Response Strategy calls for member states, international organizations and others to take the following steps:

- War on the smuggling of CBRN materials
- Confirm that biotechnology development is not used for terrorist purposes
- Prevent and detect illegal transactions of CBRN weapons and materials by improving border and customs control
- Cooperation in establishing a counterterrorism plan using CBRN weapons or materials

UNCCCT’s WMD/CBRN program seeks to promote member states and international organizations’ understanding of WMD/CBRN terror threat levels.

- Enhancing national capabilities to prevent and respond to chemical and biological terrorist attacks in Iraq.
- Enhancing capabilities to prepare for and respond to CBRN terrorist attack in Jordan.
· Promoting universalization and effective implementation of the International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT).
· Enhancing knowledge about advances in science and technology to combat WMD terrorism.

The UNCT’s WMD/CBRN program aims to promote understanding of the level of WMD/CBRN terror threats among member states and international organizations.
UNCCT also provides support focused on areas such as border and export.

5.2. Europol’s role in responding to CBRN terrorism

The process of making explosives, potential recipes for harmful use of explosive precursors, and potential new threats using CBRN materials are monitored and cross-checked daily by Europol experts at the ECTC[18]. Information is shared with EU member states and with experts and relevant departments within non-EU countries. Europol also promotes cooperation between CBRN and explosives experts through the European Explosive Ordnance Disposal Units (EEODN). The agency provides seminars and training to practice responses to possible and realistic scenarios of terrorist attacks.

Europol is a key partner in the field of explosives with CBRN and is working with state agencies in Europe. Europol serves to link the activities and training of member states and non-EU countries and the European Commission and other relevant international organizations. The European Explosive Processing Unit Network Groups, where EOD and CBRN experts work, continue to be promoted and actively supported by Europol.

The new platform for the European Explosive Surveillance Network in the European Platform of Experts (EPE) has already become a major communication channel through which more than 300 European bomb technicians and CBRN experts can quickly and efficiently share knowledge, best practices and technical information about the latest cases and incidents directly.

The European Commission announced a new action plan in October 2017 to strengthen its preparedness against the security risks of Annex 76 CBRN, strengthening the role of Europol as a key player in CBRN security.

6. Conclusion: Terrorism in the Age of Coronavirus

The European Commission announced a new action plan in October 2017 to strengthen its preparedness against the security risks of Annex 76 CBRN, strengthening the role of Europol as a key player in CBRN security.

Extremists around the world are revising their strategies to take advantage of the virus-induced upheaval in the health care industry and the global economy. The U.S. Department of Homeland Security has determined that domestic and foreign terrorists are trying to inspire supporters to use the Coronavirus. Terrorists are deliberately trying to infect the Corona virus.

On March 1, Bahgat Saber, known as a supporter of Muslim Brotherhood, posted a video on his Facebook account calling on Egyptians to deliberately infect friends and family members working for Egyptian President Abdel Fattah al-Sisi’s government. And even though ISIS has warned its supporters to stay away from the infected areas, some ISIS supporters have referred to the virus itself as ‘soldier of allah’ and consider it God’s punishment for the heathen.

In February, White Nationalists reported conversations about the encrypted message service Telegram, referring to the ‘duty’ to spread it in case of coronavirus infection. The discussion took place among followers of neo-Nazi James Mason, according to the Federal Protective Service of the Department of Homeland Security. The FBI warned white nationalists who instructed their followers to use spray bottles to spread virus-infected body fluids, targeting law enforcement agencies and Jews, especially in the false belief that Jews were trying to make or financially use viruses. Other terrorist threats have often occurred using the coronavirus of individuals whose membership is unclear.
Coronavirus19 has changed the way society behaves from social interaction to employment. We must consider how we will do the proper security measures to prevent this epidemic from being used for bio-terrorism while at the same time trying to prevent the spread of the virus.

7. References

7.1. Journal articles


7.2. Books


7.3. Additional references


### 8. Contribution

#### 8.1. Authors contribution

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