Three Track Approaches to Verify and Destruct North Korea's Biological Weapons

Ki-Chul Park

Abstract

Biological warfare agents (BWA) are highly potent substances that can cause harm when inhaled or ingested. These agents can be living organisms or toxic substances created by them. Due to their potency, BW agents can be up to 108 times stronger than the most potent chemical warfare agents (CWA). The primary delivery method for BW agents is through the air as an aerosol, which can spread through the wind. Biological agents can take several hours to take effect, and the effects of biological diseases may not manifest for days or even weeks. North Korea is believed to have an active biological weapons program and has been developing and stockpiling various biological agents, including anthrax, smallpox, botulinum toxin, and plague. North Korea's pursuit of biological weapons is a significant concern for the international community, and efforts to prevent the proliferation of these weapons have been ongoing for many years. This study aims to examine the potential risks of North Korean biological warfare and the measures taken by ROK-U.S. to mitigate these dangers. However, North Korea's deliberate secrecy about its biological weapons program makes it challenging to draw definitive conclusions on this subject. Nonetheless, since biological weapons potentially benefit North Korea, the country is very likely to possess them and thus pose a biological warfare threat. Responding to North Korea's biological weapons threats requires a comprehensive approach that involves diplomacy, intelligence, military, preparedness, and international cooperation. Three distinct approaches have been suggested to verify and dismantle North Korea's biological weapons program. They are contingent on feasible scenarios for verifying and destroying its capability. These scenarios depend on the stability of the Kim Jong-Un (KJU) regime. In addition, diplomatic efforts, intelligence monitoring, effective countermeasures, and citizen education and preparedness are all necessary components of a comprehensive response.

Keywords: *North Korea, Biological Weapons Threats, Kim Jong-Un regime, BWC.*

INTRODUCTION

Biological warfare agents (BWA) refer to living organisms or toxic substances that are produced by living organisms, such as toxins. The main worry is with the presence of bacteria and viruses that have an extremely high level of potency, ranging from 102 to 108 times stronger than the most potent Chemical warfare agents (CWA), which are nerve agents. This increased strength often results from the organisms' ability to reproduce within the body (USAMRIID 2020).

Generally, BWA is dispersed in the air as an aerosol, which can be transported by wind. Once on the ground, the agents become less dangerous but can still be re-aerosolized by movement in the area. Unlike chemical warfare agents (CWA), BWAs generally have little effect on the skin and must be inhaled or ingested to cause harm, although they can also penetrate the body through contact with hands and eyes. Most BWAs quickly die or become inactive in the environment, but some exceptions exist. Unlike CWA, which can cause rapid fatalities, biological toxins can take several hours to take effect and may not manifest for days or weeks. Due to their fragility, BWAs are most likely to be delivered through sprayers on the ground or mounted on drones. Explosive munitions are less effective because they can destroy much of the live agent, although the Soviet Union had planned to use them (Windrem 2001). The aim of biological weapon attacks may not necessarily be to cause fatalities but to disable victims for prolonged periods, which could reduce the likelihood of a severe retaliatory response such as the use of nuclear weapons. Biological agents can be contagious or non-contagious; the former carries a greater impact as the disease can spread far beyond the site under attack. However, using contagious agents could be risky because they could spreading back to the attacker's troops or country. Non-contagious agents would not pose this risk and would limit their impact within the targeted area.

North Korea is believed to have an active biological weapons program, although the extent of its capabilities and the current status of the program are uncertain. The North Korean government has been suspected of pursuing biological weapons for many years, and there have been multiple reports of covert activities related to biological weapons development in the country. According to various sources, North Korea has been producing and stockpiling different biological agents, including anthrax, smallpox, botulinum toxin, and plague. It is also suspected that North Korea has been researching and developing new biological agents that could potentially be used as weapons.

The international community is concerned that North Korea could employ biological weapons in various scenarios, including retaliation in the event of a conflict, covert assassination or sabotage, or terrorist attacks against other countries. North Korea's pursuit of biological weapons is a cause for significant

concern, and efforts to prevent the proliferation of these weapons have been ongoing for years. The United States and other nations have imposed sanctions on North Korea in an attempt to deter its weapons programs, and international organizations like the United Nations have also worked to limit the spread of biological weapons. The use of biological weapons constitutes an extraordinary occurrence known as an X-event. X-events are difficult to predict and improbable to take place, yet when they do manifest, they inflict substantial harm that surpasses the means of a single nation to bear. Information concerning North Korea's biological warfare program is limited and inaccessible, but it is crucial to acknowledge it as a substantial menace and to be thoroughly prepared to tackle it.

This study aims to examine the potential risks of North Korean biological warfare, as well as the measures taken by ROK-U.S. to mitigate these dangers. However, North Korea has deliberately kept any detailed information about its biological weapons from ROK-U.S., making it difficult to draw definitive conclusions about the subject. Nonetheless, since biological weapons potentially benefit North Korea, the country is likely to possess them and, thus, pose a biological warfare threat. North Korea's biological threats necessitate a multifaceted approach. Diplomatic efforts should be strengthened through sanctions, negotiations, and incentives. Intelligence agencies should monitor North Korea's biological weapons program to understand its capabilities and intentions. Effective countermeasures should be developed and deployed, including medical and physical countermeasures. Governments should educate and prepare their citizens for a biological attack, and the international community should work together to prevent the proliferation of biological weapons. Responding to North Korea’s biological weapons threats requires a comprehensive approach that involves diplomacy, intelligence, military, preparedness, and international cooperation.

In addition, I suggest three distinct approaches to verify and dismantle North Korea's biological weapons program; they are contingent on feasible scenarios for verifying and destroying its capability. These scenarios depend on the stability of the Kim Jong-Un (KJU) regime. The first scenario assumes regime stability and proposes that the U.S. should support the Biological Weapons Convention (BWC) to bolster the regime's power. The second scenario, also assuming regime stability, suggests that a harmonious relationship between North and South Korea could be fostered. The third scenario, characterized by regime instability or sudden change, would require a different approach.[1)]

1) Further theoretical discussion on WMD regime effectiveness can be found at “Park, Ki Chul, 2021. “An Inquiry for Weapons of Mass Destruction Regime Effectiveness: Great Power’s Commitment and Implications for North Korea’s Biological Weapons Threats”, Korea University dissertation, February.”

NORTH KOREA'S BIOLOGICAL WARFARE THREATS

North Korea Biological Weapons Program

Despite the lack of concrete information, there is consensus among experts that North Korea's pursuit of biological weapons is a cause for concern. The potential use of these weapons by North Korea could have devastating consequences, given the highly contagious nature of some biological agents and the difficulty in containing their spread once released. The international community has taken steps to address this threat, including imposing sanctions on North Korea and engaging in diplomatic efforts to prevent the proliferation of biological weapons. However, given the challenges in monitoring North Korea's military activities, it remains difficult to determine the exact nature and extent of their bioweapons program (Harris 2019).

Former Russian Prime Minister Yevgeny Primakov served as director of the Federal Security Bureau (FSB) in 1993. His report, titled "New challenges after the cold war: WMD proliferation," described North Korea's biological weapons program. According to the report, North Korea intends to develop biological weapons using anthrax, cholera, plague, and smallpox. Pyongyang Medical College often collaborates with unknown medical research institutes. Live agents are also used in experiments on the veiled islands (Farkas 1999).

In 2015, the U.S. Department of Defense's report on North Korea raised the issue of military doctrine, saying that the North may consider the use of biological weapons an option. But the report made no mention of actual work on these weapons, noting only that North Korea was continuing to develop its capabilities for biological R&D. The 2017 report was the same with one important exception. After noting that North Korea's R&D capabilities could support a biological warfare program, it added that most aspects of biological weapons research were inherently dual-use, which means they could be used to develop both medical countermeasures and biological warfare agents (U.S. OSD 2015/2017).

Different views are presented by various sources within the U.S. and South Korean governments regarding North Korea's biological weapons program. While some analysts assert that there is no publicly available evidence to support the existence of a North Korean biological weapons program, other reports indicate that North Korea possesses the capability to produce and distribute biological weapons. According to the 2020 South Korean Defense White Paper and the 2022 Annual Threat Assessment by the U.S. Director of National Intelligence, North Korea was believed to have a biological weapons program and suspected of possessing a variety of BWAs, including anthrax, smallpox, botulinum toxin, Korean hemorrhagic fever (KHF), plague, yellow fever, typhoid fever, dysentery, brucellosis, cholera, T-2 mycotoxin, staphylococcal enterotoxin B (SEB), typhus, and tularemia. It is improbable that North Korea has developed all 14 agents, particularly, since some of them, such as cholera and dysentery, would be less effective in modern countries like

South Korea. This article focuses on two BWAs, anthrax and KHF, as they are the most probable agents developed by North Korea, based on the evidence uncovered in recent decades. North Korea has reportedly cultured significant quantities of the KHF virus for vaccine production, making it a particularly useful agent in the Korean context since it occurs naturally in Korea. (Bennett 2022, 27)

<Table 1> Characteristics of Some Potential North Korea Biological Weapons

Biological Weapon	Cases in 2021	Incubation Period	Duration of Illness	Untreated Lethality	Contagious	Aerosol Persistence
Anthrax	0	1–6 days	3–5 days	High	No	High
Botulinum toxin	0	12 h–5 d	1–3 d if lethal, months otherwise	High	No	Moderate
Brucellosis	8	5–60 d	Weeks to months	< 5%	No	Moderate
KHF	260	4–42 days	Weeks to months	5–15%	Rare	Low
Pneumonic Plague	0	1–7 days	1–6 days	High	Moderate	Low
SEB	0	3–12 hours	1–2 weeks[a]	< 1%	No	Low
Smallpox	0	7–17 days	4 weeks	High to moderate	High	Moderate
Q Fever	48	7–41 days	2–14 days	Very low	Rare	High
Ricin	0	18–24 hours	Days	High	No	Low
Tularemia	0	1–21 days	2+ weeks	Moderate	No	Low

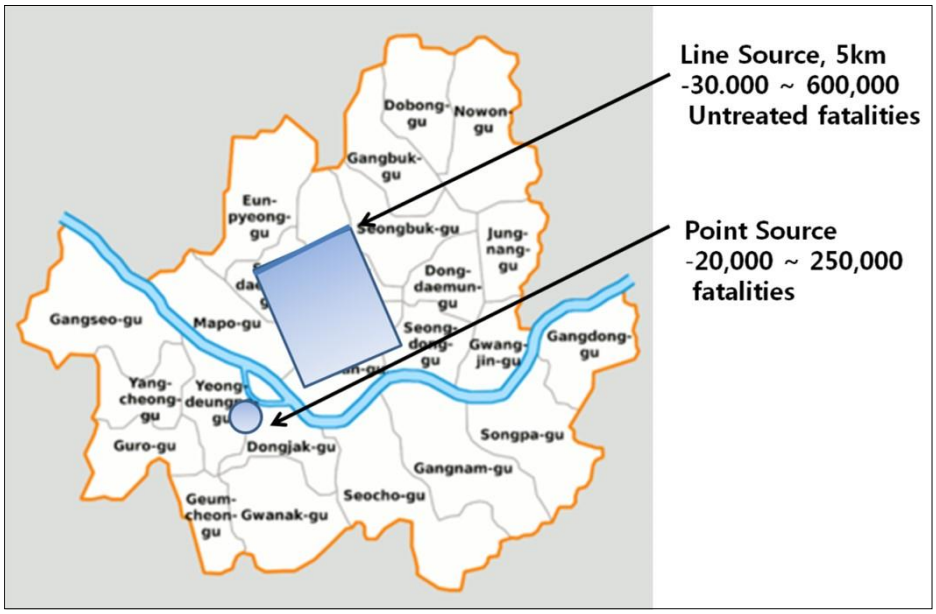
Source: U.S Army Medical Research Institute of Infectious Disease (USAMRIID)'s Medical Management of Biological CasualtiesHandbook, 9th ed., September 2020

Kim Jong-un's 2015 tour of a biopesticide factory in North Korea has raised suspicions that anthrax could be part of the country's biological weapons program. During the visit, Kim inspected Bacillus thuringiensis (Bt), which is used to produce biopesticides that can be used to eliminate insect pests over vast areas while being harmless to humans and animals. Although Bt is different from anthrax, they belong to the same genus, and Bt uses the equipment that can manufacture anthrax. Iraq and the Soviet Union had previously used Bt production to mask anthrax production. Even though Kim did not wear any protective gear during the factory visit, which may indicate that the plant was not producing anthrax, there is still concern that the plant could start producing anthrax upon Kim Jong-un's orders at any time (Hanham 2015).

Biological Weapons Simulation and Physical and Social Effects

Bruce W. Bennett, a defense analyst at the RAND, warns North Korea’s potential use of biological weapons against both military and civilian targets. A biological weapon would probably be delivered as a dispersed aerosol that the wind would carry. If people are not wearing some form of protection or are not physically in a place that protects them from exposure, they will be exposed downwind of the release location (See Figure 1) (Bennet 2011).

<Figure 1> Potential Effects of 10kgs of Anthrax on Seoul



Source: Proliferation of Weapons Mass Destruction: Assessing the Risks, the U.S. Congress Office of Technology Assessment August 1993.

Some biological weapons like smallpox are contagious. Its incubation and effect periods are long, and its mortality rate is fairly high if untreated. Vaccination can prevent diseases like smallpox from spreading. Many countries achieved herd immunity levels of vaccination during the eradication of smallpox. Since the 1970s, however, almost no one in the world has been vaccinated. As a precaution against North Korea's potential use of smallpox, the Korea Centers for Disease Control (KCDC) prepared seven million doses of the smallpox vaccine, which is not enough to cover the entire country. It has recently been reported that South Korea's smallpox vaccines have either expired or failed a toxicity test (Lee 2016).

Biological weapons would not only result in casualties but also affect the following four areas (Bennett 2011).

A. Destruction of Infrastructure

Following the anthrax attacks in the US in 2001, the facilities where anthrax had been spread remained contaminated for several months to years before they were fully decontaminated and deemed safe to use. While many biological weapons degrade quickly after release, certain ones such as anthrax can persist for an indefinite period of time.

B. Healthcare System

The healthcare system can become overwhelmed if a large number of people become ill from biological weapons, which can divert individuals who are not sick from their usual activities to help care for their ill family members or friends. The "worried well" population, which perceives themselves as infected when they are not, may seek medical attention. This phenomenon was observed after the terrorist use of Sarin (GB) in Tokyo in 1995, where the number of people seeking hospital care due to anxiety and physical symptoms was three times higher than the number of individuals who actually had physical symptoms of chemical exposure. (Meyer 2003).

C. Biological Weapon Protection

When the symptoms of a biological weapon start to show, people will take steps to protect themselves, such as wearing surgical masks or P-95 respirators. However, these measures can limit people's ability to perform physical activities and may affect their overall behavior.

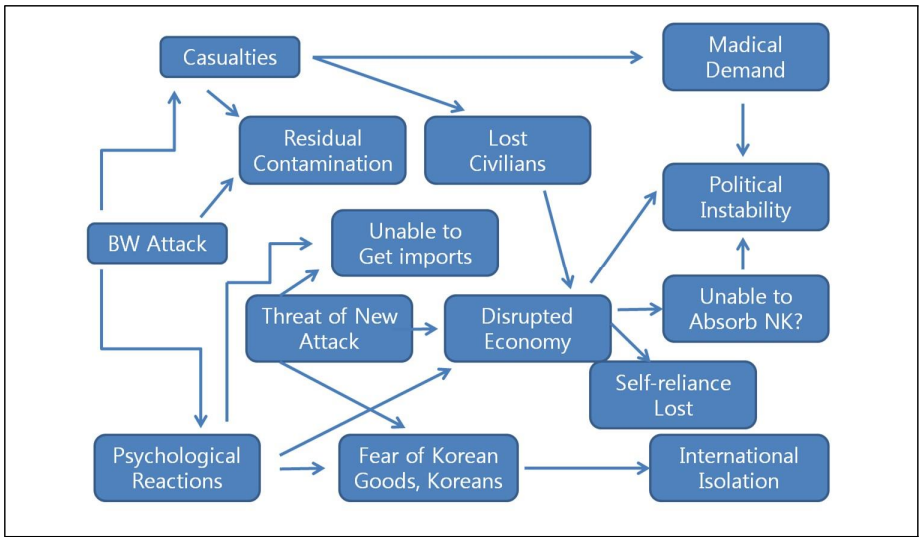
D. Psychological Reaction

The use of biological weapons can trigger strong psychological reactions in some individuals, exacerbating the "worried well" issue. A case in point is the 1994 outbreak of natural plague in Surat, India, where 600,000 people fled the city in response to 5,000 reported cases, even though only 167 cases were actually confirmed. (Ramalingaswami 2001, 29-30).

Biological weapons can have strategic impacts that go beyond direct human and infrastructure losses, as shown in Figure 2. The economic impact of biological contamination, including loss of civilian life and infrastructure, can be significant. If contagious biological weapons are used, trading partners may refuse to send goods to or accept goods from the affected country due to fears of contamination. There may also be concerns about additional biological weapon attacks, potentially targeting countries that provided assistance to the country under attack. The country affected by biological weapons may also face international isolation, as seen in the 1972 smallpox outbreak in Kosovo where neighboring nations closed their borders with Yugoslavia (Henderson 1998, 490). The use of biological weapons could lead to internal unrest, as the healthcare system and other resources may not be sufficient to meet the demands of scores of sick people. This could result in the military being diverted from their usual duties to maintain order and impose quarantine and vaccination requirements. In the case of South Korea, such internal problems could prevent them from carrying out a counteroffensive against North Korea or dealing

with a failed government in North Korea. It is so because they may be fully occupied with internal problems and lack the economic resources needed for unification.

<Figure 2> Potential Strategic Impacts of Biological Weapon Use



Source: Bruce W. Bennett, "The Challenge of North Korea Biological Weapons", Presentation at 16th Hwarangdae Symposium, October 26, 2011

The terrorist attacks on September 11, 2001, on U.S. soil caused a relatively small loss of life, less than 0.002 percent of the population, while costing the United States approximately 1 to 5 percent of its gross domestic product. This example highlights that the economic impact of an incident can be much greater than the impact on the number of casualties. A biological attack in South Korea that could affect 100,000 people, or about 0.2 percent of the population, would have significant economic implications (Bennett 2011).

According to a report issued by a U.S. official in August 2011, North Korea might still consider using biological weapons as a military option and has been actively seeking to acquire specialized equipment, materials, and expertise that could support the development of biological weapons. Although North Korea has signed the Biological Weapons Convention (BWC), it has not revealed any information about its biological research and development activities, which is required as part of confidence-building measures (CBMs) under the BWC (US Department of State 2011).

Recently a North Korean government official declared that they would take extraordinary action to attack South Korea in a revolutionary way that has never been

imagined before (Daily Korea Times 2016). What does this provocative rhetoric implicate? What is the revolutionary way that has never been used? There is no way to know whether these threats are just empty words designed to scare Seoul or would actually be carried out. If Pyongyang were serious, next-generation warfare would be biological. Strategically, there is a belief that North Korea is clandestinely dispersing biological agents during the early stages of a conflict, which would result in widespread societal chaos. There is a challenge in distinguishing between an intentional biological attack and the emergence of a naturally occurring infectious disease, which makes it likely that the biological attack is undertaken as a means to mask the real intention. From an operational standpoint, there is a potential for North Korea to resort to a smallpox attack as a desperate measure when the war takes a turn for the worse or the Kim Jong-un regime is on the brink of collapse. In fact, “Able Response,” the ROK-US Combined tabletop exercise, has been conducted based on strategic and operational scenarios since 2011.[2)]

THREE TRACK APPROACHES

The U.S. government officials now admit that the CIA's initial assessment of North Korea's leader Kim Jong-un was a failure. They believed he was more interested in reforming its economy than pursuing his father's "military first" policy. However, Kim Jong-un has continued to increase tension on the Korean Peninsula since taking power by making threats of unexpected strikes against South Korea (Sanger 2013).

Different interpretations exist within the US government regarding North Korea's leader, Kim Jong-un. Admiral Samuel J. Locklear III, head of the Pacific Command, described him as impetuous and more unpredictable than his father during his testimony to the Senate Armed Services Committee. However, Lieutenant General Michael T. Flynn, Director of the Defense Intelligence Agency, characterized Kim as a charismatic leader who understands real politics and is firmly in control, acknowledging that he cannot survive a full-scale war. Kim's government has also played a complex game with American intelligence agencies.

The international community holds optimistic expectations for a policy that strengthens the Biological Weapons Convention (BWC) and bolsters the implementation of the international framework. This aligns with the continuity between the foreign policies of the Biden and Obama administrations. However, it is worth acknowledging that the BWC significantly limits the United States’ ability to

2) Able Response, a collaborative effort between South Korea and the US aiming to combat biological threats, also contributed to advancing the bio defense project. This joint exercise took place between 2011 and 2016, and it was later substituted by a tabletop training session known as “Adaptive Shield.”

pursue research related to biological weapons that intends to safeguard and defend the domestic pharmaceutical industry. Consequently, it is somewhat idealistic to anticipate that the BWC would verify and dismantle North Korea's biological weapons capabilities effectively.

To respond to North Korea's threats with biological weapons, Seoul should consider the multi-track strategy of collaborating with the Biden administration. For the possible scenarios about Pyongyang's actions, I propose the following three track approaches that will verify and destruct North Korean bio threats.

Track I. Diplomatic efforts to enhance BWC effectiveness and cooperate with E.U. and UNSCR: Kim Jong-Un's stable regime and Great Power changing directions to support BWC.

Professor Bruce Cumings emphasized the significance of understanding North Korea's historical background to contextualize current developments properly. He pointed out that North Korea's history as a monarchy and the power transition that followed Kim Il-Sung's death are important factors to consider. Cumings noted that there was minimal disruption when Kim Il-sung died, highlighting the stability of the regime, which contradicts the commonly held belief that the regime is volatile. Cumings further argued that Kim Jong-un's leadership style is similar to that of Kim Il-sung and that he will overshadow Kim Jong-il, whose reign was the worst in North Korean history. Overall, Cumings' analysis suggests that Kim Jong-un's leadership is more stable than commonly thought (Kassam 2012). If Kim Jong-Un's regime maintains its stability and continues to manage the crisis successfully and also the Washington changes its policy direction in support of BWC, then diplomatic efforts are required to eliminate the North's biological weapons threat.

In December 2009, the US government unveiled a new strategy for the Biological Weapons Convention (BWC). Speaking at a meeting of the BWC's member states in Geneva, Switzerland, Under Secretary of State Ellen Tauscher emphasized that President Obama understood the potential danger of a biological attack and its potential consequences, which could be as severe as a nuclear attack. The Obama administration developed a strategy aiming at advancing the objectives of the BWC. However, the US government did not endorse the establishment of an international monitoring system that would verify the BWC member states' compliance with the treaty (Matishak 2009). The strategy and posture of the U.S. on the BWC would not change in the Trump administration, which insisted on "America First" to protect the pharmaceutical and bio-industries for the national interest. Even the Biden administration declared to boost the goals of the BWC, but the likelihood that the U.S. Senate would ratify the verification protocol is very low because pharmaceutical and bio-industries wield a strong influence on the Senate not to get the protocol ratified. In short, if Kim Jong-un's regime were stable and the U.S. boosted the compliance level for the BWC without ratification of the verification

protocol, Seoul should focus on diplomatic efforts to enhance the transparency of CBMs and NIMs of Pyongyang by cooperating with other international organizations such as E.U. and UNSCR Committee.

The European Union (E.U.) provides support to the BWC through a Council Decision called the BWC Action and previous E.U. Joint Actions. These projects with a specific time limit require coordinated action from the member states of the European Union, using resources such as human and financial resources, equipment, and expertise to achieve the specific objectives set by the E.U. Council. The member states are committed to the positions they adopt and the actions they take as part of these projects.

The United Nations Office for Disarmament Affairs (UNODA) in Geneva is responsible for implementing the BWC Action, which has three major projects aiming at supporting the BWC and the work of the BWC Implementation Support Unit (ISU). These projects include promoting universality and national implementation, building confidence in compliance, strengthening international cooperation, and encouraging discussion on the future of the BWC. The previous E.U. Joint Action, which focused on promoting universalization, national implementation, and the submission of Confidence-Building Measures (CBMs), was also implemented by the Geneva Branch of UNODA. The first E.U. Joint Action was implemented by the Graduate Institute of International Studies in Geneva and focused on universalization and national implementation. Through these projects, E.U. Member States mobilize resources and work together to achieve specific objectives set by the E.U. Council, committing to the positions they adopt and their activities.

The European Security Strategy of 12 December 2003 identified the proliferation of WMD as one of the main threats to our collective security. Despite the successes of international treaties and export control regimes to slow the spread of WMD, the threat only continues to grow as advances in biological sciences and technology enable easier production of more menacing biological agents. The E.U. is a strong supporter of all multilateral agreements that aim to disarm and prevent the proliferation of weapons of mass destruction, including the BWC. They have developed a strategy against the proliferation of such weapons, based on effective multilateralism, prevention, and cooperation. The E.U. is implementing measures listed in BWC's Chapter III to reinforce and implement the BWC, with a particular focus on universalization. The E.U. adopted an action plan on biological and toxin weapons on 20 March 2006, which aimed to efficiently utilize Confidence-Building Measures (CBMs). E.U. member states agreed to submit their CBMs annually and also provided a list of relevant experts and laboratories to the UN Secretary-General to facilitate investigations in case of alleged use of chemical and biological weapons.

In a report on the implementation of the European Security Strategy dated 11 December 2008, it was noted that the risk of proliferation of weapons of mass

destruction by both states and terrorists had increased since 2003, putting pressure on the multilateral framework. The report stressed the importance of continued efforts to prevent proliferation through UN and multilateral agreements, which act as key players, and work with third countries and regional organizations to enhance their capabilities to prevent proliferation. It also highlighted the need for more work on specific issues, including E.U. support for measures related to biosafety and biosecurity. At the BWC Seventh Review Conference held in December 2011, the E.U. had identified three priorities for reviewing the BWC: promoting universalization, supporting national implementation, and building confidence in compliance. North Korea became a signatory to the Biological and Toxin Weapons Convention (BWC) in 1987, but it only submitted one Confidence-Building Measure (CBM) report in 1990. North Korea has not fulfilled its obligation to provide additional CBM reports or any information on its National Implementation Measures (NIMs). The BWC's Article IV requires each State Party to take necessary measures to prevent and prohibit the development, production, stockpiling, acquisition, retention, transfer, or use of biological weapons by anyone under its jurisdiction. State Parties are also required to prevent and prohibit the encouragement, incitement, or assistance of others in any of these prohibited activities.

Track II. Bilateral Treaty (Wyoming Model): Kim Jong-un's stable regime and the betterment of the relationship between the two Koreas.

In the assessment of a former North Korean intelligence official, Dr. Suh Hoon, Kim Jong-Un's regime in North Korea appears to be stable and is expected to remain in power for the foreseeable future, despite facing increased international sanctions. As an expert on North Korean leadership, Dr. Suh Hoon believes that the regime is able to maintain control over all segments of society, eliminating potential political threats. Additionally, there are no visible alternative forces within the country that could ally themselves with outsiders (Voice of America 2016).

If Kim Jong-Un's regime were stable and South Korea attempted to resume dialogue with North Korea, a direct bilateral treaty could be a potential solution to address North Korea's biological weapons threat. The 1989 Memorandum of Understanding (MOU) between the United States and the Soviet Union, also known as the Wyoming MOU, aimed to support the Chemical Weapons Convention (CWC) negotiations through data exchanges and verification experiments, which have since been completed. In 1990, the U.S. and the Soviet Union signed the Bilateral Destruction Agreement (BDA), which prohibited chemical weapons production and required both countries to destroy most of their chemical weapon capability. By signing the BDA, the U.S. and the Soviet Union showed their willingness to halt production and initiate the destruction of chemical weapons without waiting for agreement on the CWC. Although the CWC has entered into force, a verification

protocol for the BDA has not been completed.

The BDA would require both participating countries to provide declarations regarding their relevant activities and facilities initially and annually. The initial declaration would contain information about any offensive weapon programs, while the annual declaration would cover four categories: (a) activities and facilities involved in national defense against biological or toxin weapons; (b) facilities designed to prevent the spread of biological agents; (c) facilities involved in working with specific agents or toxins; and (d) facilities that produce biologically based products. Randomly selected transparency visits would ensure the accuracy of declarations and promote transparency. A declaration clarification procedure would resolve any issues in declarations, including the omission of a facility that meets declaration criteria. The protocol includes mechanisms for consultation, clarification, and cooperation between the state parties. The Executive Commission would investigate any alleged use of biological weapons, with an investigation team having access to relevant personnel, documents, records, and equipment. The organization would consist of a Conference of States Parties, an Executive Commission, and a Technical Secretariat to facilitate the implementation of the BDA (Voice of America 2016).

Track III. Challenge Investigation (UNSCOM / UNMOVIC Model): Kim Jong-Un's unstable regime, sudden change of Pyongyang, and finding evidence of the intention of using biological weapons.

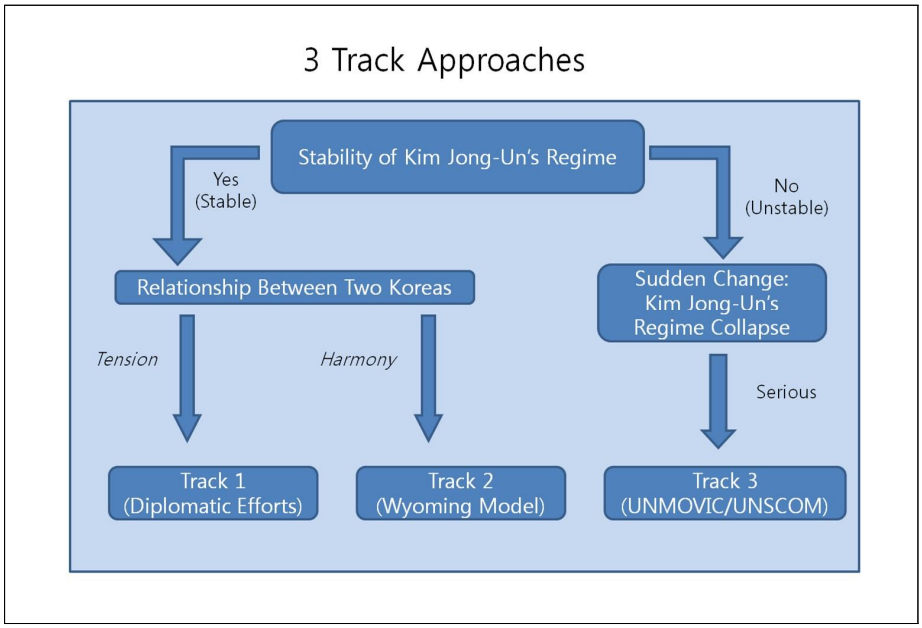
As per an article in the Foreign Policy Journal on August 18, 2015, there is a chance that Pyongyang could face a conflict similar to that of Syria, which would lead to immense chaos in the Korean peninsula and East Asia. As Kim Jong-Un continued to purge generals and political advisers, a high-ranking official may attempt a coup d'état to prevent their own execution, possibly by anti-aircraft fire. Such an event, along with a popular revolt, would not immediately end Kim's government but, instead, lead to a prolonged and extremely deadly conflict that would destabilize the region and the global economy. This scenario is not an attempt to spread fear but rather a plausible outcome. The instability of Kim Jong-un's regime could lead to either his assassination by a revolt triggered by economic hardship or a sudden military coup. In the event of the regime collapse, it would cause massive chaos.

To prevent North Korea from using its biological weapons, it is necessary to conduct rigorous inspections to verify their existence. The United Nations Security Council established the United Nations Special Commission (UNSCOM) in April 1991 to facilitate international cooperation in eliminating Iraq's weapons of mass destruction threats. Its initial focus was on identifying and overseeing the destruction of "prohibited items," including any means of developing or deploying chemical, biological, or nuclear weapons, as well as ballistic missiles with a range of over 150

km. The International Atomic Energy Agency (IAEA) was responsible for the nuclear arena, and the two organizations worked together closely. The second task was to establish a monitoring system to prevent Iraq from producing and obtaining prohibited items (Ekeus 2000).

In response to Iraq's refusal to allow UNSCOM's return, the UN Security Council deliberated the establishment of a new monitoring organization called UNMOVIC in December 1999. The proposal was first put forth by the UK and the Netherlands, but the US also participated in drafting the resolution. UNMOVIC was designed to have a robust monitoring regime, including inspections, and suspend sanctions if Iraq cooperated. The resolution established the structure of UNMOVIC, limiting its dependence and authorizing the Security Council to have a more significant role in its management. The emphasis was on supervising the executive chairman instead of controlling Iraq. UNSCOM had previously established a successful inspection and monitoring system, utilizing innovative techniques to uncover much of Iraq's prohibited weapons programs. UNMOVIC's success defended on the political climate in the Security Council being supportive (Ekeus 2000).

<Figure 3> 3 Track Approached to verify and destruct NK's Biological Weapon Program



Source: Authoredited.

CONCLUSION

The pursuit of biological weapons by North Korea is a significant concern due to the highly contagious nature of some biological agents and the difficulty in containing their spread. While some experts dispute the existence of North Korea's bioweapons program, others assert that North Korea has the capability to produce and distribute dangerous biological agents. The potential use of these weapons against military and civilian targets is particularly worrying since a biological weapon would likely be dispersed as an aerosol that could easily spread.

The use of biological weapons can have significant impacts on both social and public health. From a social perspective, the use of these weapons can cause fear and panic in populations, leading to widespread disruption of social and economic activities. It can also create mistrust and suspicion among people, which can have long-lasting effects on the social fabric of a community or society. From a public health perspective, the use of biological weapons can have devastating consequences. Biological agents can cause a range of illnesses, including deadly diseases such as anthrax and smallpox. These illnesses can spread rapidly through a population, and it can be difficult to control the outbreak once it has started.

The use of biological weapons can also have secondary effects on public health, such as the loss of healthcare workers and resources, which can further exacerbate the situation. Additionally, the use of these weapons can lead to a loss of confidence in public health systems and authorities, which can lead to a breakdown in trust and cooperation between communities and governments.

In order to prevent the use of biological weapons, it is crucial for governments and international organizations to collaborate and develop effective strategies to reduce the impact of outbreaks caused by these weapons. To minimize the risk of biological warfare on the Korean peninsula, I proposed one approach involving three main efforts: verifying the North Korean biological threat; eliminating that threat; and strengthening South Korea's resilience in case deterrence fails against a potential biological attack from North Korea. These efforts could include intercepting the delivery of biological weapons, detecting their use, preventing exposure and infection, and managing the consequences of a biological weapon infection. The preparation for such a response could require substantial costs, and the level of preparedness may not be sufficient to adequately protect the entire population of South Korea. Nevertheless, the longer the delay in preparation, the more expenses South Korea will incur, and the resulting consequences will become irreversible.

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