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Combating nuclear terrorism



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Introduction

"Nuclear terrorism is the most serious danger the world is facing."

—*Mohamed ElBaradei (former director of the IAEA and winner of the 2005 Nobel Peace Prize), February 1, 2009*

With around 15,000 nuclear weapons in the world and at least 12% of these on high-alert status, meaning they could be launched within minutes, one of the greatest threats our world is expected to be facing today is complete and utter destruction as a result of a nuclear war. Most of these weapons of mass destruction are much more powerful than the atomic bombs that were dropped on Japan in 1945 by the United States of America. Not only could a nuclear warhead, if detonated on a large city, kill millions of people, the effects also may linger for the decades to come. However, surprisingly enough, the risk of such a large-scale, world ending nuclear war has declined. Instead, the risk of a single nuclear weapon being detonated as an act of terrorism is on the rise.

It is quite clear that terrorist threats are ever changing; the dramatic rise of the Islamic State makes this indisputable. Securing nuclear weapons and the materials needed to make them are the most effective tools to reduce the risk of such a nuclear terrorist attack. However, the improvement of nuclear weapon and nuclear material security quite frankly never ends. As technology develops, the threat evolves and vulnerabilities are revealed. Even though the security for nuclear materials has improved slightly, the increasing capabilities of terrorist groups such as the Islamic State suggest that the risk of a nuclear terrorist attack is on the rise. This threat must be tackled as quickly as possible with a strong arm, in order to prevent any catastrophes.



Definition of Key Terms

Nuclear terrorism

Nuclear terrorism is defined as an act of terrorism in which an individual or a group detonate a nuclear device, intentionally, to wreak mass devastation by harming humans and/or damaging specific locations or the environment. Three types of nuclear terrorism have been declared:

1. Detonation of an actual nuclear bomb, either a nuclear weapon acquired from a state's arsenal or an improvised nuclear device made from stolen weapons-usable nuclear material
2. Sabotage of a nuclear facility causing a large release of radioactivity
3. Use of a radiological dispersal device or "dirty bomb" to spread radioactive material and create panic and disruption

The first of these three would, although most difficult for terrorist groups, be the most devastating.

Highly Enriched Uranium (HEU)

Highly Enriched Uranium (HEU) is a type of uranium, which is created by removing isotopes from the original uranium, which is more commonly found naturally. Due to its highly radioactive properties, HEU is an incredibly important part of radioactive technology and nuclear weapons.

Non-Proliferation Treaty (NPT)

The Non-Proliferation Treaty (NPT) is an international treaty, which aims to limit and prevent the spread of nuclear weapons and nuclear weapon technology, as well as further the peaceful uses of nuclear technology. It also aims to achieve nuclear disarmament and complete disarmament in general. Generally, the NPT is seen as based on one simple bargain: 'The NPT non-nuclear-weapon states agree never to acquire nuclear weapons and the NPT nuclear-weapon states in exchange agree to share the benefits of peaceful nuclear technology and to pursue nuclear disarmament aimed at the ultimate elimination of their nuclear arsenals.'

As of June 2017, 191 Member States signed the NPT (including the Republic of China (Taiwan)). The Democratic Peoples Republic of Korea (DPRK) (North Korea), India, Israel, Pakistan and South-Sudan have not signed the treaty.



Nuclear-Weapon States (NWS)

In total, there are eight known states to have detonated nuclear weapons. Only five of these are considered Nuclear-Weapons States under the terms of the NPT. These are: the United States of America, the Russian Federation, the United Kingdom, France and China. The three other states, which have detonated nuclear weapons are India, Pakistan and the DPRK. Israel is rumoured to have nuclear weapons, yet does not acknowledge this, and there is no definitive proof of a nuclear test.

Hydrogen Bomb

A hydrogen bomb is a second-generation of nuclear weapon design which employs the fusion of isotopes of hydrogen, releasing massive amounts of energy, in contrast to the 'standard' nuclear bomb, which employs the splitting of isotopes.

General Overview

Development of nuclear warheads

In the 20th century, humanity saw revolutionary breakthroughs in both technology and science. Not only were electronics and telecommunications perfected, nuclear science advanced in particular. One distinct area within this nuclear revolution was the creation and distribution of nuclear weapons, which had a ground-breaking impact on people's lives and society.

In 1945, the first atomic bomb was tested by the United States of America in cooperation with the United Kingdom, as a result of the fear of Germany possessing such a weapon of mass destruction as well. The nuclear warhead had taken 4,5 years to complete and the project had been conducted in utter secrecy, named "The Manhattan Project". However, at the moment of the testing, Germany had already surrendered and the potential threat of a Nazi nuclear bomb ceased to exist. Despite this, the war in Japan raged on, and on the 6th of August an atomic bomb was dropped on the Japanese city Hiroshima. A second bomb was detonated on the 9th of August, on the Japanese city of Nagasaki. Five years later, the two explosions had resulted in as many as 340,000 deaths.

After this catastrophe, many people called for a ban on nuclear weapons all together, in order to prevent a nuclear arms race and any catastrophes that could potentially be even worse than the previous three nuclear bomb detonations put together. The United States and the Soviet Union both were in favour of putting all atomic bombs under international control. However, despite these declarations, both nations never gave up their nuclear warheads. By

the end of 1946 it had become clear that this nuclear arms race couldn't be prevented, and the Soviet Union had already launched a full speed atomic weapons programme in an attempt to catch up with the United States of America. By 1964, the United Kingdom, France and China had all fabricated and tested their own nuclear warheads, joining the pre-existing nuclear powers in the process.

In order to prevent the spread of nuclear weapons the Non-Proliferation Treaty (NPT) was set up. As of June of 2017, 191 states (including the Republic of China (Taiwan)) have signed the treaty. The DPRK announced its withdrawal from the treaty in 2003. The other four nations, which have not signed the NPT are India, Israel, Pakistan and South Sudan.

Terrorist groups

There are several terrorist groups that have demonstrated interest in acquiring and using nuclear weapons. These include Al Qaeda, Chechnya-based separatists, based in Chechen in Russia, Lashkar-e-Taiba, founded in Afghanistan and mainly operating from Pakistan, and Aum Shinrikyo, a Japanese doomsday cult. Al Qaeda and Aum Shinrikyo are known to have attempted to buy nuclear materials on the black market, and Al Qaeda has been, according to the 9/11 commission in 2004, 'trying to acquire or make nuclear weapons for at least ten years... and pursue its strategic goal of obtaining a nuclear capability.' The main motive for these terrorist groups is their disagreement with their current state of politics in their regions and/or their religion. Al Qaeda, for example, is thought to believe that a Christian-Jewish alliance wishes to destroy Islam, while Lashkar-e-Taiba has claimed to destroy the Indian republic, as a result of the conflict of Kashmir, and eradicate Hinduism and Judaism.

Terrorists can buy, steal or construct nuclear warheads. The hardest part of constructing a nuclear bomb is the acquiring the required materials. Even though this is quite difficult to do, it is still too easy. There are hundreds of locations holding these precious materials, and there are no binding regulations stating how and how well these materials should be secured. According to the United States Office of Technology Assessment, a group of individuals with the right materials, without any access to classified documents concerning nuclear bombs could make a simple nuclear weapon.

Terrorists could acquire fissile materials or nuclear weapons from hundreds of sites across the globe. There are no known cases of terrorist actually acquiring fissile material, but there are some examples of individuals doing so. A Russian citizen was arrested in Georgia for carrying 100 grams of HEU in 2006, and in 2007 two armed teams broke into the

Pelindaba nuclear facility in South Africa. In that facility, enough HEU for an estimated 30 weapons is stored.

Furthermore, terrorist groups might as well steal or buy nuclear weapons. Across the globe, nuclear weapons are stored in around 110 different places, in 14 different countries. There are around 150-240 nuclear weapons belonging to the United States of America stored in Europe and, according to a 2008 United States Air Force investigation, 'most' of these sites do not meet the United States security standards. In 2010, six anti-nuclear activists broke into a Belgian military base.

Global Initiative to Combat Nuclear Terrorism (GICNT)

The Global Initiative to Combat Nuclear Terrorism (GICNT) commits participants to follow the Statement of Principles (mentioned below) to enhance international partnerships and combat nuclear terrorism. Nations concerned with the threat of nuclear terrorism are called upon to implement the following principles:

1. Develop, if necessary, and improve accounting, control and physical protection systems for nuclear and other radioactive materials and substances;
2. Enhance security of civilian nuclear facilities;
3. Improve the ability to detect nuclear and other radioactive materials and substances in order to prevent illicit trafficking in such materials and substances, to include cooperation in the research and development of national detection capabilities that would be interoperable;
4. Improve capabilities of participants to search for, confiscate, and establish safe control over unlawfully held nuclear or other radioactive materials and substances or devices using them;
5. Prevent the provision of safe haven to terrorists and financial or economic resources to terrorists seeking to acquire or use nuclear and other radioactive materials and substances;
6. Ensure adequate respective national legal and regulatory frameworks sufficient to provide for the implementation of appropriate criminal and, if applicable, civil liability for terrorists and those who facilitate acts of nuclear terrorism;
7. Improve capabilities of participants for response, mitigation, and investigation, in cases of terrorist attacks involving the use of nuclear and other radioactive materials and substances, including the development of technical means to identify nuclear and other radioactive materials and substances that are, or may be, involved in the incident;



- Promote information sharing pertaining to the suppression of acts of nuclear terrorism and their facilitation, taking appropriate measures consistent with their national law and international obligations to protect the confidentiality of any information which they exchange in confidence.

The GICNT is signed by 86 nations. Please see Appendix A for all nations.

Major Parties Involved

Iran

In 1970, Iran signed the NPT, making its nuclear program subject to IAEA verification. The IAEA has, however, since then constantly declared its uncertainty whether Iran's nuclear program is entirely peaceful or not. Since 2011, the IAEA has raised its concerns about the nuclear program, fearing it may consist of multiple military dimensions. In 2016, Iran had dismantled large parts of its nuclear program, which lifted the sanctions placed by the United States of America after Iran refused to suspend its uranium enrichment, which is the process of making HEU, program in 2006. The Board of Governors, which is part of the IAEA, adopted the following resolution regarding Iran:

- Joint Comprehensive Plan of Action (JCPOA) implementation and verification and monitoring in the Islamic Republic of Iran in light of United Nations Security Council Resolution 2231, GOV/2015/72, December 2015

The resolution mentioned in the resolution above is Resolution 2231, adopted by the Security Council in 2015, which endorses the JCPOA. The JCPOA is an international agreement on the nuclear program of Iran between Iran, China, France, Russia, the United Kingdom, the United States of America, Germany and the European Union. The JCPOA eventually lead to the Iranian Nuclear Deal Framework.

Even though Iran's nuclear program has, for a large part, been lifted, Iran could lend nuclear intellect, financial and operational support terrorist groups. They have been known to support alleged terrorist groups such as Hezbollah and Hamas. These groups' ideologies are generally Anti-West and such organizations with nuclear capabilities could pose a threat to international security.

Democratic People's Republic of Korea (DPRK)

As of June 2017, the DPRK said to have conducted 5 successful nuclear tests: in 2006, 2009, and 2013 and in January and September of 2016. The DPRK claims the



January test was a hydrogen bomb, yet experts doubt this is possible due to the size of the explosion. The tests carried out in 2016 ignited international disapproval, such as from China, DPRK's main trading partner and only ally, which brought increased sanctions. The situation in the DPRK remains unstable and their possession of nuclear weapons is more than clear. The General Conference adopted the following resolution during the 60th Regular Session of the IAEA, in September 2016, regarding this issue:

- Implementation of the NPT safeguards agreement between the Agency and the Democratic People's Republic of Korea, GC(60)/RES/14, 30 September

United States of America

The United States of America was the first country to manufacture nuclear weapons and the only country to ever use nuclear warheads in war. This was in the Second World War. During the production of these weapons, the USA was aided by the United Kingdom and Canada, and established a deal which prohibited sharing of information to other countries, without consent of the other parties involved. This can be seen as an early attempt at non-proliferation.

The president of the USA, Donald Trump, has stated that he wishes the USA's nuclear arsenal to be 'top of the pack', and states that the USA has fallen behind in its weapons production, despite expressing that 'a dream would be that no country would have nukes.' The USA is one of the five recognized nuclear powers, and its arsenal consists of 4,500 warheads and facilities for their production.

New START is a new nuclear and strategic arms limitation treaty, signed by the USA and the Russian Federation. It requires both nations to limit their arsenals of nuclear warheads to equal levels for 10 years. It went into force on 5 February 2011 and is thus expected to last at least until 2021. Donald Trump has called New START a one-sided deal, and the question whether Trump wants to abrogate New START remains.

The Russian Federation

The Russian Federation became the world's second nuclear weapons power after World War II. It currently has the largest stockpile of nuclear warheads in the world, the exact amount is unknown, and is also one of the five recognized nuclear powers.

The Russian Federation also signed New START, and is to follow the same regulations as mentioned above. The Russian Federation has also indicated it will not negotiate further non-strategic arms reductions. Along with the other NWS, the Russian



Federation is against an open-ended working group (OEWG), adopted by the United Nations General Assembly in 2013, to create proposals for global nuclear disarmament.

International Atomic Energy Agency (IAEA)

The international Atomic Energy Agency (IAEA) is an international organization which seeks to prohibit the use of nuclear weapons and promote the peaceful usage of nuclear technology. It is, as of June 2017, signed by 168 nations. Please see Appendix B for all nations. Generally, the IAEA is described as having three goals:

1. **Peaceful uses:** Promoting the peaceful uses of nuclear energy by its member states,
2. **Safeguards:** Implementing safeguards to verify that nuclear energy is not used for military purposes,
3. **Nuclear safety:** Promoting high standards for nuclear safety.

Timeline of Key Events

Date	Description of Event
8 August 1945	United States of America drops first atomic bomb on Hiroshima, Japan
1 July 1968	NPT open for signing
5 March 1970	NPT entered into force
1985	DPRK accedes to NPT (but never comes into compliance)
2003	DPRK resigns from NPT
January 2016	Iran dismantles major parts of its nuclear program
6 January 2016 & 9 September 2016	DPRK tests nuclear weapon, causing international uproar and condemnation
September 2016	Sixtieth Regular Session of the General Conference of the IAEA takes place

UN involvement, Relevant Resolutions, Treaties and Events

The United Nations has discussed the issue multiple times. However, most of the resolutions are quite passive and don't enforce any strict laws. The treaties concerning this situation are much more effective.

- Resolution 1373, **S/RES/1373**, September 2001
- Resolution 1540, **S/RES/1540**, April 2004
- Nuclear Security, **GC(60)/RES/10**, September 2016
- The Treaty on the Non-Proliferation of Nuclear Weapons
- Non-proliferation of weapons of mass destruction, **S/RES/2325**, 15 December 2016

Previous Attempts to Resolve the Issue

Over the past few years, nuclear security around the world has greatly improved. Several weaknesses have been fixed at a large number of sites around the world, and more than half of the countries where weapons-usable nuclear material once was store have gotten rid of it. Furthermore, the security rules and procedures have been changed, improved and tightened around the globe. Several nuclear security resolutions include:

- Resolution 1373, S/RES/1373, September 2001
- Resolution 1540, S/RES/1540, April 2004
- Nuclear Security, GC(60)/RES/10, September 2016

These resolutions mainly call upon all nations to act accordingly to the resolutions put in place, call upon all member states to remain aware of the situation and make sure they do as much as they can to resolve the issue, as well as remind them of the possible threats.

There are still security systems, which are flawed and not entirely, which increases the chances of fissile material or nuclear weapon theft.

Furthermore, the condemnation of nuclear weapons and nuclear weapon tests as a whole has limited the increase in nuclear programs globally, which of course adds to resolving the issue. There are still however plenty of storage sites around the globe with nuclear weapons and fissile materials, which should, decline in large numbers. Below are a treaty and a resolution on the non-proliferation of nuclear weapons:

- The Treaty on the Non-Proliferation of Nuclear Weapons
- Non-proliferation of weapons of mass destruction, S/RES/2325, 15 December 2016



Possible Solutions

One of the main solutions to this issue would be to create and implement stringent nuclear security principles and ensure every nation storing nuclear weapons or materials commit to these principles. In a high-security scenario, states with nuclear weapons, nuclear material that can be used for weapons or nuclear facilities whose sabotage could cause a major catastrophe are committed to strict implementations, such as those mentioned below. Organizations operating facilities or transports handling these items and materials should also be committed to: providing effective protection against the full spectrum of plausible adversary threats, undertaking regular, realistic tests and in-depth independent reviews of their nuclear security and updating their nuclear security requirements and approaches in the face of changing technology.

Also, having systems in place to detect, assess, delay, and respond to outsider intrusions and providing on-site armed guard forces that are well equipped, well trained, professional, and have capabilities sufficient to defeat adversary threats are of incredible importance for any impending threat. Achieving and sustaining nuclear security to such a degree of excellence would be far more probable if done by multiple nations together, cooperating on an international level, thus stimulating international meetings and talks regarding the issue of nuclear security could greatly benefit solving this international problem.

Furthermore, limiting the number of storage sites and transports of fissile materials such as HEU, reducing the number of facilities which process weapons usable nuclear material in bulk and stopping the production of fissile materials for weapons could greatly decrease the chance of theft of these materials, which would in turn cause the chances of a nuclear act of terrorism to decline.

If the high-security scenarios mentioned above were achieved, and other measures were taken to degrade or defeat the highest-capability terrorist groups that have the most potential to engage in nuclear terrorism, and make it as difficult as possible for nuclear thieves, smugglers, and terrorists to connect with one another and smuggle nuclear and radioactive material, then the risk of nuclear terrorism could be reduced to a very low level, greatly improving all countries' security. Moreover, the cooperation needed to achieve this level of reduced risk could improve political relations and cooperation in other areas.



Lastly, bolstering the global non-proliferation regime, would greatly aid in containing the threat of North Korea and other states who possess nuclear weapons

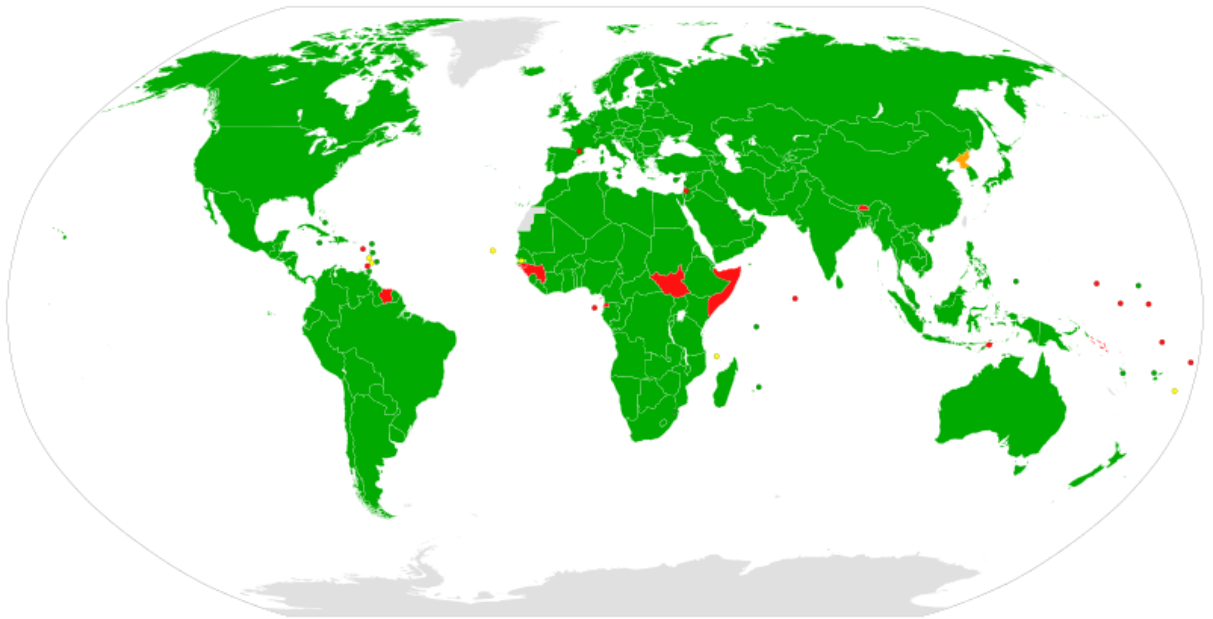
Appendices

Appendix A

1. Afghanistan	23. Denmark	45. Luxembourg	67. Russian Federation
2. Albania	24. Estonia	46. Republic of Macedonia	68. Saudi Arabia
3. Algeria	25. Finland	47. Madagascar	69. Serbia
4. Argentina	26. France	48. Malaysia	70. Seychelles
5. Armenia	27. Georgia	49. Malta	71. Singapore
6. Australia	28. Germany	50. Mauritius	72. Slovakia
7. Austria	29. Greece	51. Mexico	73. Slovenia
8. Azerbaijan	30. Hungary	52. Montenegro	74. Spain
9. Bahrain	31. Iceland	53. Morocco	75. Sri Lanka
10. Belarus	32. India	54. Nepal	76. Sweden
11. Belgium	33. Iraq	55. Netherlands	77. Switzerland
12. Bosnia & Herzegovina	34. Ireland	56. New Zealand	78. Tajikistan
13. Bulgaria	35. Israel	57. Nigeria	79. Thailand
14. Cabo Verde	36. Italy	58. Norway	80. Turkey
15. Cambodia	37. Japan	59. Pakistan	81. Turkmenistan
16. Canada	38. Jordan	60. Palau	82. Ukraine
17. Chile	39. Kazakhstan	61. Panama	83. United Arab Emirates
18. China	40. Republic of Korea	62. Paraguay	84. United Kingdom
19. Cote d'Ivoire	41. Kyrgyz Republic	63. The Philippines	85. United States
20. Croatia	42. Latvia	64. Poland	86. Uzbekistan
21. Cyprus	43. Libya	65. Portugal	87. Vietnam
22. Czech Republic	44. Lithuania	66. Romania	88. Zambia



Appendix B



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