International Atomic Energy Agency

Environmental Harms of Nuclear Tests

Hussam Alakeel, Almaha Moughrabiah

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Introduction to chairs:

Almaha Moughrabiah:

Hey I'm Almaha Moughrabiah. I am very excited to meet you all and to be a part of this wonderful committee. About me.....I have a habit of exploring hobbies. I like keeping my days as productive as possible. I believe in the saying "time is money" neither should be wasted.

Hussam Alakeel:

Hello, fellow delegates! I'm Hussam Alakeel, I can't wait to embark on this wonderful journey with you all. A bit about me, my hobbies are quite simple: playing video games, watching TV shows, and going to the Desert.

Since my first conference at SAMUN 2019, I have launched myself into the world of not just MUNs but also as an avid debater and public speaker. So, buckle in, delegates, because we're about to embark on an extraordinary journey of discovery, collaboration, and rivalry.

WELCOME ADDRESS TO PSUMUN 2023

Dear Delegates,

We are very happy to have you all with us at PSUMUN'23. This year we have the largest event we have had at PSUMUN since its beginning and we are honored that you are a part of it.

This year we have a large number of committees and a plethora of delegates from all around the Kingdom and beyond. We hope you use this opportunity to research the topics that will help you learn more about the past, present, and future of our world. We would also like you to learn from the other delegates that may come from completely different backgrounds.

Model UN conferences are very fun and entertaining, but we hope that PSUMUN becomes more than that to you. We hope that you leave our conference taking a step into the right direction of your future. Everything we learn in life is one step further on the ladder of success and PSUMUN aims to help you with that.

We strive to help educate our delegates to learn more about world issues and learn all the amazing skills that come with joining Model UN conferences. We wish you all the best in the conference and in all your future endeavors.

With that, we hope you have fruitful and constructive debates. The SG yields the floor to you.

Good luck!

Best regards,
Hend Moughrabiah, Secretary - General

COMMITTEE OVERVIEW:

The International Atomic Energy Agency (IAEA) is an international organization that serves as the global focal point for cooperation in the field of nuclear energy. It is a specialized agency within the UN system that promotes the peaceful use of nuclear energy while ensuring nuclear safety, security, and non-proliferation. It plays a vital role in facilitating international cooperation, providing technical assistance, and establishing standards in the field of nuclear energy.

Introduction

The end of the Second World War marked the dawn of the atomic age, with a number of states heading into the world of nuclear physics both as a peaceful source of energy and as a weapon of mass destruction. Initially, countries such as the United States, the Soviet Union, the United Kingdom, France, and China became nuclear powers due to the competitive backdrop of the Cold War's geopolitics and the lack of effective international regulation. During this period, nuclear tests were carried out all around the globe in all environments (atmosphere, underground, and underwater).

However, the environmental consequences stemming from these nuclear tests have emerged as a pressing global concern that demands immediate attention and a concerted response. The detrimental impact of nuclear testing poses risks to ecosystems, human health, and the overall well-being of our planet. It is crucial to address these consequences through international cooperation and coordination.

Efforts to reduce the environmental consequences of nuclear testing demands international cooperation and coordination. Organizations such as the International Atomic Energy Agency (IAEA) play an

important role in monitoring and regulating nuclear activities, as well as encouraging non-proliferation and worldwide collaboration.

BACKGROUND INFORMATION:

Past events that lead to the issue:

Nuclear tests involve the detonation of any nuclear device, whether to evaluate a nuclear weapon's capabilities or to generate electricity. However, these tests have serious environmental and health consequences as they emit hazardous radioactive elements into the environment. These radioactive elements permeate the air, soil, water, and ecosystems, causing long-term ecological damage and disturbing sensitive balances. Furthermore, radioactive particle discharge presents considerable health hazards, including higher cancer rates, genetic abnormalities, and other serious disorders. To limit the environmental and health risks of nuclear testing, strict regulations, effective monitoring, and international cooperation must be implemented.

Over 500 atmospheric nuclear tests were carried out worldwide between 1945 and 1980, releasing approximately 440 megatons of explosive yield into the atmosphere. The subsequent radioactive fallout spread across continents, polluting land, water, and vegetation. Isotopes with lengthy half-lives, such as iodine-131, cesium-137, and strontium-90, have a substantial environmental influence that lasts generations.

Some notable instances of nuclear testing include The Pacific Proving Grounds in the Marshall Islands, where the United States conducted nuclear tests from 1946 to 1958, the resulting radioactive fallout devastated these islands, it ruined marine habitats, caused population displacement, and had long-term health implications for the natives. Similarly, French nuclear testing in the Sahara Desert (1960-1966) and Mururoa Atoll in the Pacific (1975-1996) resulted in environmental contamination and considerable harm to marine ecosystems, with an estimated 250,000 marine animals perishing in the Mururoa Atoll region. From 1949 to 1991, the Soviet Union controlled the Semipalatinsk Test Site in Kazakhstan, which underwent extensive nuclear testing, including 456 nuclear explosions. These tests caused significant environmental contamination, an estimated 1.5 million individuals were affected in one way or another which led to elevated rates of cancer, birth abnormalities, and other health implications.

Efforts to address the environmental consequences of nuclear tests have been made through programs such as the Comprehensive Nuclear-Test-Ban Treaty (CTBT). The CTBT, signed by 185 countries and ratified by 166 as of 2021, seeks to ban all nuclear detonations worldwide. Its implementation will reduce nuclear testing and mitigate their environmental repercussions.

Major Countries Involved:

United States of America:

The United States has played a significant role in nuclear testing, undertaking multiple tests for both military and scientific ambitions. The Trinity Test, conducted in 1945, was the first atomic bomb test which proved that nuclear energy can be utilized as a weapon of mass destruction. The USA continued to perform atmospheric, underground, and undersea tests throughout the Cold War. The environmental repercussions of nuclear testing in the United States has been documented in locations such as the Nevada Test Site and the Pacific Proving Grounds.

Russia (Formerly the USSR):

The Soviet Union conducted a significant amount of nuclear testing, most notably at Kazakhstan's Semipalatinsk Test Site. Throughout the Cold War, the Soviet Union carried out roughly 456 nuclear explosions at this location, resulting in serious environmental damage and health concerns for the neighboring communities. Following the fall of the Soviet Union, Russia continued to engage in nuclear testing, although on a smaller scale.

United Kingdom:

During the Cold War, the United Kingdom conducted nuclear testing, principally in the atmosphere and underground. Testing was conducted on Christmas Island in the Pacific and at the Maralinga facility in Australia. Concerns were made concerning environmental contamination and the health of surrounding inhabitants as a result of the British nuclear testing.

France:

France conducted nuclear experiments both above and below ground. From 1960 to 1966, French nuclear tests were conducted in Algeria's Sahara Desert; subsequently, testing was relocated to the Mururoa Atoll in the Pacific from 1975 to 1996. The environmental ramifications of French nuclear testing sparked widespread outrage, particularly with regard to the effects on marine habitats.

China:

From its first test in 1964 until its commitment to a halt on nuclear testing in 1996, China conducted roughly 45 tests in that period, having both atmospheric and underground tests. These tests generated worries about environmental contamination and health dangers, particularly in surrounding areas.

In addition to the aforementioned states, 3 other countries are confirmed to hold nuclear weapons: Pakistan, India, and North Korea. There are also 32 sovereign nations that have active nuclear power plants for energy production.

Some of the significant countries that use nuclear power:

- *Japan with 33 operational reactors and 2 under construction*
- *South Korea with 25 operational reactors and 3 under construction*
- *Canada with 19 operational reactors*
- *Pakistan with 6 operational reactors and 1 under construction*
- *Bharat with 19 operational reactors and 8 under construction*
- *Switzerland with 4 operational reactors*
- *Sweden with 6 operational reactors*
- *Finland with 5 operational reactors*

TIMELINE :

1. *1945-1952: The Manhattan Project and Early Atomic Tests*
    - *The Manhattan Project, a US-led research program, develops the first atomic bombs during World War II.*
    - *In July 1945, the Trinity test in New Mexico became the first nuclear test, resulting in significant environmental contamination.*
    - *The bombings of Hiroshima and Nagasaki in August 1945 caused immense human suffering and widespread environmental devastation.*

2. *1950s-1960s: Atmospheric Nuclear Tests*
    - *The United States, Soviet Union, UK, France, and other countries conduct extensive atmospheric nuclear tests.*
    - *These tests release large amounts of radioactive materials into the atmosphere, causing global and regional environmental contamination.*
    - *The impacts include radioactive fallout, atmospheric pollution, and long-term health effects on populations.*

3. *1963: Partial Nuclear Test Ban Treaty (PTBT)*
    - *The PTBT is signed by the US, UK, and Soviet Union, banning nuclear tests in the atmosphere, underwater, and outer space.*
    - *The treaty aims to reduce environmental and health risks associated with atmospheric testing but allows underground tests to continue.*

4. *1960s-1990s: Underground Nuclear Tests*
    - *Following the PTBT, many countries shift their nuclear tests underground to minimize atmospheric contamination.*
    - *Underground tests still pose environmental risks, including seismic disturbances, fracturing of rock formations, and potential groundwater contamination.*

5. *1970s-1990s: Comprehensive Nuclear-Test-Ban Treaty (CTBT)*
    - *Negotiations for a comprehensive ban on all nuclear tests began in the late 1970s.*
    - *The CTBT, aiming to prohibit all nuclear explosions, was adopted by the United Nations General Assembly in 1996 but has not yet entered into force.*

6. *Post-Cold War Era: Test Suspensions and Remediation Efforts*
    - *Throughout the 1990s and early 2000s, nuclear-armed countries, including the US and Russia, suspended nuclear tests.*
    - *Efforts to remediate and restore contaminated test sites, such as the Semipalatinsk Test Site in Kazakhstan, begin.*

7. *Ongoing Environmental Concerns and Future Challenges*
    - *Despite the decline in nuclear testing, environmental concerns persist at former test sites.*
    - *Contaminated areas continue to pose risks to ecosystems, human health, and local populations.*
    - *The potential resumption of nuclear testing by any country and the associated environmental impacts remain a global concern.*

SOLUTIONS:

ATTEMPTED SOLUTIONS IN THE PAST:

1. *Partial Nuclear Test Ban Treaty (PTBT):*
    - *The PTBT, signed in 1963, prohibited nuclear tests in the atmosphere, underwater, and outer space.*
    - *This treaty aimed to reduce the environmental and health risks associated with atmospheric testing.*
    - *By limiting nuclear tests to underground facilities, it sought to minimize the release of radioactive materials into the environment.*
2. *Comprehensive Nuclear-Test-Ban Treaty (CTBT):*
    - *The CTBT, adopted by the United Nations General Assembly in 1996, aims to ban all nuclear explosions, including those conducted underground.*
    - *The treaty is intended to prevent further environmental contamination caused by nuclear tests.*
    - *However, the CTBT has not yet entered into force, as some countries have not ratified it.*
3. *Test Suspensions and Moratoriums:*
    - *Many countries, including the United States, Russia, China, and France, have voluntarily suspended nuclear testing.*
    - *These test suspensions and moratoriums aimed to reduce the environmental and health risks associated with nuclear tests.*
    - *By refraining from conducting tests, countries sought to decrease the release of radioactive materials and minimize environmental contamination.*
4. *Remediation and Site Cleanup:*
    - *Efforts have been made to remediate and clean up former nuclear test sites.*
    - *These activities involve decontamination, soil remediation, and the implementation of measures to restore the affected areas.*
    - *The goal is to mitigate the long-term environmental impacts and reduce risks to local populations and ecosystems.*

5. *International Monitoring and Verification Systems:*
    - *International organizations, such as the International Atomic Energy Agency (IAEA), have established monitoring and verification systems to detect and assess the environmental impacts of nuclear tests.*
    - *These systems use various technologies, including seismic monitoring, atmospheric sampling, and radionuclide detection, to track and analyze the release and dispersion of radioactive materials.*
6. *Collaborative Research and Information Sharing:*
    - *Countries and international organizations have engaged in collaborative research and information sharing to better understand the environmental impacts of nuclear tests.*
    - *By exchanging scientific data, studies, and best practices, they aim to improve knowledge and develop more effective strategies for mitigating environmental harms.*

POSSIBLE SOLUTIONS:

- *Strengthening and expanding treaties: Countries can work towards universal ratification and implementation of treaties such as the Comprehensive Nuclear-Test-Ban Treaty (CTBT) to achieve a complete ban on nuclear explosions, including underground tests. This would help prevent further environmental contamination caused by nuclear tests.*

- *Enhanced international monitoring and verification: International organizations, such as the International Atomic Energy Agency (IAEA), can strengthen monitoring and verification systems to detect and assess the environmental impacts of nuclear tests. This can involve advanced technologies like seismic monitoring, atmospheric sampling, and radionuclide detection, enabling timely responses and effective mitigation strategies.*

- *Promoting renewable energy and disarmament: Transitioning to renewable energy sources and reducing reliance on nuclear weapons can contribute to minimizing the need for nuclear tests. Emphasizing disarmament efforts and promoting sustainable energy alternatives can help prevent further environmental damage.*

Conclusion

The issue of environmental harms resulting from nuclear tests is of paramount importance in the realm of international security and environmental protection. As delegates of the IAEA committee, it is crucial to recognize the significant ecological and human health risks associated with nuclear testing. Throughout history, nuclear tests have caused radioactive contamination of air, water, and soil, disrupted ecosystems, and posed long-term threats to biodiversity. Some countries have yet to ratify or fully implement disarmament treaties, and the complete elimination of nuclear testing is yet to be achieved.

As delegates, it is crucial to engage in meaningful discussions and develop comprehensive strategies to mitigate environmental harms.

Useful links:

- *https://www-ns.iaea.org/committees/default.asp*
- *https://www.iaea.org/topics/energy/nuclear-energy-advisory-and-peer-review-services-committee-arpesc*
- *https://www.iaea.org/sites/default/files/20205083242.pdf*
- *https://news.un.org/en/story/2020/07/1068481*
- *https://daily.jstor.org/nuclear-tests-environmentalism/*
- *https://www.energy.gov/nnsa/environmental-management*
- *https://www.who.int/ionizing_radiation/nuclear-testing/en/*