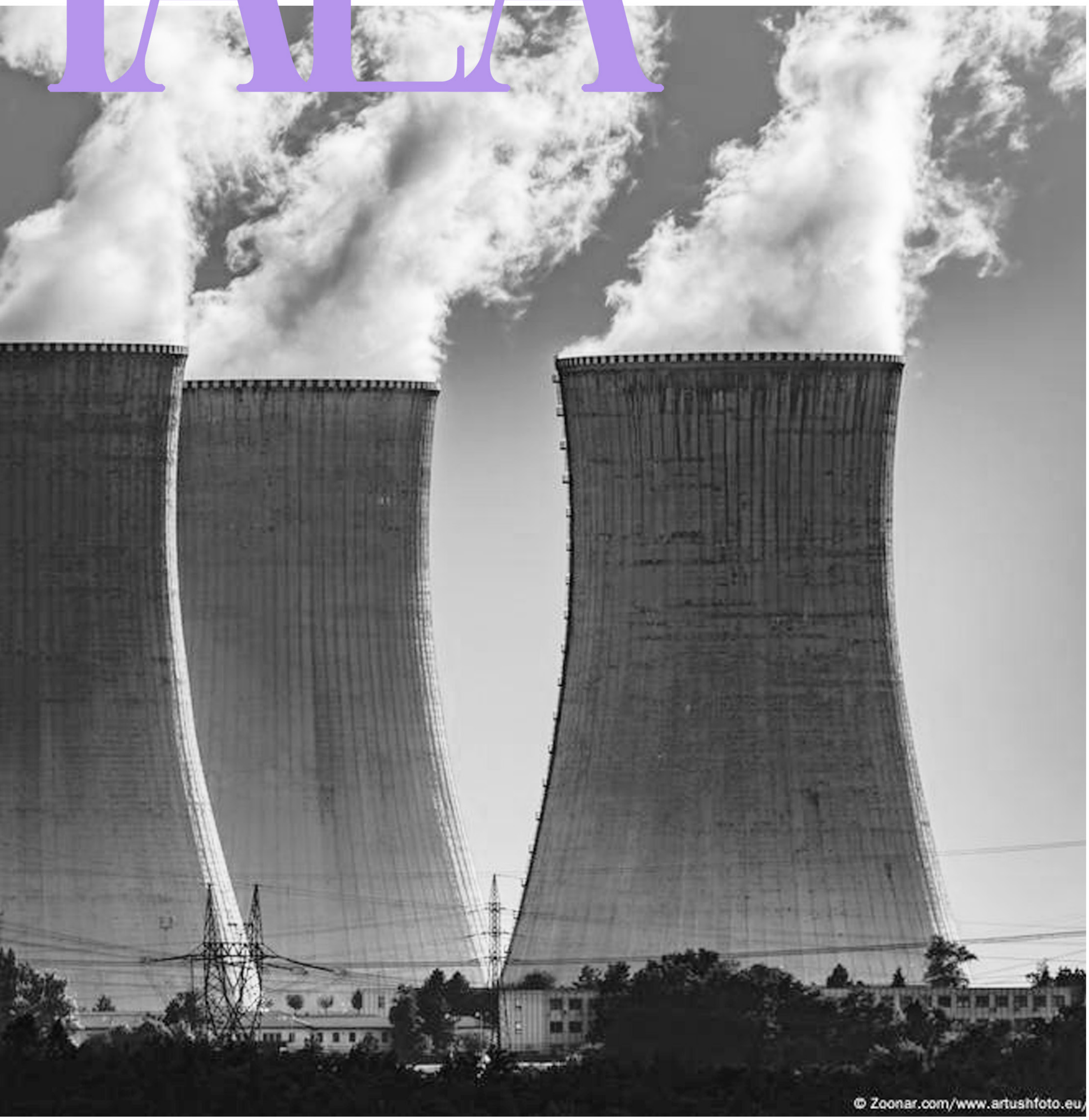
IAEA

Georgia Tech Model of United Nations

Committee
International Atomic Energy Agency



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Georgia Tech Model United Nations

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Letter from the Secretary General

Dear esteemed delegates,

Welcome to the twentyfifth edition of the Georgia Model of United Nations. I am incredibly excited to be your Secretary General for GTMUN 2024!

My first Model UN conference was GTMUN, six years ago, and it's given me a joy and passion for diplomacy that has lasted since. This year, the secretariat team has worked extraordinarily hard for months to assemble an incredible array of committees and topics to test your abilities and push you to grow as a delegate and as a future leader. As a person who was in your position six years ago, reading the GTMUN background guides, I know how it feels to prepare for a committee. Though this resouce is invaluable, I encourage you to go beyond in terms of studying about your topic(s) and your country's diplomatic position. I firmly believe that the greatest moments in Model UN happen when you have resiliently prepared through different resources to bring your member state's view into the committee. It is a sincere hope of mine that you enjoy the conference, and take the fullest advantage of what GTMUN has to offer, from public speaking skills, to critical thinking and policy creation. It is opportunities like these when you can connect with fellow, like-minded delegates to bring ideas into the table and construct the progress that people across the globe need, and that only the United Nations can deliver.

GTMUN is an amazing chance to brainstorm to solve current issues creatively and practicing being the leader of tomorrow. I wish you the best in preparing for and participating at the upcoming conference!

GTMUN XXV Secretary General
Jonah Isaza

Introduction to the Committee

The IAEA (International Atomic Energy Agency) is an intergovernmental organization, whose goal is to promote the use of nuclear energy for peaceful purposes whilst preventing its use for military purposes. It was created in 1957 as an autonomous organization within the UN. Currently, there are 440 nuclear reactors which are operating in 32 nations, with another 58 plants being constructed.[1] These reactors currently produce 9% of the world's electricity, and account for ¼ of the world's low carbon electricity. In addition to promoting the use of nuclear energy for peaceful purposes, the IAEA helps protect people and the environment from the harmful effects of radiation, through promotion of and assistance with the secure handling of nuclear material.

With that in mind, the topics for this session of the IAEA committee will be:

The Peacetime Management and Mitigation of Depleted Uranium.

Detection and Mitigation of Radiological Weapon Proliferation

Position Papers

A position paper is a document which expresses a member state's policy or position regarding the topic(s) that will be discussed in the committee. It can also help as a forefront to ideas, perspectives, solutions, or approaches that a delegate expects to prioritize in committee. It is recommended that a position paper includes the following: **a) member state's view on the topic(s), b) information on how the nation has addressed (or not) the issue in the past, c) proposed solutions based on research and policy.**

Sample Position Paper

The United Mexican States
Committee: Commission on Narcotic Drugs
Topic Area: Heroin Trafficking

"My sole ambition is to rid Mexico of the class that has oppressed her and giving the people a chance to know what real liberty means. And if I could bring that about today by giving up my life, I would do it gladly"

Although "El Centauro del Norte" spoke these words during the Mexican Revolution more than a century ago, the Mexican people are far from knowing the meaning of "real liberty". Mexico is suffering the consequences of being a key player and a large contributor in a growing illicit drug market, which each year seems to be more diversified and more difficult to trace. Mexico's protagonic and problematic stance provoked former president, Felipe Calderón, to declare open a new theater of the War against Drugs in 2006, as a strategy to counter the violence of the cartels. The low-intensity conflict has left a toll of more than 150.000 deaths and 23.000 disappearances. These painful numbers have placed Mexico as the second most dangerous country in the world.

Currently, drug trafficking and organized crime industry in Mexico is like energy: it is not destroyed, but transformed from one form to another, since each cartel dismantled by the Mexican Government gives way to more small and irrepressible groups. The strategy of the war on drugs, which was based on punctual operations to eliminate the highest branches of the cartels, has not had the desired results.

Mexico recognizes that instead of addressing the problem by the branches, we must change our strategy and attack it from its roots. The first step is understanding that fiercely repressing the violence of the cartels only results in the bloodshed and loss of precious lives of innocent citizens. We invite fellow representatives to consider our modern history, experiences and learnings as a reference.

The United Mexican States notes the necessity to promote the enhancement of international cooperation and exchange of information with the purpose of strengthening the common front in the face of transnational organized crime. For this reason, we must take the responsibility of attending and repairing the social damage of vulnerable communities that are bonded with illicit drug markets. Furthermore, we must develop integral prevention programs against violence, exclusion and weakening of the social tissue, aiming towards the most vulnerable demographics.

TOPIC 1
The Peacetime Management and Mitigation of Depleted Uranium.

https://www.mining-technology.com/features/uranium-as-a-critical-mineral-how-can-we-ensure-supply/

Key Terms and Acronyms

Depleted Uranium	A toxic heavy metal byproduct of the uranium enrichment process. Created through the removal of some of uranium's most radioactive isotopes.
Nuclear Regulatory Commision	Established in 1974, the NRC is an agency which operates independently from the United States government, with the task of protecting public health and safety from potentially negative effects related to nuclear energy.
Radiation Exposure	The amount of ionizing radiation which something is exposed to. Not all radiation exposure is harmful, and the effects of it depend on the type, duration and strength of the exposure.
Radiation sickness	Illness caused by exposure to ionizing radiation, often involving nausea, hair loss, diarrhea, bleeding, damage to bone marrow, and damage to the central nervous system.
Toxicity	The attribute of being poisonous or harmful to health.
Chemical Toxicity	A type of toxicity where the structure of chemical agents affects living organisms.
Nuclear Non-prolif-eration	The limiting and controlling of the spread of nuclear weapons at a global scale. In 1968, the Nuclear Non-Proliferation Treaty was signed by the US, UK Soviet Union and 59 other states with the signatories pledging to cooperate in stemming the spread of nuclear technology.[10]
Environmental Pro-tocols	International agreements and treaties which establish protocols aimed to prevent negative environmental actions and disasters.
Environmental Re-mediation	The cleanup and removal of a hazardous substance or pollutants from the envi-ronment. Often it is performed on soil or water, but can also be performed on other media.[11]
Soil contamination	The contamination of soil due to the presence of a substance or chemical that pos-es a risk to human, animal, or plant health. Some common types of soil contamina-tion include heavy metals, organic chemicals, and micro plastics.[12]
Water contamina-tion	The harmful presence of substances or chemicals in water, which make it unsafe for use. Some contaminants include bacteria, parasites, heavy metals, pesticides, sediments, and radioactive substances.
Epidemiological Studies	Research that human populations with the goal of linking a health condition to a causing agent.[13]

Introduction

Uranium is represented by the chemical symbol U, and has an atomic mass of 238u, in its pure form it is a silver colored heavy metal, and is extremely dense. In its natural state, uranium consists of 3 isotopes, U-234, U-235 and U-238. Of which U-234, and U-235 are radioactive.

The United States first manufactured depleted uranium as a part of its nuclear weapons program in the 1940s. It is the byproduct of natural uranium that is left over after the enrichment and extraction of U-235, the fissile isotope of Uranium used in nuclear weapons. Since then it has been produced at a large scale, and as of May 2024, there are 1.2 million tons of depleted uranium globally, and this number is only rising, with at least 50,000 tons being created in the USA, Russia, and Europe annually.[2]

The Nuclear Regulatory Commision defined depleted uranium as uranium with a U-235 mass fraction under .711%.[3] As this uranium has less U-235, and less U-234, it is less radioactive than naturally forming uranium. Despite this, it is still a dangerous material, with the primary health concerns related to depleted uranium exposure being radiation and heavy metal toxicity. Most depleted uranium is created through the production of enriched uranium, which is used to power nuclear reactors, and to manufacture nuclear weapons. Currently 95% of depleted uranium is stored at enrichment facilities in the form of uranium hexafluoride.[4] But this is not an environmentally sustainable solution as the storage systems present environmental, health, and safety risks due to chemical instability. In order to combat this, some nations have begun to convert the depleted uranium into solid uranium oxides for disposal, but this is not a widely practiced custom.

Depleted Uranium is also often used within militaries, including but not limited to, China, France, Pakistan, Russia and the UK, with the American military using it for tank armor, armor-piercing bullets, and as weights to help balance aircrafts.[5] Although, according to the US Environmental Protection Agency, exposure to depleted uranium outside of the body is not considered a serious hazard,[5] the VA states that it is a potential health hazard if it enters the body, such as through embedded fragments, the contamination of wounds, inhalation or ingestion.[5] Research into the extent to which this has impacts on the environment and human health has been hampered, due to political resistance to researching in this field. For example, a 2001 UN resolution with the goal of documenting depleted uranium within war was opposed by nuclear weidling nations

such as the UK, US, France, and Israel. Furthermore, in a past resolution the IAEA barred Iraq from accessing equipment to monitor the impact of depleted uranium on its population, due to concerns over nuclear weapon construction in Iraq.[7]
The lack of concrete knowledge regarding the safety of depleted uranium is shared by the European Union which states, "previous expert reviews have concluded that there is no conclusive evidence of harm from exposure to depleted uranium , but these findings have been disputed."[8] Therefore indicating that it is important that more research is done into the field in order to find what the potential long term effects of depleted uranium usage are.
'

Depleted uranium also has civilian uses, including counterweights or ballasts in aircrafts, radiation shields in medical equipment and as containers for the transport of radioactive material.[9]

History and Current Events

As previously mentioned, depleted uranium was first created during the American nuclear bomb program during World War II, originally it was only stored as waste. As such it was stored within cylindrical drums and tanks at enrichment facilities, where it would remain for significant periods of time. However, this changed during the Nuclear Energy Boom seen during the 1960's which saw an increased production of depleted uranium globally due to enriched uranium being used within nuclear power production. As such Hexafluoride (UF6) became a large storer of depleted uranium. Typically the UF6, is placed within steel cylinders in outdoor facilities which require monitoring to prevent corrosion and leaks.[14] However, this presents a health risk, as UF6 is corrosive and can react with moisture to produce Hydrogen Fluoride gas. Furthermore, the UF6 must be stored away from fuels, hydroxyl compounds, aromatic hydrocarbons, alcohols and ethers since violent reactions can occur.[15] Finally, it also can have negative health effects to humans exposed to it, with breathing Uranium Hexafluoride being able to irritate the nose, throat and lungs, causing coughing and wheezing, high exposures causing nausea, vomiting, restlessness, and convulsions, and long term effects including cancer, kidney damage and damage to the reproductive system within humans.

It wasn't until the Gulf war in 1991, that there started to be mainstream awareness about the potential health and environmental risks associated with depleted uranium. In response to this, the US Nuclear Regulatory Commission began to impose stricter regulations on the storage of depleted uranium , and some depleted uranium began to be turned into uranium oxide (U3O8), a less hazardous and easier chemical to store long term. Similarly in Europe, concerns were raised about the long term effects of depleted uranium , and as such, supported by NGOs there were calls for stricter regulations within the EU, as such the EU began to study the long term impacts of depleted uranium . Furthermore, during the wave of environmental legislation passed during the 1990s, the EU placed stricter regulations on the handling and disposal of radioactive materials, however none of these regulations were directly targeted at depleted uranium.

In 1997, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management was passed by the IAEA, and was the first treaty to address radioactive waste at a global scale. All the 89 states which ratified the treaty agreed to be governed by its provisions regarding the storage, transport, and location of nuclear waste.[16] The treaty helped improve international cooperation regarding the topic, united the majority of the world's depleted uranium producing nations, and was able to help improve safety standards, along with addressing some of the challenges, such as long term storage, of radioactive waste such as depleted uranium.

Depleted uranium was seen as waste until the 1970s, when in 1977, the US defense industry began using it for armaments. [17] Shortly after both NATO, and the Soviet Union began the widespread adoption of depleted uranium munitions, and armor. This is partially due to the greater penetration power of depleted uranium rounds. However, globally this has been a controversial decision, as there are health concerns, potential negative environmental impacts, and legal and ethical debates regarding their usage. Estimates say that there were around 300 tons of depleted uranium used within the first gulf war, and between 1000 and 2000 tons used within the second gulf war.[18] This has put the public at risk, as when munitions made from depleted uranium strike a target, it creates a dust that can be inhaled, causing radiation exposure, or can cause soil and water contamination. Furthermore, exposure can be gathered through interaction with leftover military equipment. However, as previously mentioned, and as stated in a Harvard article regarding the subject, "it has been difficult for epidemiologists to determine whether there is a clear link between depleted uranium exposure and health outcomes among local populations".[18] Despite this, many scientists believe that it is likely that depleted uranium has and will continue to have negative consequences on civilizations, with there being several disturbing health trends, including an increase in children's leukemia, and birth defects in areas which have seen depleted uranium munitions.

As of 2022, the following states were either using or importing depleted uranium munitions; Russia, Ukraine, USA, UK, India, Pakistan, France, China, Bahrain, Israel, Jordan, Taiwan, Saudi Arabia, Turkey, and South Korea. However, there has been a decline in the usage of depleted uranium weapons in recent years, with the United States also awarded a contract in 2022 to General Dynamics for the demilitarization and disposal of depleted uranium , and Northrop Grumman also confirmed that it was ceasing depleted uranium weapons production, however the US has not ceased depleted uranium munitions production in its entirety with it being confirmed that as of 2023, the US military is still developing depleted uranium munitions.[19]

Although there has been progress in turning depleted uranium hexafluoride containers into safer long term methods, the scale at which this has occurred is limited indicating there is still progress that needs to occur. Furthermore, there is still ongoing research into how depleted uranium storage can be made safer, and stored better for extended periods of time.
Countries that have had depleted uranium munitions used within them are currently undergoing cleanup efforts in order to limit their impact, and reduce any chance of long term risk from the munitions. They are doing so with the help of UN organizations such as the UNEP, and IAEA.

Furthermore, there has been an increased pressure to further regulate depleted uranium and its storage.

Directives

- ***How can you mitigate the effects of previous exposures to depleted uranium?***
- ***How can you clean the areas which have seen the usage of depleted uranium munitions?***
- ***How can you improve safety regulations regarding the storage of depleted uranium?***
- ***How can you ensure that the national sovereignty of other nations is respected?***
- ***How can you prevent nuclear waste causing water and soil contamination?***

TOPIC 2 Detection and Mitigation of Non- Nuclear Radiological Weapon Proliferation

https://www.bbc.com/news/world-63373637

Key Terms and Acronyms

Radiological Dispersal Device (RDD)	*Any device that causes the purposeful dissemination of radioactive material without a nuclear detonation; all encompassing term for all non-nuclear radiological weapons*[23]
Radiological Weapon:	*A device that disperses radioactive materials to cause harm or contamination*[24]
Dirty Bomb	*Explosive method of dispersion*
Proliferation	*The spread or increase in the number of weapons or materials*
Radiation Detection Equipment	*Tools used to measure and identify radiation levels, with examples including Geiger counters or scintillation detectors*
Radiological Shielding	*Infrastructure designed to block or reduce radiation exposure*[25]
Non-State Actors	*Any third party organization that acts independently from a government and may engage in criminal or violent activities; examples include, nongovernmental organizations (NGOs), private sector entities, militant groups, insurgent groups, etc*

Introduction

Radiological weapons, which use radioactive materials to cause widespread harm, present a unique threat to the global safety and wellbeing for built environments, natural environments, and civilians. Unlike nuclear weapons, which rely on fission or fusion reactions and are unattainable for civilian creation, radiological weapons can be created using a variety of sources from a variety of locations, such as research facilities, construction and industrial sites, and hospitals.[20] Often referred to as "dirty bombs", radiological weapons are more attainable for creation due to the wide array of materials that can be used to create the weapon and to detonate the weapon.[20]

One of the most dangerous isotopes, Cesium-137, an isotope found in medical equipment around the world, has a high dispersible power which can contaminate a region for years.[21] Cesium-137, along with Americium-241, and Cobalt-60 are all used in gauges for gas and oil industries. In Mexico and Iraq, there has been a recent cause for concern following the theft of Iridium-192, which is most commonly used for welding and in some cancer treatments.[22]

research and development facility once sued for dumping hazardous substances in the town of Sayreville in New Jersey

The creation of a radiological weapon includes the utilization of both explosives and radioactive materials. When the weapon is detonated, the radioactive material is vaporized and propelled into the air, dispersing and contaminating the air and the environment with radioactive isotopes.[23] The explosion produces radioactive and nonradioactive shrapnel and radioactive dust.[23]

The health and environmental consequences from radiological weapons will vary widely and depend on the type and quantity of radioactive material, the design of the weapon, and the pattern of dispersion. Radiological weapons cannot cause mass casualties, however, hazards may be present due to the explosion directly based on the chemicals used and a second device.[23] According to World Band assessments, Syria has had roughly one-third of housing damaged or demolished because of explosive weapons, with an estimated 15 million tons of debris generated in Aleppo and 5.3 million tons generated in Homs.[24] This destruction has several significant effects on the environment, such as contamination, a depletion of natural resources, and ecosystem degradation.[24]

a narrow street in a neighborhood of opposition-held east Aleppo city

The aftermath of the use of radiological weapons also has severe impacts on the health and stability of a region. Depending on the severity of the explosion, civilians may be displaced from their homes and critical civilian infrastructure may be destroyed, such as water facilities and networks.[24] In Ukraine, the water supply for roughly 3.9 million people is in close proximity to the boundary line between the government controlled territories and the non-government controlled territories.[24] As a result of this, the UN Children's Fund (UNICEF), estimates at least 750,000 children in eastern Ukraine are at risk of contracting water-borne diseases.[24]

Due to the various methods of delivery methods and explosive materials, multiple avenues must be taken to identify the creation of and to decrease the global stockpile of radiological weapons.

History

Before the 1990s, the global community did not face a large threat by radiological weapons. During the early 20th century, the focus was on developing nuclear weapons and mass casualty weaponry, as opposed to radiological weapons. However, as the 20th century progressed, radiological weapons began to be utilized more frequently, leading to a shift from weapons for mass destruction to weapons for mass disruption.[26]

September 1987: Goiania, Brazil- A scrap-yard worker opens a lead canister that was left behind from an abandoned cancer treatment center and finds "sparkling blue powder", which turned out to be radioactive cesium. The residents of this area passed the canister around for roughly a week, leading to more than 200 people exposed to the cesium, causing four deaths. The radioactivity contaminated the surrounding businesses, homes, and soil, causing 85 of these buildings to be leveled during the cleanup process.[27]

November 1995: Moscow, Russia- Marking the first ever attempt at radiological terror, Chechen rebels contacted the press claiming to have buried radiological materials in Moscow's Izmailovsky Park. The people who buried the materials and the original source were never identified. [27]

December 2001: Lja, Georgia- Three workers discover two heat-emanating containers, and hoping to use them as a heat source, the men drag them back to the location of their shelter. Within hours they fall ill and become nauseous and dizzy, developing severe radiation burns on their backs. An IAEA team reaches the workers in February of 2002, and discovers that each heat-emanating container contains roughly 40,000 curies of Strontium, which is the amount of radiation equivalent to the amount that was released immediately after the Chernobyl accident in Ukraine. [27]

June 2002: Chicago, Illinois- Joe Padilla, who was a part of a Chicago gang with known ties to the terrorist group Al Qaeda, was arrested in the Chicago O'Hare International Airport based on the suspicion of planning to detonate a dirty bomb in an American city. Padilla had undergone training in Lahore, Pakistan, where he studied the mechanics of constructing a dirty bomb, and came to the United States with $10,000 in cash. The Federal Bureau of Investigation in the United States believed that Padilla was gaining knowledge and resources to carry out a dirty-bomb attack. [27]

A member of the NYPD holds a device used to detect levels of radiation during a multi-agency "dirty bomb" exercise

Current Events

Across the globe, radiological weapons, both when being used by non-state actors during times of conflict or being used to inflict fear on the general populace, pose a danger to the stability and prosperity of civilians.

On March 20, 1995, there were five bags filled with Sarin, a nerve agent, on trains in Japan placed by Aum Shinrikyo, a religious group whose foundational belief was that the world was coming to an end soon.[28] This toxin spread to people on the trains within seconds, leaving some blinded and paralyzed and some choking and vomiting. [28] As time went on, Aum Shinrikyo got more violent, participating in kidnappings, killing opponents, and using other chemical and biological agents in other attacks. [28] Months after the March 1995 attack, the religious cult made several attempts to release hydrogen cyanide in various train stations, but failed each time. [28]

Now, this group is still active inside and outside Japan, breaking into two smaller groups, Hikari no Wa and Aleph, having roughly 1,500 followers between both of them.[28] In March 2016, Montenegro expelled 58 people suspected to be in association with Aum Shinrikyo.[28] In April 2016, Russian raids targeted 25 properties, and prosecutors believed that there were roughly 30,000 Russian followers of both religious groups. [28]

The Cult of Aum Shinrikyo

There are still ongoing concerns about black market radioactive components for dirty bombs. For example, in Belgium, investigators in 2016 uncovered that a terrorist organization was monitoring an employee at a uranium reactor that produces medical isotopes. [29] As mentioned previously, Cesium-137 used in medical devices was the target for the monitoring, as it is easier to disperse in its powder form. [29] Without proper attention and regulation, technological advances will continue to facilitate and strengthen the use of radiological chemicals. [29]

Short-term and long-term solutions must include addressing the detection of radiological weapons and also the mitigation of the proliferation of these weapons. Past UN Actions include passing resolutions in the General Assembly and the Security Council about addressing concerns surrounding radiological weapons[30] and the creation of the Code of Conduct on the Safety and Security of Radioactive Sources by the IAEA. [30] Delegates should be prepared to discuss innovative and original solutions surrounding the stockpiling and construction of radiological weapons and to confront the effects of radiological contamination on civilians and the natural environment.

Directives

- *What measures can be taken to prevent non-state actors from obtaining radioactive materials?*

- *What methods is your country currently using to detect the presence of radiological materials? Can these be improved on or implemented further? How would your country go about this?*

- *How can emergency response plans be improved to handle radiological incidents?*

- *How can the built infrastructure be improved to handle radiological incidents?*

- *How can the international community address cross-border radiological threats?*

- *What are the potential implications of advancements in radiation technology? How can the effects of this be managed and mitigated?*

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