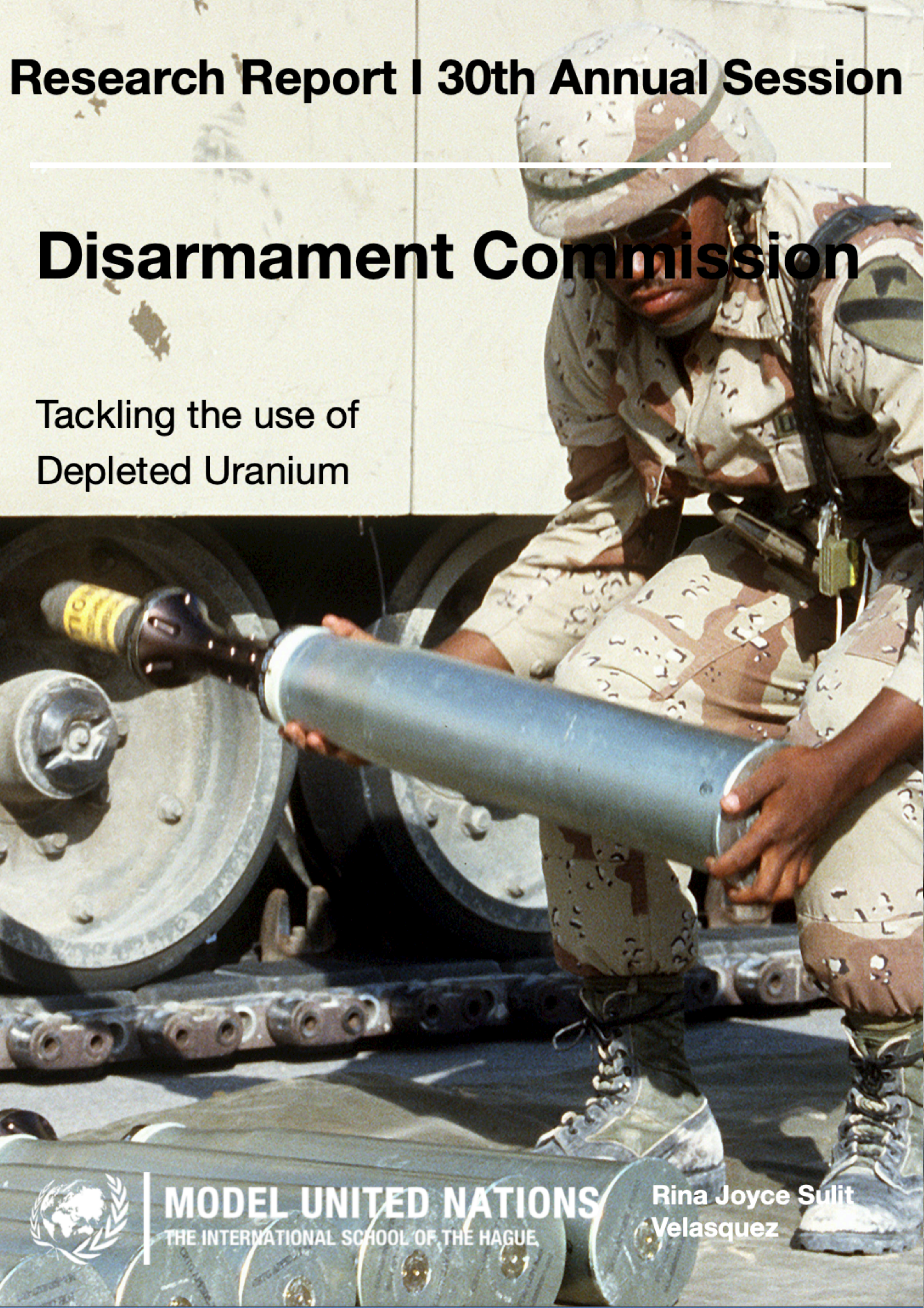

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Disarmament Commission

Tackling the use of Depleted Uranium

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Forum	Disarmament Committee
Issue:	Tackling the use of depleted uranium
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Introduction

Although depleted uranium (DU) causes environmental concern and health impairments, DU is still used for warfare. Technically speaking, this metal is classified as a low level form of nuclear waste that is placed and settled on human bodies globally. Because of its high density, heavy exterior, and low-priced convenience depleted uranium has been sought out for by producers. The final product 'enriched' depleted uranium is forged through the extraction of the radioactive isotope uranium-235 from the original ore. Hence, generating depleted uranium's radioactive behavior and nuclear nature. For this reason, disposal of DU is costly and complicated leading to many environmental burdens.

DU was first used in Kosovo and the Gulf War in the 1990s. Notably, after a few years, extreme long-term effects were found in war veterans and civilians. Such alterations include various cancers, kidney illnesses, and in extreme cases became fatal. Experts agree that depleted uranium usage is detrimental to communities and societies. In the past, the United Nations with the help from the World Health Organization (WHO) and the United Nations Environment Programme (UNEP) have been drafting five resolutions on the topic of depleted uranium. Yet, depleted uranium is still used inadequately and inappropriately globally.

Definition of Key Terms

Uranium

Uranium Is a naturally occurring, radioactive ore with a silvery finish. If it is classified as 'depleted' uranium, then the uranium has been 'enriched' and may be used for nuclear fission.

Metal Toxicity/Poisoning

A disease caused by the accumulation of an excessive amount of heavy metals in the soft tissues of the body. The metals that are most associated with the metal poisoning of humans include lead, mercury, arsenic, and cadmium. This disease may be transmitted through industrial exposure, air or water pollution, foods, medicines, lead-based paints, etc.

Nuclear Fission

The process of breaking an atom into two lighter nuclei that results in a release of a large amount of energy. If controlled, this amount of energy can provide for society's benefit, however, it also has a potential to be used for destructive purposes such as an atomic bomb.

Nuclear Radiation

"Energy in the process of being transmitted." Nuclear radiation, specifically, is radiation that arises from a large amount of different forms of unstable atoms. A majority of these atoms are created due to nuclear reactions that occur in nuclear reactors/weapons. Exposure to high-levels of radiation may cause skin burns and/or radiation sickness. Long-term exposure may also give rise to cancer or cardiovascular diseases. Although a low amount of radiation does not cause any immediate health effects, it minimally contributes to overall cancer risk.

Nuclear Reactors

A type of device or structure that can "control a series of self-sustaining series of nuclear fissions." The device would produce energy derived from split atoms, and then control said energy for specific uses; they are widely used for nuclear power plants. Particularly, they would be called radioactive isotopes.

Nuclear Weapons

A device designed to release a large amount of energy through nuclear fusion, nuclear fission or a combination of both. In general, fission-based weaponry are called atomic bombs, and fusion-based weaponry are called thermonuclear/hydrogen bombs.

Radiation Poisoning/Sickness

Radiation Sickness is caused by great doses of radiation in the human body. Developing such poison occurs in a brief time period, and requires large amounts of radiation. Simple intakes from day to day procedure, such as x-rays or CT scans will not induce radiation sickness. Rather events such as the Hiroshima bombing or other nuclear industrial accidents may cause radiation sickness. If incurred, intensity of radiation sickness is determined through the quantity of radiation ingested. In many cases, radiation sickness may be fatal.

Urania (Uranium Dioxide)

Urania also known as uranium dioxide/oxide or uranium oxide, is the developed oxide from uranium. It appears as a dark powder that possesses great radioactive behavior. Oftentimes, uranium has uses for nuclear fuel for nuclear reactors and may be combined with plutonium to create a mixed oxide fuel (MOX fuel). The then created fuel may be used to further construct nuclear weapons.

General Overview

The beginning of depleted uranium (DU)

The first exposure of depleted uranium in warfare hails from the 1940s. At the time, France, Russia, the United Kingdom and the United States were developing nuclear weapons during the Cold War and post-WWII. After testing and examining various ores, the United States had decided to revisit uranium. At the time depleted uranium was classified as nuclear-capable, however the use of it was dismissed because of its storage of uranium hexafluoride. Hence, uranium was deemed useless, ineffective and meaningless.

Not until the United States discovered the manufacture of depleted ‘enriched’ uranium, did uranium become the latest commodity. Their method involved altering the toxic metal as a by-product of a nuclear reaction. As such, their damaging process involves many underlying problems. In fact, the end product, depleted uranium, is considered as a low level form of nuclear waste. Not fully established until 1977, the American nuclear weapons program broke ground, discovering depleted uranium. Soon after the United States, other nations’ nuclear testing turned to this metal too.

Uses of depleted uranium (DU)

Depleted uranium has proven effective and practical in warfare and civilian uses because of its great adaptability. Perhaps furthest from traditional use, depleted uranium was used for the production of enamel paints for porcelain or glass products until 1999. In turn, these antiques possessed a radioactive trait that produced a fluorescent green-yellow color capable of glowing under black light. However, the content of DU in these antiques were minimal at less than 10%. Likewise in a non-militant sense, depleted uranium is used for oil drills, gyroscopes, counterweights, and ballasts in aircrafts because of its substantial weight and high density. Additionally, its high radiation content can form into a radiation shield or container for medical equipment or transportation of radioactive materials.

Comparatively in militarisation, it has proven operational in both fronts of munition and armour. The aforementioned high density makes their form stronger and almost impenetrable. In munitions this would correlate to a bullet made of depleted uranium with a steel or aluminium shell casing. They are made smaller in diameter which allows them to travel faster against enemies. Since DU bullets are high in density, production of small bullets can be constructed without compromising weight or impact. Further in armour, depleted uranium is oftentimes utilised in tanks; similarly to bullets, a layer of depleted uranium is surrounded by rolled steel.

Conclusively, depleted uranium was favoured over tungsten and other high density metals because of its cheap accessibility. Nowadays, depleted uranium is infamous in past wars and set the stage for anti-armour munitions.

The Gulf War

Although depleted uranium was approved in the 1970s, the first deployment in warfare originates in 1990 during the Gulf War. The Gulf War, also known as Operation Desert Shield, was conducted when the United States and other Western powers were called to intervene in the local conflict by Saudi Arabia and Egypt. Primarily, the war was between Iraq and Kuwait when Saddam Hussein ordered the invasion of their neighboring country. As a result, the United States was able to use nuclear, chemical and biological weapons, with their main focus on depleted uranium armor/munition. Essentially, the depleted uranium had American and British soldiers dressed in radioactive and toxic waste. Altogether, 290,000 kilograms of depleted uranium was used in the course of one year. Within the 290,000 kilograms of DU, the army would have expected to use 9,500 depleted uranium tank rounds in the war. In addition, the army approximately abandoned 160 tons of depleted uranium projectiles all across the lands they had fought on.

During the war, civilians and soldiers were not aware of the contamination that depleted uranium would cause, therefore it shocked the community. The depleted uranium was able to course into people's bodies through scattered fragments in their muscles and soft tissues. Furthermore, soldiers may have accidentally inhaled or swallowed depleted uranium, consequently escalating negative effects. It is estimated that more than 150 individuals experienced level one exposure, more than 700 individuals experienced level two exposure and hundreds reached level three exposure. These estimates only include veterans, therefore further exposure and further casualties cannot be fully comprehended. Years later, veterans from the Gulf War reported various kidney damage and cancers.

The Kosovo conflict

In a similar fashion, the Kosovo conflict allowed armies to use and trial depleted uranium armor and munition. In this dilemma, the North Atlantic Treaty Organization (NATO) was called upon to intervene in the Kosovo conflict because of the failed efforts of peace. The war continued for one year from 1998 to 1999. Following the war, the United Nations Environment Programme (UNEP) provided a detailed assessment on NATO and others' use of DU weaponry during the Kosovo conflict entitled, “Depleted Uranium in Kosovo Post Conflict Environmental Assessment”.

At the time, the Secretary General of the United Nations requested mass information on the use of DU from NATO. Only much later in February 2000 did NATO confirm their utilization of depleted uranium. With their statement they included a general map of where DU was deployed, but the map was not sufficient enough to conduct a cleanup mission. From UNEP estimates, around 112 NATO-run attacks involved depleted uranium armor or munition during the Kosovo Conflict. Within these attacks, 30,000 rounds of depleted uranium was used throughout the duration of the war. After many months of coordination and further research, the United Nations finally conducted a field mission from the 5th to the 19th of November 2000 to study the sites of DU in Kosovo. Although their testing occurred one and a half years after the war, traces of radiation and DU ammunition were still found lingering.

Health concerns

As a result of the contamination of DU, veterans/civilians contract chemical and radiological damages in the kidney, brain, liver or heart. Consequently, the most frequent harm derives from kidney related issues. In extreme cases, kidney failure and kidney-related cancers are found amongst veterans. However, severity is dependent on the amount of contamination one has. In minor cases, kidney function may return to normal if all depleted uranium in the system has been withdrawn.

Moreover, radiation-related injuries may directly involve immediate tissue damage or radiation sickness. Cells with rapid reproduction are at most concern in bone marrow, gut lining, etc. to the effects of radiation. Under those severe circumstances, injuries may be lethal and incurable because of harsh tissue destruction. Moreover if individuals incur radiation sickness it may develop into mutations in the DNA. Such infections can induce cancer related diseases by means of DU (most commonly lung or kidney cancer). Additionally, these mutations may cause birth defects because of the impaired DNA strands. In the event the severity of DU contamination reaches these levels, cancer and birth defects are common.

Environmental concerns

Militant use of depleted uranium does not only affect the soldiers involved directly, but contaminates the immediate environment they are in as well. The environment may include other animals and plants in the vicinity. There are two sources of environmental concern: the battleground DU is used in and the factories the weaponry was manufactured and stored in.

The aforementioned contamination in battlegrounds is sometimes dealt with by the United Nations, such as the Kosovo Conflict. In spite of the United Nations firm beliefs of the cleanup process in past resolutions, NGOs have doubted their implementation wholly. The immediate area of DU warfare is easily contaminated through the impact of shots taken and the discarded bullets and warfare left on ground. Nonetheless, as studied by WHO, in some cases contamination may rise over time from the inner ground. Therefore, pertinent actions must be taken in order to disinfect the immediate vicinity before further calamities occur.

Secondly, because of DU's extreme toxicity and radiation content, disposal of DU waste is costly. Since the manufacturing process is relatively cheap, the removal means and custody means are looked over. Meaning factory areas are immediately exposed to the threats of DU. If such factories have large amounts of DU in their disposal, overtime health conditions may worsen. In 2005, around 57,122 cylinders of depleted uranium were placed around Kentucky, Ohio, and Tennessee in the United States. With this in mind, it was estimated that 686,500 metric tons of depleted uranium was kept for long periods of time in these areas. It should be noted that as of May 2020 China, France, Germany, Japan, Republic of Korea, Netherlands, Russia, United Kingdom and the United States all have considerable inventory of depleted uranium. Seeing as depleted uranium has considerable chemical instability, the long term depository of DU proves detrimental to the environment and their inhabitants.

Major Parties Involved

International Coalition to Ban Uranium Weapons (ICBUW)

The International Coalition to Ban Uranium Weapons (ICBUW) aims to do exactly as their title stands for, completely forbid any uranium-based weapons in the world. After their founding in 2003 Berlin, they were allowed direct partnership with the UN Economic and Social Council (ECOSOC) since 2005. Globally, the coalition combats DU (depleted uranium) ammunition within the United Nations framework. They are supported by the following organizations as well: the IPPNW (International Doctors for the Prevention of Nuclear War) and the IALANA (Lawyers Against Atomic, Biological, and Chemical Weapons). As seen, all these groups share their immense animosity against chemical/nuclear warfare. Their founding idea is based on anti-war sentiment, and as such believes that war always leads to the destruction of the environment. They maintain their strong advocacy for other means of conflict resolution. Remarkably, the International Coalition to Ban Uranium Weapons are made up of more than 155 non-governmental organizations (NGOs) and are still open to any more willing personnel.

International Atomic Energy Agency (IAEA)

The International Atomic Energy Agency (IAEA) is an organization within the United Nations that aims to promote international cooperation in the nuclear field. The agency works with its Member States to “promote the safe, secure and peaceful use of nuclear technologies.” The IAEA was created in 1957 to address the rising concerns/fears due to the discoveries and diverse uses of nuclear technology. The US President Eisenhower’s “Atoms for Peace” address to the General Assembly created the agency and has since then made large strides in terms of nuclear safety, nuclear security, and the non-proliferation of nuclear weapons. The agency also responds to Member States requests for aid related to verification tasks, nuclear disarmament, and arms controls agreements. Additionally, the IAEA has contributed to the combat of medical emergencies of regional or global scale such as the Ebola and Zika virus disease outbreaks. The agency has created a Medium Term Strategy that covers six years (2018 to 2023) in line with the Agency’s Statute. The strategy has a number of plans, namely: strengthening the development of nuclear science, improving nuclear safety and security, providing effective technical cooperation, delivering Agency safeguards, and providing innovative management and budget planning.

World Nuclear Organization

The World Nuclear Organization works to promote and advocate for nuclear energy. They do so through communication and education to those who are unaware. As stated in their mission, “promote a wider understanding of nuclear energy among key international influencers by producing authoritative information, developing common industry positions, and contributing to energy debate.” Specifically, they work in three main categories: “Nuclear Industry Cooperation”, “Nuclear Information Management”, and “Nuclear Energy Communication”. Their categories tackle their issue holistically through understanding and educating themselves in all aspects, generating easy global data and in being the voice for nuclear energy. After its creation in 2001, they have since grown into 183 members with 36 current employees. Their members represent around 80% of the population globally from over 40 countries. They closely work with well-known partner organizations such as World Association of Nuclear Operators (WANO) and World Energy Council (WEC).

United States of America (USA)

Within the use of depleted uranium, the United States have been in the forefront of DU weapon usage in the military for almost a century. They were heavily involved in its conception and testing during the 1940s, and its further beginning deployment in the 1960s. The US was the first nation to fully adopt DU in their military extensively and widely. Their first few DU related uses are most known from the Gulf War and the Kosovo Conflict. Despite the large ramifications they have caused in these two instances, smaller events have occurred since regarding DU usage. In the mid-1990s, US Marine jets have fired around 1500 DU shots in Okinawa. The US had claimed that it was an accident, despite not informing the proper Japanese authorities until two years later. Then in a similar accident in 1992, an El Al Boeing 747-F cargo plane had crashed into civilian housing in Amsterdam. Albeit no 'real' evidence of DU contamination, inhabitants had reported 'unexplained' health issues following the leftover crash materials in their homes. As a result of the mass controversy had in the late 1960s to 1990s, the United States have recently been working towards removing DU and using alternatives from DU. During this time, the phase-out process has been a tiresome and expensive course for the United States.

United Kingdom

Since their involvement in DU during the Gulf War, the United Kingdom have steadily built their own supply of depleted uranium for their own usage. In 1979, the United Kingdom had officially began their own DU munitions development due to the early assessments of the United States in their successful trials. During their early development, the United Kingdom created strict guidelines regarding safety and environmental concern before real fire testing had begun with depleted uranium. Originally, the process had been done in a small-scale to prevent further troubles. The UK policy states that DU munitions may be used in weapons because of their effectiveness and their potential. As such, in their eyes, the denial of the use of depleted uranium weapons is deemed as wrong. In 2008 regarding a UN report, United Kingdom alongside Canada and the Netherlands supported DU usage.

Timeline of Key Events

Date	Event
1789	Uranium discovered
1939	Discovery of nuclear fission
1940s to 1970s	Development of nuclear weapons in multiple countries with discovery of depleted uranium (United States of America)
August 1977	Creation of the United States Department of Energy (deals with disposal of depleted uranium for a certain fee)
August 1990 to February 1991	The Gulf War occurred where Iraq's had invaded their neighboring country Kuwait. In response, Western nations such as the United Kingdom and the United States had been called on for intervention. At this time DU weapons had first been used.

October 1992	Depleted uranium released from crash of El Al Flight 747-F from the United States (152 kg of DU lost)
November 1995	United States Enrichment Corporation (USEC) Privatization Act
1997	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management by IAEA (first treaty to globally address radioactive waste)
March 1998 to June 1999	The Kosovo Conflict occurred upon disputes between ethnic Serbs and Albanians. While Albania had opposed Yugoslavian government as well. The conflict had reached such extremes where NATO had been called on. During this time, NATO had heavy use of DU weaponry.
November 2000	Post-Assessment of DU in Kosovo battle sites. The United Nations had conducted various tests and reports following the war, all on DU usage and contamination.

UN involvement, Relevant Resolutions, Treaties and Events

Listed below are relevant UN Resolutions and reports for the topic:

- Effects of the use of armaments and ammunitions containing depleted uranium, 5 December 2018 (A/RES/73/38)
- International peace and security as an essential condition for the enjoyment of human rights, above all the right to life Sub-commission resolution 1996/19, 29 August 1996 (E/CN.4/SUB.2/RES/1996/16)

Since the creation of the 17 Sustainable Goals (SDGs) of the 2030 Agenda for Sustainable Development in September 2015, member states have been laboriously working to achieve these goals in the set deadline. The most important of which, in terms of depleted uranium, is the **Sustainable Development Goal 7** that aims to “ensure access to affordable, reliable, sustainable and modern energy for all.” Depleted uranium is a form of nuclear waste, thus before considering nuclear power plants as a reliable and sustainable source of energy (the seventh SDG) the UN and its member states continue to work towards the issues that depleted uranium causes.

Possible Solutions

Long-term solutions relating to the existing use of depleted uranium can largely be resolved on a multi-stage process. This plan will aim to do the following: the reduction (through a variety of methods) in current usage of DU by Member States in their respective militaries, the eventual complete abandonment and phase-out of DU, and the subsequent disposal and treatment of Member States' inventories of DU. Considering that the scale and scope of DU usage can vary from country to country, comprehensive solutions should endeavor to investigate situations on a case-by-case basis, as well as be open to providing necessary assistance for affected Member. Given this suggestion of a solution framework, the potential solutions provided in this section will all relate to the stages outlined above (delegates are encouraged to formulate individual clauses relating to the different aspects of each stage as outlined below). Hence, listed below are possible solutions relating to the aforementioned areas.

Reduction in the current usage of DU

As it currently stands, it is unrealistic to expect certain member states to completely abandon their usage of DU in a short timeframe; as such, it is important to stagger the removal of DU through a variety of reduction stages. Setting realistic, measurable targets of DU usage reduction for Member States to agree and follow through is a recommendable initial solution (e.g. requiring Member States to reduce their DU usage in their militaries by X% in Y years, followed by further reduction of XX% in YY years, etc.). Delegates should keep in mind that the determination of the reduction percentages and time-frames should be carefully researched and justified.

While setting reduction targets are important, arguably the proposal of realistic reduction methods is even more significant in the tackling of this issue. Reducing usage of DU is dependent on the supply and demand of the material. Since the significant majority of the supply of DU is through Member States' military industrial complexes (MICs), the reallocation of government resources to take investment out of DU is highly encouraged. An alternative option that falls both under this area and in the abandonment of DU is in the significant reduction of demand. Realistically, considering the status of DU usage, such an event can only happen once a cost-effective, safety-conscious, mass-producible alternative material is found. More details regarding this alternative option is given in the section below.

A number of potential oversight solutions can include requiring Member States in possession of DU to hold other Member States accountable for their progress (both successes and failures) in their reduction of DU. Such cooperation not only places accountability and responsibility on Member States to adhere to the proposed solutions, but also has the added benefit of creating a shared forum of knowledge and discussion that could prove useful in the global reduction of DU. Another potential form of oversight is through the mutual agreement of all Member States to be subjected to routine (and potentially random) monitoring by an objective Panel within the United Nations Office for

Disarmament Affairs (UNODA) comprised of other Member States as deemed objective. Lastly, the use of an external, third-party watchdog NGO could fit the role of an oversight organization. The latter solution would be similar in methodology to the way the IAEA conducts verification and monitoring of nuclear sites as per the Nuclear Proliferation Treaty (NPT).

Abandonment / phase-out of DU

It is expected that the slow reduction of DU will be met by significant backlash and pushback from military industrial firms involved in the mining, transport, and/or processing of DU. To anticipate and alleviate this pushback, it is then recommended that Member States consider adequate financial recourse whether in the form of subsidies and investment into the research and development of other materials, or in the form of reallocation and restructuring of firms' products. As external investment may be required to maximize the success of this solution, in theory financial incentives should encourage firms to look into the research and development of said alternative materials.

Treatment / Disposal of DU

Last but not least, a large solution framework such as the one suggested above should endeavor to include measures to do with the treatment and disposal of DU and/or DU-contaminated sites. Considering the radioactive nature of DU, complete adherence to the necessary DU-handling outlines such as those set forth by the OECD Nuclear Energy Agency and the IAEA must be guaranteed. While treatment and disposal measures can come in a variety of technical ways, proposed solutions in this manner should take into account feasibility for Member States' (particularly in regards to scale) and required land usage as per existing UNEP. It is recommended that delegates research and investigate similar treatment and disposal methods of nuclear waste to guide them in developing analogous solutions for DU.

One particular area where solutions may be required is in regards to the removal of DU from contaminated sites / soils. There are a number of Member States' who do not produce/possess significant amounts of DU like other States but instead have issues with contaminated sites within their borders as a result of warfare or previous battles. In these cases, it may be a viable course of action to strongly encourage Member States responsible for contaminating foreign soils to be held responsible for their clean-up and disposal. Otherwise, if contaminated sites are found to be 'self-inflicted,' then said Member States' should still be held accountable for their clean-up.

As has been explored in the sub-sections above, there are many economic and socio-political aspects and facets of the problem that should be considered and addressed in a potential solution. However, delegates are reminded that the suggested ideas are not exhaustive, and are very encouraged to cover other areas of DU usage.

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