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**Introduction**

2023; the number of deaths from the Fukushima Daiichi disaster. That's the number of deaths just in this one incident. Atomic radiation has become a prominent issue in today's world due to the severe dangers and hazards that atomic radiation has caused.

Atomic radiation, also known as Ionizing radiation has lots of energy and this energy can affect the atoms of the living cells by damaging their DNA (our genetic material). Luckily, our body can replace the cells/repair them. However, if this is not done correctly, a cell may mutate, which may give rise to cancer. We are all exposed to low levels of radiation because all the buildings that are around us emit large amounts of radiation which most of it goes to the atmosphere. This is completely fine as this doesn't cause many problems. However, many scientists believe that radiation is a minor contributor to our overall cancer risk as it causes various mutations (change in the base sequence of the DNA). If you get exposed to high levels of radiation, such as standing near an atomic blast (explosion that occurs due to the quick release of energy from a rapid nuclear reaction), you may experience acute health problems such as skin burns and acute radiation syndrome (the meaning of this is in the definitions section). People that have this syndrome will experience some skin damage. This damage starts to appear as quick as a few hours after the exposure. The visual symptoms can include swelling, itching, redness of the skin and sometimes hair loss. The skin may take up to several years to completely heal. Atomic radiation can also result in long term effects such as cardiovascular disease.

Many actions are being taken to solve this issue. This includes informing government officials about the adverse effects of atomic radiation as well as finding alternatives to it such as using thorium instead of Uranium, as it is less harmful. Moreover, reports about the level of atomic radiation in the environment are published regularly. This ensures that countries (usually MEDCs) are not producing excessive radioactive waste as this waste harms the environment. Member states should aim to improve and advance on these actions, as well as aim to create and implement feasible solutions such as cleaner...
methods when using Nuclear Energy, to ensure that the effects of the extremely harmful atomic radiation, is limited as much as it can be.

**Definition of Key Terms**

**Radiation**

Radiation is the production of energy in the form of electromagnetic waves. Also known as ionizing radiation, atomic radiation is radiation with sufficient energy to remove an electron from an outer shell of an atom, leaving it in the form of an ion. There are many examples of radiation which include: microwaves from an oven, X-rays from X-ray tubes, heat and light from the sun and gamma rays of radioactive elements (this includes elements all the way from rocks and soil to the food that we eat).

**Mitigating**

Reducing the effect of something that’s harmful or hazardous. In this case, it’s reducing the harms of atomic radiation on everyone that’s part of the ecosystem.

**Acute Radiation Syndrome**

Also known as radiation sickness, it is a serious illness that happens when someone is exposed to very high levels of radiation over a short period of time. The person will get this syndrome if the person’s radiation dose was high. The radiation dose is the quantity of radiation that a person’s body absorbed. A person will experience high radiation dose if the radiation penetrates the internal organs such as the liver, stomach and kidney. There are various symptoms to this syndrome which include vomiting, headache, nausea and diarrhea. The lower the radiation dose, the less damage there is to the organs and therefore the more likely it is that this person will cover from acute radiation syndrome. The main cause of death in most cases is the eradication of the bone marrow which
could result in internal bleeding and many infections. By reducing the amount of atomic radiation produced, we can reduce the number of people that experience this diseases

**Electromagnetic spectrum**

It demonstrates the different types of electromagnetic radiation expressed through their wavelengths and frequencies across a measurable spectrum. As the frequency increases, the harmfulness increases. This makes y rays the most harmful form of atomic radiation present.

**Ionization**

It is the process where the atoms or molecules are converted into charged ions through the gain or loss of electrons. These ions are the ones that penetrate our body and cause the severe effects of atomic radiation.

**Radionuclide**

It is an unstable atom due to the energy within its nucleus (caused often through the number of neutrons) exceeding beyond what the atom can maintain; this results in radioactive decay, through which gamma waves are transmitted or a new particle is created that is strong enough to knock off electrons from nearby atoms.

**Background Information**

Ionising radiation was discovered by Wilhelm Rontgen at the end of the 19th century as well as the beginning of the 20th century. This included atomic radiation, atomic change and nuclear fission. However, atomic bombings were developed during World War II as many countries used it to harm other countries. When discovering all of this, the scientists didn't know that their inventions could pose a threat to humanity. In 1902, Ernest Rutherford showed that radioactivity resulted in the formation of a different element. This helped him later on in 1919 when he fired alpha particles from a radium source into nitrogen and found out that nuclear rearrangement occurs. It's interesting to know that Rutherford discovered the three types of radiation that we will discover later on.

Nowadays, ionizing radiations are used for various terrorist and medical aims. These purposes involve exposure to immense amounts of ionizing radiations. Hence, people are at risk for dangerous effects such as cancer and acute radiation syndrome. Millions of cancer patients undergo radiotherapy annually during their course of treatment around the world. It is important to note that medical radiation therapy can be utilized towards terrorist attacks. For example, Amifostine (the first Food and drug admission approved radioprotector) has shown some toxicities that limit its usage and efficiency. Due to
these side effects (low blood pressure as well as nausea/vomiting), scientists have looked for other methods with less toxicity and possible mitigations to the lethal effects of ionizing radiations. Also, some radiological or nuclear events in recent years posed a threat to people and that's why radiation mitigation strategies are essential. Moreover, atomic radiation affects the economies of many countries as countries spend a lot of money on creating atomic bombings as well as researching. Also, the countries that get affected have to spend a lot of money on rehabilitating the damaged buildings.

Ionizing radiation occurs in the form of waves or particles. Electromagnetic radiation is a kind of wave radiation that has six forms which are: Heat Waves, Radio Waves, Infrared light, Visible light, Ultraviolet light, X rays and Gamma rays. These waves differ in their frequency and their wavelength. Waves that have a low frequency but have a longer wavelength have less energy than waves that have a high frequency and shorter wavelength. On the other side of the spectrum, particulate radiation consists of atomic and subatomic particles such as protons, neutrons and electrons which carry kinetic energy.

There is no doubt that distance is one of the main factors that reduce the effect of the exposure. The further away people are from a radiation source, the less they’re exposed to it. For example, halving the distance would increase the effects of exposure by 4 times. Distance is a prime concern when dealing with gamma rays because they can penetrate most objects and travel at the speed of light. However, alpha particles can only travel a few inches and beta particles around 10 feet so distance in this would reduce the effects. Another main factor is shielding. As ionizing radiation passes through matter, the intensity of the radiation is reduced as Shielding is the absorber between you and the radiation source (an absorber is a material that reduces radiation from the radiation source to you by absorbing the particles). Alpha, beta, or gamma radiation can all be stopped by different thicknesses of materials. You are going to learn more about their penetration below.

**Types of radiation**

**Gamma radiation**

They have the most energy of any wave in the electromagnetic spectrum as they had the shortest wavelength and therefore the highest frequency. They can pass through space within the atoms of a detector because they are produced by the most energetic and the hottest objects in the universe such as pulsars and neutron stars. On Earth, gamma waves are generated by lightning and nuclear explosions. Gamma rays can’t be captured and reflected by mirrors (unlike X-rays and optical light). This is particularly harmful to civilians and the environment as it means there are no measures that can be taken if large quantities of gamma radiation are produced and thus
the cost of an atomic bombing or nuclear fallout such as the Chernobyl disaster was a nuclear accident that occurred in 1986.

Gamma radiation has no overall charge as it does not release any electrons. Gamma particles tend to pass through a material without causing much ionization. It has an extremely long-range in the air but as distance increases, the penetration energy decreases. However, this is not the case for all elements as it can get through thin samples of most materials without any noticeable decrease in intensity. The fact that it can get through most objects indicates how harmful they are as they can penetrate our skin and therefore ionize it. The intensity decreases when it passes through materials such as lead or thick samples of any material. They are not deflected by electric and magnetic fields as they don't have a net charge.

**Alpha radiation**

To begin with, alpha Particles make up 10 to 12% of cosmic rays. Alpha particles have 2 protons and 2 neutrons which makes them have a similar nucleus to helium. Radioactive elements emit alpha particles to become stable when they experience a type of radioactive decay called “alpha decay”. They are highly ionizing and are slightly deflected by electric and magnetic fields.

Moreover, alpha particles have the lowest penetrating power because it’s immensely more massive than gamma and beta radiation which means that they can be stopped by a few centimetres of air and a few sheets of paper. The fact that alpha particles aren't very penetrative makes them less harmful to humans as they don't penetrate very deeply into the skin. Clothing can stop alpha particles. However, alpha particles can be inhaled or ingested in the form of radon gas. Once inhaled, they can be very dangerous and can cause lung cancer. Thus, the effects of this type of radiation can be limited by ensuring people who work in fields with constant exposure to alpha radiation should be provided with the necessary information about the dangers and the maximum recommended limit of alpha radiation.

**Beta radiation**
Beta radiation is a stream of fast-moving electrons. They have a negative charge as the neutrons turn into a proton and a beta particle is emitted. The beta particle has a moderate penetrating power (higher penetrating power than gamma particles and lower penetrating power than alpha particles). This means pass through paper, aluminium and steel. However, it can't pass through lead and thick pieces of metals.

Beta particles are greatly deflected by electric and magnetic fields because of their small mass (gets deflected more than the alpha particles). Their small mass makes them more dangerous than alpha particles as it allows them to penetrate the clothing and the skin. External exposure of the skin can cause burns and tissue damage, along with other symptoms of radiation sickness. If radioactive material is dispersed into the air or enters the food/water supplies, people can inhale or ingest beta particle emitters unknowingly and other aquatic organisms impacted which can increase the occurrence of mutations in water creatures affecting the achievement of SDG 14 (life below water). This affects the whole ecosystem as it disrupts the food chains and therefore disrupts the eating patterns of many organisms including us, humans! This is because it can lead to the extinction of some species.

Case Study of atomic bombings: Hiroshima and Nagasaki

The largest atomic bombings occurred in 1945. These were the Hiroshima and Nagasaki bombings which occurred on August 6 and 9, respectively, with the consent of the UK. The bombings resulted in the death of 129000 to 22600 people, most of whom were civilians. This remains the only use of nuclear weapons in armed conflict. These bombs were detonated by the US over the Japanese cities. The atomic bombings were one of the biggest incidents that occurred in World War II. It all started when the 509th Composite groups (it’s a unit of the American army air forces created during WWII) created a combat group to develop the means of delivering an atomic weapon against targets in Germany and Japan. The cities were chosen according to the following criteria:

Firstly, the target was larger than 4.8 km in diameter and was an important target in a large city which meant that this would result in more casualties. Secondly, the blast would create effective damage to the citizens.

The effects on Japan were immense. According to the 'International Campaign to abolish nuclear weapons' (ican) ground temperatures reached 4000 degrees and radioactive rain fell on the bombed cities. The medical response to this event was highly limited as 90% of nurses and physicians were injured or died due to the bomb. 70% of the victims had injuries which included severe burns but those who tried to provide medical aid by entering the city often died due to the high levels of radiation.
Case Study: Fukushima Daiichi disaster

It is surprising how most humans have little knowledge about the effects of atomic radiation and how some of them don't know that it exists as they believe that the issue does not affect them due to their geographic location particularly if they do not live in the proximity of nuclear reactors. However, a lot of them became aware of this issue after the Fukushima Daiichi nuclear disaster. This nuclear disaster which occurred on the 11th of March 2011 at the Fukushima nuclear power plant in Okuma, Japan was the most severe nuclear accident since 1986. This accident led to three hydrogen explosions, three nuclear meltdowns and the release of radioactive contamination between 12th and 15th of March. These explosions resulted in the outburst of a fair amount of ionizing radiation, which is still present today. Moreover, the cities around Fukushima were affected by this radiation as it was emitted to them. This lead to the death of 1 person from radiation and the death of 2202 from evacuation. 37 people were left with permanent physical injuries. Unfortunately, this shows that the current means of awareness on this problem is largely when major disasters occur and this hinders progress in mitigating the impacts of atomic radiation as the general population do not comprehend the extent of the issue at hand.

Major Countries and Organizations Involved

Japan

The release of various radioactive pollutants was one of the consequences of the Fukushima nuclear disaster, examples were iodine-131, caesium-134, caesium-137, strontium-90, and plutonium-238, and many others. However today, the scale of radioactive contamination throughout northeastern Japan is way lower than what it used to be since 2011.

It is notable that 8 years after the disaster, radioactive exposure no longer seems to pose a problem (according to the UN Scientific committee as 80 international experts researched this issue.) So what has happened to radioactive contamination? While it is true that some radionuclides like iodine-131 are no longer present in the environment, due to their very short life span, the overall picture of contamination is much more complex.

The Japanese government installed “monitoring posts” to measure radiation levels in Fukushima. These posts display the current atmospheric level of radiation on an electronic board. Measurements of radiation levels in the air are taken at different locations and are put together to create an average level of radiation for the cities of Fukushima. These measurements have shown optimistic views of radiation.
levels in the cities. The reports have shown that the atmospheric level of radiation in Fukushima is about
the same level as other major cities overseas such as New York, Shanghai and Munich.

**International Atomic Energy Agency (IAEA)**

IAEA’s mission is to prevent the spread of nuclear weapons and help all countries (especially
MEDCs) benefit from the peaceful, safe and secure use of nuclear science and technology. IAEA was
established under the UN in 1957. It’s the first and only organization within the UN that has expertise in
nuclear technologies. The IAEA strengthens nuclear security by minimizing the risk of nuclear and other
radioactive material being misused by terrorists and criminals. The organization’s safety standards make
sure that people and the environment are protected from the harmful effects of ionizing radiation by
taking protective actions to reduce existing radiation risks. It does this by making sure that member
states comply with the Non-Proliferation Treaty and other non-proliferation agreements to use nuclear
material and facilities only for peaceful purposes, which was created in 1968. The IAEA has scientific
labs that measure the amount of ionizing radiation and produce reports on that.

**Republic of India**

India uses nuclear radiation and radioactive sources in various fields such as medicine, industry,
agriculture and research. There are many uses of radiation in medicine. The most common one is using
X rays to see whether or not the bones are broken. Another use in medicine is nuclear medicine therapy
which treats cancers such as thyroid cancer. Fertilizers are used in agriculture to increase soil fertility,
and therefore increase crop production and therefore more income for the farmers. Also, radioactive
isotopes can be used to study the characteristics of the soil (such as minerals) to monitor
uptake and use of essential nutrients by plants from the soil.

Millisievert (mSv) is the measurement of background radiation dose to an individual for one year.
The average dose that is received by us is 2.4 mSv/yr but it varies depending on the location. The
highest known background radiation level so far is in Kerala and Madras states in India. This can lead to
many mutations in the next generation as radiation changes the base sequence of DNA (read the
introduction for more information). People that live there (about 140000) receive doses which average
over 38 mSv/yr per year just from Gamma radiation (radon isn't taken into account).

Moreover, in April 2010, many people in India were exposed to Cobalt 60 (a radioactive element)
in a university scrap metal yard. Eight people were hospitalized with acute radiation syndrome while one
of them passed away according to the national centre for biotechnological information. This wasn't the
only time that India experienced an incident of this kind. 8000-12000 years ago, India had an atomic
blast the size of the Hiroshima bomb and resulted in the death of about half a million people. This is
evidenced by the giant crater that is located near Bombay. Another piece of evidence is scattered
skeletons over two cities. People were just lying unburied, holding hands. At one site, the scholars found a skeleton that had 50 times greater radiation than normal. This incident was discovered when an ancient city in India was excavated.

**National Council on Radiation Protection and Measurements (NCRP)**

The NCRP is an organization that consists of the top scientists across the US who meet regularly to discuss recommendations that should be practised by those who use radiation such as radiation safety protection. The organization has many objectives and the following are some of them: Firstly, it collects and analyzes information and recommendations about protection against radiation as well as radiation measurements, quantities and units. Secondly, it allows organizations concerned with the scientific related aspect of radiation protection and radiation quantities. Thirdly, it develops basic concepts about radiation quantities, units and measurements, about the application of these concepts, and radiation protection.

**North Korea (DPRK)**

North Korea became interested in Nuclear weapons in the 1950s. It then led the government to ask the Soviet Union for help in developing nuclear weapons but the Soviet Union refused to do so. However, the Soviet Union agreed to help North Korea develop a peaceful nuclear energy program, including the training of nuclear scientists. Later on, China rejected North Korea's request for helping develop nuclear weapons. North Korea started conducting high explosive detonation tests in the 1980s. In 1985, DPRK ratified the NPT but did not include the required safeguard agreement with IAEA until 1992 and in early 1993, using strong evidence, DPRK was accused of in completing the declaration.

DPRK had 6 nuclear tests between 2006 and 2017. The test that was conducted in September 2017 was described as "reckless" by the representative of the DPRK at the UN as it was the biggest test that DPRK has conducted so far. The representative abandoned the tests made by DPRK and called on them to abandon all nuclear weapons and existing programmes as these programmes pose a threat to international security. The impacts of DPRK'S nuclear tests are worsening the situation as it increases the levels of atomic radiation in the environment. The consequences are affecting some of the civilians as some North Koreans who lived near the country's former nuclear site experienced high levels of radiation which is worrying as the site could be leaking fallout. The Chosun Ilbo (a Korean newspaper) said that tests conducted by the ministry showed that ten civilians had radiation levels of above 250 millisieverts which is large enough to cause genetic abnormalities.

**Timeline of Events**
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<th>Description of event</th>
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<tr>
<td>August 6th, 1945 - August 9th, 1945</td>
<td>USA drops atomic bombs on Hiroshima and Nagasaki</td>
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<tr>
<td>August 29th, 1949</td>
<td>USSR tests its first nuclear bomb</td>
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<tr>
<td>December 1st, 1959</td>
<td>Nuclear testing is banned in Antarctica</td>
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<tr>
<td>October 30th, 1961</td>
<td>USSR test The Tsar Bomba</td>
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<tr>
<td>February 14th, 1967</td>
<td>Nuclear Weapons are removed from Latin America.</td>
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<tr>
<td>July 1st, 1968</td>
<td>Non-Proliferation treaty is signed. Spread of nuclear weapons is prohibited</td>
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<tr>
<td>June 12th, 1982</td>
<td>The Largest anti-nuclear demonstration involving one million people takes place in New York.</td>
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<tr>
<td>September 24th, 1996</td>
<td>Total nuclear test ban is signed by China, France, the UK, Russia and the US.</td>
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<tr>
<td>11th of March 2011</td>
<td>Fukushima Daiichi Disaster occurred</td>
</tr>
<tr>
<td>July 7th, 2017</td>
<td>UN adopts nuclear weapons ban treaty after weeks of intensive negotiation, two-thirds of the world’s nations voted to adopt the landmark UN.</td>
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**Relevant UN Treaties and Events**

- Effects of atomic radiation, 9th December 2011, *(A-RES/66/424)*
- Effects of atomic radiation, 22nd December 2018, *(A-RES/73/521)*
- Test On 1st dec 1959, nuclear tests were banned in antarctica.
- Test Ban Treaty, 5th August 1963
Previous Attempts to solve the Issue

Establishing reports that measure the radiation levels in the environment:

In 1955, [Resolution 913 (X)] was passed on 3rd December 1955, in which the United Nations Scientific Committee on the Effects of Atomic Radiation was established to research the effects of atomic radiation. This resolution was very successful as many things were established. This includes reports on observed levels of radiation and radioactivity in the environment. Moreover, yearly progress reports were published after the conference which included the summary of radiation levels. Initially, this resolution composed of the states of Argentina, Australia, Belgium, Brazil, Canada, Czechoslovakia, Egypt, France, India, Japan, Mexico, Sweden, the United Kingdom of Great Britain and Northern Ireland, the United States of America and the Union of Soviet Socialist Republics, but was later expanded from 15 to 20 members [Resolution 3154] and notably China [Resolution 41/62] and then to 27 active members[Resolution 66/70]. The USA, Russian Federation, DPRK and Israel are not complying to this issue which is worrying as they are the major countries are threatening the lives of their civilians due to their production of nuclear weapons. These weapons are not only harming the people in these countries; they are harming everyone on this planet.

Establishing reports that measure the radiation levels in the environment:

The main event held at the International Atomic Energy Agency (IAEA) in 2016 was the 60th General Conference, where new policy measures concerning nuclear waste management were discussed and adopted. The General Conference adopted Resolution GC(60)/RES/9 on 'Measures to Enhance International Cooperation in Nuclear, Radiation, Transport and Waste Safety,' which urged the IAEA Secretariat to continue to cooperate and provide assistance in the field of nuclear safety through the incorporation of safe transport, storage and nuclear waste control. The nuclear waste was managed by separating the nuclear waste into two sections: short-lived and long-lived waste. Short-lived is disposed near the surface as it does not create much harm. However, the long-lived waste is buried in a deep geological repository to minimize the amount of harm produced.

At the same meeting, the Manager Director delivered a document on "Measures to Strengthen International Cooperation in Nuclear, Radiation, Transportation and Waste Protection," focusing primarily on safety aspects of nuclear material handling and storage. This report outlines and describes the activities and cooperation of the Agency, including the publication on the IAEA's Safety Standards...
Program, the Agency’s cooperation with Member States on Nuclear Installation Safety, the collaboration with the United Nations Scientific Committee on the Effects of Atomic Radiation on Radiation Safety and Environmental Protection Standards, and the publications by the Transport Safety Standards Committee within the IAEA Safety Standard Series. The safety and security measures taken by IAEA protect human life and health and the environment. These measures are taken by minimizing waste in various ways such as:

1. Reducing the activity and volume of the material through appropriate design measures and decommissioning practices (this applies to the military and medical sectors).
2. Maximizing efforts of containment and minimizing the creation of secondary waste. This minimizes the spread of radioactive contamination.
3. Separating valuable materials from waste and clear valuable materials for recycling and reuse. This is sometimes difficult but can be enforced when disposing biomedical waste.

### Possible Solutions

#### Use Thorium instead of Uranium

One of the main positive perspectives in nuclear energy is the use of Thorium. Thorium is becoming a popular alternative to the standard Uranium-238 power plants due to a number of factors. Countries can use Thorium instead of uranium as Thorium is about 3 times more abundant than Uranium and does not need to be enriched (processed) to be used in nuclear power. It is also estimated to produce significantly more energy than Uranium per kilogram (with some estimates putting it at over one hundred times more), while producing a significantly lower amount of nuclear waste due to its purity. As opposed to Uranium, Thorium is a fertile element, which means it needs to be activated by another element that donates neutrons to it (usually plutonium), which makes it significantly safer to deactivate in the case of a nuclear malfunction. This is because Thorium-based reactors can be easily stopped and because the operation doesn't have to take place under extreme pressures. Also, Thorium is an example of short lived waste which makes it less harmful. This solution can be implemented by encouraging countries to use Thorium by explaining the difference between it and Uranium.

On the other hand, Thorium has a few disadvantages. One of them is that it is highly corrosive, which means that the materials used to handle it must withstand its harshness. As well as that, it must be handled carefully to ensure that it is not inhaled as it can cause bone cancer. However, the advantages of Thorium outweigh their disadvantages.
Encourage the use of nuclear fusion reactors

One of the new solutions that have not been implemented yet is to encourage the development and funding of Nuclear Fusion Reactors that in theory could produce even more energy than standard Nuclear Fission and produce almost no harmful waste. This can be done by prohibiting the use of nuclear fission reactors. This is due to the use of deuterium and Tritium (which is heavily abundant in seawater), which only produces the inert, noble gas Helium. This helps reduce the environmental effects of the use of Nuclear Energy as Helium isn’t reactive and therefore is not harmful to the environment. Even though nuclear fusion reactors are cheap, the amount of heat needed to fuse the two nuclei is immense. It requires as much energy as will be produced which doesn’t make it very efficient. Despite this, sustainable energy can be used to fuel this; examples are: solar energy, wind energy, hydropower, geothermal energy, and biomass energy. These types of energy are non-renewable which means that they can be reused and don’t produce greenhouse gases and therefore are not harmful to the environment.

Implementation of safer and cleaner methods of Nuclear energy

Member States can implement safer and cleaner methods of Nuclear Energy by encouraging nations to work closely with the IAEA (as mentioned earlier). The IAEA can assist in strategizing a disposal system for nuclear waste, which mitigates the effects of atomic radiation by reducing the chance of nuclear meltdowns (like Chernobyl), reducing the amount of radioactive waste produced, and encouraging more constructive and beneficial uses of atomic energy. This also helps make nuclear energy more readily available to less developed countries as there will be a less diplomatic dispute over the propelling up of nuclear power plants since the materials and their by-products are less capable of being weaponized. In the event that these resources are mismanaged or potentially become a national threat if the energy sector is unable to ensure all the necessary protocols are being followed, the lives of people, including those operating the power plant may be put at risk and thus the IAEA will establish a lockdown system or a warning system with the governmental body responsible to prevent unnecessary exposure to radiation and monitor the efficiency of the plants and ensuring that the nuclear waste disposal system is not impacting on aquatic life. Moreover, nuclear power is one of the lowest carbon technologies for generating electricity which will help countries reduce the number of greenhouse gases emitted.

Guiding Questions

1. How can we encourage countries to reduce the emission of atomic radiation? (Think about the effects of it)
2. Why are the benefits of having nuclear power as a country?
3. What are the environmental implications of atomic radiation?

Bibliography


### Appendix

1. [https://www.who.int/ionizing_radiation/about/what_is_ir/en/](https://www.who.int/ionizing_radiation/about/what_is_ir/en/). (What is Ionising Radiation)

*This website has a detailed explanation of ionizing radiation as well as radiation exposures such as medical radiation exposure and environmental radiation. Also, it explains the different forms of electromagnetic radiation.*

This website discusses one of the solutions that are mentioned above which is Thorium. It demonstrates the pros and cons of it as well as DPRK's relation to this issue. This website will be very useful when writing up your resolution as it makes you aware of all of the aspects of this solution.