EIACP NAGALAND

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Editorial

World Ozone Day or International Day for the Preservation of the ozone layer is observed every year on the 16th of September to raise awareness about the depletion of the ozone layer and the importance of its protection. In many parts of the world, the scorching summer months are experienced in most regions. According to the World Health Organization (WHO), evidence shows that overexposure to ultraviolet (UV) radiation is the major cause of skin cancer, with over 1.5 million cases of this ailment diagnosed globally in 2020.

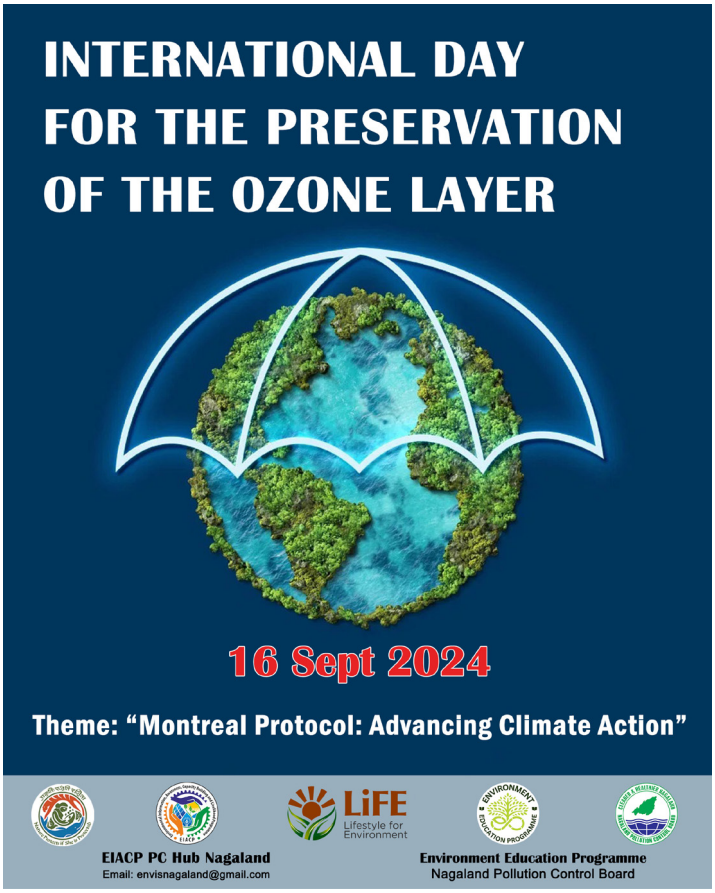
The Earth's ozone layer acts as an invisible shield and protects us from the sun's harmful UV radiation, in particular, it protects us from UV radiation, known as UV-B, which causes sunburn. Yet, the depletion of the ozone layer increases the risk of long-term UV exposure. The ozone layer is a region of high ozone concentration in the stratosphere, located 15 to 35 kilometers above the Earth's surface. When an ozone molecule absorbs UV-B it comes apart into an oxygen molecule (O2) and a separate oxygen atom (O). later, the 2 components can reform the ozone molecule (O3). However, Ozone-depleting chemicals such as chlorofluorocarbons (CFCs) have caused the thinning of the ozone layer around the world and the "ozone hole" above Antarctica.

Ozone depletion allows more UV-B radiation to reach Earth's surface. This has negative health effects on humans and the environment generally. This issue highlights the importance of the ozone layer and the use of ozone-friendly products to protect the ozone layer. It also highlights the awareness campaign under Mission LiFE and a drawing competition conducted to celebrate World Ozone Day under the theme "Montreal Protocol: Advancing Climate Action"

EIACP (Environmental Information, Awareness, Capacity building and livelihood Programme) is a project of the Ministry of Environment Forests and Climate Change, Govt. of India

International Day for the Preservation of the Ozone Layer is observed on September 16th each year to raise awareness about the depletion of the ozone layer and the importance of its protection. It marks the anniversary of the signing of the Montreal Protocol in 1987, an international treaty designed to phase out the production and consumption of ozone-depleting substances (ODS). The ozone layer present in the Earth's stratosphere, plays a crucial role in protecting life on Earth by absorbing most of the sun's harmful ultraviolet (UV) radiation. The day serves as a reminder of global efforts to reduce Ozone-depleting substances (ODS) and protect the environment for future generations.

Theme: Montreal Protocol: Advancing Climate Action



The Montreal Protocol is a multilateral agreement that regulates the production and consumption of around 100 man-made chemicals known as ozone-depleting substances. The overall phase-down has led to the notable recovery of the protective ozone layer in the upper stratosphere and decreased human exposure to harmful ultraviolet (UV) rays from the sun. In 2016, an additional agreement to the Montreal Protocol known as the Kigali Amendment required a phase-down of some hydrofluorocarbons (HFCs). HFCs do not directly deplete ozone but are powerful greenhouse gases that contribute to global warming and accelerated climate crisis. Thanks to the Montreal Protocol, the Earth's ozone layer is on track to recover within 4 decades i.e., by 2040, if current policies remain in place.

THE OZONE LAYER:

The ozone layer is a thin region of ozone (O_3) molecules in the Earth's stratosphere, typically 15 to 35 kilometers above the surface. It plays a crucial role in absorbing the sun's harmful ultraviolet (UV-B) radiation, thereby shielding life on Earth from its damaging effects. Without this protective layer, increased UV radiation could lead to higher rates of skin cancer, cataracts, and other health issues caused by long-term exposure to UV-B radiation, while also negatively impacting ecosystems and wildlife by uncontrolled ozone depletion which threatens food production, plants, animals and microbes in natural ecosystems.

OZONE DEPLETION:

Ozone depletion refers to the thinning and breakdown of the ozone layer in the stratosphere, primarily caused by the release of harmful chemicals like CFCs, halons, and other ozone-depleting substances (ODS). When these substances are emitted into the atmosphere, they undergo chemical reactions triggered by UV radiation, leading to the destruction of ozone molecules (O_3) and a decrease in the ozone concentration. This thinning allows more harmful UV rays to reach the Earth's surface, leading to severe environmental and health impacts. A significant consequence of ozone depletion is forming the "ozone hole" over Antarctica, discovered in May 1985 by three scientists from the British Antarctic Survey. In response, the Montreal Protocol was adopted in 1987. It is considered one of the world's most successful environmental treaties. The Protocol provides practical ways to phase out ODS through stringent measures worldwide. To date, nearly 99% of ozone-depleting chemicals have been phased out.

WORLD OZONE DAY CONCEPT:

World Ozone Day highlights the Montreal Protocol's positive impacts on ozone layer recovery and climate change mitigation, particularly focusing on the Kigali Amendment. This amendment addresses the phase-out of hydrofluorocarbons (HFCs), potent greenhouse gases that contribute to global warming.

The Montreal Protocol is an international treaty that has phased out the consumption and production of 99% of ozone-depleting chemicals, helping the ozone layer to recover gradually. The Kigali Amendment is an additional agreement to the Montreal Protocol to phase down some of the hydrochlorocarbons (HFCs). Once meant to replace ozone-depleting agents, HFCs have been revealed to be massively potent greenhouse gases. Phasing down HFCs via the Kigali Amendment could help slow down global warming.

As global temperatures rise, so does the demand for cooling, which could lead to increased use and emissions of HFCs. Therefore, the universal implementation of the Kigali Amendment is crucial for reducing global warming by phasing out these harmful substances from cooling systems and promoting more environmentally friendly alternatives.

The Rise of Eco-Friendly Products: Free from Ozone-Depleting Substances and HFCs

In recent years, growing awareness about environmental conservation has led to a significant shift in consumer demand toward eco-friendly products. A key focus in this shift is the elimination of ozone-depleting substances (ODS) and hydrofluorocarbons (HFCs) in various consumer goods, especially in refrigeration, air conditioning, and aerosol products.

The Threat of Ozone-Depleting Substances and HFCs:

For years, ODS, such as chlorofluorocarbons (CFCs), were a mainstay in various industrial applications, including refrigeration, air conditioning, foam production, and aerosol sprays. However, scientific studies in the 1970s revealed these substances' catastrophic impact on the Earth's ozone layer. The ozone layer acts as a protective shield, preventing the sun's harmful ultraviolet (UV) rays from reaching the Earth's surface. When the ozone layer is depleted, it leads to an increase in UV radiation, which can cause health problems such as skin cancer, cataracts, and weakened immune systems, as well as environmental damage like reduced crop yields and the destruction of marine ecosystems.

In 1987, the global community came together under the Montreal Protocol, an international treaty aimed at phasing out the production and consumption of ozone-depleting substances. The protocol, widely considered one of the most successful environmental agreements to date, has drastically reduced the use of CFCs and other ODS. This has resulted in significant ozone layer recovery, though it is still a long-term process.

HFCs were initially introduced as an alternative to ODS in products such as refrigerators, air conditioners, and fire extinguishers. While HFCs do not deplete the ozone layer, they are potent greenhouse gases with a high global warming potential (GWP), contributing significantly to climate change. This has prompted the Kigali Amendment to the Montreal Protocol, which calls for a gradual reduction in the use of HFCs to combat global warming.

Natural Refrigerants and Sustainable Alternatives:

With increasing pressure to reduce both ozone depletion and greenhouse gas emissions, industries are now focusing on sustainable alternatives. Natural refrigerants like ammonia (NH_3), carbon dioxide (CO_2), and hydrocarbons such as propane (C_3H_8) and isobutane (C_4H_{10}) are being hailed as the future of refrigeration and air conditioning systems. These substances have low or zero global warming potential and no ozone-depleting characteristics, making them environmentally superior options.

- Ammonia (NH3): A highly efficient refrigerant, ammonia has been used for over a century in industrial refrigeration systems. It has zero global warming potential and no ozone depletion potential, making it an ideal choice for large-scale refrigeration, such as in food processing and cold storage facilities. However, due to its toxicity, ammonia is not commonly used in domestic applications.

- Carbon Dioxide (CO_2): CO_2, a naturally occurring substance, is gaining popularity as a refrigerant in both commercial and residential applications. CO_2-based refrigeration

systems are being increasingly used in supermarkets, transportation, and heat pumps.

- Hydrocarbons (Propane and Isobutane): Hydrocarbons like propane and isobutane are widely regarded as environmentally friendly refrigerants for domestic refrigerators and air conditioners. These substances are non-toxic, have low global warming potential, and do not harm the ozone layer. Their widespread adoption is expected to grow as manufacturers look for ways to phase out HFCs.

Eco-Friendly Aerosols and Foams:

In addition to refrigeration and air conditioning, ODS and HFCs have also been prevalent in aerosol products and foam manufacturing. Aerosols used in everyday products, such as deodorants, hair sprays, and household cleaners, previously relied on CFCs and HFCs as propellants. However, with the growing focus on environmental sustainability, companies have transitioned to more eco-friendly alternatives like compressed air, hydrocarbons, or nitrogen as propellants.

Foam production, particularly in insulation materials, has also shifted toward greener alternatives. Companies now utilize water-blown and CO_2-blown foams, which do not contain ODS or HFCs, making them more environmentally friendly while maintaining performance.

Advantages of ODS- and HFC-Free Products:

The move toward ODS- and HFC-free products has numerous benefits for the environment consumers and industries alike. Some of the key advantages include:

- Reduced Environmental Impact: Products free from ozone-depleting substances and HFCs help protect the ozone layer and significantly reduce greenhouse gas emissions. By choosing these products, consumers can contribute to global efforts to combat climate change and protect ecosystems.

- Compliance with International Regulations: As governments and international organizations continue to tighten regulations on ODS and HFCs, businesses that adopt eco-friendly alternatives can ensure compliance and avoid potential penalties. The Montreal Protocol and the Kigali Amendment have set clear goals for phasing out harmful substances, making it crucial for industries to transition to greener options.

- Enhanced Energy Efficiency: Many ODS- and HFC-free technologies are more energy-efficient, leading to lower consumer operational costs. Natural refrigerants, for instance, often provide superior performance compared to their synthetic counterparts, making them a cost-effective option in the long run.

- Brand Reputation and Consumer Appeal: As consumers become more environmentally conscious, businesses that offer eco-friendly products can enhance their brand reputation and appeal to a growing market of sustainability-focused consumers. The demand for green products is rising, and companies prioritizing environmental responsibility can gain a competitive edge.

Conclusion:

The shift toward products that are free from ozone-depleting substances and HFCs represents a positive step toward protecting the environment and ensuring a sustainable future. From natural refrigerants to eco-friendly aerosols and foams, a wide range of alternatives is now available that minimize the environmental impact without compromising performance.

This transition not only benefits the planet by reducing ozone depletion and greenhouse gas emissions but also aligns with the growing trend of conscious consumerism. As industries continue to innovate and develop more sustainable solutions, consumers have the power to make choices that contribute to a healthier, more sustainable world for future generations.

World Ozone Day celebration:

Under the directions issued by the Economic Advisor, Ozone Cell, Ministry of Environment, Forest and Climate Change, Government of India, the Environmental Information Capacity Building and Livelihood Programme (EIACP), Nagaland Pollution Control Board (NPCB), organized an awareness campaign under Mission LiFE and a Drawing competition on the occasion of World Ozone Day (International Day for the Preservation of the Ozone Layer) on 13th September 2024, at Brighter Academy, under the theme “Montreal Protocol: Advancing Climate Action”.

Mr. Ongwang N, Science Teacher, at Brighter Academy, Chaired the programme. A welcome address was shared by Mr. Robi Nayak, Asst. Headmaster and vote of thanks was delivered by Mr. KK Newmai Headmaster & Proprietor, Brighter Academy.

Chairperson: Mr Ongwang N, Science Teacher, Brighter Academy

Welcome address: Mr. Robi Nayak, Asst Headmaster, Brighter Academy

Ms Khriehunuo Rutsa, Programme Officer, EIACP Nagaland

Mrs. Lashikali D. Assumi, Information Officer, EIACP Nagaland

Ms. Khriehunuo Rutsa, the Programme Officer of EIACP Nagaland, delivered a PowerPoint presentation on the International Day for the Preservation of the Ozone Layer. The presentation covered the importance and history of the ozone layer and the ozone hole. She also addressed the causes & effects of ozone-depleting substances, the impact of ozone depletion on humans, animals, marine life, and the environment, and proposed solutions to combat ozone layer depletion.

Mrs. Lashikali D. Assumi, the Information Officer of EIACP Nagaland gave a presentation on Mission LiFE and stressed all the seven themes associated with Mission LiFE. Followed by a combined pledge-taking session by all the participants and teaching faculty. A short video on Mission LiFE & Prakriti (Mission LiFE Mascot) was also shown to the participants to enhance their knowledge of Mission LiFE and its importance.

Mission LiFE pledge-taking moment.

A drawing competition under the theme “Montreal Protocol: Advancing Climate Action” was conducted among classes 7-10 students.

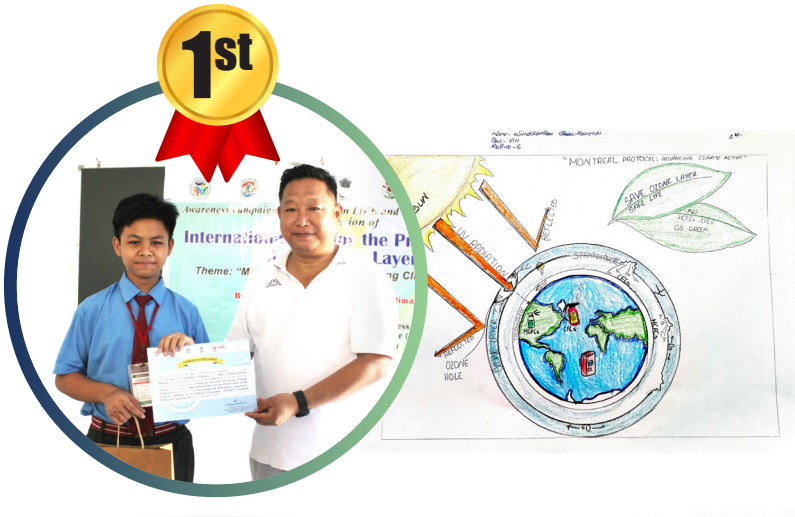
Commencement of the Drawing Competition under the theme "Montreal Protocol: Advancing Climate Action"

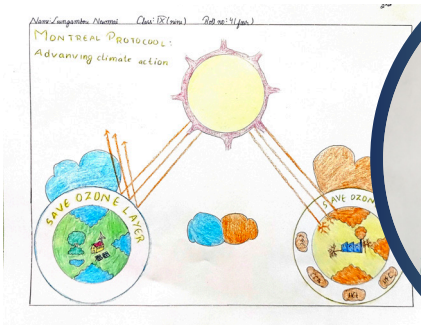
The winners and three consolations of the Drawing Competition were presented with prizes along with certificates. They are as follows:

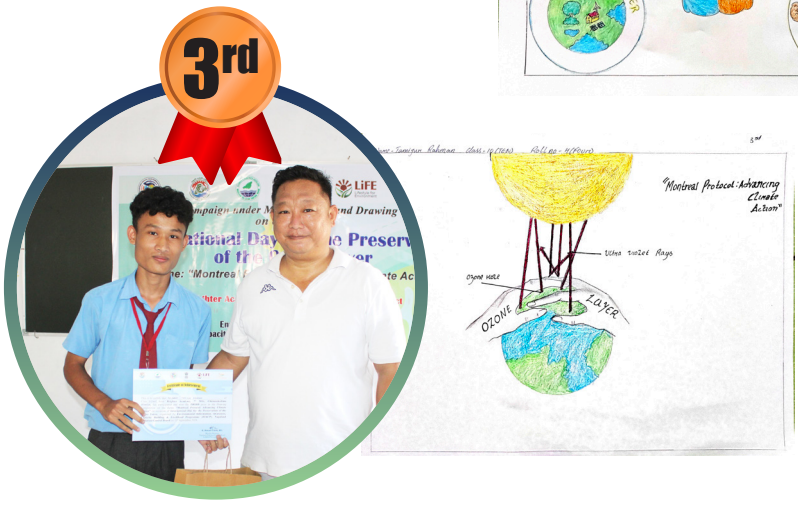
1st prize - Mr. Winachambou Abonmai, Class-8
2nd prize - Mr. Lugambou Newmai, Class - 9
3rd prize - Mr. Tamijur Class- 10

Three consolations are as follows:

1. Mr. Rachun Reuben Golmei Class- 10
2. Ms. Neisevono Alphonsa Class-7
3. Mr. Yimlonhriba s. Chang Class- 10







Pamphlets on International Day for the Preservation of the Ozone Layer were also distributed among the students & teaching faculties. The program was attended by 52 students and 4 teaching faculties.

Students, teaching faculties, and EIACP Officials at Brighter Academy, Chumoukedima.

The Ozone layer is a thin shield of gas in the Earth's atmosphere that protects the planet from the sun's ultraviolet (UV) rays and helps to preserve all life on the planet. However, the ozone layer is not immune to harmful human activities. Ozone-depleting substances (ODS) can create a hole in the ozone layer, allowing UV rays to directly hit the Earth.

Consequences of Ozone Depletion

Uncontrolled ozone depletion would have had severe consequences across multiple areas:

- **Skin Cancer:** Without the Montreal Protocol, the increase in UV-B radiation would have significantly raised skin cancer rates worldwide. Models predict an additional two million skin cancers per year by 2030, with a total of 443 million cases and 2.3 million deaths in the USA alone by 2100.

- **Eye Disease:** Higher UV-B levels would have led to a dramatic increase in cataracts, potentially adding around 63 million cases in the USA over the same period.

- **Food Security:** Increased UV-B would have harmed crop growth, possibly reducing plant production by 6% for every 10% reduction in ozone. This could have drastically impacted global food supplies, affecting both terrestrial and aquatic food chains.

- **Ecosystems**: Plants, animals, and microorganisms in natural ecosystems would suffer, disrupting food webs and ecosystem services like clean air and water. Oceans, which support half of the Earth's oxygen and much of the food supply, would also be adversely affected, with potential consequences for biodiversity and carbon cycling, exacerbating climate change.

Failing to control ozone depletion would have led to a rise in health issues, compromised food security, and disrupted ecosystems, worsening climate change. The Montreal Protocol has been crucial in preventing these outcomes.

Ozone Layer Preservation Tips:

- **Choose Ozone-Friendly Products:** Opt for items that are free from CFCs and other harmful chemicals. Look for eco-friendly alternatives.

- **Dispose of Equipment Properly:** Recycle old appliances and seek professional assistance for the safe disposal of ozone-depleting substances.

- **Reduce Energy Consumption:** Use energy-efficient appliances and maintain them regularly to prevent leaks and minimize energy use.

- **Support Environmental Policies:** Advocate for and support regulations designed to protect the ozone layer.

- **Promote Sustainable Practices:** Select eco-friendly products and engage in conservation efforts.

- **Educate and Raise Awareness:** Share information about the importance of the ozone layer and encourage others to take protective actions.

- **Support Research:** Fund and support scientific research focused on ozone protection, and stay updated on the latest findings.

- **Monitor and Maintain Equipment:** Regularly check appliances for leaks and encourage industries to adhere to best practices for handling ozone-depleting chemicals.

All queries and feedback regarding this newsletter can be sent to:

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