



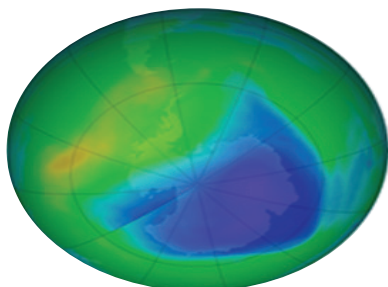
Ministry of Environment
OZONE NEWS

December 2021 – Air Resource Management and National Ozone Unit

According to the scientific revelation, the Earth's protective ozone layer has been healing at a rate of around 2 percent since 2000 and could be completely healed by the middle of this century. The historic 1987 Montreal Protocol's ban on chlorofluorocarbons (CFCs) and other ozone depleting substances attributed for this rate of success.

If Montreal Protocol is not in place as a global agreement, much of the Earth's ozone layer would have been destroyed by 2065. That would have had devastating consequences as the ozone layer protects life on the planet from the Sun's damaging ultraviolet light, which causes skin cancer, cataracts and other health impacts in humans and other animals.

28 November 2021
Approximately 25 million sq. km



If the current reductions in ozone depleting emissions are sustained, Arctic Ozone hole in the Northern Hemisphere could be healed by the 2030s and it is expected that the hole above Antarctica, which was 28.4 million sq. km and as large as North America, could be completely recovered by the 2060s.



CELEBRATION OF THE WORLD OZONE DAY 2021

The event was celebrated virtually. School children, students of technical colleges and universities, government officials, stakeholders from government and non-governmental organizations joined the occasion. The event was held under the distinguished patronage of Hon. Mahinda Amaraweera, Minister of Environment



Conducting Training Workshops for Refrigeration and Air Conditioning Technicians

Some refrigerants used in the refrigeration and air conditioning sector have been banned under the Montreal Protocol, while others are being phased out. The Kigali Amendment to the Montreal Protocol in 2016 will reduce the use of certain ozone depleting alternatives introduced to mitigate global warming. Accordingly, the National Ozone Unit conducts workshops island wide to educate students in industrial and vocational training institutes and the technicians in the field of refrigeration and air conditioning on the use of refrigerants in an environmentally friendly manner and to exchange knowledge on new trends in this field and new technologies. There were training workshops on Good Servicing Practices (GSP) in refrigeration and air conditioning to make aware on recovery, recycling and reclamation activities. Some of the workshops were conducted online due to the current COVID-19 situation.



Conducting capacity building workshops for trainers engaged in the field of refrigeration and air conditioning

Synthetic refrigerants belonging to the hydrochlorofluorocarbon (HCFC) and hydrofluorocarbon (HFC) categories which are released into the environment during servicing and maintenance of refrigeration and air conditioning systems, cause ozone depletion as well as global warming. Therefore, manufacturers of refrigeration and air conditioning systems globally have accustomed to producing equipment having zero Ozone Depleting Potential (ODP) and low Global Warming Potential (GWP). To enhance capacity of instructors engaged in the field on Refrigeration & Air Conditioning (RAC) and to publicize and usage of natural refrigerants such as R600a, R290a, Ammonia Gas, etc. which are prominent among the refrigerants, the workshops have been organized online on refrigeration and air conditioning systems operated by natural refrigerants.



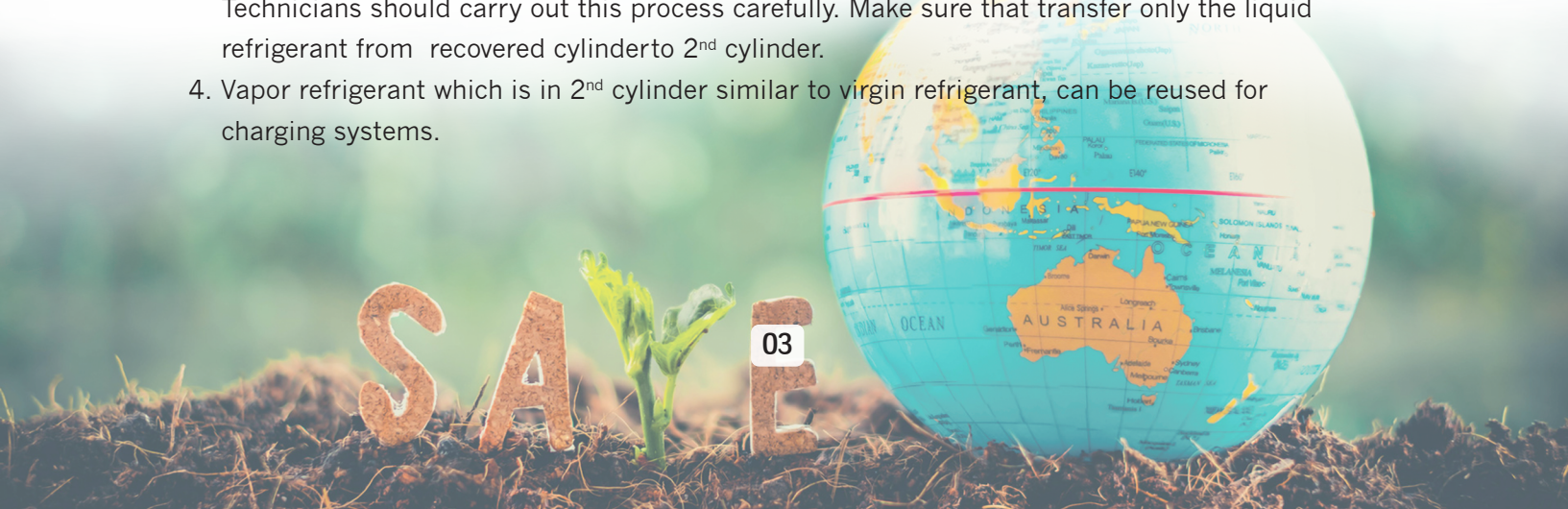
Self- Recycling

Releasing of synthetic based refrigerants to atmosphere causes depletion of the ozone layer at stratosphere and also contributes for global warming. Therefore, Refrigeration & Air Conditioning (RAC) equipment working with natural refrigerants has been introduced to RAC industry. These refrigerants have been used in RAC service sector for servicing refrigeration and air conditioning equipment. According to the new regulations, all service sector RAC workshops have to obtain an Environment Protection License (EPL) from Central Environmental Authority (CEA) for maintaining a RAC service sector workshop. To obtain an EPL from CEA, the RAC service sector workshops should have their own refrigerant recovery pumps and reusable recovery cylinders in order to collect the refrigerants without releasing them to the atmosphere when repairing RAC equipment. These recovered refrigerants can be reused again after purifying (reclaiming) the refrigerants.

The National Ozone Unit of the Ministry of Environment has introduced new environment friendly green technologies under implementation of the Montreal Protocol obligations. National Ozone Unit has focused on this matter and organizes training workshops for technicians at national level in order to make aware them on new green technologies. As part of this training, technicians are trained for assembling a low cost recovery pump by themselves. As a party to the Montreal Protocol on substances that deplete the ozone layer, it is mandatory to control import of HCFC-22 (R22) refrigerant as per the time targets set up by the Protocol.

Self-Recycling is a simple process and can be carried out within the workshop itself and there is no need to visit reclaim centers. Recovered refrigerants are contaminated with moisture, oil and non-condensable gases. This exists in two phases such as liquid and vapor phases. Oil float on top of the liquid surface. This vapor phase contains other impurities such as moisture, oil and non-condensable gasses. Refrigerant vapor is heavier than non-condensable gasses. The following steps should be followed for Self-Recycling of recovered refrigerants.

1. Recover the refrigerant to the external reusable cylinder (make sure not to mix different refrigerants to one cylinder)
2. Take another clean reusable cylinder and that should be in vacuum stage.
3. Connect both cylinders together by a connecting hose. Liquid port of the recovered cylinder should be connected to vapor port of 2nd cylinder. Make sure that only liquid refrigerant flows to 2nd cylinder. Open the valves for flowing refrigerant from recovered cylinder to 2nd cylinder. Technicians should carry out this process carefully. Make sure that transfer only the liquid refrigerant from recovered cylinder to 2nd cylinder.
4. Vapor refrigerant which is in 2nd cylinder similar to virgin refrigerant, can be reused for charging systems.



NATIONAL CEREMONY OF WORLD OZONE DAY 2021



Considering the condition of COVID-19, National Ceremony on World Ozone Day was organized on 16 September 2022 in virtually under the global theme of **“Montreal Protocol: Keeping Us, Our Food and Vaccines Cool”**. This event was held under the distinguished patronage of Hon. Mahinda Amaraweera, Minister of Environment with the participation of Dr. Anil Jasinghe, Secretary, Ministry of Environment.

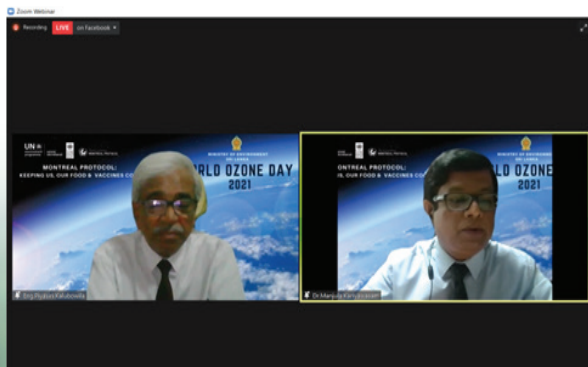
A dialogue on the vaccine cold chain was organized to raise awareness among the participants of Ozone Day, on the relationship between the vaccine cold chain and the Montreal Protocol's contribution towards sustainable use of the cold chain. This was conducted by Dr. Manjula Kariyawasam, a Consultant Epidemiologist and moderated by Eng. Piyasiri Kalubowila.

Throw & Grow Programme: Seed Balls

This programme was introduced to mitigate the impacts of global warming induced by the use of hydrofluorocarbon (HFC) by throwing and growing seed balls in degraded or barren lands. A seed ball (or seed bomb) is a 'pre-planted seed' that has been wrapped in a soil mixture of clay and compost, and then dried. Seed balls are a sustainable propagation technique used to germinate plants in degraded lands.



The preparation and distribution of seed balls enable people of all backgrounds from all age groups to be involved in the greening process. The National Ozone Unit has decided to contribute to Sri Lanka's efforts to neutralize carbon by distributing 100,000 seed balls among its stakeholders.



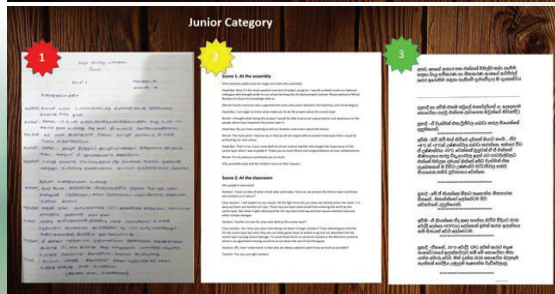
SAVE



"Montreal Protocol: Keeping Us, Our Food and Vaccines Cool"

WINNING DESIGNS

In view of the prevailing situation due to COVID-19 pandemic, several online competitions were held this year, to engage the Sri Lankan citizens in dynamic activities that could avoid the monotonous life at home. Accordingly, an online Poster Competition, Designing Ozone Friends' Badge Competition, Short Script Competition and Crossword Puzzle Competition were organized on the World Ozone Day 2021 theme "Montreal Protocol: Keeping Us, Our Food and Vaccines Cool".



Vocational and Technical Education, a Vital Factor to Prevent ODS Emission & Reduce Global Warming

In the span of only a few decades, refrigeration has grown rapidly expanding industry that it is today. This explosive growth came as the result of several factors. First reason was the development of precision manufacturing methods which became possible to produce smaller, more efficient and energy saving equipment. The development of “safe” and “environment friendly” refrigerants became another factor. Therefore, refrigeration and air conditioning (RAC) is widely used for industrial, commercial, transport marine and domestic purposes. As a result of rapid expansion of RAC applications, more young people interested to select Refrigeration and Air Conditioning as their tertiary education which is one of the prospective careers for them.

Knowledge and skills have been rapidly growing and changing with the new technology. In the RAC industry, there were no such remarkable changes during 1950-1980 periods, since RAC applications were limited to industrial and commercial sector such as cold rooms, ice plants and to several hotels, etc. Therefore, significant changes for technical training programmes in RAC sector did occur. However, after the introduction of open economy policy in Sri Lanka, RAC sector to grow leaps and bounds. RAC equipment containing CFCs and HCFCs had started replacing the place of Ammonia which has toxicity and slightly flammable. CFCs and HCFCs were safe, nonflammable, nontoxic and therefore these manmade chemicals became very much popular.

According to the Montreal Protocol, Sri Lanka also made a plan for phasing out of HCFC refrigerants (R22). However most of the industrialists and technicians who were already worked with HCFC refrigerants compromised for the change. Therefore, according to phase out schedule of HCFC, National Ozone Unit (NOU) prepared the training programme for “Train the Trainers” and training technicians and trainees with assistance of United Nations Environment Programme (UNEP) to support country programme of HCFC phase out management plan (HPMP). “Good Servicing Practices in Refrigeration” including refrigerant recovery, reclaiming and handling of alternative refrigerants were key element of this training programme curriculum.



Key Training Activities Carried Out

- Conducted awareness programmes for RAC trainees and technicians regarding the Ozone Depletion Substances (ODS) and Substances with high potential of Global Warming in RAC sector including flushing agents, foam blowing agents and solvents.
- Conducted theoretical and practical sessions for refrigerant recovery, recycling and reclaiming methods.
- Provided technical assistance to build low cost refrigerant recovery machine by the technicians for day to day repair and servicing works that are being carried out at their workshops. Most technicians recovered HCFCs/HFCs refrigerants without emitting to the atmosphere and saved environment as well as able to gain economic benefits.
- Conducted one day/three days technical training programme of “Good Servicing Practices in Refrigeration” (GSP) with practical activities, aiming to make the environmental friendly knowledge based RAC Technicians/Trainees.
- At present, people are more concerned about environment friendly, energy efficient refrigerants and equipment, especially household equipment. Therefore, technology on hydrocarbon 600a (R600a) was introduced and trained technicians on how to use hydrocarbons (HCs) safely.
- Conducted Training of Trainers (ToT) programme for ammonia (NH_3 , R717) lithium bromide absorption system aiming to make substances which are environment friendly and very low global warming potential to produce knowledge based RAC trainers/Instructors at Vocational & Technical Training Institutes in Sri Lanka.

Now our trainings are stepping up into another environment friendly technology. It is the introduction of alternative refrigerants such as R32, and Inverter technology used in air conditioners to reduce global warming effect.

It is required to continue training programmes for RAC sector, because increasing number of technicians are being produced through expanding need and increasing number of vocational and technical institutes and training centers. They will have a significant role to play when they pass out as technicians in future. **Our duty as trainers is to prepare them as competent RAC technicians to the industry to make them responsible people to the environment, that they could contribute mitigating both ozone layer depletion and global warming and can become environment friendly practitioners for leaving better environment for the future generation.**



Are you a Technician engaging in Servicing & Maintenance in the Field of Refrigeration & Air Conditioning ?

Do you know that if you recycle and reuse the Refrigerants /Gases released into the atmosphere while servicing and maintenance of refrigeration and air conditioning equipment, it will benefit economically as well as provide invaluable services to the environment and all living being on earth?

Be an Eco-Friendly Technician
Move Further to Recover Refrigerant / Gas Today

Reclaim/ Recycle the Recovered Refrigerant from the Following Centres

- | | |
|---|-------------------|
| 1. Ceylon German Technical Training Institute, Moratuwa | - Tel: 0112605625 |
| 2. Technical College, Galle | - Tel: 0912234051 |
| 3. Ceylon Electricity Board, Kolonnawa | - Tel: 0112533581 |
| 4. Technical College, Batticaloa | - Tel: 0652246557 |
| 5. Vocational Training Center, Bandarawela | - Tel: 0572231548 |
| 6. Technical College, Polonnaruwa | - Tel: 0272224429 |
| 7. Vocational Training Centre, Vavuniya | - Tel: 0242221617 |
| 8. Wayamba Technical College, Kurunegala | - Tel: 0373377033 |
| 9. Technical College, Gampaha | - Tel: 0332222132 |

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