Volume XXI | 30 August 2021

In this issue:

GLOBAL

1. Kigali Amendment latest ratifications

Congratulations to the latest countries which have ratified the Kigali Amendment:

[Cameroon, 24 August 2021]
[Tunisia, 27 August 2021]

At the Twenty-Eighth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, held in Kigali from 10 to 15 October 2016, the Parties adopted, in accordance with the procedure laid down in paragraph 4 of article 9 of the 1985 Vienna Convention for the Protection of the Ozone Layer, a further amendment to the Montreal Protocol as set out in Annex I to the report of the Twenty-Eighth Meeting of the Parties (Decision XXVIII/1).

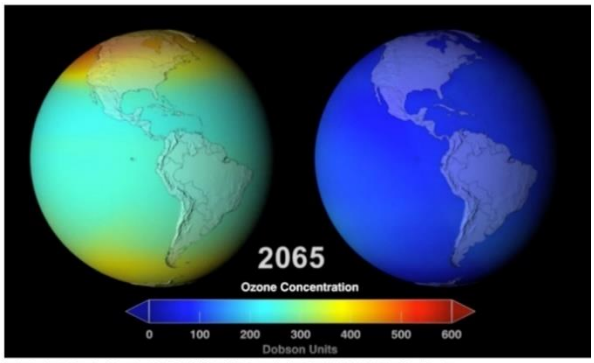
Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Status of Ratification 15 October 2016 to **date**.

United Nations Treaty Collection
Image: UN Treaty Collection website

2. Protecting the ozone layer also protects earth's ability to sequester carbon

Protecting the ozone layer also protects Earth's vegetation and has prevented the planet from an additional 0.85 degrees Celsius of warming, according to new research from Lancaster University, NASA, and others.

This **new study** in Nature demonstrates that by protecting the ozone layer, which blocks harmful ultraviolet (UV) radiation, the Montreal Protocol regulating ozone-depleting substances also protects plants – and their ability to pull carbon from the atmosphere. The impact from plants has not been accounted for in previous climate change research.



Previous "world-avoided" experiments have shown that, without the Montreal Protocol, ozone levels would be depleted globally by the mid-twentieth century.
Credits: NASA/Goddard Space Flight Center Scientific Visualization Studio

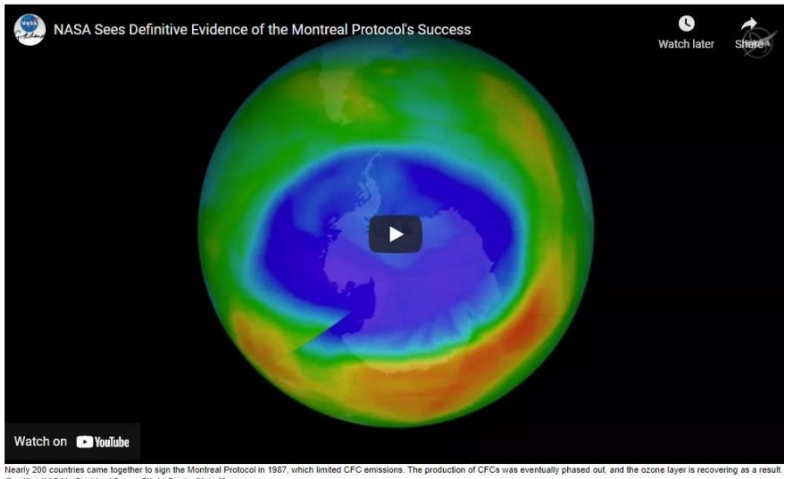
"We know the ozone layer is connected to climate. We know greenhouse gases affect the ozone layer. But what we've never done before this is connect the ozone layer to the terrestrial carbon cycle," said lead author Paul Young, an atmospheric and climate scientist at Lancaster University in the United Kingdom.

The ozone layer in the upper atmosphere, or stratosphere, blocks UV radiation that can damage living tissue, including plants. The ozone "hole," discovered in 1985, is the result of

humans emitting chlorofluorocarbons (CFCs), which are ozone-depleting chemicals and greenhouse gases that were once commonly used as coolants in refrigerators and in aerosols like hairspray. They were then phased out of use by the Montreal Protocol signed in 1987 and its subsequent amendments.

Scientists have previously simulated the world that we avoided by banning CFCs. Now, the new study returns to the same question – what would happen if CFCs continued to be emitted? – and looked at the effect on plants.

“Past world-avoided experiments have never considered the impacts of increased UV radiation on plants, and what that would mean for the plants’ ability to sequester carbon,” said Young.



Nearly 200 countries came together to sign the Montreal Protocol in 1987, which limited CFC emissions. The production of CFCs was eventually phased out, and the ozone layer is recovering as a result.
Credits: NASA's Goddard Space Flight Center/Katy Mersmann

The team used a series of models to gain a more complete picture and simulate two hypothetical scenarios: the world projected, and the world avoided. “The world projected is similar to the path we’re currently on,” said Luke Oman, a research physical scientist focusing on atmospheric chemistry and dynamics at NASA’s Goddard Space Flight Center in Greenbelt, Maryland. “The world avoided represents a path not taken.”

For the world-avoided scenario, the researchers assumed that CFC emissions would increase at the same rate, 3% every year, from the 1970s onward. The models show that there would be a huge thinning of the ozone layer across the globe by 2050. By 2100, ozone holes forming in the tropics would be worse than what has been observed in the Antarctic ozone hole.

In their models of the world-avoided, a depleted ozone layer would let more harmful ultraviolet (UV) radiation reach the surface, inhibiting plants from storing carbon in their tissue and in the soil. As a result, atmospheric CO_2 levels are estimated to be 30% higher than they would likely be under Earth’s current trajectory. Consequently, Earth would likely be an additional 0.85°C hotter in that “world-avoided” scenario solely because of the impact on plants.

This global thinning of the ozone layer would allow significantly more harmful UV radiation from the sun to reach the surface, which would effectively sunburn the plants on Earth, said Young. Earth’s trees and vegetation would be much less efficient at photosynthesis,

hindering their ability to absorb carbon out of the atmosphere and sequester it, storing carbon in plant tissue and the soil for many years. Overall, the damage to plants would result in 580 billion metric tons less carbon stored in forests, soil and vegetation. It would instead be released into the atmosphere, increasing atmospheric CO_2 levels by 30% on average compared to the world projected scenario.

That huge increase in atmospheric CO_2 alone would cause global temperatures to rise 0.85°C by 2100, according to the models. That's on top of the warming Earth may experience due to prior and expected emissions of CO_2 and other greenhouse gases, as well as the 1.7°C of direct warming due to increased CFC emissions in this scenario.

But how do we know this "world-avoided" scenario is anything like the world that would come to be without the Montreal Protocol? The team checked their models against historical data collected by NASA satellites and other available data from NASA's partners. For example, they looked at ozone levels recorded by the Ozone Monitoring Instrument (OMI) aboard NASA's Aura satellite and compared them to what the models 'predicted' would have happened. What happened in the model was very close to what actually happened in the past, giving the scientists confidence that their model could accurately project what may happen in the future.

National Aeronautics and Space Administration (NASA), 26 August 2021, By Sofie Bates

Image: NASA

Read/download the full paper "**The Montreal Protocol Protects The Terrestrial Carbon Sink**" available from **the Nature journal**. **Authors**: Paul J. Young, Anna B. Harper, Chris Huntingford, Nigel D. Paul, Olaf Morgenstern, Paul A. Newman, Luke D. Oman, Sasha Madronich & Rolando R. Garcia, published 18 August 2021

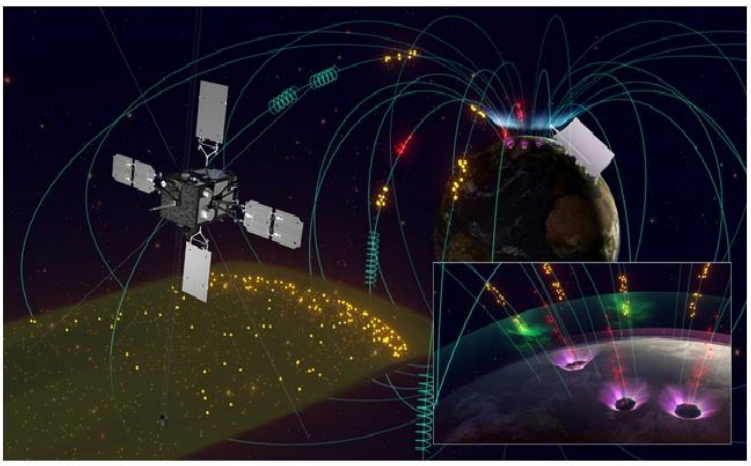
See also >>>

> **How the world already prevented far worse warming this century**. The Montreal Protocol was designed to heal the ozone layer. It may have also fended off several degrees of warming—and a collapse of forests and croplands. *Article in MIT Technology Review, 18 August 2021, By James Temple*

> **Saving ozone layer has given humans a chance in climate crisis – study**, article in *Press Association,* 19 August 2021

3. Under the northern lights: Mesospheric ozone layer depletion explained

The same phenomenon that causes aurorae -- the magical curtains of green light often visible from the polar regions of the Earth -- causes mesospheric ozone layer depletion. This depletion could have significance for global climate change and therefore, understanding this phenomenon is important.



An overview of this research. In geospace, the Arase satellite observes chorus waves and energetic electrons, while on the ground, EISCAT and optical instruments observe pulsating aurorae and electron precipitation in the mesosphere. (Image credit: the ERG science team)

Now, a group of scientists led by Prof. Yoshizumi Miyoshi from Nagoya University, Japan, has observed, analyzed, and provided greater insight into this phenomenon. The findings are published in Nature's *Scientific Reports*.

In the Earth's magnetosphere -- the region of magnetic field around the Earth -- electrons from the sun remain trapped. Interactions between electrons and plasma waves can cause the trapped electrons to escape and enter the Earth's upper atmosphere (thermosphere). This phenomenon, called electron precipitation, is responsible for aurorae. But recent studies show that this is also responsible for local ozone layer depletions in the mesosphere (lower than thermosphere) and may have a certain impact on our climate.

What's more, this ozone depletion at the mesosphere could be occurring specifically during aurorae. And while scientists have studied electron precipitation in relation to aurorae, none have been able to sufficiently elucidate how it causes mesospheric ozone depletion.

Prof. Miyoshi and team took the opportunity to change this narrative during a moderate geomagnetic storm over the Scandinavian Peninsula in 2017. They aimed their observations at "pulsating aurorae" (PsA), a type of faint aurora. Their observations were possible through coordinated experiments with the European Incoherent Scatter (EISCAT) radar (at an altitude between 60 and 120 km where the PsA occurs), the Japanese spacecraft Arase, and the all-sky camera network.

Arase data showed that the trapped electrons in the Earth's magnetosphere have a wide energy range. It also indicated the presence of chorus waves, a type of electromagnetic plasma wave, in that region of space. Computer simulations then showed that Arase had observed plasma waves causing precipitations of these electrons across the wide energy range, which is consistent with EISCAT observations down in the Earth's thermosphere.

Analysis of EISCAT data showed that electrons of a wide energy range, from a few keV (kilo electron volts) to MeV (mega electron volts), precipitate to cause PsA. These electrons carry enough energy to penetrate our atmosphere to lower than 100 km, up to an ~60 km altitude, where mesospheric ozone lies. In fact, computer simulations using EISCAT data

showed that these electrons immediately deplete the local ozone in the mesosphere (by more than 10%) upon hitting it.

Prof. Miyoshi explains, "PsAs occur almost daily, are spread over large areas, and last for hours. Therefore, the ozone depletion from these events could be significant." Speaking of the greater significance of these findings, Prof. Miyoshi continues: "This is only a case study. Further statistical studies are needed to confirm how much ozone destruction occurs in the middle atmosphere because of electron precipitation. After all, the impact of this phenomenon on the climate could potentially impact modern life."

Authors: Y. Miyoshi*, K. Hosokawa, S. Kurita, S.-I. Oyama*, Y. Ogawa, S. Saito, I. Shinohara, A. Kero, E. Turunen, P. T. Verronen, S. Kasahara, S. Yokota, T. Mitani, T. Takashima, N. Higashio, Y. Kasahara, S. Matsuda, F. Tsuchiya, A. Kumamoto, A. Matsuoka, T. Hori*, K. Keika, M. Shoji*, M. Teramoto, S. Imajo, C. Jun*, and S. Nakamura*

*Nagoya University Institute for Space-Earth Environmental Research

Contact: Yoshizumi Miyoshi, Professor, Institute for Space-Earth Environmental Research (ISEE), Nagoya University

Nagoya University, 19 August 2021

Image: Nagoya University

4. Sustainable Refrigeration Summit - 27 September - 8 October 2021

Registration is now open for the **Sustainable Refrigeration Summit**

This **FREE virtual summit** will bring together commercial refrigeration, energy, environmental, and policy stakeholders to advance solutions for a **zero-emissions future for supermarket refrigeration.**

Attendees will gain knowledge on the latest regulatory and industry trends and hear directly from the food retailers, leading industry experts, and policymakers that are shaping the future of sustainable refrigeration.

Hosted over a two-week period, the summit will feature on-demand presentations and 1-2 live sessions each day, including:

- **LIVE** panel discussions with food retailers and other industry experts on zero emission strategies, technology solutions, opportunities, and challenges
- **LIVE** sessions covering the regulatory landscape, funding for natural refrigerants, and the latest trends and research

- **LIVE** interactive workshops with state policymakers to facilitate engagement in refrigerant rulemaking and state program development processes
- **ON-DEMAND** **technology sessions** showcasing the latest innovations in natural refrigerants

*Check out the **preliminary program** and stay tuned for more session details!.*

Learn More / **Register Now**

The North American Sustainable Refrigeration Council, August 2021

Image: NASRC website

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Less food waste. Reduced greenhouse gas emissions. Greater food security. This is the path to addressing hunger and a better future. It takes a more sustainable cold chain to get us there.

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AFRICA

5. Tunisia joins international effort to phasing-down climate warming HFCs

The United Nations Environment Programme (UNEP) has officially approved the adoption by Tunisia of the Kigali Amendment to the Montreal Protocol on substances that deplete the ozone layer.

Thus, Tunisia can benefit from the financial and technical support of the Multilateral Fund of the Montreal Protocol and some other international bodies to gradually reduce hydrofluorocarbons (HFCs), used in particular in the fields of refrigeration and air conditioning and harmful to the climate, according to the Coordinator of the National Ozone Unit at the National Agency for Environmental Protection (ANPE), Youssef Hammami.

In a statement granted to TAP, Hammami said that the support of the Multilateral Fund will allow Tunisia to develop a national strategy to identify the uses of hydrofluorocarbons (HFCs) and help industrialists to reduce their use of these substances, by adopting other production lines, by strengthening human resources in their companies and by integrating other natural products.

The Coordinator of the National Ozone Unit at ANPE stressed that the adhesion of Tunisia to the international effort to fight against the use of hydrofluorocarbons (HFCs) is particularly important, especially since these materials contribute to 8% of the production of greenhouse gases.

According to experts, this rate will reach 25% by 2050, especially with the rise in temperatures and the increase in refrigeration and air conditioning needs.

Hammami noted that a national strategy based on sectoral studies has been developed, allowing the national ozone unit to train 112 technicians in the field of air conditioning and refrigeration in the public and private sectors, the largest consumer of hydrofluorocarbons (HFCs), or 80% of total use, in order to rationalise its consumption.

He said that a technical and economic model is being developed to set up a national system to recover and recycle these substances.

The official said that a unit in Borj Chakir has been created to collect and recycle waste from air conditioning and refrigeration appliances and that another unit should be created in Sfax.

The accession of Tunisia to the Kigali Amendment of the Montreal Protocol took place after the adoption by the parliament in March 2021 of law number 11 of the year 2021 relating to the accession to the Kigali Amendment of the Montreal Protocol on substances that deplete the ozone layer, to progressively reduce its use. [...]

Tunis Afrique Presse (TAP), 30 August 2021

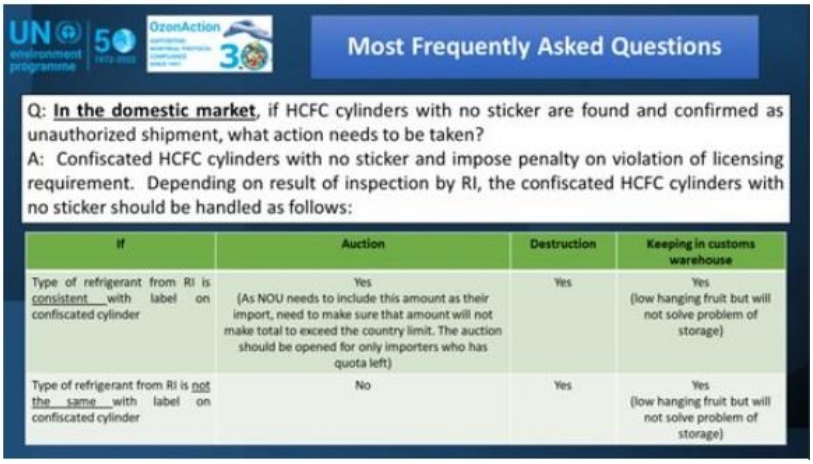
Image: TAP

ASIA AND THE PACIFIC

6. Pacific Island Countries plan to Label HCFC Cylinders to Tighten Licensing System Enforcement under Montreal Protocol

Bangkok, Thailand, 23 July 2021 – Sixteen participants (seven female and nine male) from seven Pacific Island Countries (PIC) joined a virtual meeting on 23 July 2021 to discuss the use of mandatory hydrochlorofluorocarbon (HCFC) cylinder labelling requirements to further enhance the enforcement of their national licensing systems. The meeting was hosted by the UN Environment Programme (UNEP) OzonAction Compliance Assistance Programme (CAP), Asia and the Pacific Office.

The key principle of a mandatory HCFC cylinder labelling requirement is that any imported HCFC containers have a non-detachable sticker by the authority attached before they can be put on the domestic market. This initiative renders several win-win benefits for the country, the industry, and end-users: enabling the enforcement authority to identify the illegally-imported HCFC during their regular inspection in the domestic market and protecting servicing technicians from the health risks caused by mislabeled refrigerants, which has been a widespread problem in the region (equipment using a refrigerant different from the one it was originally designed for will be cross-contaminated and that has implications on its performance, shortening its lifetime and creating safety risks for the end-users).



Through a case study of the Lao People's Democratic Republic, the meeting reviewed mechanisms/approaches to set up and effectively implement the labelling system, discussed the key steps of inspection, attaching stickers, developing and maintaining a labelling database and monitoring in the local market. The meeting also explored how to collaborate with enforcement agencies in the process, and how to handle mislabeled refrigerants identified during the customs clearance process or a market inspection.

The PICs agreed to initiate stakeholder consultations to set up a policy framework including the development of clear and practical standard operating procedures, forming an inspection team, and designing and printing national stickers, as part of the Regional HCFC Phase-out Management Plan (HPMP) Stage II.

Ms. Tumau Neru, Principal Ozone Officer, National Ozone Unit of Samoa mentioned that "Samoa have regularly implemented market inspection to gauge the situation of illegal trade in the country. The implementation of the mandatory labelling requirement will certainly strengthen our existing monitoring and inspection operation. The technicians will be encouraged to purchase only cylinders that carry the government sticker. This initiative

is extremely useful not only to enhance our monitoring mechanism but also to protect our industry and end-users."

Mr. Shaofeng Hu, Senior Montreal Protocol Regional Coordinator, UNEP, added "UNEP has extensive experience in assisting countries in implementing mandatory labelling requirements in the South East Asia Network, which has been proven as an effective tool with multiple benefits. Experience from these countries has been customized to suit the context of the PIC, which can be further explored for HFC (hydrofluorocarbon) control in the future."

Contact: Shaofeng Hu, Senior Montreal Protocol Regional Coordinator, UNEP, OzonAction Compliance Assistance Programme (CAP) Asia and Pacific Office
Images: OzonAction

7. India to phase down use of climate-damaging refrigerant HFCs, approves ratification of Kigali Amendment to Montreal Protocol

The Centre on Wednesday approved India's ratification of the Kigali Amendment to the Montreal Protocol on phasing down climate-damaging refrigerant Hydrofluorocarbons (HFCs). The Amendment to gradually reduce use of HFCs by the late 2040s was adopted by 197 countries in Rwanda in October 2016.

Under its commitment to the Montreal Protocol, India will complete its phase down of HFCs, used in air-conditioners, refrigerators and insulating foams, in four steps from 2032 onwards with cumulative reduction of 10% in 2032, 20% in 2037, 30% in 2042 and 80% in 2047 over 2024-26 baseline.

"National strategy for phase down of HFCs as per the applicable phase down schedule for India will be developed after required consultation with all the industry stakeholders by 2023," said a Cabinet note on the decision.

Different countries have different phase down plans under the Protocol. The developed countries including the US, Canada, west European nations and Japan will reduce HFC use first, followed by China and then by 10 developing countries including India, Iran, Iraq and Pakistan. Overall, the action is expected to reduce HFC use by 85% by 2045 over different baselines by different countries.

The move on HFCs phase down by all member countries of the Protocol assumes significance at this juncture as the collective action is expected to prevent the emission of up to 105 million tonne of carbon dioxide equivalent of greenhouse gases, helping to avoid up to 0.5 degree Celsius of global temperature rise by 2100, while continuing to protect the ozone layer.

The Montreal Protocol on substances that deplete the Ozone layer, is an international environmental treaty for protection of the Ozone layer by phasing out the production and

consumption of man-made chemicals referred to as ozone depleting substances (ODS). The stratospheric ozone\ layer protects humans and the overall environment from harmful levels of ultraviolet radiation from the sun. After gradually phasing down use of HFCs, the countries will use cleaner alternatives.

Times of India, 18 August 2021, By Vishwa Mohan

Image: Wikipedia

8. The Philippines eyes Japan's help in protecting ozone layer, climate

MANILA – The Philippines aims to secure Japan's assistance on safely disposing hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs) from various industries nationwide.

Such assistance will enable the country to destroy HCFCs and HFCs without releasing these substances' gases into the air -- protecting the ozone layer and climate, noted the Department of Environment and Natural Resources-Environmental Management Bureau (DENR-EMB) OIC Assistant Director Vizminda Osorio.

"At present, the Philippines is coordinating with Japan's Ministry of the Environment regarding the possibility of having a destruction facility here in our country," she said during this month's *Ang Tinig Klima* program aired on August 27 for the 2021 observance of the annual International Day for the Preservation of the Ozone Layer (IDPOL) on Sept. 16.

Located in the atmosphere, she said the ozone layer is the mantle of ozone molecules shielding Earth from over-exposure to the sun's ultraviolet rays.

HCFCs are ozone-depleting substances (ODS) used in refrigeration and other applications but which the Philippines is phasing out in line with its commitment under the Montreal Protocol on Substances that Deplete the Ozone Layer.

Montreal Protocol is the international environmental agreement on preventing further ozone layer depletion by eliminating ODS use.

"It laid down mechanisms for control and phase-out of ODS," Osorio said.

HFCs are non-ODS alternatives to HCFCs but which have high global warming potential.

According to experts, there is a need for industry alternatives that will protect the ozone layer from further depletion without increasing global warming that is driving climate change.

Phasing down HFCs is aligned with Montreal Protocol's Kigali Amendment which the Philippines and other parties to this agreement approved in 2016, noted the Philippine Ozone Desk (POD).

POD facilitates and coordinates ODS phase-out projects and policies in the country.

The Kigali Amendment seeks to help boost the fight against climate change by requiring parties to the Montreal Protocol to gradually phase down HFC production and use, the POD added.

The Philippines has set its HFC phase-down in 2024.

Osorio said work is already underway to provide safe storage for HCFCs and HFCs in the country.

"EMB, with the help of Pollution Adjudication Board, is building a storage facility in San Mateo Rizal for such substances," she said.

Recovered HCFCs and HFCs will be temporarily stored in that facility before being delivered to the destruction facility for these substances, she noted.

Industry stakeholders concerned regularly receive EMB's reminder to always properly manage and recover respective HCFCs and HFCs, so these won't leak into the air, Osorio continued.

"We're also seeking alternatives that don't destroy the ozone layer and increase global warming," she said.

"Montreal Protocol - Keeping Us, our Food and Vaccines Cool" is the 2021 IDPOL theme, said UN Environment Programme.

In 1994, UN General Assembly designated Sept. 16 of every year as IDPOL to commemorate countries' signing of Montreal Protocol in 1987.

Scientists' discovery of a hole in the ozone layer has fueled international action on the matter, including the crafting of the Montreal Protocol.

Earlier, UN Secretary-General Antonio Guterres described the Montreal Protocol as "an inspirational example of how humanity is capable of cooperating to address a global challenge" and a "key instrument for tackling today's climate crisis".

As a result of international cooperation on the matter, he said the ozone layer "is healing".

The Philippine News Agency, 31 August 2021, By Catherine Teves

Image: PNA

9. Vietnam's HCFC consumption down 35 percent in 2020

Vietnam consumed nearly 2,600 tonnes of HCFC substances in 2020, down 35 percent from the base consumption, and also down from nearly 3,600 tonnes in 2019, statistics showed.

In January 1994, Vietnam became one of the first countries to join the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer.

The Ministry of Natural Resources and Environment's department of climate change is implementing the second phase of Vietnam's project on eliminating HCFC substances for 2018-2023 (HPMP II).

The project, funded by the World Bank, targets to reduce Vietnam's HCFC consumption by 35 percent as committed to the Montreal Protocol.

The project has so far provided technical and financial support to enterprises manufacturing air conditioners, refrigeration equipment, and foam insulation in line with the conditions set by the Multilateral Fund for the Implementation of the Montreal Protocol regarding technology conversion without using HCFC-22 and HCFC-141b pre-blended polyol.

To date, a number of sub-projects providing technical assistance and funding for the procurement of technology conversion equipment have been implemented, and a number of proposals for similar sub-projects are in the making.

Vietnam is expected to issue regulations banning the import of HCFC-141b pre-blended polyol used in the production of foam insulation from January 1, 2022.

VietnamPlus, 31 August 2021

Image: dcc.gov.vn

WEST ASIA

10. Syria and UNEP train refrigeration technicians and convene a consultative meeting for adoption of long-term alternatives under the Kigali Amendment

Damascus, Syria, 19 August 2021 – The UN Environment Programme (UNEP) OzonAction Compliance Assistance Programme (CAP), West Asia Office, in cooperation with the National Ozone Unit (NOU) of the Syrian Arab Republic, Ministry of Local Administration

and Environment, organized a successful two-day (17-18 July 2021) online training for technicians on Leak Detection, Safe handling of refrigerants and Good Practices and a Consultation Meeting for Stakeholders on the Development and Adoption of International Standards as part of their Country Programme to accomplish the tasks under the HCFC (hydrochlorofluorocarbon) Phase-Out Management Plan (HPMP) of Syria.

The Technician's training on 17 August, was highlighted by the information shared by invited experts on their experiences and challenges with long-term alternatives such as alternative refrigerants for HCFCs in West Asian countries with High Ambient Temperatures. Mr. Michel Farah, Director of Environmental Responsibility at Daikin Middle East and Africa, confirmed that flammability issues are mitigated by proper application of good installation procedures and servicing by trained technicians. Furthermore, a key element for transition to reduce climate and environmental impacts will soon be the better approach. Once the most balanced and feasible solution for an application is found, manufactures should commercialize and disseminate the technology.

The application of good installation and servicing of flammable-based air conditioning units also highlighted the technician's training which was shared by an international expert, Mr. Manuel Azucena of the UNEP West Asia Office. The training was well attended by various stakeholders from private industries and public offices in Syria in addition to the participation of the National Ozone Unit of Iraq.

The Consultative meeting on 18 August discussed the importance of developing/adopting international standards relevant to refrigeration and air conditioning (RAC) as Syria's preparation for the possible introduction of alternatives to HCFCs that might be flammable, operate at high pressure, or be more toxic.

Various International Standards relevant to RAC were presented by an international expert, Mr. Manuel Azucena, on the possible applicable standards to the Syrian context. The experience of the Philippines in developing and adopting international standards into national standards was shared by a Technical Committee member of the Bureau of Philippines Standards, Mr. Augusto Quitco. It was noted from the presentation by Ms.

Tharaa Qubaili of the Syrian Arab Organization for Standardization and Metrology (SASMO), that the process and procedure of developing/adopting international standards into national standards by other countries are similar to Syria's through SASMO. She stated that SASMO and the NOU in Syria look forward to creating a working committee to begin developing/adopting relevant international standards into national standards as part of their commitment to the Montreal Protocol.

In closing, Mr. Khaled Klaly, Montreal Protocol Regional Coordinator, UNEP West Asia, extended his appreciation to all the participants, stakeholders of Syria, resource persons, and the efforts of the NOU in organizing a successful training and meeting despite the challenges due to the COVID-19 pandemic.

Contact: Khaled Klaly, Montreal Protocol Regional Coordinator, UNEP, OzonAction Compliance Assistance Programme (CAP) West Asia

Image: OzonAction

LATIN AMERICA AND CARIBBEAN

11. Grenada opts for natural refrigerants in recently published 'National Cooling Action Plan'

The Caribbean Island nation of Grenada has identified the use of natural refrigerants, including propane (R290) in single-split air conditioners, as a key factor in reducing its greenhouse gas emissions, according to its new National Cooling Action Plan (NCAP), published in August 2021. The development of the NCAP was supported by the "Cool Contributions fighting Climate Change (C4)" project of GIZ.

The NCAP outlines the core activities needed to help the country achieve its obligations under the Kigali Amendment to the Montreal Protocol, as well as its Nationally Determined Contributions (NDCs) under the Paris Agreement. Grenada ratified the Kigali Amendment in May 2018.

"R290 room air-conditioners have proven to be the technology of choice for Grenada with regards to meeting the country's obligations as a signatory to the Kigali Amendment of the Montreal Protocol, as well as the NDC commitments under the Paris Accord and the 2035 sustainable development plan for Grenada," said Leslie Smith, Head of Grenada's National Ozone Unit.

Download the 'National Cooling Action Plan' (NCAP)

Related article on hydrocarbons21

[Deutsche Gesellschaft für, Internationale Zusammenarbeit (giz) GmbH, August 2021]
Image: GIZ


Daily Express

T&T working to meet climate commitments

Focus on refrigeration and air-conditioning

AT WORK: An air-conditioning technician conducts monitoring checks of a centralised cooling unit.

12. Trinidad and Tobago (T&T) working to meet climate commitments

Focus on refrigeration and air-conditioning The Ministry of Planning and Development is working with the country's refrigeration and air-conditioning (RAC) industry to reduce the emission of harmful greenhouse gases.

In a news release, the ministry said Trinidad and Tobago recently received approval from the Global Environmental Facility to implement a US$5.152 million grant-funded project in the refrigeration and air- conditioning sector meant to tackle climate change, disaster mitigation and more specifically ozone depletion in Trinidad and Tobago.

"The National Ozone Unit of the Ministry of Planning and Development envisions the role of the RAC sector and the cooling industry as a catalyst for scaling up and coordinating cleaner energy solutions, strengthening policy frameworks, building institutional capacity and securing funding for energy efficient, low carbon technologies that can accelerate the transition towards net zero and promote sustainable development," said the ministry.

It noted that T&T acceded to the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that deplete the Ozone Layer in August 1989.

The accession to this Protocol committed Trinidad and Tobago to protect the ozone layer through measures to control emissions that deplete it, with the ultimate objective of their elimination on the basis of developments in technology, the ministry said.

T&T operates under Article 5(1) of the Montreal Protocol. In accordance with the Protocol, Trinidad and Tobago is obligated to implement a phase out schedule for ozone depleting substances (ODS), with the complete phase out of Hydrochlorofluorocarbons (HCFCs) by 2030.

In the news release, the ministry pointed out that managing thermal comfort and minimising citizens' exposure to heat stress is necessary for cities like Port of Spain and Scarborough to be safe, resilient, and sustainable, which is one of the Sustainable Development Goals.

"Key to ensuring that all this is achieved, is a RAC sector that is up to date with the rapidly changing technology and equipped with the relevant skills to employ professional service in good refrigeration practices. This Professional Certification Scheme is therefore a critical tool to ensuring that the citizenry of this country is provided with a RAC sector that is of a high standard, effective in its duty, transparent and accountable," said the ministry.

The Scheme

The Professional Certification Scheme for the Refrigeration and Air Conditioning Industry continues to grow, with administration of the Scheme now being undertaken by the Metal Industries Company Institute of Technology (MIC IT). This is being facilitated through a Memorandum of Understanding recently signed between the MIC IT and the Ministry of Planning and Development.

The Scheme was originally developed subsequent to a request from the Air Conditioning and Refrigeration Industry Association (ARIA) for the licensing and certification of technicians in order to improve the regulation and the quality of service and operations within the sector.

The National Ozone Unit (NOU) approached the National Training Agency (NTA) on possible collaboration in establishing such a system based on the National Guidelines Document for this sector developed by the NOU.

The NTA spearheaded the development of the Professional Certification Scheme through its work programme, and a team was established between NTA, the NOU, ARIA and key stakeholders in the sector, including the School of Refrigeration and Air Conditioning (SORAC), Metal Industries Company Limited (MIC), National Energy Skills Centre (NESC), and the Youth Training and Employment Partnership Programme (YTEPP), to develop the scope and content of the Scheme.

The Scheme was finalised based on input from stakeholders and interested parties received during consultations held across Trinidad and Tobago.

Since its inception, over 220 RAC technicians have been professionally certified. Planning Minister Camille Robinson-Regis said that as a small island developing state (SIDS) Trinidad and Tobago is one of the nations with the most to lose if we falter on our climate change goals and commitments to the Paris Agreement, called the Nationally Determined Contributions (NDSs).

T&T Daily Express, 15 August 2021

Image: T&T Daily Express website

EUROPE & CENTRAL ASIA

13. R422D refrigerant seized in Palermo

ITALY: Customs and law enforcement officers have seized 2.5 tonnes of the R22 retrofit refrigerant R422D at the port of Palermo.

The 50 cylinders were found during document check on a container from China.

The Sicilian importer faces a maximum fine of €50,000.

[CoolingPost, 20 August 2021]
Image: CoolingPost website

FEATURED

UN environment programme | ozone secretariat

OZONE SECRETARIAT

[Overview for the meetings of the ozone treaties in 2021]

67th IMPCOM
Online meeting, | 20 - 21 Oct 2021

12th COP (part I) – 32nd MOP Bureau
Online meeting, | 22 Oct 2021

12th COP (part II) – 33rd MOP
Online meeting, | 23 - 29 Oct 2021

Click here for past and upcoming Montreal Protocol Meetings Dates and Venue.

The UN Environment Assessment Panels

The Assessment Panels have been vital components of ozone protection since the Montreal Protocol was first established. They support parties with scientific, technological, and financial information in order to reach decisions about ozone layer protection and they play a critical role in ensuring the Protocol achieves its mandate. The Assessment Panels were first agreed in 1988 to assess various direct and indirect impacts on the ozone layer. The original three panels are:

- The Technology and Economic Assessment Panel
- The Scientific Assessment Panel
- The Environmental Effects Assessment Panel

In the past there were 4 main panels. The Panels for Technology and Economic Assessments were merged in 1990 into one Panel, now called the Technology and Economic Assessment Panel.

Why are the three current panels important to ozone layer protection? Each carries out assessment in its respective field. Every four years, the key findings of all panels are consolidated in a synthesis report. Learn more >>>

World Ozone Day 2021

Celebrating the Montreal Protocol that is:

Keeping us, our food and vaccines cool

THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL

- The Executive Committee Eighty-seventh Meeting, Montreal, 28 June-2 July 2021

  REPORT OF THE INTERSESSIONAL APPROVAL PROCESS AND ONLINE MEETINGS FOR THE 87TH MEETING

  The present document consists of the following two parts:

- I. Process for the 87th meeting, describing the agreed process followed by the Executive Committee for conducting the 87th meeting, which included consideration of several items of the agenda through an intersessional approval process (IAP) and several other items through online meetings.

- II. Comments, discussions, and decisions by the Executive Committee, containing a compilation of comments and discussions where applicable, and decisions on each of the documents considered during the 87th meeting, presented in the order of the agenda of the meeting.

- Click **here** for the Executive Committee upcoming and past Meetings and related documents.

- **Executive Committee Primer – 2020** - An introduction to the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol.

OzonAction

OzonAction Compliance Assistance Programme produces and outreaches a wide variety of information and capacity building materials and tools that support the implementation of the Montreal Protocol programs and assist Article-5 countries in meeting the compliance targets. These include publications, technology briefs and factsheets, mobile applications, videos, e-Learning, modelling and database programs and special educational or certification programs.

The section below features several of our most recent products.
Visit OzonAction website for more information, discover the entire range of products.

Images in this section are by OzonAction

New OzonAction Knowledge Maps tool - The UNEP OzonAction Knowledge Maps tool was developed to provide the National Ozone Units (NOUs) and different UNEP partners with a simple tool to help them access data and information about relevant stakeholders, who are mainly involved in the implementation of programmes and projects under the Montreal Protocol (MP) supported by Multilateral Fund (MLF).

Currently, the first two available knowledge maps are described below:

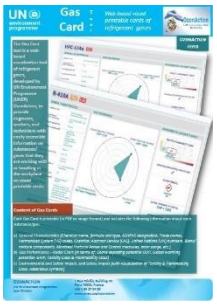
Refrigeration, Air-Conditioning, and Heat Pumps (RACHP) Associations & Organizations: This Knowledge Map provides a global directory of RACHP associations, societies, and organisations around the world. These are key stakeholders for ensuring safe and efficient refrigerant transitions, for the training of technicians and supporting the national policies related to the Montreal Protocol.

Local Technical & Vocational Education and Training (TVET): This Knowledge Map provides a global directory of TVET entities and centres around the world. These are the strategic partners for conducting and promoting training and certification programmes related to the refrigeration servicing sector.

To develop this tool, UNEP OzonAction collected and reviewed different datasets from multiple sources, and then presented the collected datasets into a common platform and format (mainly in the form of a global map so that data can be geographically displayed). Kindly note that the data and information provided will be updated regularly through the feedback that will be received from NOUs and partners to update and/or add new records. Other maps are currently under development which will include access to other key data and information of importance to the implementation of Montreal Protocol programmes.

Click **HERE** to access the OzonAction Knowledge Maps tool

Click **HERE** to download the OzonAction Knowledge Maps tool flyer



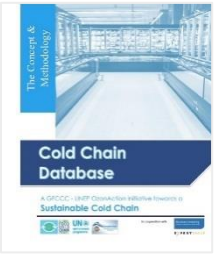
Gas Card Tool: Web-based Visual Printable Cards of Refrigerant Gases developed by the UN Environment Programme (UNEP) OzonAction, to provide engineers, workers, and technicians with easily accessible information on substances/ gases that they are working with or handling in the workplace on visual printable cards. **Content of Gas Cards -** Each Gas Card is printable (in PDF or image format) and includes the following information about each substance/gas: a) General Characteristics (Chemical name, formula and type, ASHRAE designation, Trade names, Harmonized System (HS) codes, Chemical Abstract Service (CAS), United Nations (UN) numbers, Blend/ mixture components, Montreal Protocol Annex and Control measures, main usage, etc.) b) Gas Performance—Radar Chart (in terms of: Ozone depleting potential-ODP, Global warming potential- GWP, Toxicity Class & Flammability Class) c) Environmental and Safety Impact, and Safety Impact (with visualization of Toxicity & Flammability Class, Hazardous Symbols).

More Information - The Gas Card web-based tool is part of UNEP OzonAction's portfolio of activities and tools to assist various stakeholders in developing countries, including customs officers and technicians, to achieve and maintain compliance with the Montreal Protocol on Substances the Deplete the Ozone Layer. In the left navigation bar of the Gas Card tool web page, you will find a list of commonly used HFCs and HFC Blends in different sectors.*

Using the Gas Gard web-based tool

- The Gas Gard tool is available online on the **OzonAction website**
- Read the full **2021 annual iPIC report**
- See the **flyer** introducing the new iPIC platform

** Based on the Overall Analysis of the Results of the Survey of ODS Alternatives Report (conducted in 119 countries from 2012 to 2015)*



OzonAction and GFCCC launch the methodology questionnaires the Cold Chain Database Initiative - The Global Food Cold Chain Council (GFCCC) and the United Nations Environment Programme (UNEP) OzonAction announced the launch of their Cold Chain Database and Modeling initiative. The initiative marks the first formal step to assist developing countries in identifying their cold chain baseline along with consumption of relevant HCFCs or HFCs or other refrigerants. The initiative was conceived in 2019 and kicked off during the 31st Meeting of Parties to the Montreal Protocol (Rome, Italy), which concluded with the Rome Declaration on "The Contribution of the Montreal Protocol to Food Loss Reduction through Sustainable Cold Chain Development". The launch also comes in advance of the United Nations Food Systems Summit.

With the support provided by the Montreal Protocol's Multilateral Fund, the Cold Chain Database initiative is currently being piloted in six countries – Bahrain, Bosnia and Herzegovina, Maldives, North Macedonia, Paraguay, and Senegal. From the pilot data gathering initiatives, a model is being developed that will allow the projection of benefits of cold chain expansion.

GFCCC is an independent not-for-profit industry organisation that seeks to simultaneously reduce food waste, and related greenhouse gas emissions in the processing, transportation, storage, and retail display of cold food by expanding and improving access to energy efficient low-global warming potential technology. The Cold Chain Database concept, methodology and data collection questionnaires are offered to interested countries and partners to help in assessing local cold chain capacities and designing respective action plans and policies.

> ***GFCCC-UNEP OzonAction Cold Chain Modelling Press Release***

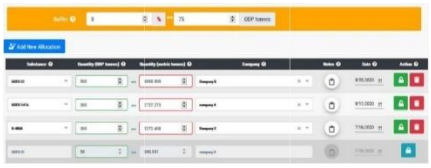
> ***GFCCC-UNEP Cold Chain Database Methodology Final***

> *For countries or partners interested to use the model data collection detailed questionnaires, please fill in the* ***Expression of Interest and NDA of Cold Chain Database*** *form and return to* ***Ayman Eltalouny***

Contact: Ayman Eltalouny, Coordinator International Partnerships, UNEP, OzonAction

United Nations Environment Programme (UNEP), OzonAction

Image: OzonAction



HCFC Quota and Licence Tracker - UNEP OzonAction launches a new desktop application to assist with HCFC licences and quotas - National Ozone Officers have the great responsibility of managing the allocation and monitoring of quotas for substances controlled under the Montreal Protocol. This process can be complex with many importers, especially if the country imports a range of different hydrochlorofluorocarbons (HCFCs) and mixtures containing HCFCs. To address this challenge, OzonAction developed a new desktop application that helps Ozone Officers with the tasks of planning, calculating, monitoring and managing consumption quotas and licences. It can be used on a daily basis to track and manage the current year's quota allocations for different importers, or for future planning by trying different scenarios that adjust the type of substances imported, their quantity, or the number of importers. The HCFC Quota and Licence Tracker allows Ozone Officers to see the effect of such scenarios on the national HCFC consumption and helps ensure that the quotas stay within agreed HCFC Phase-out Management Plan (HPMP) targets. For countries that have ratified the Kigali Amendment, in the future OzonAction will extend the tracker to include hydrofluorocarbons (HFCs) once countries begin designing their quota systems for those controlled substances.

Access the:

- HCFC Quota tracker app
- Flyer for more information on the tracker
- Short video tutorial on the OzonAction YouTube Channel

GWP-ODP Calculator Application - **Update**

"Quickly, efficiently and accurately convert between values in metric tonnes, ODP tonnes and CO_2-equivalent tonnes"

Data are extremely important for the Montreal Protocol community, and the data reporting formats for both A7 and CP have changed recently, to a large degree triggered by the Kigali Amendment. HFCs, blends, CO_2-equivalent values, etc, now have to be addressed much more frequently by Ozone Officers during their daily work. Sometimes the terminology and values are complex and can be confusing, and it helps to have it all the official facts and figures in one place. Conversion formulas need to be applied to calculate CO_2-eq values from both GWP and metric tonne values. This free app from OzonAction is a practical tool for Ozone Officers to help demystify some of this process and put frequently needed information at their fingertips.

What's new in the app:

- An updated more user-friendly interface
- Multilingual interface: English, French and Spanish
- A new **Kigali Amendment mode** - in this mode the GWP values used to calculate the refrigerant blends/mixtures only include GWP contributions from components that are controlled HFCs
- Latest updated ODP and GWP values from the recent reports from the Montreal Protocol technology and scientific expert panels as well as the Intergovernmental Panel on Climate Change (IPCC) reports
- References added for sources of all values
- New refrigerant mixtures (with ASHRAE -approved refrigerant designations)

The new and updated UNEP OzonAction ***GWP-ODP Calculator*** application will help you to convert between values in metric tonnes, ozone depleting potential (ODP) tonnes and CO_2-equivalent tonnes of substances controlled by the Montreal Protocol and their alternatives.

This application, available at no cost, is particularly useful for National Ozone Officers to assist with understanding and calculating quantities of controlled substances, both pure substances and mixtures, for quota assignment, reporting requirements, etc. Other stakeholders interested in ODP and global warming potential (GWP) values of controlled substances and their alternatives will also find this tool useful.

Operation of the application is very simple — just select a substance from the dropdown list and enter the known value in the appropriate field; the calculator will automatically perform the conversion between metric tonnes, ODP tonnes and/or CO_2-equivalent tonnes and display the corresponding converted values. The ODP, GWP and information about the substance is provided. For mixtures, the components of the mixture and their relative proportions (metric, ODP, CO_2- equivalent tonnes) are also calculated.

The updated ***GWP-ODP Calculator*** application now includes a new Kigali Amendment mode. The app can now be used in two different modes: the regular "Actual Values" mode and the "Kigali Amendment" mode. In the Kigali Amendment mode, the GWP values provided are those specified in the Kigali Amendment to the Montreal Protocol, i.e., GWP values are only assigned to controlled HFCs. In this mode the GWP values used to calculate the refrigerant blends/mixtures only include GWP contributions from components that are controlled HFCs. The user can effortlessly switch between modes.

The OzonAction GWP-ODP Calculator uses standard ODP values and GWP values as specified in the text of the Montreal Protocol to make the conversions. Other ODP and GWP values from the recent reports of the Montreal Protocol Technology and Economic Assessment Panel and Scientific Assessment Panel as well as the Intergovernmental Panel on Climate Change (IPCC) are used when appropriate, with references to sources of all values used. The app includes new refrigerant mixtures (with ASHRAE- approved refrigerant designations).

This application is designed primarily for use by Montreal Protocol National Ozone Units and other related stakeholders. The application was produced by UN Environment Programme (UNEP) OzonAction as a tool principally for developing countries to assist them in meeting their reporting and other commitments under the Protocol and is part of the OzonAction work programme under the Multilateral Fund for the Implementation of the Montreal Protocol.

If you already have the application installed on your device, be sure to update to benefit from the new features. The app can be viewed in English, French or Spanish.

Smartphone Application: Just search for "*GWP-ODP Calculator*" or UNEP in the Google Play store or use the QR code – free to download! If you already have the application installed on your device, be sure to update to benefit from the new features.

Desktop Application: *GWP-ODP Calculator* is also available online on the OzonAction **website**

Watch the new short introductory tutorial **video** on the *GWP-ODP Calculator* - available now on **YouTube**

>>> Read/download the **flyer** for more information

OzonAction WhatGas? Updated

New features:
- An updated more user-friendly interface
- Multilingual interface: English, French and Spanish
- HFCs and HFC containing mixtures
- Latest updated ozone depleting potential and global warming potential values from the recent reports from the Montreal Protocol technology and scientific expert panels as well as the Intergovernmental Panel on Climate Change; as well as the standard ODP and GWP values as specified in the text of the Montreal Protocol
- References to sources of all values used
- New refrigerant mixtures (with ASHRAE approved refrigerant designations)
- Values for 'actual GWP' and 'Kigali Amendment context' GWP for pure substances and mixtures (i.e. only including GWP values/components assigned to controlled hydrofluorocarbons - HFCs).

The WhatGas? application is an information and identification tool for refrigerant gases: ozone depleting substances (ODS), HFCs and other alternatives. It is intended to provide a number of stakeholders, including Montreal Protocol National Ozone Officers, customs officers, and refrigeration and air-conditioning technicians with a modern, easy-to-use tool that can be accessed via mobile devices or the OzonAction website to facilitate work in the field, when dealing with or inspecting ODS and alternatives, and as a useful reference tool. If the user requires additional information or assistance in identifying a refrigerant gas they are inspecting or that is described in the relevant paperwork, this can be easily obtained by consulting the application.

Using the application:

If you already have the application installed on your device, be sure to update to benefit from the new features.

Smartphone Application: Just search for "WhatGas?" or UNEP in the Google Play store or use the QR code – free to download!

Desktop Application: WhatGas? is also available online on the OzonAction **website**

For more information: Watch the new short introductory tutorial **video** on WhatGas? available on **YouTube**

See/download the **WhatGas? flyer**

Over 10,000 installations on Android and iOS devices to date!

RAC Technician Videos - Full length films!

Two 'full length' videos for refrigeration and air-conditioning (RAC) sector servicing technicians: on 1) Techniques, Safety and Best Practice and 2) Flammable Refrigerant Safety.

The OzonAction Refrigeration and Air-Conditioning Technician Video Series consists of instructional videos on techniques, security and best practice and flammable refrigerant safety. They are intended to serve as a complementary training tool RAC sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training. The videos are not intended to replace structured formal technician training, but to supplement and provide some revision of tips and skills and to build on training already undertaken.

These videos are based on the successful UNEP OzonAction smartphone application, the RAC Technician Video Series app. This application has been downloaded on more than **86,000** devices since its launch.

Following many requests to make the videos more versatile and better suited to classroom and training settings, OzonAction has responded to this demand and produced two 'full-length' instructional videos.

You may wish to share this message and the flyer with:

- Your national/regional RAC associations
- Training or vocational institutes
- Master RAC trainers in your country
- Any other interested national stakeholders

You can watch these videos on the OzonAction YouTube Channel:

- **Techniques, Safety and Best Practice**
- **Flammable Refrigerant Safety**

The videos are also available for download by request from UNEP OzonAction: **unep-ozonaction@un.org**

If you prefer to access the video clips via the OzonAction smartphone application, just search for "RAC Technician Video Series" or UNEP in the Google Play Store and iTunes/App Store or scan the QR code –

Free to download!

The flyer is available from the **OzonAction website**.

Refrigerant Cylinder Colours: What has Changed - *A new UNEP OzonAction factsheet on the new AHRI revised guideline on a major change to refrigerant cylinder colours*

One of the ways in which refrigeration cylinders are quickly identified is by cylinder colour. Although there was never a truly globally adopted international standard, the guideline from the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) although not required by law was used by the vast majority of industry and chemical producers around the world.

An AHRI revised guideline, first published in 2015, now removes paint colour assignments for refrigerant containers and specifies that all refrigerant containers should have the same paint colour from 2020 onwards.

NOOs and technicians should be aware of this change and inform national stakeholders, as well as familiarising themselves with relevant container labels and markings for refrigerants.

Read/download the **factsheet**

Update on new refrigerants designations and safety classifications - The latest version of the factsheet providing up to date information on refrigerant designations and safety classifications is now available (September 2020 update).

The factsheet, produced by **ASHRAE** in cooperation with **UN Environment Programme OzonAction** is updated every 6 months.

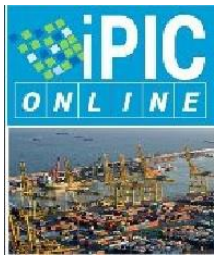
The purpose is to provide an update on ASHRAE standards for refrigerants and to introduce the new refrigerants that have been awarded an “R” number (or ASHRAE designation) over the last few years and which have been introduced into the international market.

Read/download the **factsheet**

The factsheet, as well as more information on ASHRAE-UNEP joint activities and tools, is also available on the **ASHRAE UNEP Portal**.

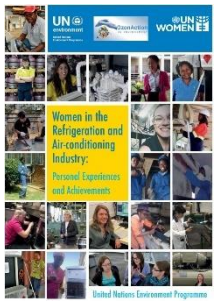
Contact: **Ayman Eltalouny**, OzonAction, UN Environment Programme

OzonAction's iPIC platform - Updated - Collaboration between China and Thailand using OzonAction's informal Prior Informed Consent (iPIC) system has resulted in the prevention of a huge consignment of ozone-depleting and climate damaging hydrochlorofluorocarbons (HCFCs).



Those chemicals, which are primarily used as refrigerants for air conditioners and fridges, are controlled under the Montreal Protocol on Substances that Deplete the Ozone Layer and are being phased out by all countries according to a specific timeline.

Women in the refrigeration and air-conditioning industry: Personal experiences and achievements - The United Nations Environment Programme's (UNEP), OzonAction, in cooperation with UN Women, has compiled this booklet to raise awareness of the opportunities available to women and to highlight the particular experiences and examples of women working in the sector and to recognise their successes.

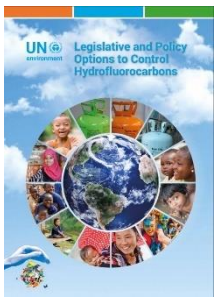


All of the professionals presented in the booklet are pioneers. They are role models whose stories should inspire a new generation of young women to enter the weld and follow in their footsteps.

Read/download the **publication**

PUBLICATIONS

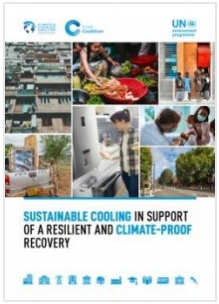
Legislative and Policy Options to Control Hydrofluorocarbons - In order to follow and facilitate the HFC phase-down schedules contained in the Kigali Amendment, the Parties, including both developed and developing countries, will have to implement certain measures.
This booklet contains a recommended set of legislative and policy options which the developing (Article 5) countries may wish to consider for implementation. It is intended to be a guide/tool for countries.



Read/download

Latest issue of Centro Studi Galileo magazine,
Industria & Formazione, n. 450 - 2021
(in Italian).

Sustainable Cooling in support of a Resilient and Climate Proof Recovery, Report by the Climate and Clean Air Coalition (CCAC), 2021



Solar Cooling (2020), 40th Informatory Note on Refrigeration Technologies. **Summary** - Solar cooling is a promising and environmentally friendly technology that can help meet the growing global demand for space cooling. Solar cooling can be achieved by various technologies. The two main commercial options are photovoltaic (PV)-driven vapour compression chillers and heat-driven cooling machines powered by solar collectors. Thermal cooling equipment can be coupled with various types of solar collectors with different efficiencies and costs. Overall system efficiencies of PV-driven and solar thermal-driven plants may not have such different values. Economic analysis indicates that the investment cost for the PV solution is at least half that of other systems. Solar cooling may have a very positive environmental impact by reducing the use of fossil fuels, and the technology may be considered mature to compete with conventional cooling equipment.

** This Informatory Note is an update of a previous version published in April 2017. It was prepared by Renato Lazzarin (President of IIR Section E).*

A Summary for policy makers - Solar Cooling 2020 is available in English and French languages.

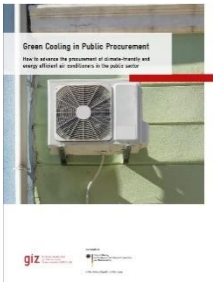
International Institute of Refrigeration, March 2021

Leaks, maintenance and emissions: Refrigeration and air conditioning equipment report details common faults identified in both residential and commercial refrigeration and air conditioning equipment. The report also lists the impacts of these faults and how routine maintenance of the equipment has the potential to significantly reduce electricity use, refrigerant leaks and emissions.

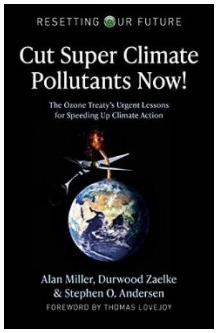
The research was supported by an extensive survey of international and domestic literature included as Appendix B to the report.

Australian Government, Department of Agriculture, Water and the Environment, Expert Group, 2021

Green Cooling in public procurement How to advance the procurement of climate-friendly and energy-efficient cooling equipment in the public sector? Air conditioning in public buildings is often responsible for around 50% of total electricity consumption. Switching to climate-friendly cooling technologies ("Green Cooling") can reduce costs and energy consumption and improve the carbon footprint of public buildings. This study takes a closer look at the benefits of Green Cooling in the public sector and discusses current barriers and possible solutions. The information presented provides a solid basis to revise current procurement criteria for sustainable cooling systems in public buildings. **Read/Download the study**



Cut Super Climate Pollutants Now!: The Ozone Treaty's Urgent Lessons for Speeding Up Climate Action (Resetting Our Future). We have a decade or less to radically slow global warming before we risk hitting irreversible tipping points that will lock in catastrophic climate change. The good news is that we know how to slow global warming enough to avert disaster. Cut Super Climate Pollutants Now! explains how a 10-year sprint to cut short-lived "super climate pollutants" -- primarily HFC refrigerants, black carbon (soot), and methane -- can cut the rate of global warming in half, so we can stay in the race to net zero climate emissions by 2050.



Authors: Alan Miller, Durwood Zaelke, Stephen O. Andersen.

MISCELLANEOUS

I am in the Montreal Protocol Who's Who… Why Aren't You?

The United Nations Environment Programme, OzonAction, in collaboration with Marco Gonzalez and Stephen O. Andersen are updating and expanding the "**Montreal Protocol Who's Who**".

We invite you to submit your nomination*, and/or nominate Ozone Layer Champion(s). ***The short profile should reflect the nominee's valuable work related to the Montreal Protocol and ozone layer protection.***

Please notify and nominate worthy candidates through the **on-line form**.

We look forward to receiving your nomination(s), and please feel free to contact our team for any further assistance concerning your nomination.

Take this opportunity to raise the profile of women and men who made an important contribution to the Montreal Protocol success and ozone layer protection.

- View the «Montreal Protocol Who's Who» **Introductory video**
- Contact : **Samira Korban-de Gobert,** UN Environment Programme, OzonAction

** If you are already nominated, no need to resubmit your profile*

The Clean Cooling Collaborative's 2017-2021 impact report - **Scaling up clean cooling for all** – details the emissions reductions and cost savings that are expected as a result of the efforts of our team and partner organizations. The report also looks at the wide range of accomplishments made over the last four years to support the global transition to efficient, climate-friendly cooling.

Click here for recent OzoNews Issues

Request a PDF of the current issue

Disclaimer:
The United Nations Environment (UNEP), Economy Division, OzonAction provides OzoNews as a free service for internal, non-commercial use by members of the Montreal Protocol community. Since its inception in January 2000, the goal of OzoNews is to provide current news relating to ozone depletion and the implementation of the Montreal Protocol, to stimulate discussion and promote cooperation in support of compliance with the Montreal Protocol. With the exception of items written by UNEP and occasional contributions solicited from other organizations, the news is sourced from on-line newspapers, journals, and websites.

The views expressed in articles written by external authors are solely the viewpoints of those authors and do not represent the policy or viewpoint of UNEP. While UNEP strives to avoid inclusion of misleading or inaccurate information, it is ultimately the responsibility of the reader to evaluate the accuracy of any news article in OzoNews. The citing of commercial technologies, products or services does not constitute endorsement of those items by UNEP.

If you have questions or comments regarding any news item, please contact directly the source indicated at the bottom of each article.

Prepared by: Samira Korban-de Gobert
Reviewed by: Ezra Clark

If you wish to submit articles, invite new subscribers, please contact:
Samira Korban-de Gobert,
samira.degobert@un.org

UN environment programme

Multilateral Fund for the Implementation of the Montreal Protocol

OzonAction
SUPPORTING MONTREAL PROTOCOL COMPLIANCE SINCE 1991

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