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OzoNews

A fortnightly electronic news update on ozone and climate protection and the implementation of the Montreal Protocol brought to you by OzonAction

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| 15 May 2019

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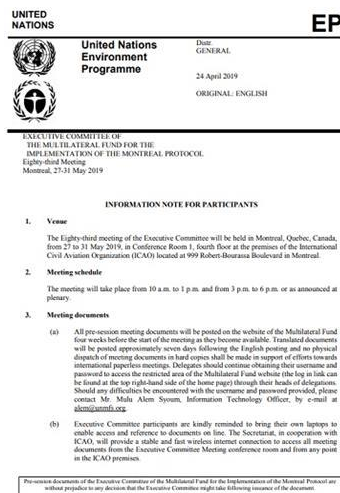
Global

1. Upcoming Eighty-third meeting of the Executive Committee

The Eighty-third meeting of the Executive Committee will be held in Montreal, Quebec, Canada, from 27 to 31 May 2019.

[Link](#) to Provisional agenda and other related documents

The Multilateral Fund for the Implementation of the Montreal Protocol



2. 32 Years and Healing - Theme for World Ozone Day 2019

The theme for the World Ozone Day 2019, to be marked on 16 September, is:

32 Years and Healing

The theme for this year celebrates over three decades of remarkable international cooperation to protect the ozone layer and the climate under the Montreal Protocol. It reminds us that we must keep up the momentum to ensure healthy people and a healthy planet.

The Montreal Protocol has led to the phase-out of 99 per cent of ozone-depleting chemicals in refrigerators, air-conditioners and many other products.

The latest Scientific Assessment of Ozone Depletion completed in 2018, shows that, as a result, parts of the ozone layer have recovered at a rate of 1-3% per decade since 2000. At projected rates, Northern Hemisphere and mid-latitude ozone will heal completely by the 2030s. The Southern Hemisphere will follow in the 2050s and Polar Regions by 2060. Ozone layer protection efforts have also contributed to the fight against climate change by averting an estimated 135 billion tonnes of carbon dioxide equivalent emissions, from 1990 to 2010.

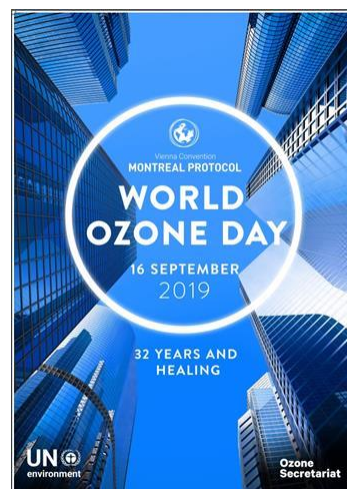
On this World Ozone Day, we can celebrate our success. But we must all push to keep hold of these gains, in particular by remaining vigilant and tackling any illegal sources of ozone-depleting substances as they arise. We must also wholeheartedly support the Kigali Amendment to the Montreal Protocol, which entered into force on 1 January 2019. By phasing down hydrofluorocarbons (HFCs), which are potent climate-warming gases, this amendment can avoid up to 0.4°C of global temperature rise by the end of the century, while continuing to protect the ozone layer. And by combining action to phase-down HFCs with energy efficiency improvements in the cooling industry, we can achieve bigger climate benefits.

Let's keep on working and healing together!

Theme in the six UN official languages

English - 32 years and healing

Arabic - عاماً على البروتوكول وتعافي الأوزون ٣٢



Chinese - 32年, 不断修复

French - 32 ans et en voie de guérison

Russian - 32 года прогресса в охране озонового слоя

Spanish - 32 años de recuperación

UN Environment, Ozone Secretariat, 16 May 2019

3. International action on HFCs through the Kigali Amendment to the Montreal Protocol

Hydrofluorocarbons (HFCs) are factory-made chemicals primarily used as refrigerants, foamblowing agents, and other applications. HFCs were used to replace chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), but in many cases are no longer needed, as alternatives are available. While HFCs do not deplete the ozone layer, they are powerful greenhouse gases, the usage of which has increased 10–15% annually in recent years.

CFCs and HCFCs, in addition to depleting the ozone layer, are also powerful greenhouse gases, and by phasing out these chemicals, the Montreal Protocol has provided climate mitigation equivalent to 135 billion tonnes of CO₂.

In October 2016, the Parties to the Montreal Protocol agreed to the Kigali Amendment, which will gradually phasedown HFCs.

532 Phasing down HFCs can avoid up to 0.5°C of warming by 2100, and the Kigali Amendment will achieve most of that avoided warming, with the remainder possible through acceleration of the Kigali phasedown schedule.

The Kigali Amendment entered into force 1 January 2019. As with previous transitions under the Montreal Protocol, developed countries (non-Article 5 Parties) will act first to phase down HFCs with developing countries (Article 5 Parties) following some years later. Substitutes for HFCs already exist in almost every sector, which will help to speed the transition.

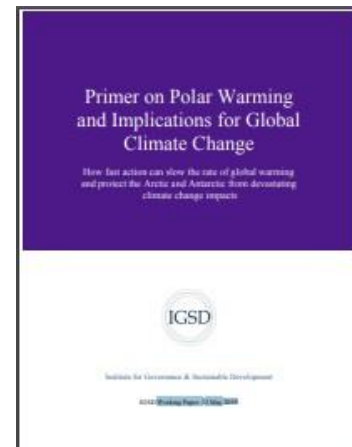
Alternatives include fluorinated hydrofluoroolefins (HFOs), natural refrigerants, and not-in-kind alternatives.

Previous transitions under the Montreal Protocol facilitated improvements in energy efficiency in the appliances that utilise these refrigerants, and similar benefits can be achieved during the transition away from high-GWP HFCs. For example, a 30% improvement in efficiency of room air conditioners avoids an additional 100 billion tonnes of CO₂-eq emissions by mid-century.

Furthermore, a quicker transition away from HFCs will have an added benefit of preventing the accumulation of HFCs in products and equipment that risks release of HFCs in the future when the products and equipment are disposed.

Excerpt from: "Primer on Polar Warming and Implications for Global Climate Change How fast action can slow the rate of global warming and protect the Arctic and Antarctic from devastating climate change impacts", pages 49-50

Institute for Governance & Sustainable Development IGSD, Working Paper: 13 May 2019



4. Maritime sector urged to replace HFCs with natural refrigerants



A new report for the Nordic Council of Ministers highlights the efficiency and environmental benefits of adopting CO₂ and ammonia in maritime applications.

The release of refrigerants from global shipping is estimated to be 8,400 tons (corresponding to 15 million tonnes of CO₂-equivalent emissions). Eliminating that would save about 2% of the total greenhouse gas emissions from shipping, according to the report 'Refrigeration units in marine vessels: Alternatives to HCFCs and high-GWP HFCs', authored for the Nordic Council of Ministers by Prof. Dr.-Ing. Armin Hafner, Dr. C. H. Gabriellii and Dr. K. Widdell.

In fishing vessels, refrigeration units are mainly applied to cool or freeze the catch. In passenger ships and cargo ships, refrigeration plants provide air conditioning for passenger and crew areas and provide cooling to preserve food.

The International Maritime Organisation estimates that the total use of HCFC/HFCs as refrigerants in the merchant shipping fleet worldwide comprises 70% R22, 26% R134a and 4% R404A (2014 data).

Maritime cooling equipment based on natural refrigerants CO₂ and ammonia, meanwhile, is readily available and already widely used. The report, published in April, calls on the maritime sector "to convert current refrigeration units from HFCs directly to natural working fluids".

It also calls for the establishment of a Nordic Technology Hub for global maritime refrigeration R&D, helping to develop dedicated natural refrigerant-based compressors and heat exchangers for maritime applications.

Adopting natural refrigerants now will avoid "costly retrofit actions in the future," the report argues. It urges customers to specify their preference for natural refrigerants over other low-GWP options when talking to system providers.

Mitigating risk

Acknowledging the toxicity of ammonia, the report points out that it has nonetheless been applied successfully in refrigeration systems for 150 years.

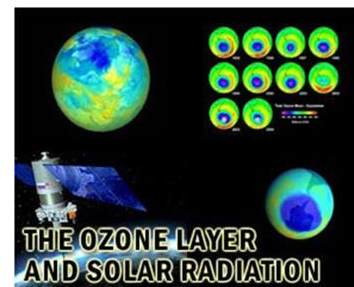
The authors see the high working pressure of CO₂ as an advantage in marine applications, where space on board vessels is often limited. Equipment for CO₂ is compact, designed for a higher fluid density than for conventional systems, the report says.

Some customers are turning to a new generation of synthetic refrigerants – HFOs – as alternatives to the HCFCs and HFCs being phased down in response to the Montreal Protocol, its subsequent Kigali Amendment, and similar such regional and national regulations.

"The risks related to the use of HFOs and their blends when it comes to human health, safety and the environmental impact of decomposition products are not yet fully understood," according to the report.

Ammonia21, 29 April 2019, By: Andrew Williams

5. Ozone monitoring team spots "fingerprints" on Earth's atmosphere



The Ozone Monitoring Instrument (OMI) aboard NASA's Aura satellite specializes in finding "fingerprints" - signatures of gases and particles that clutter the atmosphere. By measuring solar radiation reflected from Earth's surface and scattered by its atmosphere, the OMI team derives important information about aerosols such as dust and smoke and pollutants like nitrogen and sulfur dioxide.

The team also estimates ozone amounts in two areas of Earth's atmosphere. In the upper atmosphere (also called the stratosphere or "ozone layer"), ozone acts as a shield to protect life from harmful ultraviolet radiation,

but in the lower atmosphere (or troposphere), it is a greenhouse gas and pollutant. The team's data products report ozone concentrations in both places to monitor its influence on climate change and the ozone layer's recovery from damage caused by harmful manmade chemicals such as chlorofluorocarbons (CFCs).

"The OMI international team continues to make significant advances in retrieval algorithm development for clouds, aerosols and important trace gases, including pollutants," said Bryan Duncan, current Aura project scientist.

For more than a decade, the OMI team, comprised of members from the Netherlands, Finland and the US, has worked together to provide these valuable data sets and to validate them by comparing them with data from the ground, aircraft and other satellites.

In addition, the Dutch team handles flight operations and the Finnish team operates the "Very Fast Delivery" (VFD) system, which processes OMI data within 15 minutes of collection. The VFD system's speed is crucial in situations such as volcanic eruptions, where aircraft need to be rapidly diverted away from dangerous ash plumes that can damage engines.

OMI data are used in "chemical weather forecasts" to improve predictions of air quality and its impacts on human health. So far, their research has shown that in some parts of the world air quality is improving, while in other places it is getting worse.

Principal investigator Pieternel Levelt of the Netherlands explained that OMI's detailed data had the best mapping capability of any instrument of its kind for more than a decade, and this led to unexpected discoveries and applications, such as finding previously unknown sources of air pollutants.

"OMI can distinguish air pollution caused by different emission sources and is very suited for air pollution analyses," Levelt said.

Launched in 2004 aboard the Aura satellite, OMI was originally designed for a six-year lifespan, but it will celebrate 15 years of data collection in 2019.

"OMI has had a crucial role in showing how air quality can be observed from space reliably and continuously for years," said Finnish co-principal investigator Johanna Tamminen.

In addition to technical and scientific achievements, the OMI team is distinctive in another way: "OMI is currently led by three female scientists, which is very rare in the Earth observation satellite business," Levelt said.

Levelt is the PI and leads the team at the Dutch Royal Meteorological Institute (KNMI); Tamminen leads a team at the Finnish Meteorological Institute (FMI); and NASA-appointed U.S. OMI science team leader Joanna Joiner coordinates the U.S. team. The U.S. team is comprised of scientists from NASA's Goddard Space Flight Center in Greenbelt, Maryland and the Harvard Smithsonian Astrophysical Observatory (SAO) in Cambridge, Massachusetts.

[SpaceDaily, 6 May 2019](#)

Africa

6. 'Ozone layer depletion threat to human health, environment' (Gambia)

The Governor of the North Bank Region (NBR), has tasked regional refrigeration and air condition technicians to live up to expectation, in the execution of their duties as stakeholders in the fight against the consumption and emission of controlled refrigerants like hydrochlorofluorocarbons (HCFCs), which does not only deplete the Ozone layer, but contribute to the warming of the earth.



Governor Ebrima Dampha made these remarks at the opening of a four day training workshop on Ozone Depleting Substances (ODS), flammability and safety, which took place in Farafenni, in the NBR. He challenged participants to exercise professionalism as any little mistake will cost both human health as well as the environment.

This training he said is important and timely, because environmental issues are currently on top of the global agenda [...]

On his part, the Director of Administration and Finance Muhammed Denton, told participants that the training workshop has come at a time when the refrigeration and air conditioning subsector is experiencing lots of transformation in terms of technology, and the introduction of new refrigerants in a bid to replace the ones that are not only Ozone Depleting Substances, but are potent greenhouse gases [...]

As parties to Article Five of the protocol, Denton disclosed that we should adjust to compliance requirements of international agreements like the Vienna and Montreal protocols on substances that deplete the Ozone Layer, and we therefore have to be committed in ensuring that new technologies are adopted for a cleaner environment.

"This is a challenge all of us have to face. With some political support from Government and donor partners like the United Nations Environment Program, United Nations Industrial Development Organization and Global Environment Facility, we are assured of compliance as Article Five countries," NEA's Director of Administration revealed. [...]

Alhagie Sarr, Co-coordinator of the project disclosed that the training workshop is one of six that is approved by the United Nations Industrial Development Organization (UNIDO); that the introduction of new refrigerants already in the Gambia, needs technical knowledge on how to handle them, due to their flammability even though they are Ozone and climate friendly, and energy efficient compared to HCFCs. During the four day training, Sarr said discussions will be on retrofitting, safety measures to avoid accidents, placement of working equipment, lack of emergency exit, and lack of fire extinguishers; that the Gambia like other Article Five parties, is committed to the obligations of the Montreal protocol in phasing out HCFCs until 2030, a major refrigerant currently used in both domestic and industrial refrigeration. This is a major challenge considering the time. [...]

Foroyaa, 9 May 2019, By: Sheikh Alkinky Sanyang

Latin America and Caribbean

7. Brasil ganha tecnologia natural inofensiva à Camada de Ozônio

O Ministro do Meio Ambiente, Ricardo Salles, inaugura hoje, às 15h, na Eletrofrio Refrigeração LTDA, a primeira linha de envase de propano na América do Sul em maquinários para expositores refrigerados. A tecnologia é o resultado de uma parceria da Eletrofrio com a Organização das Nações Unidas para o Desenvolvimento Industrial (UNIDO) e com o Ministério do Meio Ambiente (MMA). Também estarão presentes na inauguração o presidente da Eletrofrio, José Antonio Paulatti, e o presidente do Condor Super Center, Pedro Joanir Zonta.



O Propano se destaca por atingir 100% de sustentabilidade em refrigeração, é natural, inofensivo à Camada de Ozônio e com baixíssimo GWP (Global Warming Potential).

A novidade representa um marco na evolução sustentável do Brasil e contribui para que o país atinja a meta do Protocolo de Montreal de eliminar a utilização de gases nocivos até 2040. O Brasil é o nono consumidor de hidroclorofluorcarbonos (HCFCs) do mundo e o quinto entre os países em desenvolvimento. O objetivo do Programa é eliminá-los em 35% até 2020 e 67,5% até 2025.

Como a solução faz parte do Programa Brasileiro de Eliminação dos HCFCs, ela será de domínio público e ficará disponível para ser utilizada por toda a cadeia de refrigeração comercial do país, que se tornará mais desenvolvida e ambientalmente limpa. Com isso, a indústria brasileira é colocada em condições de igualdade com o mercado externo e se torna mais competitiva.

“Vamos transferir o conhecimento da pesquisa para que o Brasil possa avançar na eliminação dos gases sintéticos. Com isso, o nosso país dá um passo enorme para alcançar a substituição completa dos gases sintéticos e cumprir a meta do Protocolo de Montreal”, afirma o engenheiro da Eletrofrio, Rogério Marson. O propano possui um investimento inicial menor e alta eficiência energética, porém é inflamável, o que exige alta capacitação dos profissionais que forem trabalhar com ele. [...]

[Diário Indústria & Comércio, 29 de abril de 2019](#)

North America

8. Data in the driver's seat: leak patterns in observed data and how it can help reduce emissions - US EPA GreenChill upcoming webinar



Topic: [Data in the Driver's Seat: Leak Patterns in Observed Data and How it Can Help Reduce Emissions](#)

Date: Tuesday, June 4, 2019

Time: 2:00 pm to 3:00pm (Eastern time)

Description: Jason Ayers (Parasense) and Jeff Rupert (Fazio Mechanical) will present on patterns in leak data from over 2.8 billion refrigerant leak samples. This webinar looks at five distinct leak event characteristics, including what equipment owners and contractors should look out for to spot leaks and drive down refrigerant emissions.

To join the webinar:

1. Visit the webinar access page: [Data in the Driver's Seat: Leak Patterns in Observed Data and How it Can Help Reduce Emissions](#)
2. Select "Enter as a Guest". It is important that you select the option to enter as a guest.
3. Enter your name.
4. Click "Enter Room".
5. Click "OK".

For audio:

1. Call the toll free call-in number: 1-866-299-3188 (706-758-1822 from outside the U.S.)
2. Use Conference Code: 202 343 9185#

Asia Pacific

9. Govt, UNDP join hands to implement US\$ 3.3m project (Bangladesh)

The government of Bangladesh and the United Nations Development Programme (UNDP) signed an agreement on Sunday to implement a US\$ 3.3 million grant approved by the Montreal Protocol Multilateral Fund for making environment-friendly and energy-efficient refrigerator at Walton Hi-Tech Industries Ltd.

Monowar Ahmed, Secretary, Economic Relations Division, and Kyoko Yokosuka, Deputy Resident Representative, UNDP Bangladesh, signed the project agreement on behalf of their respective organisations.

It is expected that emission of around 329,801 tonnes of CO₂ equivalent GHG will be reduced and 42 million kwh electricity will be saved through implementation of the project.

Under this initiative, UNDP, with assistance from the Ministry of Environment, Forest and Climate Change [and funding from the Multilateral Fund for the Implementation of the Montreal Protocol,] will provide technical support and necessary equipment to Walton Hi-Tech Industries Ltd to produce and promote environment-friendly and energy-efficient refrigerators.

As a partner of this project, Walton is also contributing the same amount of resources to implement it.

High global warming refrigerant, HFC-134a will be replaced by environment-friendly and energy-efficiency HC-600a (isobutane) refrigerant during refrigerator production in 3 production lines.

Environment-friendly equipment and training will be provided to Walton for changing production facilities of HFC-134a based compressor to HC-600a for the same industry.

[Walton has its own 70 service centres across Bangladesh. With the support from MLF these 70 centres will be well equipped with modern tools and equipment. Apart from it 200 RAC technicians will be trained on flammable refrigerants.]

Monowar Ahmed said this is a very significant initiative under public-private partnership, supported by the UN, to promote environment-friendly and energy-efficient technology. "We can bring additional resources from other development partners for promoting green growth while bringing climate benefits," he said.

Kyoko Yokosuka said Montreal Protocol is considered as one of the most successful global treaties to address global climate challenge. "I think Bangladesh has done tremendously well under the leadership of the Ministry of Environment, Forest and Climate Change. As a result, the country has phased out some of the chemicals harmful for Ozone layer."

She has also highlighted the partnership between UNDP and the ministry and said, "The partnership between UNDP and MOEFCC now joined by ERD will intensify further in the implementation of both Montreal Protocol and Paris Climate Agreement".

SM Ashraf Alam, Managing Director of Walton, said their operation is fully compliant with the national and international standards set for environmental, energy and occupational health and safety of workers.

United News of Bangladesh (UNB), 5 May 2019



10. Stakeholders join hands to boost cooling efficiency in BRI countries

At the Green Silk Road Thematic Forum of the Chinese government's Second Belt and Road Forum for International Cooperation on April 25, the National Development and Reform Commission (NDRC) launched a BRI Green Cooling Initiative. Energy Foundation China, as a co-sponsor, witnessed this important moment.



While bringing health and comfort to human beings, air conditioners and other cooling equipment have also raised the temperature of the earth. Refrigerants such as HCFCs and HFCs have a very strong greenhouse effect, and cooling equipment consumes a lot of electricity when in use, thus indirectly generating a large amount of greenhouse gas emissions. A significant increase in the energy efficiency of cooling products and equipment, plus green transformation of refrigerants will avoid a temperature rise of 0.5–1°C by the end of this century, experts estimate.

Green growth and efficiency improvements in the cooling industry will also help countries achieve their energy efficiency and sustainable development goals, as well as fulfilling their international promises. Against this backdrop, China's NDRC joined hands with the United Nations Industrial Development Organization (UNIDO), the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), and Energy Foundation China to launch the BRI Green and Efficient Cooling Initiative.

The initiative aims to promote sustained energy efficiency improvement and green development in the cooling and air conditioning industry and contribute to the international and national energy efficiency goals of fighting climate change through various efforts. They include policy dialogue and information exchange platforms, capacity building, exchange and cooperation on energy efficiency policies and standards, innovation in green cooling business models, and technology exchange.

Cooling industry associations from China, the United States, Japan, Brazil, Europe, and other countries and regions, as well as the China National Institute of Standardization and China's leading air conditioning manufacturers have joined the initiative.

“China is the world's largest manufacturer and consumer of air conditioners. The success of its cooling policies and regulations will have a huge impact not only on the country itself, but also on the global transition to more efficient, climate-friendly cooling equipment,” said Zou Ji, President of Energy Foundation China. “We hope that the BRI Green Cooling Initiative will further promote cooperation between China and the countries along the ‘Belt and Road’ in the effort to propel the green development of the cooling industry. Energy Foundation China will strongly support the initiative through coordinating international cooperation mechanisms, building capacity, and promoting technology exchange and cooperation.”

[Belt and Road initiative (BRI)]

Energy Foundation, 28 April 2019

West Asia



11. Workshop on coordinating the Gulf position on the Montreal Protocol - Saudi Arabia

البيئة تنظم ورشة عمل حول تنسيق الموقف الخليجي بشأن بروتوكول مونتريال

نظمت وزارة البيئة والمياه والزراعة ورشة عمل بعنوان (ورشة العمل الخليجية حول تنسيق الموقف الخليجي بشأن بروتوكول مونتريال وتعديلات كيجالي) بمدينة جدة

وأوضحت أن الهدف من الورشة مناقشة الالتزامات المرحلية على الدول لخفض استخدام المركبات المستنفذة لطبقة الأوزون والخاضعة لبروتوكول مونتريال في قطاعات التكييف والتبريد والصناعة، حسب تعديلات كيجالي التي أقرت في عام 2016م على هذا البروتوكول، والهادفة إلى التخفيض التدريجي لمركبات الهيدروفلوروكربون في ظل تعديل كيجالي، ومدى مرونة جداول التخفيض الخاصة بهذه المركبات

وشارك في اللقاء ممثلون من الهيئة العامة للأرصاد وحماية البيئة، ووزارة الطاقة والصناعة والثروة المعدنية، بالإضافة إلى ممثلين من برنامج الأمم المتحدة للبيئة، والهيئة العامة للبيئة في دولة الكويت، والمجلس الأعلى للبيئة في مملكة البحرين، ووزارة التغير المناخي والبيئة في دولة الإمارات العربية المتحدة، والأمانة العامة لمجلس التعاون لدول الخليج العربية

واستعرض المشاركون أهم المواضيع التي ستناقش خلال اجتماعات الاطراف لبروتوكول مونتريال في عام 2019م وتتضمن كفاءة الطاقة في قطاع التبريد، ومواصفات ومقاييس الأمان للبدائل، وتوحيد مواقف دول المجلس في مواضيع عدة مثل التصديق على تعديلات كيجالي، والتنسيق الاستراتيجي بين دول المجلس فيما يتعلق بالقطاعات المستهلكة للمواد الخاضعة للرقابة والتجارة البيئية في المواد والمنتجات، وتعزيز تمثيل دول المجلس في فريق التكنولوجيا والتقييم الاقتصادي واللجان الفنية الأخرى التابعة للبروتوكول

واختتمت الورشة بعدد من التوصيات والتي تهدف إلى الالتزام بقرارات اتفاقية مونتريال مع ضمان مصالح دول المجلس يذكر أن اتفاقية مونتريال معاهدة دولية تهدف لحماية طبقة الأوزون عبر التوقف التدريجي عن إنتاج عدد من المواد التي يعتقد أنها مسؤولة عن نضوب طبقة الأوزون التي هي جزء من الغلاف الجوي لكوكب الأرض، والذي يحتوي بشكل مكثف على غاز الأوزون، وكانت الاتفاقية قد وضعت للتوقيع في 17 سبتمبر 1997م، ودخلت حيز التنفيذ في 7 يناير 1999م، ومن المتوقع أنه في حال التزام كل دول العالم بتطبيق الاتفاقية، فإن طبقة الأوزون ستتعافى بحلول عام 2050م

Alriyadh, 29 April 2019

12. Armenia and Montenegro recently ratified the Kigali Amendment to the Montreal Protocol

Armenia and Montenegro recently ratified the Kigali Amendment to the Montreal Protocol bringing the total number of ratifications to 71 countries so far.

Under the Kigali Amendment, adopted by 197 countries on 15 October 2016, countries committed to cut the production and consumption of HFCs by more than 80% over the next 30 years.

The status of the Kigali Amendment ratification to date is available [here](#)



Featured



OZONE SECRETARIAT

- [62nd Meeting of the Implementation Committee under the Non-Compliance Procedure of the Montreal Protocol](#), 29 June 2019, Bangkok, Thailand
- [41st Meeting of the Open-Ended Working Group of the Parties to the Montreal Protocol](#), 1 - 5 July 2019, Bangkok, Thailand
- [63rd Meeting of the Implementation Committee under the Non-Compliance Procedure of the Montreal Protocol](#), 2 November 2019, Rome, Italy
- [Bureau Meeting of the 30th Meeting of the Parties to the Montreal Protocol](#), 3 November 2019, Rome, Italy
- [31st Meeting of the Parties to the Montreal Protocol](#), 4 - 8 November 2019, Rome, Italy

Click [here](#) for Montreal Protocol upcoming Meetings Dates and Venues

Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Status of Ratification
15 October 2016 to [date](#)

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](#)

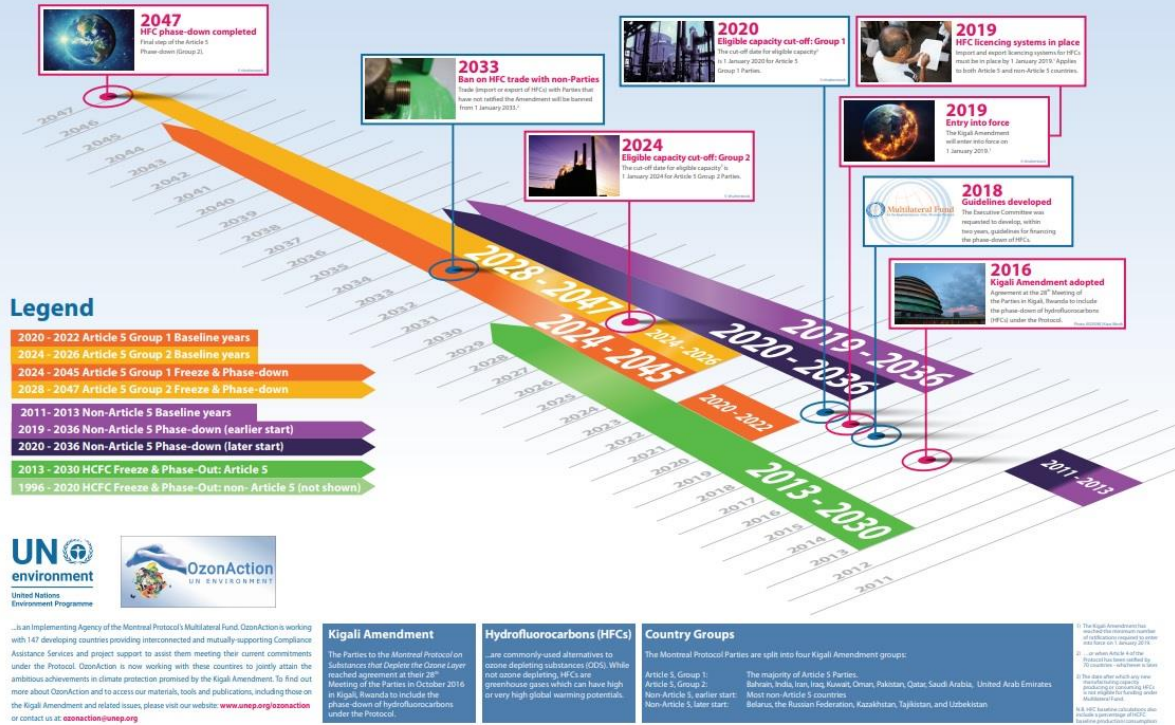
In the past there were 4 main panels. The Panels for Technology and Economic Assessments were merged in 1990 into one Panel, now called the Technology and Economic Assessment Panel.

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.



**THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL
PROTOCOL**

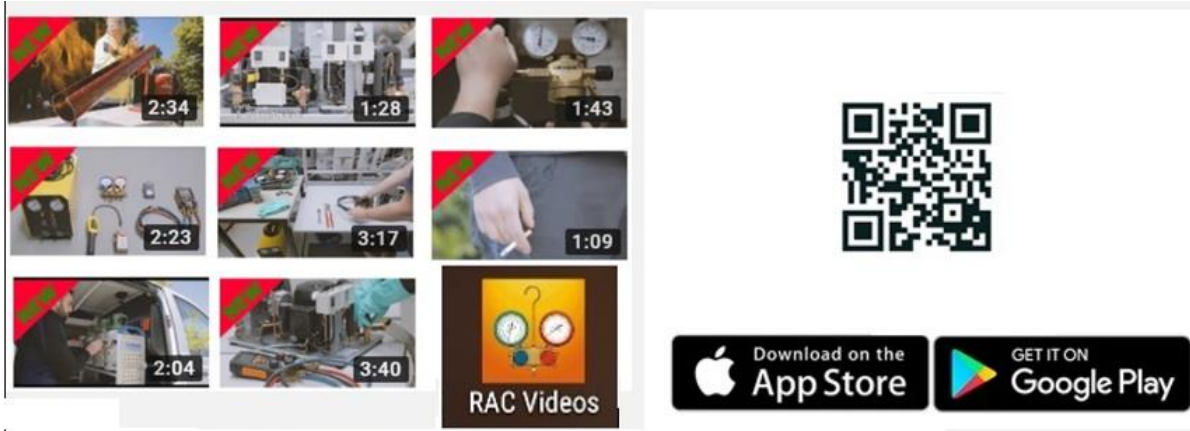
The Path from Kigali: HFC Phase-Down Timeline



The Path from Kigali: HFC Phase-Down Timeline

This timeline, produced by OzonAction, highlights key hydrofluorocarbons (HFCs) phase-down dates.

Click [here](#) to download the timeline



New videos available on the OzonAction RAC video application

A series of new videos has just been released on the Refrigeration and Air-conditioning Technician Video Series application, with a focus on working with flammable refrigerants ...

50,000 downloads and counting!

To install, search for "RAC Video" in the Google Playstore or Apple IOS store, or scan the QR code.



GWP-ODP Calculator Smartphone Application

The application allow you to easily convert ODP, CO₂-eq and metric quantities of refrigerants and other chemicals.

- Helps in understanding and reporting under the Montreal Protocol (and future commitments under the Kigali Amendment)
- The calculator will automatically perform the conversion between metric

tonnes, ODP tonnes and/or CO₂-equivalent tonnes (or kg) and display the corresponding converted values

- The app includes both single component substances and refrigerant blends
- The components of a mixture and their relative proportions (metric, ODP, CO₂-eq) are also displayed.

Available for free from the Apple IOS store and Google PlayStore. Search for "GWP ODP CALC" in the Playstore to install!

Download it Now!



OzonAction Smartphone Application WhatGas? Quickly search for the information you need

- Chemical name
- Chemical formula
- Chemical type
- ASHRAE designation
- Trade names
- HS code
- CAS number
- UN number
- Montreal Protocol Annex and Control measures
- Ozone depleting potential (ODP)
- Global warming potential (GWP)
- Blend components
- Toxicity and flammability class
- Main uses

OzonAction Smartphone Application WhatGas?

Available for **free** in the **Google Play** and **Apple IOS Store**

Scan the QR code or search for “UNEP”, “OzonAction” or “WhatGas?”



The Kigali Amendment to the Montreal Protocol - Opportunities and Next Steps - OzonAction Video

The Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer reached agreement at their 28th Meeting of the Parties on 15 October 2016 in Kigali, Rwanda to phase down hydrofluorocarbons (HFCs). The UN Environment, OzonAction developed a video to find out from renowned international scientific, health, technical, financial and national experts about background and significance of this Kigali amendment.

The amendment presents many opportunities: improving the environment, refrigeration and air-conditioning systems and especially energy efficiency. It also presents new challenges. It is absolutely critical now for industry, governmental bodies and civil society to work together to adopt greener technologies in each country of the world and fight global warming.

[OzonAction YouTube](#) | See also: [United Nations Treaty Collection](#)

OzonAction Factsheets



UN Environment-ASHRAE Factsheet Update on New Refrigerants Designations and Safety Classifications

OzonAction Series of 19 Fact Sheets related to the Kigali Amendment.

HS codes for HCFCs and certain other Ozone Depleting Substances ODS (post Kigali update).

The Kigali Amendment to the Montreal Protocol: HFC Phase-down - The phase-down of HFCs under the Montreal Protocol on Substances that Deplete the Ozone Layer has been under negotiation by the Parties since 2009 and the successful agreement on the Kigali Amendment at the 28th Meeting of the Parties on 15 October 2016 in Kigali, Rwanda to phase-down hydrofluorocarbons (HFCs) continues the historic legacy of the Montreal Protocol. This factsheet summarises and highlights the main elements of the Amendment of particular interest to countries operating under Article 5 of the Protocol (Article 5 Parties).

Refrigerant Blends: Calculating Global Warming Potentials (post-Kigali update).

Global Warming Potential (GWP) of Refrigerants: Why are Particular Values Used? (post-Kigali update).

Tools Commonly used by Refrigeration and Air-Conditioning Technicians.



OzonAction Multimedia Video Application: Refrigeration and Air-conditioning Technician Video Series - Over 50,000 downloads to date -

OzonAction has launched an exciting new application which hosts series of short instructional videos on techniques, safety and best practice for refrigeration and air-conditioning technicians.

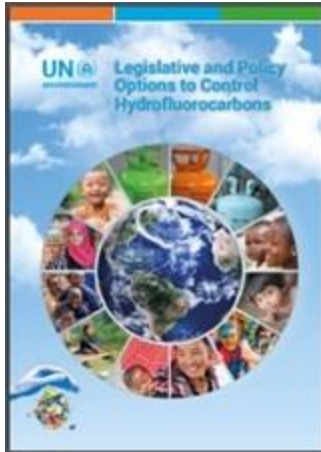
This application, consisting of short instructional videos on techniques, safety and best practice, serves as a complementary training tool for refrigeration and air-conditioning (RAC) sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training.

New videos on flammable refrigerants just added!

Please share with your RAC associations, technicians and other interested stakeholders...

OzonAction Multimedia Video Application: Refrigeration and Air-conditioning Technician Video Series
Available in the [Android Play Store](#) and [Apple Store/iTunes](#).
(Just search for "OzonAction", or scan this QR code)

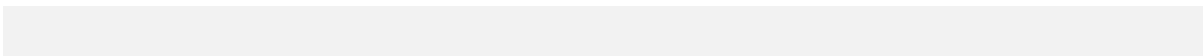
Publications



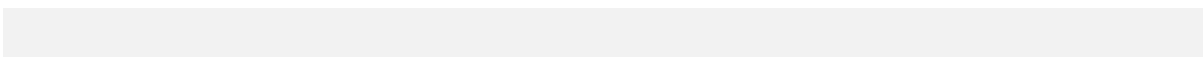
Legislative and Policy Options to Control Hydrofluorocarbons

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.



Latest issue of the Centro Studi Galileo - [Industria & Formazione](#). La rivista per il tecnico della refrigerazione e della climatizzazione, N. 2, 2019



Events

2019

- [25th IIR International Congress of Refrigeration](#) - 24-30 August 2019, Montreal, Canada

Click [here](#) for more information / [International Institute of Refrigeration](#)

Please feel free to [share](#) with us relevant events.

Reading



[Twenty Questions and Answers About the Ozone Layer](#), presents complex science in a straightforward manner. It complements the [2014 Scientific Assessment Report of Ozone Depletion](#) by WMO and the U.N. Environment Programme.

Lead Author:
Michaela I. Hegglin

Coauthors:
David W. Fahey, Mack McFarland, Stephen A. Montzka, Eric R. Nash



[Primer on Hydrofluorocarbons \(HFCs\)](#) - IGSD -11 January 2018

Summary:

Fast action under the Montreal Protocol can limit growth of hydrofluorocarbons (HFCs), prevent 100 to 200 billion tonnes of CO₂-eq by 2050, and avoid up to 0.5°C of warming by 2100.

Lead authors:

Durwood Zaelke, Nathan Borgford-Parnell, and Stephen O. Andersen.

Contributing authors:

Kristin Campbell, Xiaopu Sun, Dennis Clare, Claire Phillips, Stela Herschmann, Yuzhe Peng Ling, Alex Milgroom, and Nancy J. Sherman.



The [IIR International Dictionary of Refrigeration](#) Available in 11 languages, the complete version of the International Institute of Refrigeration (IIR) International Dictionary of Refrigeration is now freely accessible online. The IIR International Dictionary of Refrigeration offers researchers, industrialist or

administrations the practical resources required to produce content related to refrigeration technologies in multiple languages.

This online tool allows you to find definitions, in English and French, of scientific and technical terms, as well as identify terms in the language of your choice and find corresponding translations in the 10 other languages.

The dictionary provides term searches in Arabic, Chinese, Dutch, English, French, German, Italian, Japanese, Norwegian, Russian and Spanish.

Access the International Dictionary of Refrigeration on the [IIR website](#)



[Impact of Standards on Hydrocarbon Refrigerants in Europe – Market research report](#). The market research report was realised for the EU-funded [LIFE FRONT](#) project. Amongst the main result of the market research:

- Current charge limits set in standards both restrict and obstruct the development of hydrocarbon technology
- Over 50% survey respondents already work with hydrocarbons to some extent
- Most of those planning to start working with hydrocarbons in the future will do that in 2019-2020 timeframe - revision of standards could have a major impact on the scale of this shift
- Large proportion of respondents indicated they manufacture equipment using multiple refrigeration circuits - allowing higher hydrocarbon charge limits per single refrigeration circuit would have a profound impact on cost and availability of larger units.



[Tip of the Iceberg: Implications of Illegal CFC Production and Use](#). The Environmental Investigation Agency (EIA) recently released report urges Parties to the Montreal Protocol to address a number of remaining unanswered questions, in particular the absence of comprehensive data regarding the size of current banks of CFC-11 in PU foam and other products or equipment.



phased down from January 2018.

Miscellaneous



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

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

We are pleased to 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, OzonAction

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



The International Institute of Refrigeration supports World Refrigeration Day -
As the only independent intergovernmental organisation in the field of refrigeration, the International Institute of Refrigeration (IIR) joins associations and companies worldwide to support the initiative of an official

World Refrigeration Day on 26 June every year. The annual World Refrigeration Day, to be launched on 26 June 2019, aims to raise awareness among the wider public about the importance of refrigeration technologies in everyday life.

Refrigeration is essentially a question of temperature and, as such, it only seems natural to celebrate the field on the birthday of the pioneer at the origin of the international unit of temperature, Lord Kelvin (Sir William Thomson) – born 26 June 1824.

With increasing global stakes at hand, over the past years refrigeration has come to take a leading role at the heart of international affairs.

The inauguration of a World Refrigeration Day would not only be an ideal way to recognise the many historical achievements of the industry, but also a means to anticipate and overcome together the challenges we face. ... Click [here](#) for more information.



New International Journal of Refrigeration service for IIR members -

Access the complete archives of the International Journal of Refrigeration (IJR) online. Designed with IIR members in mind, this new and practical electronic subscription gives members substantial advantages:

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 - Consult the research highlights overview of articles in volumes from 2012 onwards.

To access this new service, click "[activate my e-IJR subscription now](#)" and follow the instructions.



International Observers - New AREA membership category - Due to the significant worldwide interest in European legislative developments and the increase in competence of personnel who handle new refrigerants, AREA is pleased to introduce its brand new "International Observer" membership category. This provides a fantastic opportunity for non-European RACHP installer bodies the world, to benefit from the expertise and discussions

within Europe through access to AREA. Contact: info@area-eur.be



Ozone Hole: How We Saved the Planet
Premieres Wednesday, April 10, 2019
10:00-11:00 p.m. ET on PBS
New Documentary Tells the Remarkable Story of How Scientists Discovered the Deadly Hole in the Ozone – and the Even More Remarkable Story of How the World's Leaders Came Together to Fix It.

OZONE HOLE: HOW WE SAVED THE PLANET - New Documentary Tells the Remarkable Story of How Scientists Discovered the Deadly Hole in the Ozone – and the **Even More Remarkable Story of How the World's Leaders Came Together to Fix It.**



Million Cool Roofs Challenge - The Million Cool Roofs Challenge is a \$2 million global competition to rapidly scale up the deployment of highly solar-reflective “cool” roofs in developing countries suffering heat stress and lacking widespread access to cooling services.

The Challenge will award \$100,000 grants to up to ten teams this year to deploy solar reflective coating and/or materials in an eligible country between August 2019 and December 2020. From there, \$1 million will be awarded in 2021 to the team that has demonstrated the best sustainable and transferable model for rapid deployment of cool roofs in an eligible country and best meets the judging criteria. Materials should also meet minimum performance standards and be applied to roofs of buildings regularly occupied by people.

The application window for \$100,000 grants is now open. Applicants must submit their completed entry forms by 20 May 2019. Before applying to the Challenge, applicants must carefully review all of the information on the **Apply** page.

The Million Cool Roofs Challenge is a project of the Kigali Cooling Efficiency Program (K-CEP) in collaboration with the Global Cool Cities Alliance, Sustainable Energy for All and Nesta's Challenge Prize Centre.

The recent paper by SEforAll and K-CEP, Chilling Prospects: Providing Sustainable Cooling For All, directly linked strategies to deploy more highly reflective “cool” roofs and walls with achieving the goals of the Paris climate agreement, the Sustainable Development Goals, and the Kigali Amendment to the Montreal Protocol.

By minimizing the amount of heat generated by solar energy absorbed by buildings, reflective building surfaces reduce the demand for cooling energy for those that can afford it while also providing a sustainable passive cooling solution for the billions of people who do not have the economic means to access mechanical cooling options, in poor rural areas, urban slums and homeless shelters.

Reflective roof surfaces not only have an impact on individual buildings, but deploying them across a whole community can have a net effect on reducing local ambient temperatures. Further, the deployment of reflective materials creates sustainable job and skills opportunities for low skilled workers in both rural and urban contexts.

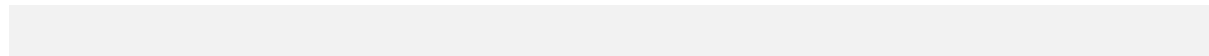
Learn more, see a full list of eligible countries, and apply to the Challenge please visit www.coolroofschallenge.org

Contact: team@coolroofschallenge.org



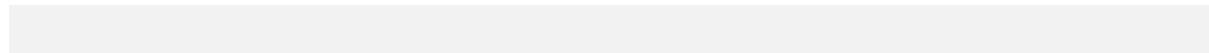
New program to scale up efficient, clean cooling in developing countries- The World Bank announced today [24 April 2019] a new program to accelerate the uptake of sustainable cooling solutions, including air conditioning, refrigeration and cold chain in developing countries. The program will provide technical assistance to ensure that efficient cooling is included in new World Bank Group investment projects and mobilize further financing. Globally, demand for cooling is increasing, mainly driven by growing populations, urbanization and rising income levels in developing countries. Further exacerbating the issue, rising temperatures will increase demand for cooling

appliances, which not only use large amounts of energy, but also leak refrigerants that contribute to global warming.

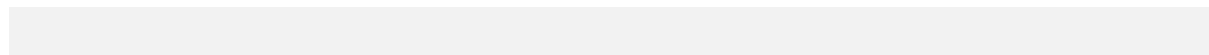


Ozone Depletion Explained --- The ozone layer's status today

- Recognition of the harmful effects of CFCs and other ozone-depleting substances led to the Montreal Protocol on Substances That Deplete the Ozone Layer in 1987, a landmark agreement to phase out those substances that has been ratified by all 197 UN member countries. Without the pact, the U.S. would have seen an additional 280 million cases of skin cancer, 1.5 million skin cancer deaths, and 45 million cataracts—and the world would be at least 25 percent hotter...



The IIR launches a [Call to Action for World Refrigeration Day](#) - Send your proposals to the IIR, preferably by May 20, at iif-iir@iifiir.org with the subject "Call to Action: World Refrigeration Day".



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Prepared by: Samira Korban-de Gobert, OzonAction

Reviewed by: Dr. Ezra Clark, OzonAction

If you wish to submit articles, invite new subscribers, please contact:

Samira Korban-de Gobert,

Tel. (+33) 1 44.37.14.52,

samira.degobert@un.org



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