

OZONNEWS

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A fortnightly electronic news update on ozone and climate protection and the implementation of the Montreal Protocol



INVITATION: MOP 28 - UNEP OzonAction Side event

“Update on safety and standards for flammable refrigerants”,

on **Wednesday, 12 October** at: **1:15 PM**,

Venue: **Room: MH3**, Radisson Blu Hotel & Convention Centre, Kigali, Rwanda



GLOBAL



1. Nations Aim to Reach an Important Agreement to Protect the Climate while Continuing to Preserve the Ozone Layer

Photo Credit: Bill Dickinson CC

The 197 parties to the Montreal Protocol on Substances that Deplete the Ozone Layer will meet in Kigali, Rwanda, in a bid to reach an important agreement that could prevent a global temperature rise of up to 0.5°C by the end of the century, while continuing to protect the ozone layer. They will work towards a possible amendment to the Montreal Protocol to phase down hydrofluorocarbons (HFCs) - powerful greenhouse gases used as substitutes for ozone-depleting substances.

10 - 14 October 2016 Kigali Convention Centre, Kigali, Rwanda

13-14 October - High-Level Segment

Ministers and high-level representatives of parties to the Montreal Protocol will participate in two ministerial roundtable discussions on 13 and 14 October respectively during the high-level segment of the 28th Meeting of the Parties to the Montreal Protocol. The discussions will focus on how Montreal Protocol parties can reach an agreement on a possible HFC amendment to the Protocol. [...]

- ▶ UN Environment, [Ozone Secretariat](#), September 2016
- ▶ See also the MOP 28 [website](#)

2. Leaders from 100+ Countries Call for Ambitious Amendment to the Montreal Protocol to Phase Down HFCs and Donors Announce Intent to Provide \$80 Million of Support

Today, the United States hosted a gathering of countries in New York to provide a boost of momentum to the upcoming international negotiations to adopt an amendment to the Montreal Protocol to phase down the potent greenhouse gases known as hydrofluorocarbons (HFCs). The event highlighted two significant announcements:

- First, more than 100 countries called for securing an ambitious amendment with an “early freeze date.” This group includes the United States, Argentina, Chile, Colombia, all 28 countries in the European Union, all 54 countries in Africa, and several island states that are the most vulnerable to the impacts of climate change. Complementing this announcement, more than 500 companies and organizations and hundreds of sub-national governments called upon world leaders to take strong action on HFCs.
- Second, a group of donor countries and philanthropists announced their intent to provide \$80 million in support to help countries in need of assistance (i.e., Article 5 countries) implement an ambitious amendment and improve energy efficiency. The philanthropic component of this is the largest-ever private grant made for energy efficiency in this sector.

HFCs are factory-made chemicals that are primarily used in air conditioning, refrigeration, and foam insulation, and they can be hundreds to thousands of times more potent than carbon dioxide in contributing to climate change. If left unchecked, global HFC emissions could grow to be equivalent to 19 percent of total carbon dioxide emissions in 2050. There are alternative refrigerants available that have comparable performance to HFCs but with significantly reduced climate-changing properties.

Securing an ambitious amendment to the Montreal Protocol to phase down HFCs could avoid up to 0.5°C of warming by the end of the century, making a major contribution to the Paris Agreement goal to limit global temperature rise to well below 2°C. Countries agreed last November to “work within the Montreal Protocol to an HFC amendment in 2016,” and they have subsequently worked intensively during a series of negotiations this year toward consensus on the terms of such an amendment. Next month, countries will gather at the Montreal Protocol Meeting of the Parties in Rwanda for final negotiations on the amendment.

Launch of the Coalition to Secure an Ambitious HFC Amendment

At an event today hosted by Secretary of State John Kerry, senior government officials representing over 100 governments released the “[New York Declaration of the Coalition to Secure an Ambitious HFC Amendment](#).” The declaration calls for adopting an ambitious HFC phasedown amendment at the upcoming Meeting of the Parties with an early freeze date for Article 5 countries, in addition to an early first reduction step for non-Article 5 countries.

In addition to the broad support for an ambitious amendment overall, the commitment for an “early freeze date” is a key element for achieving a strong climate outcome. The freeze date is the year when countries stop increasing the production and consumption of HFCs and begin the process of phasing them down, and it is therefore critical to achieving the emissions reductions associated with an amendment.

New Finance Announcements

In tandem with the declaration for an ambitious amendment, a group of donor countries and philanthropists announced their intent to provide \$80 million in assistance to Article 5 countries to implement an amendment and improve energy efficiency.

A group of 16 donor countries – consisting of the United States, Japan, Germany, France, the United Kingdom, Italy, Canada, Australia, the Netherlands, Switzerland, Sweden, Norway, Denmark, Finland, Ireland, and New Zealand – announced their intent to provide \$27 million in 2017 to the Montreal Protocol Multilateral Fund to provide fast-start support for implementation if an ambitious amendment with a sufficient early freeze date is adopted this year. Such funding is one-time in nature and will not displace donor contributions going forward.

Complementing the funding announced by donor countries today, the following group of 19 philanthropists announced their intent to provide \$53 million to Article 5 countries to support improvements in energy efficiency: Barr Foundation; Bill Gates; Children's Investment Fund Foundation; ClimateWorks Foundation; David and Lucile Packard Foundation; Heising-Simons Foundation; Hewlett Foundation; John D. and Catherine T. MacArthur Foundation; Josh and Anita Bekenstein; John and Ann Doerr; Laura and John Arnold; Oak Foundation; Open Philanthropy Project; Pirojsha Godrej Foundation; Pisces Foundation; Sandler Foundation; Sea Change Foundation; Tom Steyer; and Wyss Foundation. This support reflects a strong recognition from private philanthropists of the dual benefits associated with taking advantage of the transition to HFC alternatives to also improve energy efficiency.

Together, this funding will enable Article 5 countries to begin developing programs to track and reduce HFCs and help their consumers and businesses realize the net economic benefits from energy efficiency as they transition to HFC alternatives. Today's announcement from philanthropists represents the single largest private grant ever made in this sector for energy efficiency. Based on our own experience in the United States, this scale of investment could yield billions of dollars in economic benefits for Article 5 countries and help to offset any upfront costs associated with transitioning past HFCs.

Technical Progress

Demonstrating that in addition to galvanizing support for an ambitious amendment and providing new resources, the United States is also committed to addressing technical questions associated with phasing down HFCs, the U.S. Department of Energy (DOE) today published the results of a testing program to evaluate the performance of HFC alternatives in rooftop air conditioning units in high ambient temperatures. The testing program was launched in response to questions over whether HFC alternatives can perform well in hot and extremely hot temperatures. The results demonstrate that several viable replacements exist for both HCFC-22 and HFC-410A – two of the most common refrigerants used today – and that these potential replacements perform just as well at high temperatures as today's refrigerants. The testing program was conducted at Oak Ridge National Laboratory (ORNL), and guided by a panel of prominent technical experts from Brazil, China, Egypt, India, Italy, Japan, Kuwait, Peru, Saudi Arabia, the United States, the United Nations Environment Programme (UNEP), and the United Nations Industrial Development Organization (UNIDO). The new report can be found [here](#).

Last year, ORNL conducted a similar testing program for mini-split air conditioning units. The results of that testing program can be found [here](#).

Call to Action from Companies and Sub-National Governments

Building on the announcements in New York today, more than 500 national and international companies and organizations and hundreds of sub-national governments are also calling – individually and/or through their associations – for an ambitious amendment to the Montreal Protocol and have issued the following statement:

By avoiding up to 0.5°C of warming by the end of the century, a Montreal Protocol hydrofluorocarbon (HFC) phasedown amendment is one of the most significant steps the world can take now to deliver on the goals of the Paris Agreement. Today, we call upon world leaders to adopt in October an ambitious amendment to the Montreal Protocol, including an early first reduction step for Article 2 countries and a freeze date for Article 5 countries that is as early as practicable, and we declare our intent to work to reduce the use and emissions of high-global-warming-potential HFCs and transition over time to more sustainable alternatives in a manner that maintains or increases energy efficiency.

Signatories of the statement include the following companies, organizations, and associations: 3M; Air-Conditioning, Heating, and Refrigeration Institute (AHRI); Airgas; The Alliance for Responsible Atmospheric Policy; Arkema; Aspen Skiing Company; Aveda; Ben & Jerry's Homemade Inc.; Berkshire Hathaway Energy; BioAmber Inc.; Brazilian Association for HVAC-R (ABRAVA); Business for Innovative Climate & Energy Policy (BICEP); CA Technologies; Cap & Seal Co.; Catalyst Paper; Ceres; CH2M; The Chemours Company; Daikin U.S. Corporation; Danfoss; Dell Inc.; The Dow Chemical Company; DSM; Dynatemp International; Eileen Fisher; Emerson Climate Technologies; Environmental Entrepreneurs (E2); European Partnership for Energy and the Environment (EPEE); Falcon Safety Products; Gap Inc.; General Mills; Godrej Group; Golden Refrigerant; Hewlett Packard Enterprise; Honeywell; Hudson Technologies; ICP Adhesives & Sealants, Inc.; Ingersoll Rand; The Japan Refrigeration and Air Conditioning Industry Association (JRAIA); Johnson Controls; Lapolla Industries, Inc.; Lennox International; Mexichem; Microsoft; Midwest Refrigerants; Mission Pharmacal Company; National Refrigerants; Nike; Red Bull; Refrigerants Australia; Refrigerants, Naturally!; Rheem Manufacturing Company; RM2; SEVO Systems, Inc.; shecco america; Solvay; Symantec; Tri Global Energy; True Refrigeration; Unilever; and Virginia Mason Health System.

These companies include producers of the chemicals, manufacturers of equipment that use HFCs, and end-users, which demonstrates that companies throughout the HFC supply chain support strong global action on HFCs.

Signatories of the aforementioned statement also include ICLEI USA, which represents hundreds of sub-national governments; Atlanta Mayor Kasim Reed, Mayors' National Climate Action Agenda Member and Compact of Mayors Member; Boston Mayor Martin J. Walsh, C40 Vice-Chair and Mayors' National Climate Action Agenda Member; Los Angeles Mayor Eric Garcetti, C40 Vice-Chair and Mayors' National Climate Action Agenda Co-Founder; Phoenix Mayor Greg Stanton, Mayors' National Climate Action Agenda Member; San Jose Mayor Sam Liccardo, Mayors' National Climate Action Agenda Member; and Seattle Mayor Ed Murray, C40 Member and Mayors' National Climate Action Agenda Member.

▶ The White House, [Office of the Press Secretary](#), 22 September 2016

The United States of America is organizing a side event at MOP-28, on “Making the Most of \$53 Million in Philanthropic Funding for Energy Efficiency”

Saturday, 8 October, at 1:15 PM

Venue: Room: MH3, Radisson Blu Hotel & Convention Centre, Kigali, Rwanda

Description: In support of an ambitious amendment to the Montreal Protocol to phase down HFCs, a group of philanthropists announced on September 22 their intent to provide \$53 million in 2017 to Article 5 countries to support improvements in energy efficiency. This funding represents the largest-ever non-governmental grant made in this sector for energy efficiency, and it reflects a strong recognition from the philanthropists of the dual benefits associated with transitioning to low-GWP HFC alternatives while also improving energy efficiency. This side event is focused on a discussion about how to best utilize this funding to improve energy efficiency.



3. "National HFC Inventories: A summary of key findings from the first tranche of studies"- New OzonAction/CCAC Report

OzonAction has just published a new report “**National Hydrofluorocarbon (HFC) Inventories: A summary of key findings from the first tranche of studies**”, as part of the UN Environment's work programme under the CCAC.

The report summarises the findings of HFC use from the first six completed HFC inventories - Bangladesh, Chile, Colombia, Ghana, Indonesia and Nigeria - all UNDP-assisted countries. This report includes preliminary results from Kyrgyzstan (UN Environment-assisted), Vietnam, Moldova and Sri Lanka.

Key findings from the 6 completed inventories:

- All countries are expecting continued increase of HFC consumption in the coming years as ozone depleting hydrochlorofluorocarbons (HCFCs) are phased out.
- Based on the HFC use in the 6 countries, the average annual growth of HFC consumption was 16 per cent.
- Out of the different chemicals, HFC-134a is the most common, accounting for an average of 80 per cent of HFC use from 2011-2014 across the six countries. However, by 2020, R-401A, R404A and R-507A will have an increasingly larger share of the total.

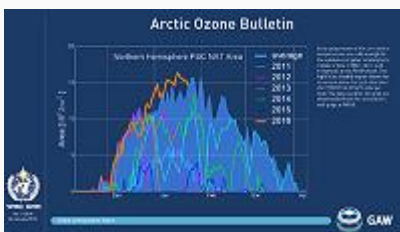
A revised and expanded version of this document will be produced in early 2017, summarising and analysing the full range of fourteen national HFC inventories.

▶ Read/Download the [Report](#)

The CCAC is organising a side event to launch the report at MOP-28, on Friday 14 October, at 1:15 PM

Venue: Room: MH3, Radisson Blu Hotel & Convention Centre, Kigali, Rwanda

4. WMO Antarctic Ozone Bulletin no. 1, 2016 is Now Available



The Secretariat of the World Meteorological Organization, in collaboration with the [European Ozone Research Coordinating Unit](#), issues annual bulletins containing information on the development of the Arctic ozone layer over the course of each winter. The bulletins are based on data provided by WMO Members that operate atmospheric monitoring stations in the Arctic and satellites to observe ozone and related parameters globally.

Executive Summary

Stratospheric temperatures over Antarctica have been below the PSC type I threshold of 194.6 K since 17 May and below the PSC type II threshold of 187.8 K since 12 June. The daily minimum temperatures at the 50 hPa level were close to the 1979-2015 average from April to mid-July. From mid-July until the end of August the minimum temperature was somewhat lower than the long term mean. From late August until present it has been close to the long term mean.

The average temperature at 50 hPa over the 60-90°S region was oscillating around the long term mean from April until mid-August, after which it has been above the long term mean.

At 10 hPa, the 60-90°S mean temperature was oscillating around the long term mean during the early April to the late July time period. In August and so far in September the mean temperature has been above the long term mean.

Since the onset of NAT temperatures in mid-May, the NAT area was oscillating around the long term mean from May through August. In early September the NAT area decreased somewhat more rapidly than the long term mean. On 30th July the NAT area reached a maximum for the season with 27.7 million km², which is a bit lower than the 28.2 million km² reached in 2015, but higher than the maximum reached in other recent years.

The NAT volume has been below the long term mean during most of the winter and spring, except for a period

from early July to mid-August, when it was close to the long term mean. The maximum NAT volume for the season was reached on 29 July with 310 million km³. This is the highest daily maximum since 2008, when 325 million km³ was recorded.

During the whole period from May until present, the 45-day mean of the heat flux at 100 hPa has been larger than or close to the 1979-2015 average. In early-mid September it was, on a couple of days, somewhat larger than even the long term maximum for those dates. This is an indication of a disturbed vortex.

At the 45.4 hPa level (altitude of ~18.5-19.5 km) the vortex was almost entirely depleted of hydrochloric acid (HCl), one of the reservoir gases that can be transformed to active chlorine, during August and early September. By mid-September HCl is slowly recovering.

Certain parts of the vortex contained more than 3.8 ppb of active chlorine (ClO + 2Cl₂O₂) in August and into early September. By mid-September the amount of active chlorine is coming down, but there are still areas with more than 3 ppb of active chlorine.

Satellite observations show that the area where total ozone is less than 220 DU (“ozone hole area”) has been significantly above zero since 7 August. This is a relatively early onset of ozone depletion and about ten days earlier than in 2015. The ozone hole area on 20 September was 21.8 million km², whereas it was 26.1 million km² on the same date in 2015. The date of the onset of ozone depletion varies considerably from one year to the next, depending on the position of the polar vortex and availability of sunshine after the polar night. In 2016, the vortex has been relatively perturbed and shifted somewhat away from the South Pole. This can explain the relatively early onset of ozone depletion in 2016.

Measurements with ground based instruments and with balloon sondes show clear signs of ozone depletion at all sites. In this issue data are reported from the following stations: Arrival Heights, Belgrano, Davis, Dôme Concordia, Dumont d’Urville, Halley, Kerguelen, Macquarie Island, Marambio, Mirny, Neumayer, Novolazarevskaya, Rothera, South Pole, Syowa, Ushuaia, Vernadsky and Zhongshan.

As the sun continues to rise in the sky after the polar night ozone destruction will continue as long as there is active chlorine and bromine present. It is still too early to give a definitive statement about the development of this year’s ozone hole and the degree of ozone loss that will occur. This will, to a large extent, depend on the meteorological conditions. However, the temperature conditions and the extent of polar stratospheric clouds together with the perturbed nature of the vortex so far indicate that the degree of ozone loss in 2016 will be less than that observed in 2015 and probably similar to that observed in 2013 and 2014.

WMO and the scientific community will use ozone observations from the ground, from balloons and from satellites together with meteorological data and modelling results to keep a close eye on the development during the coming weeks and months.

▶ WMO Antarctic Ozone [Bulletins](#)



LATIN AMERICA AND CARIBBEAN

5. Técnicos reciben taller de cuidado de capa de ozono en El Salvador



Más de 100 técnicos e importadores del área de la refrigeración doméstica y de sectores clave en el uso de tecnología y equipo con hidrocarburos recibieron hoy en El Salvador una capacitación sobre el manejo de sustancias que no deterioran la capa de ozono, informó una fuente oficial. El taller fue impartido por personal del Ministerio de Medio Ambiente y Recursos Naturales (MARN) con el apoyo del Programa de Naciones Unidas para el Desarrollo (PNUD), detalló el MARN.

La capacitación, que incluyó teoría y práctica, fue impartida en el marco del cumplimiento del Protocolo de Montreal para la protección de la capa de ozono, el cual fue suscrito en el 2010.

“Al final de esta jornada de capacitación se cuenta con 175 técnicos que cuentan con formación para aplicar la nueva tecnología y continuar el proceso de formación de nuevos técnicos en el área de refrigeración utilizando refrigerantes naturales”, concluyó la entidad gubernamental.



WEST ASIA

6. Iraq Wins Praise from UNEP for Ozone Layer Protection

منح العراق شهادة أممية لإستخدام الغازات الصديقة للبيئة للحفاظ على طبقة الاوزون

أعلنت وزارة الصحة والبيئة، اليوم الخميس، حصول العراق شهادة من الأمم المتحدة لإستخدام الغازات الصديقة للبيئة، للحفاظ على طبقة الاوزون.

وقال بيان للوزارة تلقتة "عين العراق نيوز" ان "برنامج الامم المتحدة للبيئة نظم دورات تدريبية للخبراء العراقيين على استخدام غازات التبريد نوع هيدروكربون HC الصديقة للبيئة بدل غازات التبريد نوع هيدروكلورو فلور كاربون HCFC ومنح الفريق العراقي المشارك شهادة ضمن المعايير الاوربية وهي شهادة لممارسة مهنة استخدام البدائل والاستخدام الامن لموانع التبريد البديلة واستخدام الغازات الصديقة للبيئة للحفاظ على الاوزون".

واضاف ان "هذه الدورات تعتبر فقرة من فقرات خطة ازالة المواد المستنفدة لطبقة الاوزون وتضمنت عقد اجتماعات مع خبراء وممثلي برنامج الامم المتحدة للبيئة والقاء محاضرات علمية على المشاركين عن تطور استخدام غازات التبريد الصديقة للاوزون ودروس في التبريد واجراء امتحانات عملية ونظرية وايضا تنظيم زيارات ميدانية لمصانع التبريد التي تستخدم غازات التبريد صديقة للبيئة".

واوضح ان "العراق نجح في الانتقال الى الصناعات الصديقة لطبقة الاوزون وقام بتغيير خطوط الانتاج القديمة بخطوط اكثر مواكبة لبروتوكول مونتريال ليكون ضمن الدول الصناعية التي نجحت في الانتقال الى صناعات خالية من الغازات الضارة".

ولفت الى "إشادة منظمي الدورات التدريبية والمسؤولين المحليين في ميلانو الايطالية بكفاءة الفريق العراقي والخبراء من وزارة البيئة والعاملين على تنفيذ الاتفاقية مع UNEP ومصانع التبريد في وزارة الصناعة واساتذة التعليم العالي والتعليم المهني ومراكز التدريب في وزارة العمل".

واشار البيان الى ان "العراق وبالتعاون مع برنامج الامم المتحدة للبيئة ومنظمة الامم المتحدة للتنمية الصناعية قد اعد البرنامج الوطني وخطة الازالة النهائية للمواد المدرجة في ملاحق بروتوكول مونتريال".

هذا اليوم للاخبار - 8 سبتمبر 2016

7. The United Arab Emirates University Conducts Lecture on Importance of Preserving Ozone Layer

A lecture organized by the Media and Communications Department of the United Arab Emirates University (UAEU) spoke [about] the "Importance of the Ozone Layer."

The event took place on Sept. 20 and was attended by faculty members and students from Al Zaydia Secondary School and Al Nashaa Al Saleh Private School, as well as Dr. Ahmed Murad, dean of the College of Science.

Murad welcomed the students by highlighting the importance of social awareness and humanity's effect on the environment.

"This lecture is part of the university's contribution to educating the society about the importance of the world's ozone layer," Murad said. "The university seeks to raise environmental awareness within the community, by holding a series of lectures on this topic. The ozone layer is a serious issue affecting the world. Therefore, international organizations have made 16th of September a day to mark its global importance."

Dr. Mahmoud Abu Saima, from the Department of Geology in the College of Science, performed the lecture by identifying the scientific explanation of the ozone layer, highlighting actions needed across the globe to protect it and UAE's position in protecting the ozone layer.

Gulf News Journal Reports, 25 September 2016



EUROPE & CENTRAL ASIA

8. Europe Reduced Use of Ozone Layer-Harming Chemicals in 2015



Chemicals which harm the ozone layer continue to be phased out in the European Union. In 2015, consumption of these chemicals reached its lowest level since 2006, partly due to a drop in imports according to a new report from the European Environment Agency (EEA).

Image © NASA

Stratospheric ozone absorbs most of the sun's ultraviolet light so it does not reach the surface of the planet, helping prevent skin cancers and other problems such as damage to crops and marine phytoplankton. Some chemicals, also known as ozone depleting substances (ODS), harm the ozone layer. They have been successfully substituted in most parts of the world since 1989 when the Montreal Protocol came into force.

Within the European Union (EU), the phase-out of ODS use is established through the ODS Regulation. Companies are obliged to report data on production, import, export and destruction, which is used to calculate 'consumption', the key metric tracking progress under the Protocol. Consumption can be negative, if the amounts of controlled substances produced and imported are lower than those exported or destroyed.

In 2015, the ODS consumption reached the lowest negative level since 2006 measured in metric tonnes. The value (-3 808 metric tonnes) was 1 305 metric tonnes lower than in 2014. A significant contributing factor to the low consumption was a 12 % decrease in imports compared to 2014. Moreover, destruction of controlled substances increased between 2014 and 2015. [...]

- ▶ Read The EEA report '[Ozone depleting substances 2015](#)'
- ▶ [European Environment Agency](#) (EEA), 16 September 2016

9. Belarus to Stop Using Ozone-depleting Substances by 2020

By 2020 Belarus will stop using ozone-depleting substances, Natalya Klimenko, a consultant of the department for the regulation of the impacts on the air and ozone layer at the Ministry of Natural Resources and Environment Protection, said in a press conference in Minsk, BelTA has learnt. Previously, such substances were widely used in industry, including in the production of air conditioning and refrigerators. Today, the ozone-depleting substances are not produced in Belarus. By phasing out such substances as chlorofluorocarbons, the country contributes to the reduction of greenhouse gas emissions that cause climate change.

"In 2020 we will stop the import of ozone-depleting substances," Natalya Klimenko noted. "Consumers will not have to discontinue the use of already purchased equipment. Acquired before 2020, the equipment working on ozone-depleting substances will remain in operation while it is technically sound and suitable for use. The maintenance of this equipment will be provided the centers on recycling and recovery of ozone-depleting substances that have been created in Belarus.

Used substances will be recycled and used for filling up the above mentioned specified technology. Belarus was one of the first to sign the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer. The law on the protection of the ozone layer came into force in Belarus in 2001. In 2013 the country approved a strategy for gradual phase-out of hydrochlorofluorocarbons by 2020.

- ▶ [Belarus News](#), 14 September 2016



FEATURED

OZONE SECRETARIAT

28th Meeting of the Parties to the Montreal Protocol

Scan to download the meeting app:

Resumed meeting of the thirty-eighth Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer and Twenty-Eighth Meeting of the Parties Kigali, Rwanda, 8 October and 10-14 October 2016

[Information note for participants](#)



Click [here](#) to access MOP 28 Pre-sessions documents, General information ...etc.



The theme for the 2016 International Day for the Preservation of the Ozone Layer to be marked on 16 September is: *Ozone and climate: Restored by a world united*. The theme is complemented by the tagline: *Working towards reducing global-warming HFCs under the Montreal Protocol*. [Download the theme and tagline in the six official UN languages](#)

The theme for this year's International Ozone Day recognizes the collective efforts of the parties to the Vienna Convention and the Montreal Protocol towards the restoration of the ozone layer over the past three decades and the global commitment to combat climate change. As a result of concerted international efforts, the ozone layer is healing itself and is expected to recover by the middle of this century. In addition, the Montreal Protocol has significantly contributed to the mitigation of climate change by averting the emission of more than 135 billion tonnes of carbon dioxide equivalent into the atmosphere by simply phasing out ozone-depleting substances...[More](#)

- Browse through the Ozone Secretariat "[In Focus](#)" to learn about latest updates.
- Resumed [38th Meeting of the Open-ended Working Group of the Parties to the Montreal Protocol](#), Vienna, Austria, 18 - 21 July 2016
- [Third Extraordinary Meeting of the Parties to the Montreal Protocol](#), Vienna, Austria, 22 – 23 July 2016
- [56th Meeting of the Implementation Committee Under the Non-Compliance Procedure of the Montreal Protocol](#), Vienna, Austria, 24 July 2016
- Click [here](#) for more Montreal Protocol Meetings Dates and Venues
- [Methyl Bromide Technical Options Committee 2014 Assessment Report](#)
- [Medical Technical Options Committee 2014 Assessment Report](#)

Progress & Quadrennial Assessment Reports:

- Environmental Effect Assessment Panel ([EEAP](#))
- Scientific Assessment Panel ([SAP](#))
- Technology and Economic Assessment Panel ([TEAP](#))

Halon Technical Options Committee Reports:

- [Halons Technical Options Committee 2014 Assessment Report \(Volume 1\)](#)
- [Halons Technical Options Committee 2014 Supplementary Report #1 - Civil Aviation \(Volume 2\)](#)
- [Halons Technical Options Committee 2014 Supplementary Report #2 - Global Halon 1211, 1301, and 2402 Banking \(Volume 3\)](#)
- [Technical Note #1- Revision 4 - Fire Protection Alternatives to Halon - 2014](#)

- [Technical Note #2 - Revision 2 - Halon Emission Reduction Strategies - 2014](#)
- [Technical Note #3 - Revision 2 - Explosion Protection - Halon Use and Alternatives - 2014](#)
- [Technical Note #4 - Recommend Practices for Recycling Halon and Halocarbon Alternatives - 2014](#)
- [Technical Note #5 - Halon Destruction - 2014](#)

THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL



[Report of the 76th Meeting of the Executive Committee](#), 9 - 13 May 2016 in Montreal.

The Executive Committee decided to continue convening two meetings per year from 2015 onwards with the possibility of holding an additional brief meeting, if required, between those meetings to consider project proposals. On this basis the second meeting in 2016 could be scheduled to take place in November/December 2016 taking into account decision XXVII/1 of the Parties (MOP) to the Montreal Protocol, in which it was decided inter alia to hold a series of Open-ended Working Group (OEWG) and other meetings, including an Extraordinary Meeting of Parties in 2016.

[▶ Learn more](#)

OZONACTION

UNEP, [OzonAction](#) highlights



New **OzonApp eDocs+** launched in Android Play Store and Apple Store - This new application launched by OzonAction on February 12, includes publications, videos, fact sheets and other awareness materials to help National Ozone Units (NOUs) and other stakeholders to build their capacity to implement the Montreal Protocol in a sustainable manner and at the same time to derive climate benefits. Now available in the [Android Play Store](#) and Apple Store/iTunes.



(Just search for “UNEP OzonAction” and install the application, or scan the QR code)



[OzonAction News Drops](#) - UNEP OzonAction is presenting a series of short video “**News Drops**” which focus on ozone layer protection, climate change and the importance of continuing ozone observations.



NEW! Regional News Drops

The Regional Networks of National Ozone Units (NOUs) under the Multilateral Fund are a path-breaking mechanism for North-South and South-South cooperation. Networking provides a platform for NOUs from Article 5 countries to exchange experiences, develop their skills and tap the expertise of their peers in both developing and developed countries. Conducted at the regional level, the Networking activity builds the Ozone Officers' skills for implementing and managing their national ODS phase-out activities. During 2016 these videos were filmed at the regional network meetings around the world.

The NOUs were asked about their success stories, alternative refrigerants selected and their personal messages for national ozone celebrations.

Click [here](#) to access the News Drops

OzonAction Recent Publications:



[Lower-GWP Alternatives in Commercial and Transport Refrigeration: An expanded compilation of propane, CO₂, ammonia and HFO case studies](#) - This booklet presents an

expanded compilation of case studies on lower-GWP alternatives in commercial and transport refrigeration and provides an update to the first set of case studies which was published in 2014 by UNEP DTIE OzonAction/CCAC (Low GWP Alternatives in Commercial Refrigeration: Propane, CO₂ and HFO Case Studies).



[NATIONAL CERTIFICATION SCHEMES FOR RAC SERVICING TECHNICIANS](#) - This publication aims to provide introductory information for institutions in developing countries to better understand the issue of certification in the field of refrigeration and air conditioning, to assist in the creation of such certification and training schemes and to demonstrate to service technicians and enterprises why it is in their interest to participate. [Read/Download](#)



[THE MONTREAL PROTOCOL AND HUMAN HEALTH](#) - This booklet summarizes how the successful implementation of the Montreal Protocol has protected human health. It describes how ozone depletion would have led to increases in UV radiation and, based on current understanding of the mechanisms by which UV affects biological processes, how that would have led to a dramatic increase in skin cancers, cataracts and affected human health in other ways. It also covers recent progress in understanding the ‘World Avoided’ – that is the world we would have lived in without a successful Montreal Protocol. [Read/Download](#)



[FINANCING THE CLIMATE CO-BENEFITS OF THE HCFC PHASE-OUT](#) - A guide for Low Volume Consuming Countries - Hydrochlorofluorocarbons (HCFCs) are being phased out worldwide under the Montreal Protocol on Substances that Deplete the Ozone Layer. The Parties to this treaty encouraged countries to promote the selection of alternatives to HCFCs that minimise environmental impacts, in particular impacts on climate. The Protocol’s Multilateral Fund encourages developing countries to explore potential financial incentives and opportunities for additional resources to maximise the environmental benefits from HCFC Phase out Management Plans (HPMPs). This booklet explains how Ozone Officers in low volume consuming countries can explore such opportunities for climate co-benefits. Read/Download in [English](#) | [French](#) | [Spanish](#)



[SAFE USE OF HCFC ALTERNATIVES IN REFRIGERATION AND AIR CONDITIONING](#) - An Overview for Developing Countries - Many of the alternative refrigerants to hydrochlorofluorocarbons (HCFCs) have particular characteristics in terms of toxicity, flammability and high pressure which are different from those used previously. It is therefore important that the refrigeration and air-conditioning industry adapts to both the technical and safety issues concerning these refrigerants. This publication provides an overview of the alternatives, their general characteristics and their application in the context of the safety issues. It provides guidance for National Ozone Units (NOUs) and other interested parties in developing countries on how they can advise and assist their national stakeholders in the selection and implementation of alternative refrigerants. [Read/Download](#)



[PHASING-OUT HCFCs IN SMALL AND MEDIUM-SIZED ENTERPRISES](#) - This booklet aims to assist foam enterprises, especially SMEs, to better understand policies on HCFC phase-out, access to assistance from the Multilateral Fund for the Implementation of the Montreal Protocol and access alternative technologies in different foam applications taking into account challenges in converting to alternative technology. It also discusses some tips on how to identify enterprises that may use HCFCs and verify the HCFCs consumption of enterprises. [Read/Download](#)



[INTERNATIONAL STANDARDS IN REFRIGERATION AND AIR-CONDITIONING](#) - This guide provides an introduction and simple overview of the issues related to international standards in the refrigeration and air-conditioning sector and how they can be useful in the context of the phase-out of hydrochlorofluorocarbons (HCFCs) in developing countries as required by the Montreal Protocol on Substances that Deplete the Ozone Layer. Read/Download in [English](#) | [French](#) | [Spanish](#)



[Guide on Good Practices: Phasing out HCFCs in the Refrigeration and Air-conditioning Servicing Sector](#)



[Phasing out HCFCs in Small and Medium-sized Foam Enterprises](#)



[Demonstrating the feasibility of R-290 based AC manufacturing: China's Midea and Meizhi case](#)



[Low-GWP Alternative for Small Rigid PU Foam Enterprises](#)

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EVENTS

2016

 [47th International HVAC&R Congress and Exhibition](#), 30 Nov – 2 Dec 2016, Belgrade, Serbia

2017

 [Sustainable Management of Refrigeration Technologies in Mobile Marine and Fisheries Sectors](#), co-organized by UNEP, ASHRAE, IIR and UNIDO with the kind support of the Government of the Kingdom of Thailand and the Department of Industrial Works, 11-13 January 2017, Bangkok, Thailand

 [International Ground Source Heat Pump Association \(IGSHPA\) Technical Conference and Expo](#), 14-16 March 2017, Denver, USA


 [5th IIR International Conference on Thermophysical Properties and Transfer Processes of Refrigerant](#), 23-26 April 2017, Seoul, South Korea

 [7th Conference on Ammonia and CO₂ Refrigeration Technologies](#), 11-13 May 2017, Ohrid, Macedonia

 [12th Heat Pump Conference](#), 15-18 May 2017, Rotterdam, the Netherlands

 [9th International Conference on Compressors and Coolants](#), 6-8 September 2017, Bratislava, Slovakia

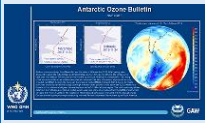
READING



[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.



[UNEP and USEPA: Promoting ozone and climate-friendly technologies in public procurement - a scoping study of Asia Pacific](#)



[WMO Antarctic Ozone 2016 Bulletins](#) - Containing information on the state of the ozone layer in the Antarctic at roughly two week intervals from August to November. The bulletins are based on data provided by WMO Members which operate ozone monitoring stations in the southern hemisphere and satellites to observe ozone globally.



The [EU F-Gas Regulation Handbook](#), Keeping Ahead of the Curve as Europe Phases Down HFCs - a free online resource for climate media and other concerned parties, published by the London-based Environmental Investigation Agency (EIA).



[Alternative Refrigerant Evaluation for High-Ambient-Temperature Environments: R-22 and R-410A Alternatives for Mini-Split Air Conditioners](#)



[AREA Guidance on minimum requirements for contractors' training & certification on low GWP Refrigerants](#) - AREA has updated its Guidance on minimum requirements for contractors' training & certification on low GWP Refrigerants.



[Free guide to F-gas changes](#) The European contractors association AREA has produced a timely guide to the F-gas regulations which clarifies the new rules, their impact and their practical application... [Read more](#)



The recent [Alternatives to HCFCs/HFCs in developing countries](#) with a focus on high ambient temperatures" study carried out by Öko-Recherche for the European Commission stresses that the refrigerant and blowing agent demand is expected to triple by 2030 in developing countries as a result of economic growth. A sector by sector analysis shows that a climate-friendly replacement for current and future of HCFCs and high GWP HFCs is possible in most applications ...



[Primer on Hydrofluorocarbons](#), Fast action under the Montreal Protocol can limit growth of HFCs, prevent up to 100 billion tonnes of CO₂-eq emissions by 2050, and avoid up to 0.5°C of warming by 2100. IGSD, January 2014, Lead authors: Durwood Zaelke, Nathan Borgford-Parnell, and Danielle Fest Grabiell. Contributing authors: Stephen O. Andersen, Xiaopu Sun, Dennis Clare, Yuzhe Peng Ling, and Alex Milgroom.



[Flammable Refrigerants Safety Guide](#), AIRAH - Many of the refrigerants traditionally used in refrigeration and air conditioning systems in Australia have been non-flammable, non-toxic, synthetic greenhouse gases (SGGs) that have a high global warming potential (GWP). These were typically synthetic refrigerants including CFCs, HCFCs and HFCs. Due to the growing national and international concern regarding the resulting atmospheric effects of SGGs, the use of alternative low GWP refrigerants is increasing. ...



[Recent Trends in Global Emissions of Hydrochlorofluorocarbons and Hydrofluorocarbons: Reflecting on the 2007 Adjustments to the Montreal Protocol](#). S. A. Montzka *†, M. McFarland ‡, S. O. Andersen §, B. R. Miller †||, D. W. Fahey †, B. D. Hall †, L. Hu †||, C. Siso †||, and J. W. Elkins †

† Earth System Research Laboratory, National Oceanic and Atmospheric Administration, Boulder, Colorado 80305, United States ‡ DuPont Chemicals &

Fluoroproducts, Wilmington, Delaware 19805, United States § Institute for Governance & Sustainable Development, Washington, D.C. 20007, United States|| Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, Colorado 80309, United States

[Geothermal Heating and Cooling: Design of Ground-Source Heat Pump Systems-ASHRAE](#)

[Principles of Heating, Ventilating and Air-Conditioning, 7th Ed. ASHRAE](#)

A first edition, the IIR guide “[CO₂ as a Refrigerant](#)” highlights the application of carbon dioxide in supermarkets, industrial freezers, refrigerated transport, and cold stores as well as ice rinks, chillers, air conditioning systems, data centers and heat pumps. This guide is for design and development engineers needing instruction and inspiration as well as non-technical experts seeking background information on a specific topic. Publication, IIR Technical Guide, 2014.

FREE [HVAC Optimisation Guide released](#) by AIRAH and the NSW Office of Environment & Heritage outlines 20 HVAC optimisation strategies and how they can be applied to the vast majority of commercial systems, both in older and modern buildings...

[Organic Bromine Compounds—another threat to the ozone layer](#)

[Latin America Industrial Refrigeration Equipment Market Benefits from Region Flourishing Food and Beverage Production and Processing Market – Trends and forecast 2013-2019.](#)

[Solvents & Bio Solvents Market Outlook - Global Trends, Forecast, and Opportunity Assessment \(2014-2022\)](#)

[R444B tops high ambient R22 drop-in test](#)

[Chlorofluorocarbon Market: Global Industry Analysis and Forecast 2015 to 2021](#)

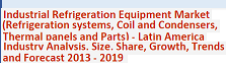
[Getting The World Off the Chemical Treadmill: A per capita convergence framework for an ambitious phase-down of HFCs under the Montreal Protocol,](#)
By: Umang Jalan, Research Associate, Climate Change Programme, Centre for Science and Environment

[Refrigeration on Fishing Vessels](#)

[Global Market for Natural Refrigerants to Reach 1,408.20 Million by 2020, Growing at CAGR of 11.0% by 2020](#)

ASHRAE [2016 Handbook](#) Focuses on HVAC Systems and Equipment...

MOPIA New [2016 Regulatory Compliance Guide](#) summarizes regulatory controls (*Manitoba and Canada*) and provides some other useful links and references...





The Importance of Ambition in the 2016 HFC Phase-Down Agreement - Following the adoption of the Dubai Pathway on HFCs, Parties to the Montreal Protocol are set to negotiate and adopt an HFC amendment in 2016, the first major test of the Paris Climate Agreement and global commitment to "pursue efforts to limit the [average global] temperature increase to 1.5 degrees Celsius." The level of climate ambition in the agreed HFC phase-down will be crucial in determining whether or not Montreal Protocol passes the test. In preparation for the next installment of Montreal Protocol meetings, known as the Open Ended Working Group, set for July 2016 in Vienna, the Environmental Investigation Agency (EIA) has produced a briefing, [The Importance of Ambition in the 2016 HFC Phase-Down Agreement](#). Download the full report [here](#).



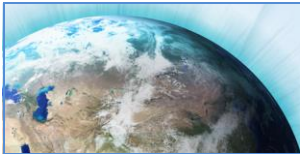
Update on the Illegal Trade in Ozone-Depleting Substances – The Environmental Investigation Agency (EIA) briefing to the 38th meeting of the Open-Ended Working Group of Parties to the Montreal Protocol, in Vienna, Austria, from July 18-21, 2016.



The global beverage giant (The Coca Cola Company) is putting natural refrigerants at the heart of its sustainability strategy – and is keen to share its experience with partners around the world... [The Natural Voice Magazine](#), #1, July 2016, p. 21

[How Bad Is Your Air-Conditioner for the Planet?](#), NY Times, 9 August 2016

Environmental Investigation Agency (eia) briefing, [The Importance of Ambition in the 2016 HFC Phase-Down Agreement](#), outlining key aspects of the proposals and calling on Parties to seek an agreement securing the highest climate ambition.



MISCELLANEOUS

Vacancy Announcement // Programme Management Officer, United Nations Environment, OzonAction, PARIS. Click [here](#) to learn more/Apply | **Deadline 29 October 2016**

The International Institute of Refrigeration (IIR) is delighted to announce [IIR new Working Group on Careers in Refrigeration “CaRe”](#), chaired by Dr Catarina Marques. [Learn more](#)



Training on the Economic Rationale for Energy and NAMA Development: Caribbean Island States to Make Climate Friendly Cooling Financeable, Saint Kitts & the Nevis, 12th to 15th of September 2016. More than 50 policy makers as well as representatives from the financial and private sector came together in St. Kitts & Nevis from September 12-15 to learn about the rationale of energy efficiency in the cooling sector. Gathering participants from 15 Caribbean Islands, the training was offered in the quest to mainstream the integration of energy efficiency solutions in the cooling sector into climate processes as well as address

existing project opportunities' lack of bankability in the region. [Deutsche Gesellschaft für Internationale Zusammenarbeit](#) (GIZ) GmbH, September 2016

The US EPA Finalizes [Two Rules to Reduce Use and Emissions of Potent Greenhouse Gases](#), 26 September 2016

[The North American Sustainable Refrigeration Council \(NASRC\) Joins the Climate & Clean Air Coalition](#) - The action-oriented nonprofit continues to expand its influence in retail refrigerant sustainability. NASRC has joined the Climate and Clean Air Coalition (CCAC), further positioning itself to drive the change necessary to create a more level playing field for natural refrigerants.



MONTREAL PROTOCOL

WHO'S WHO

The Montreal Protocol Who's who

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<http://www.unep.fr/ozonaction/montrealprotocolwhoswho>

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