

# 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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## GLOBAL

1. A tribute to Professor Mario Molina, our most esteemed champion of ozone layer protection



Professor Mario Molina, our most esteemed champion of ozone layer protection has passed away.

He, together with Professor F. Sherwood Rowland, hypothesized in their paper published in *Nature* in 1974, that chlorofluorocarbons (CFCs) destroy the ozone layer in the stratosphere. At the time CFCs were being used widely in a range of products such as aerosol sprays and refrigerators. The research alerted governments around the world to the threat to the Earth's protective ozone layer, and mobilized global action that culminated in the Vienna Convention for the Protection of the Ozone Layer in 1985, and its Montreal Protocol on Substances that Deplete the Ozone Layer in 1987. The Montreal Protocol came into force in 1989 and resulted in the successful phase out of about 99 per cent of almost 100 ozone depleting chemicals.

Professor Mario Molina and Professor F. Sherwood Rowland, along with Professor Paul Crutzen, jointly won the Nobel Prize for Chemistry in 1995 for their research on the ozone layer. Professor Mario Molina's work, his dedication and commitment to protect the global environment, will live on to drive the continuing global effort to protect the ozone layer.

[United Nations Environment Programme, Ozone Secretariat, October 2020](#)

**See also >>>**

- [Centro Mario Molina](#)
- Polar Ozone Depletion, Mario J. Molina, [Nobel Lecture, 8 December 1995](#). *The Nobel Prize in Chemistry 1995, Paul J. Crutzen, Mario J. Molina, F. Sherwood Rowland*
- Institute Professor Emeritus Mario Molina, environmental leader and Nobel laureate, dies at 77. The atmospheric chemist shared the Nobel Prize for the discovery that chemicals known as CFCs deplete the ozone layer. [MIT News Office](#)
- Mario Molina: An appreciation from a colleague, By Durwood J. Zaelke, [Bulletin of the Atomic Scientists](#), 8 October 2020
- The Time Bomb at the Top of the World, [Project Syndicate](#), 16 October 2020, By Mario Molina, Durwood Zaelke

### 3. Contingency meeting plans for 2020-2021: update

As we continue to live and work under the shadow of the COVID-19 pandemic, restrictions on travel and the convening of large meetings remain in place. The Ozone Secretariat, after consulting the bureaux of the eleventh meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer and the Thirty-First Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, the co-chairs of the forty-second meeting of the Open-ended Working Group (OEWG42), as well as many parties, suggests to conduct the combined twelfth meeting of the Conference of Parties to the Vienna Convention and the Thirty-Second Meeting of Parties to the Montreal Protocol (COP12/MOP32) online.



#### Meetings in 2020

##### Proposed arrangements for COP12(I)/MOP32 in November 2020

The combined twelfth meeting of the Conference of the Parties to the Vienna Convention, part I, and the Thirty-Second Meeting of the Parties to the Montreal Protocol (COP12(I)/MOP32) will be convened as an online meeting with a reduced agenda. **The preparatory segment will take place from Monday, 23 November 2020 to Thursday, 26 November 2020, and the high-level segment will take place on Friday, 27 November 2020 from 2 - 4 p.m. EAT each day with possibility of an additional extra hour should parties decide to have additional time.**

COP12 will be held in two parts. Part I will be convened this year to decide on the budget of the Vienna Convention Trust Fund for **2020 (revised)** and 2021 only. All the other agenda items that refer to the Convention will be addressed in COP12 part II in 2021.

- MOP32 will address few issues as found in [the agenda of the meeting](#)

Preparatory work will be needed in order to better prepare parties and facilitate their discussions during the online [meeting](#). The [online forum](#) will be the forum used for the preparatory work on the specific agenda items of COP12(I)/MOP32 and will be open from 1 October 2020.

The related meetings that will take place immediately prior to COP12(I)/MOP32 are:

- the sixty-fifth meeting of the Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol, online, 16-18 November 2020;
- the joint meeting of the bureaux of the eleventh meeting of the Conference of the Parties to the Vienna Convention and the Thirty-First Meeting of Parties to the Montreal Protocol, online, 21 November 2020.

#### Meetings in 2021

##### OEWG42 part II, on replenishment of the Multilateral Fund for 2021-2023

A second part of OEWG42 focusing on the issue of replenishment may be convened as a face-to-face meeting in March 2021 to discuss the need for and content of a supplementary

report. The Secretariat has made a tentative booking for the OEWG42 part II on replenishment to be held on 15 and 16 March 2021 in Montreal, Canada.

The parties may task the Technology and Economic Assessment Panel to prepare a supplementary report in time for consideration by the parties at the forty-third meeting of the Open-ended Working Group (OEWG43) in July 2021.

If a face-to-face meeting in the first quarter of 2021 is not possible due to the pandemic, then the suggested timeline will be adjusted accordingly.

#### **OEWG43: Bangkok, 12-16 July 2021**

The forty-third meeting of the Open-ended Working Group (OEWG43) is scheduled to be held from 12-16 July 2021 in Bangkok. All the agenda items that were deferred from the OEWG42 would be included in the agenda of OEWG43. In addition, any other issue that the parties may wish to discuss in 2021 can also be included.

The sixty-sixth meeting of the Implementation Committee will be held on 11 July 2021.

#### **COP12(II)/MOP33: Nairobi (tentative), 25-29 October 2021 (tentative)**

Part II of COP12 will address all issues including the recommendations of the eleventh meeting of the Ozone Research Managers (ORM11), which is now rescheduled to be convened in April 2021, matters related to the trust fund for monitoring and research and the budget of the Vienna Convention Trust Fund for the triennium 2022-2024. The Thirty-Third Meeting of the Parties (MOP33) will address all issues that MOP32 would have addressed in 2020 if a full-scale, physical meeting had been held, plus any new issues that may arise.

Other related meetings to be convened immediately prior to COP12(II)/MOP33 are:

- the sixty-seventh meeting of the Implementation Committee, 23 October 2021
- the joint meeting of the bureaux of the twelfth meeting of the Conference of the Parties to the Vienna Convention and the Thirty-Second Meeting of the Parties, 24 October 2021

#### **Eleventh Meeting of the Ozone Research Managers (ORM11)**

The **ORM11, part I, will be held online on 7-8 October 2020** to discuss only the issue of international monitoring programmes, namely the gaps in the global coverage of atmospheric monitoring of substances controlled by the Montreal Protocol.

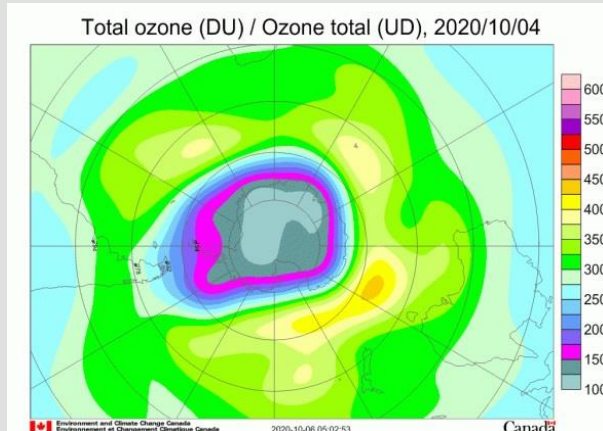
**ORM11, part II, will be held from on 14 to 16 April 2021 in Geneva** to discuss all remaining issues set out in the agenda of the meeting taking also stock of the discussion on the gaps in monitoring of controlled substances discussed in ORM11(I). The recommendations will be passed on for the consideration of COP12(II).

[The United Nations Environment Programme, Ozone Secretariat, 21 September 2020](#)

#### 4. 2020 Antarctic ozone hole is large and deep

The annually occurring ozone hole over the Antarctic is one of the largest and deepest in recent years. Analyses show that the hole has reached its maximum size.

The 2020 ozone hole grew rapidly from mid-August and peaked at around 24 million square kilometres in early October. It now covers 23 million km<sup>2</sup>, above average for the last decade and spreading over most of the Antarctic continent.



WMO's Global Atmosphere Watch programme works closely with Copernicus Atmospheric Monitoring Service, NASA, Environment and Climate Change Canada and other partners to monitor the Earth's ozone layer, which protects us from the harmful ultraviolet rays of the sun.

NASA's Ozone Watch reports a lowest value of 95 Dobson Units recorded on October 1. Scientists are seeing signs that the 2020 ozone hole now seems to have reached its maximum extent.

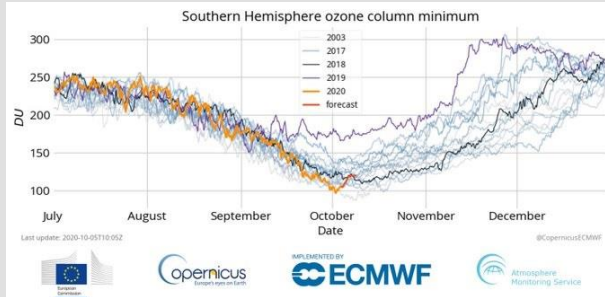
"There is much variability in how far ozone hole events develop each year. The 2020 ozone hole resembles the one from 2018, which also was a quite large hole, and is definitely in the upper part of the pack of the last fifteen years or so", Vincent-Henri Peuch, [Director of Copernicus Atmosphere Monitoring Service at ECMWF](#), said in a news release.

"With the sunlight returning to the South Pole in the last weeks, we saw continued ozone depletion over the area. [After the unusually small and short-lived ozone hole in 2019](#), which was driven by special meteorological conditions, we are registering a rather large one again this year, which confirms that we need to continue enforcing the Montreal Protocol banning emissions of ozone depleting chemicals."

The Montreal Protocol bans emissions of ozone depleting chemicals. Since the ban on halocarbons, the ozone layer has slowly been recovering; the data clearly show a trend in decreasing area of the ozone hole.

[The latest WMO /UN Environment Programme Scientific Assessment of Ozone Depletion](#), issued in 2018, concluded that the ozone layer on the path of recovery and to

potential return of the ozone values over Antarctica to pre-1980 levels by 2060. The large ozone hole in 2020 has been driven by a strong, stable and cold polar vortex, which kept the temperature of the ozone layer over Antarctica consistently cold.



Ozone depletion is directly related to the temperature in the stratosphere, which is the layer of the atmosphere between around 10 km and round 50 km altitude. This is because polar stratospheric clouds, which have an important role in the chemical destruction of ozone, only form at temperatures below  $-78^{\circ}\text{C}$ .

These polar stratospheric clouds contain ice crystals that can turn non-reactive compounds into reactive ones, which can then rapidly destroy ozone as soon as light from the sun becomes available to start the chemical reactions. This dependency on polar stratospheric clouds and solar radiation is the main reason the ozone hole is only seen in late winter/early spring.

Stratospheric ozone concentrations have been observed to have reduced to near-zero values over Antarctica around 20 to 25 km of altitude (50-100hPa), with the ozone layer depth coming just below 100 Dobson Units, about a third of its typical value outside of ozone hole events.

During the Southern Hemisphere spring season (August - October) the ozone hole over the Antarctic increases in size, reaching a maximum between mid-September and mid-October. When temperatures high up in the atmosphere (stratosphere) start to rise in late Southern Hemisphere spring, ozone depletion slows, the polar vortex weakens and finally breaks down, and by the end of December ozone levels have returned to normal.

[The World Meteorological Organization \(WMO\), 6 October 2020](#)

## 6. Climate-friendly cooling to help ease global warming

A new IIASA-led study shows that coordinated international action on energy-efficient, climate-friendly cooling could avoid as much as 600 billion tonnes  $\text{CO}_2$  equivalent of greenhouse gas emissions in this century.





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Hydrofluorocarbons (HFCs) are mainly used for cooling and refrigeration. While they were originally developed to replace ozone-depleting substances that are being phased out under the Montreal Protocol, many HFCs are potent greenhouse gases with a global warming potential up to 12,400 times that of CO<sub>2</sub> over a 100-year period.

The Kigali Amendment to the Montreal Protocol, which entered into force in 2019, aims to phase down the consumption of HFCs by 2050. While previous agreements have resulted in improvements in the design and energy performance of, for instance, cooling

equipment, the Kigali Amendment is the first to include maintaining and/or enhancing the energy efficiency of cooling technologies as an explicit goal. According to the authors of the study, which has been published in the journal *Atmospheric Chemistry and Physics*, there is however currently limited understanding of the potential future impacts of the Kigali Agreement on global warming and possible co-benefits from savings in electricity. The study is the first to try to quantify the overall effects of the Agreement on both greenhouse gas and air pollutant emissions.

The researchers developed a range of long-term scenarios for HFC emissions under varying degrees of stringency in climate policy and also assessed co-benefits in the form of electricity savings and associated reductions in emissions. The results indicate that, due to technical opportunities to improve energy efficiency in cooling technologies, there is potential for significant electricity savings under a well-managed phase-down of HFCs.

“Our results show that the global cumulative HFC emissions from refrigerant use in cooling technologies would have been over 360 billion tonnes CO<sub>2</sub> equivalent between 2018 and 2100 in the pre-Kigali baseline scenario. In addition, indirect CO<sub>2</sub> emissions from energy production of electricity used in cooling equipment will be approximately the same order of magnitude if the world continues along its present path, without any additional changes in energy policy,” explains IIASA researcher Pallav Purohit, who led the study.

“We found that if technical energy efficiency improvements are fully implemented, the resulting electricity savings could exceed 20% of future global electricity consumption, while the corresponding figure for economic energy efficiency improvements would be about 15%,” adds study coauthor and senior IIASA researcher Lena Höglund-Isaksson.

The researchers say that the combined effect of HFC phase-down, improvement of energy efficiency of stationary cooling technologies, and future changes in the electricity generation fuel mix would prevent between 411 and 631 billion tonnes CO<sub>2</sub> equivalent of greenhouse gas emissions between 2018 and 2100, thereby making a significant contribution towards keeping the global temperature rise below 2°C. Transitioning to high efficiency cooling can therefore double the climate mitigation effects of the HFC phase-down under the Kigali Amendment, while also delivering economic, health, and development benefits.

The findings further show that reduced electricity consumption could mean lower air pollution emissions in the power sector, estimated at about 5 to 10% for sulfur dioxide, 8 to 16% for

nitrogen oxides (NO<sub>x</sub>), and 4 to 9% for fine particulate matter (PM<sub>2.5</sub>) emissions compared with a pre-Kigali baseline.

“To be consistent with 1.5°C scenarios, by 2050 HFCs should be reduced by between 70 and 80% compared to 2010 levels. According to the Kigali Amendment and Maximum Technically Feasible Reduction (MTFR) scenarios we analyzed, we could achieve 92.5% and 99.5% reductions in 2050 compared to 2010 levels, respectively. This means that both scenarios surpass the 1.5°C threshold. If carefully addressed during the transition to alternatives that have the potential to relieve global warming, improvement potentials for energy efficiency in cooling technologies are extensive and can bring significant electricity savings,” Purohit concludes.

**Reference** Purohit P, Höglund-Isaksson L, Dulac J, Shah N, Wei M, Rafaj P, & Schöpp W (2020). Electricity savings and greenhouse gas emission reductions from global phase-down of hydrofluorocarbons. *Atmospheric Chemistry and Physics* DOI: [10.5194/acp-20-11305-2020](https://doi.org/10.5194/acp-20-11305-2020)

## [International Institute for Applied Systems Analysis \(IIASA\), 6 October 2020](#)

### 7. The IIR launches a call to action to adopt 5 internationally established refrigeration terms

All professionals in the field of low-temperature technologies are called and are strongly encouraged to strictly adhere to the internationally established and approved definitions, by the International Institute of Refrigeration and the ASHRAE, of the following words: cooling, refrigeration, chilling, freezing and cold chain.

Last year, a group of experts from the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) and the International Institute of Refrigeration (IIR) came together to establish universal definitions of five essential terms characterising the refrigeration sector.



The IIR calls on all national refrigeration organisations and associations, as well as all HVACR professionals to adopt and disseminate these five key definitions across their publications and activities!

### The five fundamental terms of refrigeration

#### Cooling

1. Removal of heat, usually resulting in a lower temperature and/or phase change.



2. Lowering temperature.

## Refrigeration

1. Cooling of a space, substance or system to lower and/or maintain its temperature below the ambient one (removed heat is rejected at a higher temperature).
2. Artificial cooling.

## Chilling

Cooling of a substance without freezing it.

## Freezing

Solidification phase change of a liquid or the liquid content of a substance, usually due to cooling.

## Cold Chain

Series of actions and equipment applied to maintain a product within a specified low-temperature range from harvest/production to consumption.

## The IIR International Dictionary of Refrigeration

These five terms can be found in the IIR International Dictionary of Refrigeration.

The Dictionary contains more than 4,300 words in all fields of refrigeration - including air conditioning – as well as their translations in 11 languages.

Click [here](#) to consult the Dictionary

[The International Institute of Refrigeration, 2 October 2020](#)

## 8. A comprehensive quantification of global nitrous oxide sources and sinks

### Abstract

Nitrous oxide (N<sub>2</sub>O), like carbon dioxide, is a long-lived greenhouse gas that accumulates in the atmosphere. Over the past 150 years, increasing atmospheric N<sub>2</sub>O concentrations have contributed to stratospheric ozone depletion<sup>1</sup> and climate change<sup>2</sup>, with the current rate of increase estimated at 2 per cent per decade. Existing national inventories do not provide a full picture of N<sub>2</sub>O emissions, owing to their omission of natural sources and limitations in methodology for attributing anthropogenic sources. Here we present a global N<sub>2</sub>O inventory that incorporates both natural and anthropogenic sources and accounts for the interaction between nitrogen additions and the biochemical processes that control N<sub>2</sub>O emissions. We use bottom-up (inventory, statistical extrapolation of flux measurements, process-based land and ocean modelling) and top-down (atmospheric inversion) approaches to provide a comprehensive quantification of global N<sub>2</sub>O sources and sinks resulting from 21 natural and human sectors between 1960 and 2016. Global N<sub>2</sub>O emissions were 17.0 (minimum–maximum estimates: 12.2–23.5) teragrams of nitrogen per year (bottom up) and 16.9 (15.9–17.7) teragrams of nitrogen per year (top-down) between 2007 and 2016. Global human-induced emissions, which are dominated by nitrogen additions to croplands, increased by 30% over the past four decades to 7.3 (4.2–11.4) teragrams of nitrogen per year. This increase was mainly responsible for the growth in the atmospheric burden. Our findings point to growing N<sub>2</sub>O emissions in emerging economies – particularly Brazil, China and India. Analysis of process-based model estimates reveals an emerging N<sub>2</sub>O–climate feedback resulting from interactions between nitrogen additions and climate change. The recent growth in N<sub>2</sub>O emissions exceeds some of the highest projected emission scenarios<sup>3,4</sup>, underscoring the urgency to mitigate N<sub>2</sub>O emissions.

Article | Published: 07 October 2020

### A comprehensive quantification of global nitrous oxide sources and sinks

Hangjin Tian<sup>1,2</sup>, Rongting Xu<sup>1,2</sup>, [...] Yuanzhi Yao

Nature **586**, 248–256 (2020) | Cite this article

7359 Accesses | 1329 Altmetric | Metrics

### Abstract

Nitrous oxide (N<sub>2</sub>O), like carbon dioxide, is a long-lived greenhouse gas that accumulates in the atmosphere. Over the past 150 years, increasing atmospheric N<sub>2</sub>O concentrations have contributed to stratospheric ozone depletion<sup>1</sup> and climate change<sup>2</sup>, with the current rate of increase estimated at 2 per cent per decade. Existing national inventories do not provide a full picture of N<sub>2</sub>O emissions, owing to their omission of natural sources and limitations in methodology for attributing anthropogenic sources. Here we present a global N<sub>2</sub>O inventory that incorporates both natural and anthropogenic sources and accounts for the interaction between nitrogen additions and the biochemical processes that control N<sub>2</sub>O emissions. We use bottom-up (inventory, statistical extrapolation of flux measurements, process-based land and ocean modelling) and top-down (atmospheric inversion) approaches to provide a comprehensive quantification of global N<sub>2</sub>O sources and sinks resulting from 21 natural and human sectors between 1960 and 2016. Global N<sub>2</sub>O emissions were 17.0 (minimum–maximum estimates: 12.2–23.5) teragrams of nitrogen per year (bottom up) and 16.9 (15.9–17.7) teragrams of nitrogen per year (top-down) between 2007 and 2016. Global human-induced emissions, which are dominated by nitrogen additions to croplands, increased by 30% over the past four decades to 7.3 (4.2–11.4) teragrams of nitrogen per year. This increase was mainly responsible for the growth in the atmospheric burden. Our findings point to growing N<sub>2</sub>O emissions in emerging economies – particularly Brazil, China and India. Analysis of process-based model estimates reveals an emerging N<sub>2</sub>O–climate feedback resulting from interactions between nitrogen additions and climate change. The recent growth in N<sub>2</sub>O emissions exceeds some of the highest projected emission scenarios<sup>3,4</sup>, underscoring the urgency to mitigate N<sub>2</sub>O emissions.

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[Nature, 7 October 2020, Authors: Tian, H., Xu, R., Canadell, J.G., et al.](#)

## 9. Procurement Recommendations for Climate Friendly Refrigerants

*Are you ready to take action on avoiding obsolete hydrofluorocarbon (HFC) refrigerants that will be phased down globally under the Montreal Protocol on Substances that Deplete the Ozone Layer) and that are prohibited under various state laws?*

Developed by the Sustainable Purchasing Leadership Council (SPLC), in partnership with IGSD, the [Procurement Recommendations for Climate](#)

[Friendly Refrigerants](#) is a toolkit designed to help select affordable, energy-efficient heating and cooling equipment that uses next-generation refrigerants that are more climate friendly.

While this toolkit focuses on avoiding climate change impacts of HFCs, it also takes into consideration refrigerant flammability, toxicity, and atmospheric fate of the replacement refrigerants. This document focuses on small heating, cooling, and refrigeration equipment where climate friendly alternatives are more readily available, cost effective, and compliant with US environmental and safety standards.

This document is the first formal output of the SPLC Climate Friendly Refrigerant Action Team. The Climate Friendly Refrigerant Action Team is dedicated to investigating global regulatory and voluntary programs to avoid and/or reduce emissions from high global warming potential (GWP) HFCs. It identifies opportunities and specific procurement options to:

1. Avoid high GWP HFC refrigerants when purchasing new energy efficient refrigeration and air conditioning equipment, and
2. Reduce refrigerant leakage and service emissions.

We invite you to read and put their work to use in your own procurement processes, and to offer additional insights and experiences to sharpen and improve the guidance over time.



Download the *Procurement Recommendations for Climate Friendly Refrigerants* [here](#).

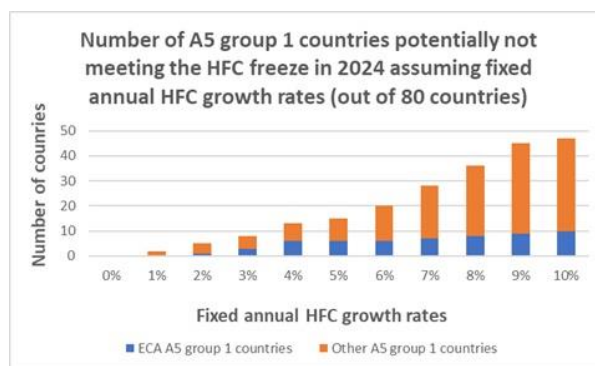
[Institute for Governance & Sustainable Development \(IGSD\), 1 October 2020](#)

## EUROPE & CENTRAL ASIA

### 10. ECA meeting: Risk analysis - are Article 5 group 1 countries on track to meet the HFC freeze in 2024?

Following an analysis of HFC baseline scenarios for Article 5 group 1 countries in the Europe and Central Asia (ECA) region, it appeared that most countries would not “automatically” meet the HFC freeze in 2024 without putting in place additional HFC policy and legislative measures. If countries allowed a fixed annual HFC growth rate of 10%, the resulting HFC consumptions in 10 out of 11 countries (91%) would exceed the freeze level in 2024. The 10% growth scenario might not even be realistic as several countries witnessed growth rates well above 10% in the past. The year 2020 is a particular year as the Covid-19 pandemic has affected national economies and growth in the heating, refrigeration and air-conditioning sectors.

A similar situation can be observed in Article 5 group 1 countries in general. Out of 80 countries with estimated or reported HFC consumption data for 2019 (or 2018), 47 countries (59%) are not likely to meet the HFC freeze in 2024 if they allowed a fixed annual HFC growth rate of 10%. If they allowed a growth rate of only 5%, 15 countries (19%) would exceed the freeze level. For ECA countries, this figure was 6 out of 11 countries (55%). The message is that countries would need to adopt early HFC policy and legislative measures prior to the freeze.



It is in this context that UNEP OzonAction’s Montreal Protocol Network for Europe and Central Asia (ECA network) dedicated its recent online meeting to the adoption of early HFC policy and legislative measures to meet the HFC freeze. Invited experts included Arno Kaschl of the European Commission’s DG Climate Action, Barbara Gschrey of Oekorecherche and Janusz

Kozakiewicz of Poland's Industrial Chemistry Institute. The experts presented the range of available policy measures and shared their experience from applying such measures in the European Union. The meeting was attended by 45 experts from ECA network and associated CEIT countries as well as bilateral partners, implementing agencies, European Commission, Ozone Secretariat and OzonAction staff from Asia Pacific and West Asia.

During the initial stage of the HFC phase-down strategy, it will be important to identify "low-hanging fruits" in terms of sectors / applications where HFCs can easily and at low cost be replaced by climate-friendly alternatives in new equipment. Prohibitions are easier to implement than a gradual phase-down and they are feasible in several areas. Disposable cylinders should be banned because they cannot completely be emptied and facilitate illegal trade. Restriction and bans should be considered for imports and placing on the market of new high-GWP equipment and products, as well as use bans for specific applications.

At the same time, barriers should be removed and economic incentives provided for new climate-friendly and energy-efficient equipment. Existing equipment might require better servicing and containment practices including the recovery, recycling and reclaim. Green public procurement can facilitate the deployment of new technologies in local markets. Quota systems based on the GWP / CO<sub>2</sub>-equivalent tonnes for HFC imports will ultimately allow meeting the freeze and should be supported by accompanying measures e.g. labeling of refrigerant cylinders and equipment.

Tax, rebate or fee schemes have proven to be efficient in several countries. It is important to establish effective penalties, reporting and licensing systems, to ensure the qualification of service personnel and sustainable end-of-life treatment, to enforce leakage prevention through mandatory leakage checking and a ban on venting. Other aspects include that exemptions are difficult to monitor and enforce, transit procedures may represent loopholes, licenses for each shipment provide better control, awareness raising and training is crucial. It is also important to monitor the implementation of such measures through the registration of HFC importers/exporters, wholesalers and users of HFC equipment / products, the introduction of mandatory reporting requirements and the establishment of an inventory of HFC equipment.

In conclusion, Article 5 group 1 parties to the Montreal Protocol should elaborate their respective HFC phase-down strategies and adopt HFC policy and legislative measures as early as possible. This requires the ratification of the Kigali Amendment (if not yet done) as a pre-condition to access funding for the strategy preparation, and the timely submission of the strategy for ExCom approval. Hopefully the funding guidelines for the preparation and implementation of the HFC phase-down strategies can soon be adopted despite the constraints imposed by the Covid-19 pandemic.

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### 11. More climate-friendly alternatives to harmful greenhouse gases used in air-conditioning and switchgear

The [EU] Commission has published two reports on more climate-friendly alternatives to the damaging F-gases used in split air-conditioning systems and in electrical switchgear.

The conventional technologies in these applications use fluorinated greenhouse gases

(F-gases), which can stay in the atmosphere for centuries and have a particularly high warming effect. The gas typically used in switchgear, for instance, has a warming effect almost 23,000 times greater than that of carbon dioxide (CO<sub>2</sub>).

The reports analyse the technical feasibility, reliability, energy-efficiency and cost of different solutions, and identify how long it could take to make these alternatives widely available. Given the many different types of split air - conditioning systems and switchgear, there is no 'one-size-fits-all' solution. The reports nonetheless show that workable alternatives for many applications already exist. In some cases, using the alternatives may incur higher costs and so it is likely that the EU will need to take additional policy measures to promote these solutions.

Regulation (EU) No 517/2014 on fluorinated greenhouse gases requires the Commission to prepare these reports. The findings will serve as input to the review of the EU rules on fluorinated greenhouse gases that the Commission launched in the context of the European Green Deal and the Climate Law proposal.

The review aims to ensure that the rules are consistent with the EU's objective

of achieving a 55% net reduction in greenhouse gas emissions by 2030 and becoming climate neutral by 2050. The review will also confirm EU obligations related to hydrofluorocarbons under the Montreal Protocol on substances that deplete the ozone layer. The Commission aims to propose a new F-gas Regulation by the end of 2021.

[The European Commission, 30 September 2020](#)

### 12. Suppression de la taxe sur les HFC, initialement prévue pour 2021 (France)

Dans le [projet de loi de finances \(PLF\) pour 2021](#), présenté le 28 septembre 2020 par le gouvernement, il est indiqué que le programme pluriannuel de suppression des taxes à faible rendement se poursuivra en 2021 (comme y appelait la Cour des Comptes dans un référé du 3 décembre 2018).





Après la suppression de 26 taxes en 2019 et de 20 taxes en 2020, ce sont sept taxes dont la suppression est prévue dans le PLF 2021. Parmi elles, deux concernent les sujets air & climat.

### **La taxe sur les HFC, prévue pour 2021, n'entrera pas en vigueur**

En 2018, une taxe sur les hydrofluorocarbures (HFC) était instituée (loi n° 2018-1317 du 28 décembre 2018 de finances pour 2019), au sens de l'article 2.2 du règlement européen sur les gaz fluorés (règlement (UE) n° 517/2014 du Parlement européen et du Conseil du 16 avril 2014), autres que les gaz régénérés ou recyclés (art. 2.15 et 2.16).

L'entrée en vigueur de cette taxe avait été repoussé au 1<sup>er</sup> janvier 2021, sous réserve que les filières utilisant des HFC réduisent fortement leurs émissions. D'après le Ministère de l'Economie, la filière a tenu ses engagements de réduction des émissions et l'entrée en vigueur de la taxe (au rendement escompté de 390 millions d'euros en 2022) n'est plus nécessaire. Les émissions de HFC ont-elles effectivement diminué ?

Si les émissions de HFC en France ont fortement augmenté entre 1995 et 2011 (passant de 1,9 Mt CO<sub>2</sub>e à 18,5 Mt CO<sub>2</sub>e, soit +16%/an en moyenne), elles ont atteint un plateau entre 2011 et 2016 (pic à 19 Mt). Depuis 2016, les émissions de HFC sont effectivement en baisse : -7% en 2017, -11% en 2018 (-3,2 Mt CO<sub>2</sub>e en 2 ans), et une baisse pré-estimée à -3% en 2019, pour atteindre 15,5 Mt CO<sub>2</sub>e. [Consulter les données en ligne](#).

[Centre interprofessionnel technique d'études de la pollution atmosphérique \(citepa\), 7 octobre 2020](#)

See also >>> [Never applied, the tax on the worst greenhouse gases, HFCs, in the process of being abolished](#), Pledge Times, 13 October 2020, By Bhavi Mandalia

### **13. Great Britain regulation of F gas and ODS (as of 1 January 2021)**

[...] EU F gas and ODS regulations will no longer apply in GB from 1 January 2021. Northern Ireland will remain subject to and in the EU F gas and ODS regulations and systems, as set out under the Protocol on Ireland and Northern Ireland.

New GB [ODS and F gas regulations](#) transfer most of the requirements of the EU regulations into UK law.

GB will continue to:

- restrict ODS
- use the same schedule as the EU to phase down HFCs (hydrofluorocarbons, the most common type of F gas) by 79% by 2030 relative to a 2009 to 2012 baseline

That means new GB F gas quotas will follow the same phase down steps as the EU:





- limited to 63% of the baseline in 2019 and 2020
- reducing to 45% of the baseline in 2021

Most of the rules for F gas and ODS will not change. However, you will need to use new GB IT systems to:

- manage new GB quotas
- report on use

You'll still need to comply with EU regulations on F gas, ODS and products containing them that you place on the EU and Northern Ireland market after 1 January 2021. [...]

[The UK Government, Department for Environment, Food & Rural Affairs and Environment Agency, update 15 October 2020](#)

### **5<sup>th</sup> Edition of Europe and Central Asia (ECA) Montreal Protocol Award for Customs and Enforcement Officers for 2019-2020**

The United Nations Environment Programme, OzonAction, in cooperation with the World Customs Organization and the Ozone Secretariat, has launched the fifth edition of the ECA Montreal Protocol Award for Customs and Enforcement Officers for the period 2019-2020. Nominations forms are available in English and Russian and the award ceremony is scheduled for 2021. The award is part of the work programme of OzonAction's Regional Montreal Protocol Network for Europe and Central Asia (ECA network).

The award recognizes the crucial role of customs & enforcement officers in implementing trade restrictions and bans for hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs). Both groups of chemicals, which are controlled under the Montreal Protocol on Substances that Deplete the Ozone Layer, are widely used as refrigerants and foam blowing agents in the refrigeration, air conditioning and foam blowing sectors.

The informal Prior Informed Consent (iPIC) system allows trade partners to confirm the legitimacy of an intended trade in controlled substances prior to issuing import / export licenses. More information on iPIC is available [here](#)

The award aims to recognize and offer encouragement to customs and enforcement officers and their respective organizations for successful prevention of illegal or unwanted trade in HCFCs / HFCs. This also includes equipment or products containing or relying on the use of HCFCs / HFCs.

Eligible nominees include customs and enforcement officers and / or their respective organizations who have been directly involved or instrumental in preventing illegal or unwanted trade in HCFCs / HFCs as well as equipment or products containing or relying on the use of HCFCs / HFCs.

Eligible enforcement actions include the detection of an illegal shipment and the subsequent seizure, detention or sending back of the disallowed goods, as well as successful iPIC consultation preventing the issuance of export / import licenses for illegal or unwanted shipments.

Enforcement actions are eligible if they have not been submitted to any other award schemes.

#### **Geographical scope and time period**

Eligible countries include those in the Europe and Central Asia (ECA) region including countries with economies in transition (CEIT countries) and Western European countries as well as their trading partners.

**Eligible enforcement actions must have taken place during the period: 1 January 2019 – 31 December 2020.**

Completed nomination forms with detailed and comprehensive case descriptions and supporting photos and documents should be received by the United Nations Environment Programme as soon as possible but **at the latest by: 31 January 2021.**

[Learn more >>>](#)

## FEATURED



**OZONE SECRETARIAT**



### **Ozone for life: 35 years of ozone layer protection**

World Ozone Day, held on September 16, the world celebrates 35 years of the Vienna Convention and 35 years of global ozone layer protection.

[Learn more](#)

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### [Overview for the meetings of the ozone treaties in 2020-2021](#)

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

Recent Meetings:

- [42<sup>nd</sup> Meeting of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer \(OEWG 42\)](#), 14-16 July 2020 | Online
- [31<sup>st</sup> Meeting of the Parties to the Montreal Protocol](#), 4 - 8 November 2019, Rome, Italy
- [Bureau Meeting of the 30<sup>th</sup> Meeting of the Parties to the Montreal Protocol](#), 3 November 2019, Rome, Italy
- [63<sup>rd</sup> Meeting of the Implementation Committee under the Non-Compliance Procedure of the Montreal Protocol](#), 2 November 2019, Rome, Italy



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](#)

### **Provisional agenda of the 85<sup>th</sup> meeting of the Executive Committee**

The Eighty-fifth Meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, has been postponed due to the coronavirus disease (COVID-19).

The 85<sup>th</sup> meeting has been postponed until immediately after the 42<sup>nd</sup> meeting of the Open-ended Working Group (OEWG), and will be held in Montreal for a duration of four days, from 19 to 22 July 2020, on the understanding that the meeting might be further postponed or cancelled in light of the evolution of the COVID-19 pandemic.

### [Provisional Agenda](#)

### [The Multilateral Fund for the Implementation of the Montreal Protocol, April 2020](#)



Click [here](#) for the Executive Committee upcoming and past Meetings.

Recent meetings:

- [84<sup>th</sup> meeting of the Executive Committee](#)
- [83<sup>rd</sup> meeting of the Executive Committee](#)
- [82<sup>nd</sup> meeting of the Executive Committee](#)
- [Executive Committee Primer – 2019](#) - An introduction to the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol



# OZONACTION

Dear National Ozone Officers,

In behalf of the United Nations Environment Programme (UNEP) Compliance Assistance Programme (CAP), I would like to express our deep appreciation to your country for its continued high-level commitment to implement the Montreal Protocol on Substances that Deplete the Ozone Layer, including during very challenging times such as what the world is now facing with the COVID-19 pandemic.

I would like to re-assure you that during this very difficult period, Compliance Assistance Programme (CAP) – like the rest of OZONACTION – remains open for business. Our CAP teams in Bangkok, Manama, Nairobi, Panama City, and Paris continue to work with great dedication and diligence to support Article 5 countries with meeting their compliance, reporting and project-related needs. Our internal processes are all functioning well, including those related to finance and administration. Our CAP teams continue to provide technical and policy support, our information clearinghouse, capacity building services, and refrigeration and air conditioning partnerships are still developing and distributing tools and information to support your work.

Your financial institutions and social distancing requirements, in addition to our Regional Network and Financial Institutions have been confirmed. Please assured that the CAP teams are working on contingency plans to continue this support and to re-evaluate all procedures in case the situation evolves, in the meantime our Regional Commissions are continuing with the National Ozone Officers to provide assistance of information and expertise to your National Ozone Officers.

Just like you and your colleagues, our CAP teams have had to adjust both their personal and professional lives to meet these new conditions. All of our staff are now working remotely through a teamworking arrangement to ensure the continuous delivery of support to your countries. They are also continuing with their other work, and in UNEP headquarters through online conferencing, email and meetings. They are all doing and working for administration with all National Ozone Officers.

Since 1988, UNEP OZONACTION has been your close partner in the implementation of the Montreal Protocol and we stand together with you in your country's maintenance journey. We will continue to work together, meet, share, exchange, and learn from one another.

OZONACTION is here to support you. If you have any needs, challenges, or if you need us to discuss your situation, please reach out and contact any member of OZONACTION, including the Regional CAP teams in closest.

We will always continue our services and our technical assistance.

Yours sincerely,  
James S. Curlin  
Acting Head, OZONACTION

## [COVID-19 pandemic: Letter from James S. Curlin, Acting Head, OzonAction, to the National Ozone Officers](#) -

On behalf of the United Nations Environment Programme (UNEP) OzonAction, I would like to express our deep appreciation to your country for its continued high-level commitment to implement the Montreal Protocol on Substances that Deplete the Ozone Layer, including during very challenging times such as what the world is now facing with the COVID-19 pandemic. I would like to re-assure you that during this very difficult period, OzonAction's Compliance Assistance Programme (CAP) – like the rest of UNEP – remains open for business. Our CAP teams in Bangkok, Manama, Nairobi, Panama City, and Paris continue to work with great dedication and diligence to support Article 5 countries with meeting their compliance, reporting and project-related needs. Our internal processes are all functioning well, including those related to finance and administration. Our CAP teams continue to provide technical and policy support. Our information clearinghouse, capacity building services, and refrigeration and air conditioning partnerships are still developing and distributing tools and information to support your work. [...] [Read/download](#)

Substance	Quantity	Unit	Status
...	...	...	...
...	...	...	...
...	...	...	...

## [HCFC Quota and Licence Tracker - UNEP OzonAction launches a new desktop application to assist with HCFC licences and quotas](#) -

National Ozone Officers have the great responsibility of managing the allocation and monitoring of quotas for substances controlled under the Montreal Protocol. This process can be complex with many importers, especially if the country imports a range of different hydrochlorofluorocarbons (HCFCs) and mixtures containing HCFCs. To address this challenge, OzonAction developed a new desktop application that helps Ozone Officers with the tasks of planning, calculating, monitoring and managing consumption quotas and licences. It can be used on a daily basis to track and manage the current year's quota allocations for different importers, or for future planning by trying different scenarios that adjust the type of substances imported, their quantity, or the number of importers. The HCFC Quota and Licence Tracker allows

Ozone Officers to see the effect of such scenarios on the national HCFC consumption and helps ensure that the quotas stay within agreed HCFC Phase-out Management Plan (HPMP) targets. For countries that have ratified the Kigali Amendment, in the future OzonAction will extend the tracker to include hydrofluorocarbons (HFCs) once countries begin designing their quota systems for those controlled substances.

**To access the tools:**

Click [HERE](#) to access the HCFC Quota tracker app

Click [HERE](#) to access the flyer for more information on the tracker

Click [HERE](#) to see the short video tutorial on the OzonAction YouTube Channel



**IIR and UNEP OzonAction release the French and Spanish versions of the ‘Cold Chain Technology Briefs’**

As part of their cooperation to support the needs of different stakeholders in developing countries to fulfil their commitments under the Montreal Protocol, the International Institute of Refrigeration (IIR) and UNEP OzonAction today released the French and Spanish versions of their popular Technology Briefs on the Cold Chain. The original English versions are also available for download from the OzonAction website.

**Download:**

- [Cold Storage and Refrigerated Warehouse](#)
- [Commercial, Professional and Domestic](#)
- [Fishing Vessel Application](#)
- [Refrigeration in Food Production and Processing](#)
- [Transport Refrigeration](#)



## The new updated OzonAction GWP-ODP Calculator Application

**“Quickly, efficiently and accurately convert between values in metric tonnes, ODP tonnes and CO<sub>2</sub>-equivalent tonnes”**

Data are extremely important for the Montreal Protocol community, and the data reporting formats for both A7 and CP have changed recently, to a large degree triggered by the Kigali Amendment. HFCs, blends, CO<sub>2</sub>-equivalent values, etc, now have to be addressed much more frequently by Ozone Officers during their daily work. Sometimes the terminology and values are complex and can be confusing, and it helps to have it all the official facts and figures in one place. Conversion formulas need to be applied to calculate CO<sub>2</sub>-eq values from both GWP and metric tonne values. This free app from OzonAction is a practical tool for Ozone Officers to help demystify some of this process and put frequently-needed information at their fingertips.



### What's new in the app:

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

The new and updated UNEP OzonAction **GWP-ODP Calculator** application will help you to convert between values in metric tonnes, ozone depleting potential (ODP) tonnes and CO<sub>2</sub>-equivalent tonnes of substances controlled by the Montreal Protocol and their alternatives. This application, available at no cost, is particularly useful for National Ozone Officers to assist with understanding and calculating quantities of controlled substances, both pure substances and mixtures, for quota assignment, reporting requirements, etc. Other stakeholders interested in ODP and global warming potential (GWP) values of controlled substances and their alternatives will also find this tool useful.

Operation of the application is very simple — just select a substance from the dropdown list and enter the known value in the appropriate field; the calculator will automatically perform the conversion between metric tonnes, ODP tonnes and/or CO<sub>2</sub>-equivalent tonnes and display the corresponding converted values. The ODP, GWP and information about the substance is provided. For mixtures, the components of the mixture and their relative proportions (metric, ODP, CO<sub>2</sub>- equivalent tonnes) are also calculated.

The updated **GWP-ODP Calculator** application now includes a new Kigali Amendment mode. The app can now be used in two different modes: the regular "Actual Values" mode and the "Kigali Amendment" mode. In the Kigali Amendment mode, the GWP values provided are those specified in the Kigali Amendment to the Montreal Protocol, i.e. GWP values are only assigned to controlled HFCs. In this mode the GWP values used to

calculate the refrigerant blends/mixtures only include GWP contributions from components that are controlled HFCs. The user can effortlessly switch between modes.

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

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

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

#### Using the application:



Smartphone Application: Just search for “*GWP-ODP Calculator*” or UNEP in the Google Play store or use the QR code – free to download!

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



Desktop Application: *GWP-ODP Calculator* is also available online on the OzonAction [website](#)



Watch the new short introductory tutorial **video** on the *GWP-ODP Calculator* - available now on [YouTube](#)

Read/download the [flyer](#) for more information

#### RAC Technician Videos - Full length films!

OzonAction is very pleased to release two ‘full length’ videos for refrigeration and air-conditioning (RAC) sector servicing technicians: on 1) Techniques, Safety and Best Practice and 2) Flammable Refrigerant Safety.

The OzonAction Refrigeration and Air-Conditioning Technician Video Series consists of instructional videos on techniques, security and best practice and flammable refrigerant safety. They are intended to serve




as a complementary training tool RAC sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training. The videos are not intended to replace structured formal technician training, but to supplement and provide some revision of tips and skills and to build on training already undertaken.

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


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

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

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

 You can watch these videos on the OzonAction YouTube Channel:

- [Techniques, Safety and Best Practice](#)
- [Flammable Refrigerant Safety](#)

 The videos are also available for download by request from UNEP OzonAction: [unep-ozonaction@un.org](mailto:unep-ozonaction@un.org)



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

The flyer is available from the [OzonAction website](#).

## The UNEP OzonAction WhatGas? application has been updated and improved

### New features:

- An updated more user-friendly interface
- Multilingual interface: English, French and Spanish
- HFCs and HFC containing mixtures
- Latest updated ozone depleting potential and global warming potential values from the recent reports from the Montreal Protocol technology



and scientific expert panels as well as the Intergovernmental Panel on Climate Change; as well as the standard ODP and GWP values as specified in the text of the Montreal Protocol

- References to sources of all values used
- New refrigerant mixtures (with ASHRAE approved refrigerant designations)
- Values for 'actual GWP' and 'Kigali Amendment context' GWP for pure substances and mixtures (i.e. only including GWP values/components assigned to controlled hydrofluorocarbons - HFCs).

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

#### **Using the application:**

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

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



**Desktop Application:** WhatGas? is also available online on the OzonAction [website](#)

**For more information:** Watch the new short introductory tutorial [video](#) on WhatGas? available on [YouTube](#)

See/download the [WhatGas? flyer](#)

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

#### **Refrigerant Cylinder Colours: What has Changed**

A new UNEP OzonAction factsheet on the new AHRI revised guideline on a major change to refrigerant cylinder colours

One of the ways in which refrigeration cylinders are quickly identified is by cylinder colour. Although there was never a truly globally-adopted international standard, the guideline from the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) although not required by law was used by the vast majority of industry and chemical producers around the world. This guideline was intended to support manufacturers, engineers, installers, contractors and users, and was also widely used by customs and enforcement officers and National Ozone Officers (NOOs) to help identify the contents of cylinders.

In recent years, the number of refrigerants has dramatically increased, particularly as chemical producers continue to develop numerous new refrigerant mixtures for various applications. This fast-rising number of refrigerants created some concern since as more and more colours were used, the potential for misidentification of cylinders of similar colours increased. It was therefore decided by AHRI that for the benefit of the industry the guideline should be updated. This was to ensure continuation of correct identification and safe use of refrigerants based on clear and distinct product markings and labels. The revised guideline, first published in 2015, removes paint colour assignments for refrigerant containers and specifies that all refrigerant containers should have the same paint colour from 2020 onwards. This colour is a light green/grey, called "silk grey" (RAL 7044<sup>4</sup>). This guideline also provides a means by which colours can be assigned to printed materials, such as printed labels on refrigerant containers; these colours generally follow the familiar AHRI colours previously used for refrigerants.

It is very important that the range of stakeholders in the refrigeration and air-conditioning industry as well as NOOs and customs and enforcement personnel are aware of this change. **Cylinder colours can no longer be relied on as a means to identify the type of refrigerant in a container.** The principal method of cylinder identification now needs to be the container labels and markings. It is important to note that **flammable refrigerants** should include a red band on the top of the cylinder.

NOOs and technicians should be aware of this change and inform national stakeholders, as well as familiarising themselves with relevant container labels and markings for refrigerants. It will be important to inform and train customs officers of this change as colour codes have always been a helpful way to identify refrigerants. Given the possibility of mis-labelled or counterfeit refrigerants in cases of doubt/suspicion, it is recommended to verify the type of refrigerant using a refrigerant identifier

**For more information read/download the [factsheet](#)**



## Update on new refrigerants designations and safety classifications

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

The factsheet, produced by [ASHRAE](#) in cooperation with [UN Environment Programme OzonAction](#) is updated every 6 months.

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

Read/download the [factsheet](#)

The factsheet, as well as more information on ASHRAE-UNEP joint activities and tools, is also available on the [ASHRAE UNEP Portal](#).

### Contact:

- [Ayman Eltalouny](#), OzonAction, UN Environment Programme
- [W. Stephen Comstock](#), Manager of Business Development EMEA, ASHRAE



## OzonAction's iPIC system helps prevent an illegal shipment of 72 tonnes of HCFC-22

Collaboration between China and Thailand using OzonAction's informal Prior Informed Consent (iPIC) system has resulted in the prevention of a huge consignment of ozone-depleting and climate damaging hydrochlorofluorocarbons (HCFCs). Those chemicals, which are primarily used as refrigerants for air conditioners and fridges, are controlled under the Montreal Protocol on Substances that Deplete the Ozone Layer and are being phased out by all countries according to a specific timeline.





**The OzonAction new iPIC platform** - The Informal Prior informed consent system (iPIC) has been completely overhauled and updated - *OzonAction latest updated and streamlined version of the online Informal Prior-Informed Consent (iPIC) platform. Responding to comments and feedback we have changed how the system looks and operates. See the [iPIC flyer](#) for more details - Visit [iPIC website](#) to familiarise yourselves with the new features and functionalities. Automatically re-set your password if required.*

**Contact:** [iPIC Online Administrators](#) for any further questions.



**[Servicing tail for HCFCs: What is it & why does it matter?](#)**

This concept of a servicing tail, while allowed under the Montreal Protocol might not always be consistent with the phase-out targets specified under the HCFC Phase out Management Plan (HPMP) funding agreements agreed by Article 5 countries with the Executive Committee when receiving funds for HCFC phase out, where countries are obliged to meet these targets as specified in the agreement.

Details and explanations are provided in this [Policy Brief](#).

**Contact:** [Ezra Clark](#), UNEP, OzonAction



**[OzonAction Factsheet: Proposed additional HS code sub-headings for HFCs in advance of the 2022 HS code update - 'Cheat Sheet'](#)**

This document is intended to accompany the OzonAction policy brief: "[HS CODES FOR HFCs - Advice for countries in advance of the 2022 HS code update](#)", available [here](#).

**[Download the Factsheet](#)**

**Contact:** [Ezra Clark](#), UNEP, OzonAction



## OzonAction Factsheet: Dealing with seized ODS - Options for Article 5 countries

This concise factsheet summarises the five main options available to countries when dealing with seized ODS or HFCs as well as outlining the various considerations and the pros and cons of these options.

[Download the Factsheet](#)

Contact: [Ezra Clark](#), UNEP, OzonAction

## UNEP OzonAction Training Programme for National Ozone Officer

A key factor contributing to the significant success of the Montreal Protocol on Substances that Deplete the Ozone Layer is the 'country-driven approach'. This approach places National Ozone Units at the centre of the action to protect the ozone layer.

The National Ozone Unit led by the National Ozone Officer (NOO), is the single most important element in national strategies to comply with the Montreal Protocol.

The knowledge and capacity of the NOO in effectively developing projects, managing strategies, reporting data, and working with national and international institutions -directly or indirectly affects each developing (Article 5) country's ability to meet its obligations under the Montreal Protocol treaty.

For this reason, OzonAction has completely transformed and updated its NOO training programme to assist NOUs in successfully understanding all the roles and requirements and in carrying out their daily tasks in Montreal Protocol implementation.

The main objective of this training programme is to provide new National Ozone Unit (NOU) staff with essential information about the Montreal Protocol, a country's obligations under the Montreal Protocol, and the main activities carried out by NOUs. It aims to provide new NOU staff with fundamental knowledge and information tools that will enable them to support their national government in meeting the commitments agreed by all countries under the Montreal Protocol.

[Download the flyer >>>](#)



Contact: [Mikheil Tushishvili](#), Montreal Protocol Programme Officer, UNEP-OzonAction.



### **[OzonAction Factsheet: Article 7 Data Reporting on HFCs - When Countries Need to Start Reporting](#)**

One of the important commitments of the Protocol is that of reporting the consumption and production of substances controlled under the Montreal Protocol.

Following ratification of the Kigali Amendment, this commitment is now extended to HFCs.

This short factsheet provides some useful information on relevant Article 7 reporting dates and deadlines for HFCs.

[Download the Factsheet](#)

Contact: [Ezra Clark](#), UNEP, OzonAction



### **[HS Codes for HFCs - Advice for countries in advance of the 2022 HS code update](#)**

The Kigali Amendment requires Parties to put into place an import and export licensing system for hydrofluorocarbons (HFCs) by 1st January 2019 (or two years later if required).

To enable a licensing system to function effectively, it is important that the government is able to monitor and record imports and exports of each specific HFC individually.

Import and export statistics are normally collected by customs officers using the international product nomenclature system – the Harmonized Commodity Description and Coding System, or Harmonized System (HS).

However, until the HS is revised in 2022, all HFCs are contained in a single HS code which does not allow differentiation of the individual chemicals or of mixtures.

This document outlines a proactive interim approach, recommended by the World Customs Organization (WCO), to establish additional digits in the existing national HS codes to identify specific HFCs.

This practical document is suitable for outreach to the customs agencies, customs officers in the field, and others involved in controlling trade in HFCs.

Document prepared by the UN Environment Programme in cooperation with the World Customs Organization (WCO).

[Download the publication](#)

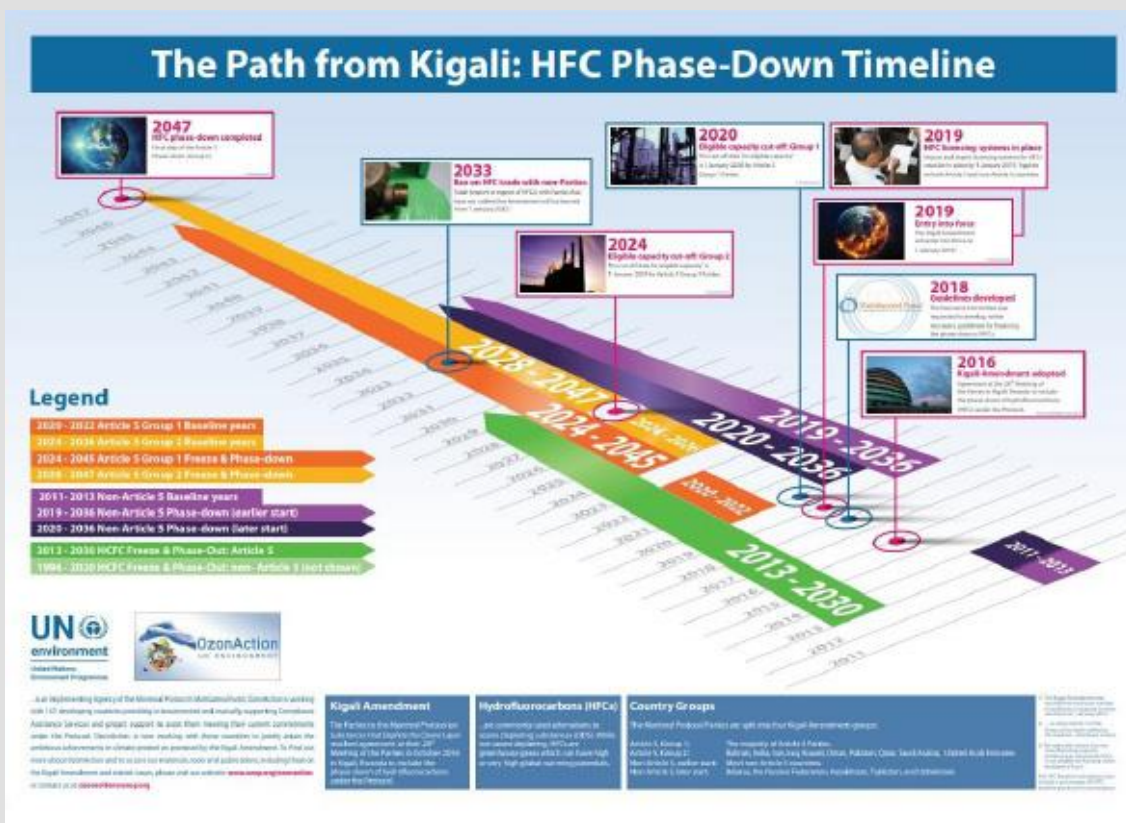
Contact: [Ezra Clark](#), UNEP, OzonAction



**Women in the refrigeration and air-conditioning industry: Personal experiences and achievements**

The United Nations Environment Programme’s (UNEP), OzonAction, in cooperation with UN Women, has compiled this booklet to raise awareness of the opportunities available to women and to highlight the particular experiences and examples of women working in the sector and to recognise their successes. All of the professionals presented in the booklet are pioneers. They are role models whose stories should inspire a new generation of young women to enter the weld and follow in their footsteps.

[Download the publication](#)



**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





### Good Servicing: Flammable Refrigerants Quick Guide

This is the electronic and interactive version of the UN Environment Programme OzonAction Quick Guide on Good Servicing Practices for Flammable Refrigerants. It offers easy reference to the key safety classification and technical properties of flammable refrigerants that are available in the market.

It also provides important safety guidance for the installation and servicing of room air-conditioners designed to use flammable refrigerants.

This interactive guide allows you to scroll and browse the text, jump to specific chapters or use the comprehensive dynamic index to locate specific keywords, figures and tables. The application also includes a refrigerant charge size calculator and a room size calculator for flammable refrigerants.

Available for [free](#) on the [Google play store](#) (Apple version coming soon). Search for “UNEP Quick guide” or use the QR code



### Refrigerant Identifier Video Series

Guidance on how to identify refrigerants using a refrigerant identifier.

This new OzonAction video series consists of short instructional videos showing how to use and maintain a refrigerant identifier.

The videos provide useful guidance on safety and best practice, understanding the difference between different identifier units, testing procedures and identification of results.

It is intended for use by Montreal Protocol National Ozone Officers, Customs and Enforcement Officers as well as technicians involved in the servicing and maintenance of refrigeration and air conditioning systems.

The application features 10 short instructional videos on the following topics:

- Refrigerant cylinder types
- Types of identifiers
- Getting to know your identifier
- Safety and precautions
- Testing a sample – vapour (gas)
- Testing a sample – liquid
- Results
- Faults & error messages
- Maintaining the unit
- Software updates

Available for [free](#) on the Google play store (Apple version coming soon). Search for “UNEP Refrigerant ID” or use the QR code



### 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.

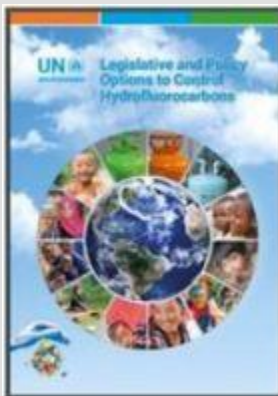
This application, consisting of short instructional videos on techniques, safety and best practice, serves as a complementary training tool for refrigeration and air-conditioning (RAC) sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training.

#### **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

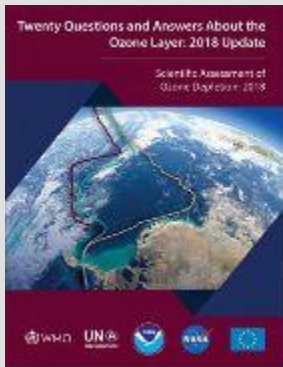


### [Legislative and Policy Options to Control Hydrofluorocarbons](#)

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.





[Twenty questions and answers about the ozone layer: 2018 update](#), is a component of the Scientific Assessment of Ozone Depletion: 2018 report. The report is prepared quadrennially by the Scientific Assessment Panel (SAP) of the Montreal Protocol on Substances that Deplete the Ozone Layer.

**Lead Author:** Ross J. Salawitch

**Coauthors:** David W. Fahey, Michaela I. Hegglin, Laura A. McBride, Walter R. Tribett, Sarah J. Doherty

Read / Download:

[20 Questions and Answers about the ozone layer-2018](#) | [Figures](#)



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

Fast action under the Montreal Protocol can limit growth of hydrofluorocarbons (HFCs), prevent 100 to 200 billion tonnes of CO<sub>2</sub>-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.



### [Cold Hard Facts 3 - Review of the Refrigeration and Air Conditioning Industry in Australia](#)

[...] This study provides a broad view of the composition, size and value of the industry, and projections for its future. This will assist industry and policy makers with management of ozone depleting substances as they are phased out, and synthetic greenhouse gases, including hydrofluorocarbons (HFCs) which are being phased down from January 2018.



[Ozone-depleting substances 2019 Aggregated data reported by companies on the import, export, production, destruction, feedstock and process agent use of ozone-depleting substances in the European Union, 2006-2018/1994-2019](#) - The 2019 edition of the European Environment Agency (EEA) report on ODS confirms that the EU has already achieved its goals on the phase-out of such substances under the Montreal Protocol. [...]



[Benefits of Energy Efficient and Low-Global Warming Potential Refrigerant Cooling Equipment](#)  
Authors: Nihar Shah, Max Wei, Virginie Letschert, Amol Phadke.  
Energy Analysis and Environmental Impacts Division  
Lawrence Berkeley National Laboratory  
August/2019



[Lower-GWP Alternatives in Stationary Air Conditioning: A Compilation of Case Studies](#) -The case studies in this booklet discuss several applications in the stationary air conditioning sector. The applications include chillers of natural refrigerants and hydrofluoroolefins (HFOs) as well as split-units which use hydrocarbons (HCs) as the refrigerant. The technologies presented in these case studies are only some examples of the many available options for zero and lower GWP substances. The examples take into account design criteria such as system performance, environmental impact and cost. All these refrigerants still have many challenges that should be considered in the design, for example their flammability, toxicity, lower efficiency in some cases, and cost. Balancing these challenges using a consistent and comprehensive methodology across all refrigerants and system types is essential in assessing alternatives...

[Climate and Clean Air Coalition \(CCAC\), 2019](#)



Latest issue of Centro Studi Galileo magazine, [Industria & Formazione, n. 7 - 2020](#) (in Italian language).



[Accelerate #110](#) features a cover story on Clean Cooling, a new approach to HVAC&R.



“[World Guide to Transcritical CO<sub>2</sub> Refrigeration](#)”, a free three-part resource looking at the global market penetration and potential of this natural refrigerant technology. As the use of transcritical CO<sub>2</sub> refrigeration systems increase at an exponential rate around the world, it has become apparent that there is a great need for reliable information from a neutral source. The newly included Part 3 focusses on specific trends relating to industrial applications and on the global transcritical CO<sub>2</sub> market in the future. It includes survey information, partner case studies and interviews, and “thought leader interviews” with important individuals from the industry.

## MISCELLANEOUS

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



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

We 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 Programme, OzonAction

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

## **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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- See which papers, published in Elsevier or elsewhere, have cited any selected article.

- 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.



[Role of economic instruments for the sound management of chemicals and waste](#) The Strategic Approach to International Chemicals Management (SAICM) is a global policy framework which aims to protect human health and the environment from the unsound management of chemicals and waste. A key obstacle that has been limiting SAICM's success at the national level has been the inability of stakeholders to secure adequate financial resources in their efforts to manage chemicals and waste safely throughout the entire value chain. In this context, this policy brief provides an overview of existing cost recovery mechanisms and economic policy instruments being used around the world today to mobilize resources and internalize some of the external costs arising from the unsound management of chemicals and waste.

### [Chemistry for Safety in Refrigeration](#)

Webinar invitation, Centro Studi Galileo

**Wednesday, 28 October 2020,  
11:00 AM - 12:30 PM CET**

Centro Studi Galileo upcoming webinar will discuss the important contribution of chemical research and innovation to the refrigeration and air conditioning sector;

Speakers from Chemours and Errecom will shed light on flammability of refrigerants, proper lubricants and additives, nonetheless their correct use in light of safety and efficiency.

The speakers will present:

"Main differentiating factors of A2L refrigerants vs A3s and other technologies" Ernesto Revello, Sales and Business Development Manager for Opteon Refrigerants of Chemours

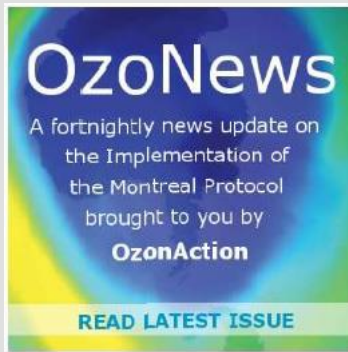
"New refrigerants: lubricants and additives evolution to grant top performance of AC/R systems" Paolo Mattavelli, R&D Manager of Errecom

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Click [here](#) to access previous webinars







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

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Prepared by: Samira Korban-de Gobert, OzonAction

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