

OzoNews

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

Volume XX | 16 September 2020

Special Issue on the International Day for the Preservation of the Ozone Layer

The World Ozone Day 2020 theme and tagline - **OZONE FOR LIFE - 35 YEARS OF OZONE LAYER PROTECTION**

On 19 December 1994, the United Nations General Assembly proclaimed 16 September the International Day for the Preservation of the Ozone Layer, commemorating the date, in 1987, on which the Montreal Protocol on Substances that Deplete the Ozone Layer was signed.

States are invited to devote the Day each year to promote, at the national level, activities in accordance with the objectives of the Montreal Protocol and its amendments.

Please refer to the [Ozone Day webpage](#) in the [OzonAction website](#).

We thank you for your ongoing commitment to compliance with the Montreal Protocol and your excellent work in implementing your national strategies and projects.

OzonAction team wishes you a successful celebration!

The United Nations Secretary-General's Message on International Day for the Preservation of the Ozone Layer | 16 September



There are few global agreements as successful as the Vienna Convention for the Protection of the Ozone Layer. Today, on World Ozone Day, we celebrate 35 years of this convention, which was the first step in fixing the hole in the planet's ozone layer.

“ Let us take encouragement from how we have worked together to preserve the ozone layer and apply the same will to healing the planet and forging a brighter and more equitable future for all humanity.

— António Guterres

Gases used in aerosols and cooling appliances were causing this hole. Under the convention's Montreal Protocol, governments, scientists and industry cooperated and have so far replaced 99 per cent of these gases. The ozone layer is now healing, safeguarding human and ecosystem health.

But the work of the Montreal Protocol is not over. Through the Protocol's Kigali Amendment, the international community is finding alternatives for coolants that contribute to the growing menace of climate disruption. If fully implemented, the Kigali Amendment can prevent 0.4 degrees Celsius of global warming. I congratulate the 100 Parties that have been leading by example.

As we look ahead to global recovery from the social and economic devastation caused by the Covid-19 pandemic, we must commit to building stronger and more resilient societies. It is imperative that we put our efforts and investments into tackling climate change and protecting nature and the ecosystems that sustain us.

The ozone treaties stand out as inspiring examples that show that, where political will prevails, there is little limit to what we can achieve in common cause. Let us take encouragement from how we have worked together to preserve the ozone layer and apply the same will to healing the planet and forging a brighter and more equitable future for all humanity.

[AR](#) | [CH](#) | [ES](#) | [FR](#) | [RU](#)

[United Nations, September 2020](#)

[UN Environment Executive Director's Message for World Ozone Day 2020](#)



Transcript:

“Today on World Ozone Day, we celebrate 35 years of the Vienna Convention for the protection of the ozone layer.

This convention and its Montreal Protocol united the world to cut out the gases creating a hole in the planet’s ozone layer, critical in shielding us against deadly UV radiation. This model of international cooperation has put the ozone layer on the road to recovery, protecting human and ecosystem health.

Such cooperation demonstrates that when people work together, they can fix problems on a global scale.

We need this unity of purpose more than ever, as we seek to address nature loss, climate change and pollution in the wake of the COVID-19 pandemic and the discussions on the replenishment of the multilateral fund.

The ozone treaties have a major role to play in this work. Particularly, through the Kigali Amendment to the Montreal protocol. As we know, the Kigali Amendment has now been ratified by 100 parties and, fully implemented, will prevent 0.4°C of global warming.

I congratulate all involved in the ozone treaties for the 35 years of success and I wish them many more to come.”

[The United Nations Environment Programme \(UNEP\), 15 September 2020](#)

World Ozone Day 2020, Letter to National Ozone Officers



Law Division

Ref: OzonAction/JSC/ANC

14 September 2020

Dear National Ozone Officers,

It is my sincere hope that you, your families and colleagues are all remaining safe and healthy during the COVID-19 pandemic, which has impacted individuals, countries and businesses worldwide. Health guidelines and travel restrictions means that we are celebrating a very different World Ozone Day (WOD) this year on 16 September, with reduced opportunities for outreach and face-to-face interactions with the public and key target groups. In spite of these challenges, I commend you and your teams in the National Ozone Units for your dedication, resilience, and innovative approach in continuing your country's work to implement the Montreal Protocol on Substances that Deplete the Ozone Layer, including WOD celebrations.

This year's WOD has a special significance since it commemorates the signature of the Vienna Convention, the world's first ozone treaty, in 1985. That landmark agreement established the framework for international scientific and research cooperation on the status of the ozone layer and paved the way for the Montreal Protocol. This year's theme 'Ozone for Life: 35 Years of Ozone Layer Protection,' gives us the opportunity to reflect with satisfaction on the accomplishments of these two treaties to date and look ahead to their evolving role for both ozone layer and climate protection. Without everyone's commitment, collaboration and sense of common purpose, we would not have achieved this "stratospheric" level of success.

The COVID-19 pandemic appears to have arisen from mankind's mistreatment of nature. The consequences of ozone depletion – excessive and dangerous UV radiation impacting human health – is another example of how humans have adversely affected the global environment. On this WOD, we can highlight the positive lesson learned from the two successful ozone treaties: the world community can unite and find a solution to a major global crisis, through differentiated but equal responsibilities, universal participation, and equity. They prove that when the world is dedicated to solving a problem, it can do so. The ozone treaties give us hope and inspiration that we will find a way to overcome the COVID 19 pandemic too.

For this year's WOD, the OzonAction Compliance Assistance Programme (CAP) is pleased to provide you with two new services: one is a new service designed specifically for you, the National Ozone Officer, and the other is suitable for outreach to national stakeholders:

- HCFC Quota and Licence Tracker (desktop application). 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

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- **Energy Efficiency Library for Air-Conditioning and Refrigeration Systems (e-learning).** Maintaining and improving energy efficiency during the phase out of HCFCs/phase down of HFCs are the aspirations of the Kigali Amendment to the Montreal Protocol. With climate change of increasing concern, it is critical to understand how energy efficiency in air conditioning and refrigeration can reduce both CO₂ emissions and operating costs. UNEP OzonAction, in cooperation with United for Efficiency (U4E), Rigil Cooling Efficiency Programme (KCEP) and ASHRAE have jointly developed a new introductory e-learning course to increase the awareness and understanding of government policy makers, community stakeholders and business leaders about energy-efficiency related to air conditioning and refrigeration. It is a 4-hour, self-paced virtual course that concludes with a final exam leading to Certificate of Successful Completion issued by ASHRAE. Attached is a flyer to the course where it outlines its content and presents how individuals can enroll.

The next page lists some of the recent online tools and videos produced by OzonAction that you can share with stakeholders during your national celebrations. Beyond those resources, OzonAction also has a wide range of other existing information and awareness-raising materials that could also be used for your national celebrations. Please refer to the [Ozone Day webpage](#) on the OzonAction website for several examples.

We would appreciate very much to receive information about your country's WOD activities or reports about what took place for posting on the World Ozone Day page. Please send this information to your Network's Montreal Protocol Coordinator or directly to Ms. Jo Zhou at jzhou@unep.org. Sharing such information is very encouraging and inspiring for the entire Montreal Protocol community.

We thank you for your ongoing commitment to maintain compliance with the Montreal Protocol and your excellent work in implementing your national strategies and projects. On behalf of the entire OzonAction CAP team, I wish you great success in this year's WOD celebration!

Yours sincerely,
James S. Curfio
Acting Head of OzonAction
Law Division
UN Environment Programme

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Yours sincerely,
James S. Curlin
Acting Head of OzonAction
UN Environment, Law Division

The World Customs Organization (WCO) celebrates World Ozone Day

On 16 September this year, the World Customs Organization (WCO) joins the international community to celebrate [35 years of work for the protection of the ozone layer](#).

This layer of gas is the Earth's shield, protecting it from the more harmful portion of the sun's ultraviolet rays. The work to protect the ozone layer is therefore fundamental to the protection of human health and the ecosystem. This work is particularly relevant to the WCO this year, as it rallies the global Customs community around the theme of "Customs fostering Sustainability for People, Prosperity and the Planet".



On this day, the WCO reiterates its support to the [United Nations Environment Programme](#) (UNEP) and [OzonAction](#) for the implementation of the Vienna Convention for the Protection of the Ozone Layer, the Montreal Protocol and the Kigali Amendment. The effective implementation of these Multilateral Environmental Agreements (MEAs) is instrumental in guaranteeing that products being traded are safe both for human health and the environment.

"Customs is a key player in the implementation of the United Nations' 2030 Sustainable Development Goals", according to the WCO Secretary General, Dr. Kunio Mikuriya. "Customs can enhance controls on transboundary movements of environmentally sensitive commodities by encouraging international cooperation, managing risks, and applying technology to data exchange and analytics."

Customs officers are at the frontline of environmental protection. They play a critical role in the prevention and detection of illegal trade and in ensuring compliance with MEAs, including the Montreal Protocol. To support Customs in this mission, the WCO, in cooperation with OzonAction and the partners of the [Green Customs Initiative](#), provides training and guidance to Customs officers around the world by increasing their knowledge, enhancing their skills and facilitating their access to information, so that they can successfully mitigate the illegal trade in ozone depleting substances (ODS). The WCO also coordinates global enforcement operations, such as the "Demeter" operations targeting illicit shipments of ODS. In 2019, Operation [Demeter V](#) resulted in Customs officers seizing 8,031 kg of illegally traded ODS.

Only through multilateral cooperation and continued capacity building can Customs successfully and durably implement MEAs and mitigate illicit trade. By developing a network of trust and enhancing intelligence gathering and exchange, Customs around the world are actively contributing to the protection of the planet and its people.

[The World Customs Organisation, 16 September 2020](#)

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.

The [tracker](#) is available on the OzonAction Website.

More information on the tracker can be found in this [flyer](#)

Please also see the [short tutorial video](#) on the OzonAction YouTube Channel.



NEW/UPDATED GLOBAL ONLINE TOOLS FROM OZONACTION

• RAC Technician Videos - Full Length Films!

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 for refrigeration and air-conditioning (RAC) sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training.

• **GWP-ODP Calculator - Updated and Improved!**

The updated UNEP OzonAction GWP-ODP Calculator application will help you to convert between values in metric tonnes, ozone-depleting potential (ODP) tonnes and CO₂-equivalent tonnes of substances controlled by the Montreal Protocol and their alternatives.

• **What Gas? – Updated and Improved!**

The UNEP OzonAction ‘WhatGas?’ application is an information and identification tool for ozone depleting substances (ODS), HFCs, and other alternatives. It is intended to provide you 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.

• **The New Informal Prior Informed Consent (iPIC) platform**

It enables countries to share details of eligible importers and exporters with other member countries through a secure online platform. iPIC has become a global voluntary initiative used by more than 100 like-minded states who wish to strengthen the implementation of their national licensing system for ODS and HFCs. Access iPIC online.

Factsheets/briefs

- [Refrigerant Cylinder Colours - What has changed?](#)
- [Updated Refrigerants Designations and Safety Classifications - 2020](#)
- [Servicing Tail for HCFCs - What is it & Why Does it Matter?](#)
- [Cheat Sheet - Proposed Additional HS Code Sub Headings for HFCs in Advance of the 2022 HS Code Update](#)
- [Dealing with Seized ODS - Options for Article 5 Countries](#)
- [Article 7 Data Reporting on HFCs: When Countries Need to Start Reporting](#)
- [HS Codes for HFCs - Advice for countries in advance of the 2022 HS code update](#)
- Cold Chain Technology Briefs (in cooperation with International Institute of Refrigeration) in French, English and Spanish:
 - [Cold Storage and Refrigerated Warehouse](#)
 - [Refrigeration in Food Production and Processing](#)
 - [Fishing Vessel Application](#)
 - [Commercial, Professional and Domestic Refrigeration](#)
 - [Transport Refrigeration](#)

Kigali Amendment latest ratification

Congratulations to the latest country which has ratified the Kigali Amendment:

[Kyrgyzstan, 8 September 2020](#)

At the Twenty-Eighth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, held in Kigali from 10 to 15 October 2016, the Parties adopted, in accordance with the procedure laid down in paragraph 4 of article 9 of the 1985 Vienna Convention for the Protection of



the Ozone Layer, a further amendment to the Montreal Protocol as set out in Annex I to the report of the Twenty-Eighth Meeting of the Parties (Decision XXVIII/1).

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

[United Nations Treaty Collection](#)

Lower-GWP refrigeration & air conditioning innovation award - Entry period extended till 1 October 2020



What is lower GWP refrigeration and air-conditioning innovation award?

The award promotes innovative design, research, and practice, recognizing individuals and teams who have developed or implemented innovative technologies or concepts. Projects must be implemented or conceived specifically for use in developing countries and be aimed at advancing lower global warming potential (GWP) refrigerants.

Who are the awarding organizations?

Award recipients will be recognized by ASHRAE and UN Environment Programme.

How often is the award issued/awarded?

Annually.

What are the award categories?

Projects can be entered into one of two categories:

- Residential Applications
- Commercial/Industrial Facilities

What is the entry criteria?

The award is open to individuals and to teams of individuals. If submission is by an individual, individuals must confirm the work was not a team effort. If a team of individuals is selected, the team itself shall determine which team members shall be entitled to be certificated (maximum 5 per team). All awards will be made in the name of individuals, not in the name of their affiliations.

ASHRAE membership is not a requirement for submission.

How do I enter for the award?

To enter, please go to the link below and fill out the online form.

www.ashrae.org/lowerGWP

The submission form requires descriptive responses to each of the following:

- Description of innovation in the field of lower-GWP refrigerants
- Project details (description must include confirmation project has been implemented and date of implementation)
- Extent of need
- Description and goal of the research, design, practice or project
- Environmental impact achieved including specific reference to the GWP chemicals' contribution
- Further application(s) of project in developing countries from both the technical and economic perspectives, including how the innovation can be replicated
- Photographs illustrating the project, as well as statistical data demonstrating the project's successful performance or experimental findings (tables, figures, charts, etc.) are encouraged to be provided with the application.

How are the projects selected?

Projects in each category will be selected based on innovative solutions for designs, practice, or research using lower-GWP technologies. The selection will take into account the following criteria:

- Innovative aspects in transforming conventional practices (40%);
- Extent of need (25%);
- Technical replicability in developing countries (25%); and
- Economy feasibility for developing countries (10%).

What happens to the selected projects?

Selected entries in each category will be publicized by both ASHRAE and the UN Environment Programme.

When does the entry period opens and closes? Entries are now being accepted.

Entry period extended till 1 October 2020.

Click [here](#) to learn more and to complete an online entry form. To receive updates about the awards, please send an [email](#) to request to be added to our mailing list.

The International Ozone Commission, on the 33rd anniversary of the Montreal Protocol, reports successes and remaining challenges for understanding ozone layer recovery

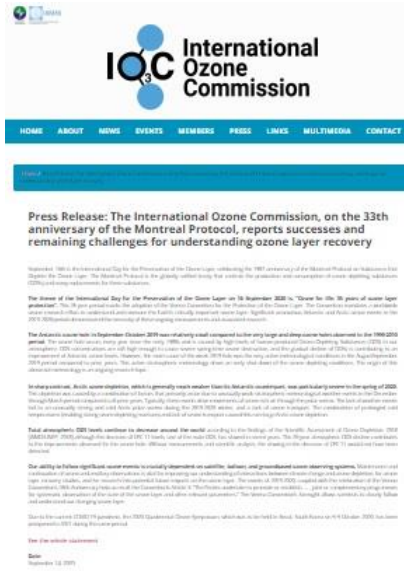
September 16th is the International Day for the Preservation of the Ozone Layer, celebrating the 1987 anniversary of the Montreal Protocol on Substances that Deplete the Ozone Layer. The Montreal Protocol is the globally ratified treaty that controls the production and consumption of ozone depleting substances (ODSs) and many replacements for these substances.

The theme of the International Day for the Preservation of the Ozone Layer on 16 September 2020 is: “Ozone for life: 35 years of ozone layer protection”. This 35-year period marks the adoption of the Vienna Convention for the Protection of the Ozone Layer. The Convention mandates a worldwide ozone research effort to understand and measure the Earth’s critically important ozone layer. Significant anomalous Antarctic and Arctic ozone events in the 2019-2020 period demonstrated the necessity of these ongoing measurements and associated research.

The Antarctic ozone hole in September-October 2019 was relatively small compared to the very large and deep ozone holes observed in the 1990-2010 period. The ozone hole occurs every year since the early 1980s and is caused by high levels of human-produced Ozone Depleting Substances (ODS) in our atmosphere. ODS concentrations are still high enough to cause severe spring-time ozone destruction, and the gradual decline of ODSs is contributing to an improvement of Antarctic ozone levels. However, the main cause of the weak 2019 hole was the very active meteorological conditions in the August-September 2019 period compared to prior years. This active stratospheric meteorology drove an early shut-down of the ozone depleting conditions. The origin of this abnormal meteorology is an ongoing research topic.

In sharp contrast, Arctic ozone depletion, which is generally much weaker than its Antarctic counterpart, was particularly severe in the spring of 2020. This depletion was caused by a combination of factors that primarily arose due to unusually weak stratospheric meteorological weather events in the December through March period compared to all prior years. Typically, these events drive movements of ozone-rich air through the polar vortex. The lack of weather events led to an unusually strong and cold Arctic polar vortex during the 2019-2020 winter, and a lack of ozone transport. The combination of prolonged cold temperatures (enabling strong ozone depleting reactions) and lack of ozone transport caused this rare large Arctic ozone depletion.

Total atmospheric ODS levels continue to decrease around the world according to the findings of the Scientific Assessment of Ozone Depletion: 2018 [WMO/UNEP, 2018] although the decrease of CFC-11 levels, one of the main ODS, has slowed in recent years. The 20-year atmospheric ODS decline contributes to the improvements observed for the ozone hole. Without measurements and scientific analysis, the slowing in the decrease of CFC-11 would not have been detected.



Our ability to follow significant ozone events is crucially dependent on satellite, balloon, and ground-based ozone observing systems. Maintenance and continuation of ozone and ancillary observations is vital for improving our understanding of interactions between climate change and ozone depletion, for ozone layer recovery studies, and for research into potential future impacts on the ozone layer. The events of 2019-2020, coupled with the celebration of the Vienna Convention's 35th Anniversary help us recall the Convention's Article 3: "The Parties undertake to promote or establish, ... , joint or complementary programmes for systematic observation of the state of the ozone layer and other relevant parameters." The Vienna Convention's foresight allows scientists to closely follow and understand our changing ozone layer.

Due to the current COVID-19 pandemic, the 2020 Quadrennial Ozone Symposium, which was to be held in Seoul, South Korea on 5-9 October 2020, has been postponed to 2021 during the same period.

[See the whole statement](#)

[The International Ozone Commission, Press Release, 14 September 2020](#)

5th 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](#)

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

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

Recent Meetings:

- [42nd 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
- [31st Meeting of the Parties to the Montreal Protocol](#), 4 - 8 November 2019, Rome, Italy
- [Bureau Meeting of the 30th Meeting of the Parties to the Montreal Protocol](#), 3 November 2019, Rome, Italy
- [63rd 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 85th 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 85th meeting has been postponed until immediately after the 42nd 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:

- [84th meeting of the Executive Committee](#)
- [83^d meeting of the Executive Committee](#)
- [82nd 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

- [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 CO₂-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, CO₂-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 CO₂-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 CO₂-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 CO₂-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, CO₂- 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



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 7044⁴). 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

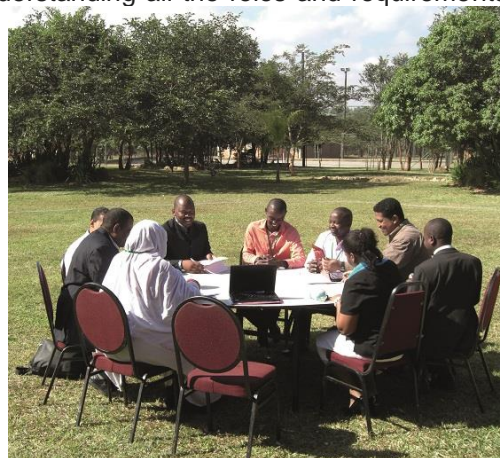
A key factor contributing to the significant success of the Montreal Protocol on Substances that Deplete the Ozone Layer is the 'country-driven approach'. This approach places National Ozone Units at the centre of the action to protect the ozone layer.

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](#)

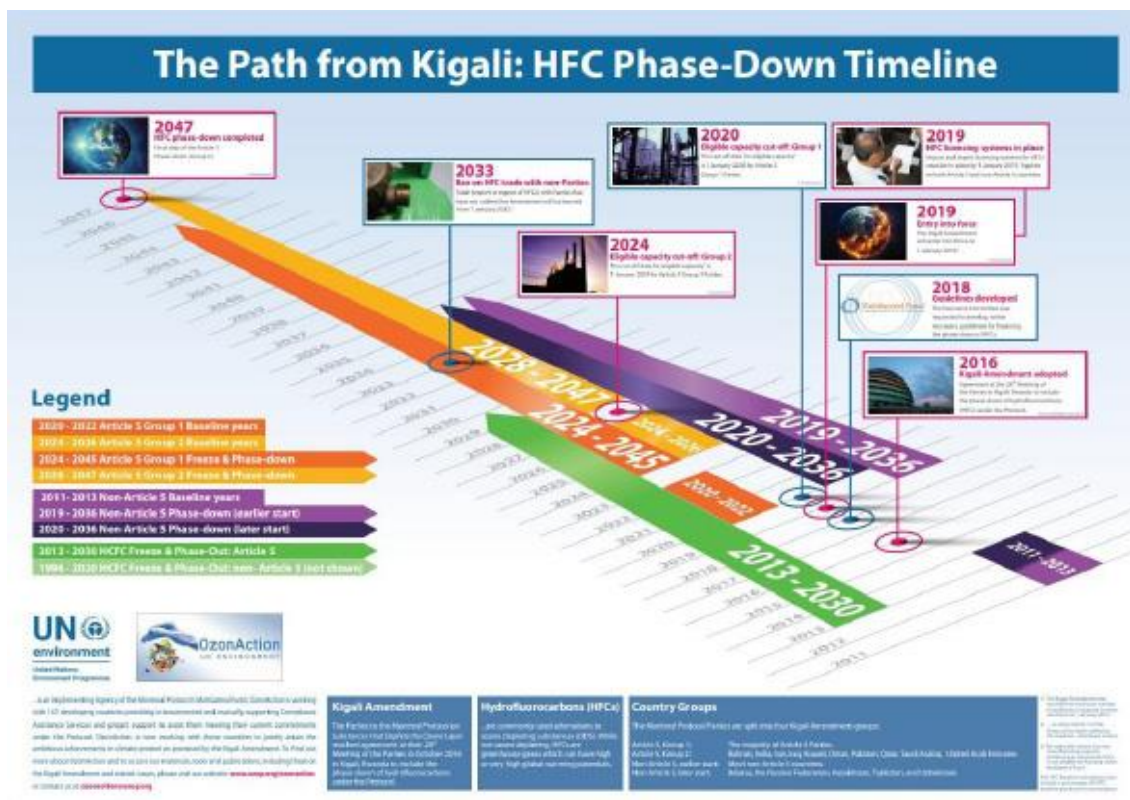
Contact: [Ezra Clark](#), UNEP, OzonAction



[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.

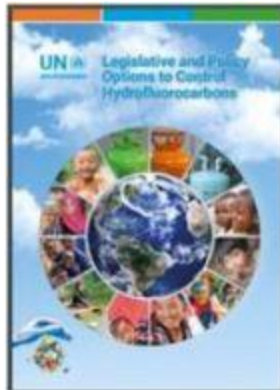
This application, consisting of short instructional videos on techniques, safety and best practice, serves as a complementary training tool for refrigeration and air-conditioning (RAC) sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training.

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)

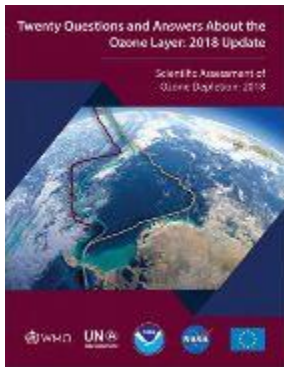
PUBLICATIONS



[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 CO₂-eq by 2050, and avoid up to 0.5°C of warming by 2100.

Lead authors: urwood 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.

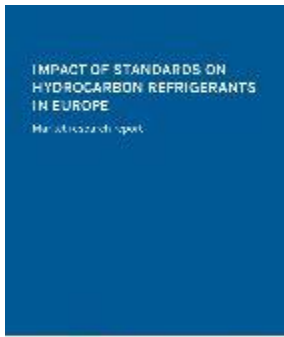


The [IIR International Dictionary of Refrigeration](#) Available in 11 languages, the complete version of the International Institute of Refrigeration (IIR) International Dictionary of Refrigeration is now freely accessible online. The IIR International Dictionary of Refrigeration offers researchers,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



life front

[Impact of Standards on Hydrocarbon Refrigerants in Europe – Market research report.](#)

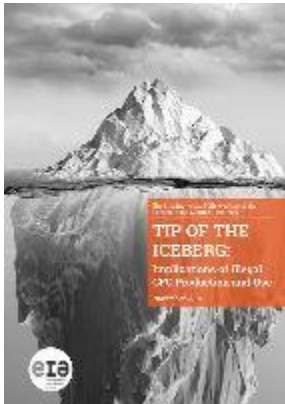
The market research report was realised for the EU-funded **LIFE FRONT** project. Amongst the main result of the market research:

- 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.



A new approach to define safe charge limits for flammable refrigerants - The LIFE FRONT project has just released its latest report entitled "[Recommendations for the revision of safety standards for RACHP equipment](#)".

LIFE FRONT is an EU-funded project that aims to remove barriers posed by standards for flammable refrigerants in refrigeration, air conditioning, and heat pump (RACHP) applications. With this new report, it provides project results from the laboratory testing as well as recommendations on measures to minimize concentrations of flammable refrigerants in the case of a leak; implementation of mitigation measures performance testing; and increasing charge size flammability risk focusing on smaller devices as described in the access categories 'a' and 'b' in the EN 378-1 (2016) Standard. [...]



[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](#)



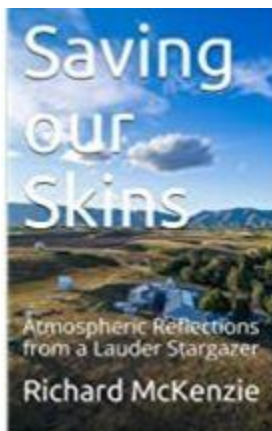
Latest issue of Centro Studi Galileo magazine,
[Industria & Formazione, n. 6 - 2020](#)
(in Italian language).



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



“[World Guide to Transcritical CO₂ Refrigeration](#)”, a free three-part resource looking at the global market penetration and potential of this natural refrigerant technology. As the use of transcritical CO₂ 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 CO₂ market in the future. It includes survey information, partner case studies and interviews, and “thought leader interviews” with important individuals from the industry.



[Saving our Skins: Atmospheric Reflections from a Lauder Stargazer](#) An insider’s account of the most successful international environmental action ever undertaken: the Montreal Protocol on Protection of the Ozone Layer. Richard McKenzie’s career in ozone research began years before the discovery of the Antarctic ozone hole and continues to the present day. McKenzie brings a first-hand experience to the story through his research and involvement in scientific and environmental assessments of ozone depletion. Saving our Skins is the story of how McKenzie and his colleagues at New Zealand’s National Institute of Water & Atmospheric Research in Lauder – a research laboratory housed on a sheep and cattle station at the bottom of the country – helped ensure the success of the Montreal Protocol. McKenzie’s story plays out against a backdrop of an ever-increasing threat from climate change and its interactions with the ozone story. This book – authoritative on the science, but accessible to the layman – intertwines the scientific story behind the Protocol with the author’s personal experiences in a career that spans four decades, stretching from the hallowed corridors of Oxford University to an isolated rural community where the locals refer to the scientists as “stargazers”. The book’s title plays on the dual problem of ozone depletion - which leads to dramatic increases in ultra-violet radiation that causes skin cancer -

and climate change, which poses an existential threat to humanity. Both serve to remind us of the fragility of our thin skin of atmosphere. Ultimately, McKenzie shows that with foresight and global cooperation, difficult problems in science can be solved. As world leaders grasp for solutions to the climate change threat, this book suggests they might find a model in the Montreal Protocol.

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:

- Immediate and permanent access to the latest research and to IJR archive
- Access the latest articles as soon as they become available online.
- Browse, search and read each one of the nearly 4,500 papers since Volume 1, Issue 1.
- Unlimited access to seminal contributions to the field of refrigeration dating back to 1978.
- Keep up-to-date with subscriptions to customized e-alerts on New Volumes, Topics and saved Searches. Enhanced content and functions
- Easily export references, citations and abstracts.
- Print, download or share articles with colleagues or peers.
- 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.



[NatRef Virtual Trade Show Signs Up 75 Exhibitors and 1,000+ Attendees](#)

The Virtual Trade Show for natural refrigerant technology, organized by clean cooling accelerator shecco (publisher of this website), has so far signed up 75 exhibitors and 1,000+ attendees. The event will take place live around the world, over a 24-hour period on September 1-2. It is [free](#) to attend, and interested participants can sign

up [here](#). It will connect the world's foremost natural refrigerant technology providers with the global cooling marketplace... [Learn more](#)



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