

OzoNews

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

Volume XXI | 30 June 2021

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GLOBAL

1. Kigali Amendment latest ratification

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

China, 17 June 2021

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



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

United Nations Treaty Collection

Image: UN Treaty Collection website

2. New OzonAction Knowledge Maps tool

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

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

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

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

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

Click [HERE](#) to access the OzonAction Knowledge Maps tool



Click [HERE](#) to download the OzonAction Knowledge Maps tool flyer

OzonAction UN Environment Programme Law Division, 30 June 2021

Image: OzonAction

3. Revised contingency plan for the 2021 meetings of the ozone treaties

Due to the continued COVID-19 pandemic, travel constraints and the varied global progress of vaccination programmes, it has become evident that it will still not be possible to convene any large-scale in-person meetings. Therefore, it has been decided that the combined twelfth meeting of the Conference of the Parties (part II) and Thirty-Third Meeting of the Parties (COP12(II)/MOP33) will be held online.

Following the successful online COP/MOP last year, the COP12(II)/MOP33 this year will be organized again online respecting the rules of procedure and the principles that guide intergovernmental meetings under the ozone treaties. These include the provision of interpretation in the official languages of the United Nations and assistance with internet connectivity, including providing additional assistance to Article 5 parties, where required.

The online **COP12(II)/MOP33** will be held from **23 to 29 October 2021**. The sixty-seventh meeting of the **Implementation Committee** will be held on **20 and 21 October 2021** and the 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 to the Montreal Protocol on **22 October 2021**.

COP12(II)/MOP33

The first six days of COP12(II)/MOP33 will comprise the preparatory segment of the meeting. The high-level segment will take place on the seventh day of the meeting.

Each day of the preparatory segment will consist of a **plenary session** from **2.00 p.m. to 4.00 p.m.** (Nairobi time (UTC +3)), and contact group(s) will be organized from **4.15 p.m. to 5.30 p.m.** maximum (Nairobi time (UTC +3)).

The **high-level segment** will run from **2.00 p.m. to 5.30 p.m.** (Nairobi time (UTC +3)) on **29 October 2021**.

As the online format poses significant challenges associated with time zones and conducting negotiations, the agenda of the COP12(II)/MOP33 will be reduced.



The **Provisional Agenda**, after it becomes available in early August 2021, can be accessed in the meeting webpage [here](#).

PREPARATORY WORK

Due to the scaled-down meeting, preparatory work will be organized on some issues through an online forum for reviewing and commenting on selected documents and draft decisions, and informal meetings and briefing sessions on other selected issues on the agenda.

Online forum tabs (13 September to 4 October) will be created for the following issues:

- Financial reports and budgets of the trust funds for the Vienna Convention and the Montreal Protocol;
- Vienna Convention issues;
- Updated replenishment report;
- Gaps in monitoring of controlled substances;
- Critical-use nominations; and
- Energy efficiency.

Relevant reports and documents including any draft decisions, will be posted in the forum to enable parties to review them and post comments.

Online informal and briefing meetings (5 to 19 October) will also be organized, specifically, two informal meeting sessions, for the budget discussion, and a briefing meeting for each of the following three issues: Vienna Convention issues; updated replenishment report; and 2021 progress report of TEAP (volume 1 of 2021 TEAP report).

Relevant reports and documents will be made available in the online forum under appropriate tabs to enable parties to post comments.

INFORMAL AND BRIEFING MEETINGS

Informal and briefing meetings are envisaged to be organized after the closing of the online forum and before the COP12(II)/MOP33 take place. Each meeting will run from **2.00 p.m. to 5.30 p.m.** maximum (Nairobi time (UTC +3)) **from 5 to 19 October 2021**.

- Informal meeting (two sessions) on financial reports and budgets (**11 and 14 October 2021**)
- Briefing meeting (one session) on the Vienna Convention issues (Ozone Research Managers and Trust Fund for research and systematic observation) (**5 October 2021**)
- Briefing meeting (one session) on the 2021 progress report of the TEAP (**7 October 2021**)
- Briefing meeting (one session) on the updated replenishment report by the TEAP task force (**18 October 2021**)

REGIONAL CONSULTATIONS ON THE MEMBERSHIP OF MONTREAL PROTOCOL BODIES AND THE BUREAU OF MOP33

Parties are urged to consult in their regional groups and appropriate constituencies prior to COP12(II)/MOP33 to nominate representatives to serve in the Montreal Protocol bodies for 2022 and as officers (the Bureau) of MOP33. The Secretariat will be happy to assist parties to organize virtual regional consultations, as needed, with the focal points for the regions available in the meeting portal for COP12(II)/MOP33 in due course.

The UN Environment Programme, Ozone Secretariat, 30 June 2021

Image: Ozone Secretariat

4. Climate change favours large seasonal loss of Arctic ozone

Chemical loss of Arctic ozone due to anthropogenic halogens is driven by temperature, with more loss occurring during cold winters favourable for formation of polar stratospheric clouds (PSCs).

We show that a positive, statistically significant rise in the local maxima of PSC formation potential (PFPLM) for cold winters is apparent in meteorological data collected over the past half century. Output from numerous General Circulation Models (GCMs) also exhibits positive trends in PFPLM over 1950 to 2100, with highest values occurring at end of century, for simulations driven by a large rise in the radiative forcing of climate from greenhouse gases (GHGs).

We combine projections of stratospheric halogen loading and humidity with GCM-based forecasts of temperature to suggest that conditions favourable for large, seasonal loss of Arctic column O₃ could persist or even worsen until the end of this century, if future abundances of GHGs continue to steeply rise.

Authors: Peter von der Gathen, Rigel Kivi, Ingo Wohltmann, Ross J. Salawitch & Markus Rex

Nature Communications, volume 12, Article number: 3886 (2021), 1 July 2021

Image: Nature Communications website



5. The World Customs Organisation: Amendments effective from 1 January 2022

HS 2022, which is the seventh edition of the Harmonized System (HS) nomenclature, is used worldwide for the uniform classification of goods traded internationally and has been accepted by all Contracting Parties to the Harmonized System Convention. It shall enter into force on 1 January 2022.



The HS serves as the basis for Customs tariffs and for the compilation of international trade statistics in 211 economies (of which 158 are Contracting Parties to the HS Convention). The new HS2022 edition makes some major changes to the Harmonized System with a total of 351 sets of amendments covering a wide range of goods moving across borders. [...]

Adaption to current trade through the recognition of new product streams and addressing environmental and social issues of global concern are the major features of the HS 2022 amendments.

Visibility will be introduced to a number of high-profile product streams in the 2022 Edition to recognise the changing trade patterns. [...]

Among the highlights:

Major changes, including new heading Note 4 to Section VI and new heading 38.27, have been introduced for gases controlled under the Kigali Amendment of the Montreal Protocol.

The changes are not confined to creating new specific provisions for various goods. The amendments also include clarification of texts to ensure uniform application of the nomenclature. For example, there are changes for the clarification and alignment between French and English of the appropriate way to measure wood in the rough for the purposes of subheadings under heading 44.03.

Given the wide scope of the changes, there are many important changes not mentioned in this short introduction. All interested parties are encouraged to read the Recommendation carefully (to be published soon).

Implementation

While January 2022 may seem far off, a lot of work needs to be done at WCO, national and regional levels for the timely implementation of the new HS edition. The WCO is currently working on the development of requisite correlation tables between the current 2017 and the new edition of the HS, and on updating the HS publications, such as the Explanatory Notes, the Classification Opinions, the Alphabetical Index and the HS online database.

Customs administrations and regional economic communities have a huge task to ensure timely implementation of the 2022 HS Edition, as required by the HS Convention. They are therefore encouraged to begin the process of preparing for the implementation of HS 2022 in their national Customs tariff or statistical nomenclatures. The WCO will step up its capacity building efforts to assist Members with their implementation.

Read/download >>> [HS 2022 Amendments to the Harmonized System \(HS\) Nomenclature accepted](#)

For more information hs@wcoomd.org

[The World Customs Organisation, 30 June 2021](#)

Image: WCO website

EUROPE & CENTRAL ASIA

6. Study warns of long-term dangers of HFOs

A new study by the German Environment Agency (GEA) has identified long term environmental and health risks associated with the use of hydrofluoroolefins (HFOs).

The report questions whether HFOs are a suitable replacement for hydrofluorocarbons (HFCs) and presents natural refrigerants as the only viable option going forward.



However, refrigerant producers claim HFOs are climate friendly and safe for the environment.

HFOs have proven to be an excellent replacement for HFCs but the report claims using HFOs could create new problems in the future as these products degrade.

This is because, when released into the atmosphere by leaks or improper end-of-life disposal of a unit, HFOs break down into trifluoroacetic acid (TFA).

Because TFA is widely used in organic chemistry its lifecycle is well known by German scientists.

They identify TFA as a highly persistent (long-lived) substance which represents a danger to the environment and humans, as it has so far unknown consequences for ecosystems and health.

Atmospheric TFA descends to earth in rainfall, and the report notes that higher levels of TFA have been found in rainwater. It is not readily biodegradable and may be toxic to aquatic life at certain concentrations.

TFA cannot be removed by current water treatment technology. It accumulates in local lakes, freshwater and soils, and therefore drinking water of humans and animals, the report said.

This is why the use of HFOs as a substitute for HFCs “must be regarded as problematic.”

“While the environmental effects of TFA are considered to be negligible over the next few decades, potential longer-term impacts require further evaluations due to the environmental persistence of TFA, and to the uncertainty in growth due to future uses of HFOs,” the report stated.

“Releasing chemicals that can last for generations in the environment, especially when there is an uncertainty about the environmental and health impacts, must be avoided when alternatives are available.”

The report said refrigerants known to yield TFA include HFC-227a, HFC-236fa, HFC-245fa, HFC^[1]365mfc, HFO-1234ze(E), HFO-1336mzz(E) and the mixtures R449A, R452C, R454C.

It went on to outline the benefits of natural refrigerants.

“Systems with water as refrigerant are very promising for temperatures above 0 °C. These systems are already used for server cooling and other industrial applications,” the report said.

“The use of propane for chillers is well established. The state-of-the-art propane chillers use multi-cycle hydraulic system to minimize the refrigerant charge and are a perfect solution for cold water production in any size with high efficiency.

“Every refrigeration application can be realised with natural refrigerants and hence reduce the risk of negative, long-term environmental effects such as climate warming, or pollution caused by chemicals.”

The report said HFC-134a and HFC-32 are used in HFC/HFO blends and therefore will not only yield TFA but also cause ozone depletion due to the emissions of their by-products during production.

“The problem with risk assessments of TFA is the considerations of known thresholds only and neglecting the persistence of the chemicals since some negative effects might not be discovered yet,” the report said.

“Therefore, phasing out HFOs (and consequently TFA), or emission reduction strategies along with best practise measures that help ensure efficient capturing of HFO/TFA during recycling operations, will help reduce the risk to human and environmental health.

“There is no technical need for these substances, since HFOs are totally unnecessary in new refrigerant systems.”

Climate Control News, 13 June 2021, By Sandra Rossi

Image: Climate Control News website

See also >>> "Environmental impact of HFO refrigerants & alternatives for the future", article in **Open Access Government, 11 June 2021**

7. Serbia's path to achieving sustainable refrigeration: Interview by UNIDO with Ms Bojana Radeski and Mr Vasil Eftimov

Bojana Radeski, National Ozone Officer of the Republic of Serbia and Vasil Eftimov, international consultant for UNIDO, on Serbia's path to achieving sustainable refrigeration



When did sustainable refrigeration become relevant in Serbia, and which is the path the country is following?

Since 1990, refrigeration and air-conditioning are sectors in which there are constant activities and improvements in the Republic of Serbia. From 1999 until 2010, activities were focused on the elimination of CFC (Chlorofluorocarbon) substances. Currently, the Republic of Serbia is in the elimination phase of HCFCs (Hydrochlorofluorocarbons) and in the final stages of preparing for ratification of the Kigali Amendment.

Which are the main activities you are carrying out in Serbia and what have been the main achievements in the last few years?

In the last few years, the main focus was on improving the existing legislation and the establishment of the National Certification Scheme.

The regulation on the certification of personnel performing certain activities related to control substances and certain fluorinated greenhouse gases was adopted in 2016. This regulation is fully in compliance with European Commission Regulation (EC) No. 303/2008 (repealed by Implementing Regulation (EU) 2015/2065).

The National Ozone Unit (NOU) of the Republic of Serbia, in cooperation with UNIDO, prepared new training materials following the requirements set out in the regulation. All necessary tools and materials for conducting trainings and exams have been provided in four established training centres in the Republic of Serbia. A ban on the import of equipment containing or relying on HCFC substances was introduced in 2018.

The training of environmental inspectors and customs officers was a part of the project activities in the last few years.

A checklist for controlling RAC (Refrigeration and Air-conditioning) equipment containing or relying on ozone-depleting substances (ODS) and F-gases for environmental inspectors has been prepared and trainings have been organized for the inspection of this type of equipment.

A new manual and a poster with tariff codes were prepared and a training was organized for the control of import/export of ODS and F-gases for customs officers.

How many people benefit from these activities and which opportunities do they have available to them?

It is estimated that there are around 2,500 – 3,000 RAC service technicians in the Republic of Serbia. They are directly involved in activities such as the installation, maintenance and decommissioning of equipment containing refrigerants. The establishment of a national certification system ensures that these RAC technicians have the necessary skills and knowledge to perform certain working activities according to the category of the certificate that they possess.

Furthermore, end users also receive indirect support, since their system and equipment will be installed and maintained by skilled technicians.

In honour of World Refrigeration Day, we would like to know how you, in your role at the National Ozone Unit, have seen this sector grow and transform in Serbia?

Stakeholders involved in this sector are fully aware of ozone layer depletion and climate change. They are aware of all the Montreal Protocol control measures and are continuously trying to find new solutions and possibilities during the design, installation and

maintenance of systems and equipment containing substances controlled by the Montreal Protocol.

Throughout project activities, NOU Serbia has supported four manufacturing companies in the elimination of the production of equipment working on ODS.

We have examples of manufacturers of equipment already transferring their production from high-GWP (Global Warming Potential) refrigerants to natural and flammable hydrocarbon (HC) refrigerants, with negligible GWP. Although this is still in the first stage, we can already see steps towards the use of natural and flammable refrigerants in some applications. There are examples of supermarket applications using HCs. In other words, this industry is at the forefront of environmental protection.

This year's World Refrigeration Day theme is "Cooling Champions: Cool Careers for a Better World". Who are some of the cooling champions you work with in Serbia?

The Ministry of Environmental Protection of the Republic of Serbia and the NOU, as a part of the Ministry, are constantly working on updating the legislation in the refrigeration industry in order to provide Serbia's contribution to the world efforts in achieving the goals of the Montreal Protocol.

We must emphasize the work of the four established training centres in Republic of Serbia, which are the following: (1) Technical School in New Belgrade, (2) High Mechanical School in Novi Sad, (3) Secondary Vocational School in Kragujevac and (4) Secondary Vocational School in Nis. These four training centres with their 20 trainers, five trainers in each training centre, supported by the NOU of Serbia and UNIDO as an implementing agency, managed to organize 30 training sessions in which 501 RAC service technicians were trained for the highest category of stationary equipment (category A-I). These trainings had such a huge impact in the country that they led to the constitution of a new association, namely the "[Union of Air-conditioning Service Providers](#)", which was formed only three months after the initiation of the trainings.

These training centres organized 23 assessment sessions for the trained service technicians (14 assessment sessions were organized from March 2020 to January 2021, following all national COVID-19 prevention recommendations). A total of 433 RAC service technicians successfully passed the exams and will gain a certificate for Category A-I. Based on these results, the Ministry of Environmental Protection issued 95 certificates to RAC service technicians and 30 certificates to RAC service companies.

As already mentioned, the NOU of Serbia, in cooperation with UNIDO, prepared all the necessary training and assessment materials. The training manual is available for download on the web page of the [Ministry of Environmental Protection](#), and on the web page of the training centres. This training manual, including the complete list of questions for the theoretical part of the assessments, is available for download on the [web pages of the training centres](#).

What would be your advice to someone who wants to start a career in refrigeration?

We definitely encourage all those who want to start a career in this field to do so. The RAC sector is huge, and it provides opportunities for many people. Working in the RAC sector is challenging but also brings new experiences.

What would be your advice?

Go for it. Become a cooling champion. This is a cool career for better a world.

What are the next steps and what is your vision for the future?

We plan to continue to support the training centres with the organization of trainings for all certificate categories from A-I to A-IV for stationary equipment and category B for mobile air-conditioning (MAC) equipment. We are constantly working on the improvement of the training materials, since we strongly believe that qualified personnel is important for achieving our goals, the elimination of ODS and the reduction of the use of high-GWP refrigerants. We are currently in the process of finalising training material on the topic of flammable and natural refrigerants (such as hydrocarbons, ammonia, CO₂) and plan to include this material into current trainings as introductory material which will later lead to the establishment of a training curricula for flammable and natural refrigerants.

We are actively working on the establishment of a system for the inventory of equipment containing refrigerants. Knowing the amount of each type of refrigerants, the application in which this equipment is used, as well as the power consumption of this equipment in different sectors and applications is of utmost importance for us to better plan our future activities.

We plan to continue to provide support to state and local environmental inspectors, as well as to continue to support customs officers. We also plan to continue our cooperation with RAC service companies, RAC service technicians and RAC Associations. Additionally, the establishment of a recovery and recycling system is another major focus of our activities.

Our ultimate vision and goal is the wider use of low-GWP refrigerants. We want to do our part in the global efforts for achieving this goal.

[UNIDO Montreal Protocol Newsletter, issue # 5 June 2021](#)

Image: UNIDO Newsletter

8. Green Cooling Summit 2021: Conference Materials

650 registrations from 100 countries, 32 speakers, 3 days, 1 goal: Advancing Green Cooling together! The Green Cooling Summit was jointly hosted by the German Environment Agency (UBA), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the Federal German Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU).



The virtual conference addressed how the phase-down of hydrofluorocarbons (HFCs) according to the Kigali Amendment to the Montreal Protocol can best be implemented and

accelerated politically and technically through the use of natural refrigerants and improved energy efficiency.

Recordings and presentations of all sessions are available [here](#)

[Deutsche Gesellschaft für Internationale Zusammenarbeit \(giz\) GmbH, June 2021](#)

Image: GIZ

FEATURED



OZONE SECRETARIAT

Overview for the meetings of the ozone treaties in 2021

- [66th IMPCOM](#) - Online meeting | 12 - 13 Jul 2021
- [43rd OEWG](#) - Online meeting | 14 - 17 Jul 2021
- (CFC-11: 14 & 15 Jul, Energy Efficiency: 16 & 17 Jul, Replenishment: completed 24 May)
- [11th ORM \(part II\)](#) - Online meeting | 19 - 23 Jul 2021
- [67th IMPCOM](#) - Nairobi, Kenya (tentative) | 21 Oct 2021
- [12th COP \(part I\) – 32nd MOP Bureau](#) - Nairobi, Kenya (tentative) | 22 Oct 2021
- [12th COP \(part II\) – 33rd MOP](#) - Nairobi, Kenya (tentative) | 23 - 29 Oct 2021

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

The UN Environment Assessment Panels

The Assessment Panels have been vital components of ozone protection since the Montreal Protocol was first established. They support parties with scientific, technological and financial information in order to reach decisions about ozone layer protection and they play a critical role in ensuring the Protocol achieves its mandate. The Assessment Panels

were first agreed in 1988 to assess various direct and indirect impacts on the ozone layer. The original three panels are:

- [The Technology and Economic Assessment Panel](#)
- [The Scientific Assessment Panel](#)
- [The Environmental Effects Assessment Panel](#)

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

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

World Ozone Day 2021



*Montreal Protocol - Keeping us,
our food and vaccines cool*

World Ozone Day 2021

**Celebrating the Montreal
Protocol that is: [Keeping us,
our food and vaccines cool](#)**



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

- [Report of the Extended Intersessional Approval Process](#) established for the 86th meeting of the Executive Committee.
- Click [here](#) for the Executive Committee upcoming and past Meetings and related documents.
- [Executive Committee Primer – 2020](#) - An introduction to the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol.



OzonAction

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

The section below features several of our most recent products.

Visit [OzonAction website](#) for more information, discover the entire range of products.

Images in this section are by OzonAction



Climate Action with OzonAction - The Montreal Protocol on Substances that Deplete the Ozone Layer protects human health and the environment by phasing out nearly 100 industrial chemicals known as ozone depleting substances (ODS)- which include hydrochlorofluorocarbons (HCFCs) and chlorofluorocarbons (CFCs). The Montreal Protocol also works to phase down hydrofluorocarbons (HFCs), which are not ODS but are powerful greenhouse gases. UNEP's OzonAction supports 147 developing countries in making their Montreal Protocol targets. [...]

Excerpt from the "[Environmental Governance Update - April 2021](#) - Good governance for healthy planet and people", June 2021.

Read pages 6-9 to learn more about [Climate Action with OzonAction](#)

Gas Card Tool: Web-based Visual Printable Cards of Refrigerant Gases developed by the UN Environment Programme (UNEP) OzonAction, to provide engineers, workers, and technicians with easily accessible information on substances/ gases that they are working with or handling in the workplace on visual printable cards.

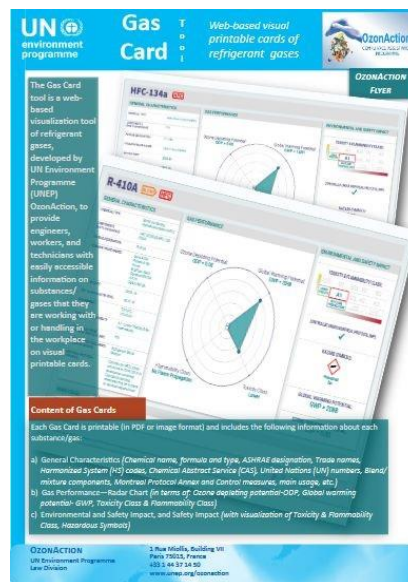
Content of Gas Cards - Each Gas Card is printable (in PDF or image format) and includes the following information about each substance/gas: a) General Characteristics (Chemical name, formula and type, ASHRAE designation, Trade names, Harmonized System (HS) codes, Chemical Abstract Service (CAS), United Nations (UN) numbers, Blend/ mixture components, Montreal Protocol Annex and Control measures, main usage, etc.) b) Gas Performance—Radar Chart (in terms of: Ozone depleting potential- ODP, Global warming potential- GWP, Toxicity Class & Flammability Class) c) Environmental and Safety Impact, and Safety Impact (with visualization of Toxicity & Flammability Class, Hazardous Symbols).

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

Using the Gas Gard web-based tool

- The Gas Gard tool is available online on the [OzonAction website](#)
- Read the full [2021 annual iPIC report](#)
- See the [flyer](#) introducing the new iPIC platform

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



Substances	Quantity ODP	Quantity Licence	Country	Date	Action
...
...
...
...

HCFC Quota and Licence Tracker - UNEP OzonAction launches a new desktop application to assist with HCFC licences and quotas - National Ozone Officers have the great responsibility of managing the allocation and monitoring of quotas for substances controlled under the Montreal Protocol. This process can be complex with many

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

Access the:

- [HCFC Quota tracker app](#)
- [Flyer for more information on the tracker](#)
- [Short video tutorial on the OzonAction YouTube Channel](#)

GWP-ODP Calculator Application – Updated

“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.



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



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



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

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

OzonAction **WhatGas?** Updated

New features:

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



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

are inspecting or that is described in the relevant paperwork, this can be easily obtained by consulting the application.

Using the application:

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

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



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

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

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

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

RAC Technician Videos - Full length films!

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



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

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


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

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


- Your national/regional RAC associations



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

 You can watch these videos on the OzonAction YouTube Channel:

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

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



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

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

Refrigerant Cylinder Colours: What has Changed

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

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

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

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

Read/download the [factsheet](#)



Update on new refrigerants designations and safety classifications

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

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

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

Read/download the [factsheet](#)

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

Contact: [Ayman Eltalouny](#), OzonAction, UN Environment Programme



OzonAction's iPIC platform - Updated

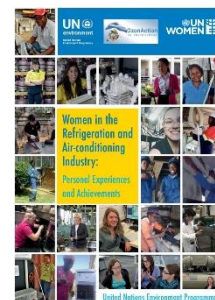
Collaboration between China and Thailand using OzonAction's informal Prior Informed Consent (iPIC) system has resulted in the prevention of a huge consignment of ozone-depleting and climate damaging hydrochlorofluoro-carbons (HCFCs).

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



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

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



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

Read/download the [publication](#)

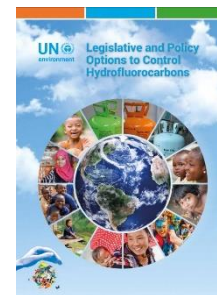
PUBLICATIONS

Legislative and Policy Options to Control Hydrofluorocarbons

In order to follow and facilitate the HFC phase-down schedules contained in the Kigali Amendment, the Parties, including both developed and developing countries, will have to implement certain measures.

This booklet contains a recommended set of legislative and policy options which the developing (Article 5) countries may wish to consider for implementation. It is intended to be a guide/tool for countries.

[Read/download](#)



Latest issue of Centro Studi Galileo magazine,
Industria & Formazione, n. 449 - 2021
(in Italian).



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



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



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

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

International Institute of Refrigeration, March 2021

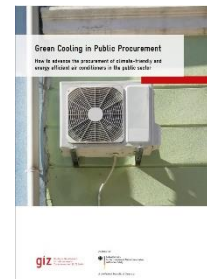
Leaks, maintenance and emissions: Refrigeration and air conditioning equipment report details common faults identified in both residential and commercial refrigeration and air conditioning equipment. The report also lists the impacts of these faults and how routine maintenance of the equipment has the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

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

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

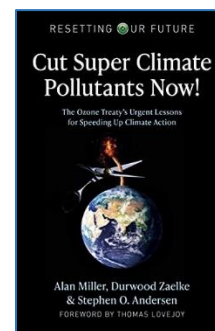


Green Cooling in public procurement How to advance the procurement of climate-friendly and energy-efficient cooling equipment in the public sector? Air conditioning in public buildings is often responsible for around 50% of total electricity consumption. Switching to climate-friendly cooling technologies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



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

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



MISCELLANEOUS

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



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

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

Please notify and nominate worthy candidates

through the [on-line form](#).

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

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

- View the «Montreal Protocol Who's Who» [Introductory video](#)
- Contact : [Samira Korban-de Gobert](#), UN Environment Programme, OzonAction

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

R744.

CO₂ COOLING MARKETPLACE

R744.com

Originally established in 2006, the new and improved [R744.com](#) offers a trusted source for the latest CO₂ products, services and news from around the world with a key feature being the new marketplace. In addition to the latest CO₂ news and information about the site's partners, the revamped R744.com includes a store where users can browse all available products, and filter for a wide variety of criteria, including components and services. It is also possible to narrow your search to include only products available in your home region, making it easier to find

the best local options. [Watch this space!](#)



Retradeables introducing a brand new reclaiming marketplace - F-gases are a family of man-made gases used in a range of industrial applications. As consumer demand for refrigeration and air-conditioning products increased, industry emissions have also dramatically increased. New EU regulations force us to prioritize environmental obligations, whilst continuing to serve the increased consumer demand and operate with a decreased amount of F-gas ...



Pathways to Resilient Zero Carbon Cities (RZCC-2021) - Organised by Zero Carbon Lab, School of Creative Arts, University of Hertfordshire

Dates: 12-13 July 2021 - **Venue:** virtual conference

About the conference - Due to the increasing risks from global warming, optimising our cities to cut carbon emissions to zero before 2050 is seen as one of the prerequisites for a sustainable world. In response to this challenge, a number of world cities have declared carbon emergency and an aspiration to achieve zero emissions, in some cases as early as 2030, but there are no clear pathways towards that goal. Simultaneously, all cities have been caught unprepared by the COVID-19 pandemic in 2020, testing their resilience to extremes. As the worldwide urban population is expected to grow to nearly 70% by 2050, there is an overwhelming case for improving our future by transforming cities into resilient zero carbon communities. The conference will gather an international audience of researchers, designers, experts, and policy makers to provide a forum for exchange of knowledge in the complex issues of multiple pathways towards resilient zero carbon cities.

Delegate registrations are open via [this link](#) - please book early as the number of registrations is limited.

The organizer kindly agreed for Delegates from developing countries who are interested in participating to register using the 'Student Rate' which is free of charge.

Contact: [Zero Carbon Lab](#)



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

Prepared by: Samira Korban-de Gobert

Reviewed by: Ezra Clark

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

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