

OzoNews

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

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GLOBAL

1. Kigali Amendment latest ratifications

Congratulations to the latest countries which have ratified the Kigali Amendment:

[Belize, 3 October 2023](#)

[Kenya, 22 September 2023](#)

[Republic of Moldova, 22 September 2023](#)

[Egypt, 22 August 2023](#)




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



Thirty-Fifth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer

Nairobi, Kenya, 23–27 October 2023

Click [here](#) to access related meeting information and pre-session documents.

2. Organisers Introduce Overarching Agenda for the 2023 World Cold Chain Symposium

The [Global Food Cold Chain Council](#) (GFCCC), the [United Nations Environment Programme OzonAction](#), and its partners announce that the 2023 World Cold Chain Symposium, taking place in advance of the Montreal Protocol 35th Meeting of the Parties on October 21st, 2023 in Nairobi, Kenya, will feature four sessions focusing on different aspects of the theme Sustainable Growth: Building Business Models for Cold Chain Development. These sessions, described below, will give further insight into both the operational and conceptual development of sustainable cold chain projects, creating a dialogue on the importance of not only business feasibility for cold chain projects but how focus on continual growth and sustainability will better assist in the expansion of the cold chain internationally.



It takes more than one company, industry or country working on its own to succeed in expanding a sustainable cold chain and reducing food loss and waste. Success stories arise from solid collaborations and the development of sustainable business models. As a logical step building on previous World Cold Chain Symposiums, the theme for this year's event is Sustainable Growth: Building Business Models for Cold Chain Development.

Join the Global Food Cold Chain Council, the United Nations Environment Programme's OzonAction, the Cool Coalition, Carrier and experts from around the world as we come together for an in-person and virtual event focused on the benefits of finding efficient and sustainable cold chain development programs and successes to date.

GLOBAL FOOD COLD CHAIN COUNCIL | IN COOPERATION WITH Cool Coalition | SUPPORTED BY Carrier

foodcoldchain.org | www.unep.org/ozonaction/coolcoalition.org | corporate.carrier.com

The agenda for the 2023 World Cold Chain Symposium will include such discussions as:

1. The opening session will include high-level discussion on the challenges and opportunities for sustainable cold chain expansion of projects

2. The second session will feature presentations by numerous current cold chain projects, many of which are focused on the African continent.
3. The third session will highlight efforts by a wide array of governments, foundations, industry and NGO organizations to build systematic business models and finance mechanisms to drive cold chain expansion and technology innovation.
4. The fourth session will feature a roundtable discussion by industry representatives on the importance for technology innovation for the Cold Chain

All will include a mix of academics, policymakers, business experts, and nongovernmental organizational representatives.

The sponsors and cooperating partners believe the Symposium will continue to build on the dialogue that has begun through not only the previous World Cold Chain Symposiums, but at climate events all over the world. It will also help set the stage for the conversations focusing on cooling and food insecurity at this year's upcoming 28th UN Climate Change Conference, happening this November and December in the United Arab Emirates.

For event information, including registration for program and reception, please visit the website <https://wccs.performedia.com/> or email dobson@foodcoldchain.org

UNEP is an Implementing Agency of the Multilateral Fund of the Montreal Protocol on Substances that Deplete the Ozone Layer. OzonAction's goal is to enable developing countries to meet and sustain their compliance obligations under the treaty.

GFCCC is an independent not-for-profit industry organization that seeks to simultaneously reduce food waste, and related greenhouse gas emissions in the processing, transportation, storage, and retail display of cold food by expanding and improving access to energy efficient low-global warming potential technology.

UNEP-OzonAction, 21 September 2023

Image: GFCCC logo



3. Efficient, Smart, Controlled Refrigeration Tackled at ICR in Paris - Invited article

The 26th International Congress of Refrigeration (ICR), held August 21-25, 2023, in Paris, left an indelible mark on the world of refrigeration. It provided the ideal environment for discussions on all aspects of refrigeration in line with sustainable development, providing a platform for in-depth exchange and analysis.

Organised under the theme "Towards efficient, controlled and smart refrigeration", the 2023 edition of the ICR attracted approximately 1,000 participants, a record number for the quadrennial event. Through one opening plenary session, 19 keynotes, 453 lectures, 22 workshops, and 94 posters, the entire field of refrigeration, air conditioning and heat pumps (RACHP) was broadly discussed with climate and energy efficiency driving the field. Tracks covered cryogenics and liquefied gases; thermodynamics, equipment, and systems; biology and food technology; storage and transport; and air conditioning, heat pumps and energy recovery.

Before the ICR began, the International Institute of Refrigeration (IIR) had its statutory meetings. Radim Cermak (CZ), who is also a UNEP RTOC member, was elected as the chair of the IIR Executive Committee for a four-year term. Elections also took place for new presidents and vice presidents of IIR's Technical Commissions. Since Didier Coulomb, the current IIR Director had announced his retirement, the Tunisian-Norwegian expert Yosr Allouche was elected as his successor. She will take her new position as of September 2024, focusing on the active participation of the many member countries of the IIR. In fact, this was a historic choice, since to date all IIR Directors have come from the French Ministry of Agriculture, and Allouche's election marks the first time a woman and a candidate without French nationality (but with a French-speaking background) will serve as the IIR Director.

Is History Repeating?

Before the participants fanned out over the almost 100 technical sessions, Lambert Kuijpers (also a UNEP RTOC member) outlined in the opening plenary the many factors that determine the path to a climate-friendly future. Kuijpers looked back to 1972, tracing refrigeration's technology development since then. What have been the environmental challenges and have they been successfully addressed? Now that climate science has access to numerous published reports, including the IPCC 1.5°C, and IPCC AR6 Reports -- that all define net-zero 2050 emissions pathways, the world is clearly in trouble complying. Kuijpers said decarbonization will need to be accomplished in various ways; however, at this moment the issues surrounding decarbonization are not being properly addressed. For example, net-zero targets are necessary for controlling all emissions, but these may not be sustainable in their entirety. Also, a large number of societal undertakings around the globe refuse to accept limitations, still aiming at unlimited growth without considering environmental impact. This is a formula that repeats the same oversights that occurred during the last 50 years.

Kuijpers explained that the obstacles to 'net zero' are of a larger order than the ones related to the RACHP sector itself, such as the growth of green electricity, behavioural patterns, and limiting the demand for heating and cooling. Yet, the RACHP sector is an important player in future energy consumption and will need to comply with net-zero sustainable pathways during 2023-50. The sector is already electrified, has suitable environmentally friendly refrigerants available, and is sailing a steady course towards energy-efficient solutions.

Possibilities to overcome challenges for net-zero pathways are available, for the whole RACHP sector, including heat pumps. Based on all the recent developments, including regulatory and chemical related advancements, Kuijpers concluded that there are important interlinkages between developments that can lead to a future net-zero society with critical offsets – for which refrigeration technology is essential.

The background plenary technical paper, **"From past to present: a net-zero framework with various hurdles and opportunities for RACHP"**, by Lambert J.M. Kuijpers, with review authors Natasha Kochova and Asbjørn L. Vonsild, 35 pp., with DOI: 10.18462/iir.icr.2023.1160, will be available on IIR FRIDOC by the end of September 2023. Most other technical papers presented at the ICR2023 will be available before the end of November 2023.

Ideal Environment for Dialogue About Refrigeration Challenges and Solutions

For the first time, there were special sessions, which commemorated the contributions of sector experts to IIR activities, in particular: Erik Granryd (Board of IIR), Jose Corberan

(President Commission B2), Pega Hrnjak (Gustav Lorentzen prize recipient), and Andre Gac (former IIR Director).

Also, another feature of the ICR was discussion of an IIR campaign to promote the entry of women into the field of refrigeration technology. When it comes to youth, Karlsruhe University of Applied Sciences also reported a significant general shortage of young people in applying to enter the field of refrigeration technology.

In all, the ICR presented 22 workshops that offered practical insights and skills development opportunities through hands on learning.

"Work in Progress and Innovation" (WIPI) posters illustrating 'Innovations in Refrigeration' were presented. lined the corridors of ICR2023, as one of the highlights of the event. There were 94 of them. Thirty-three industry sponsors and 28 exhibitors also participated, demonstrating the collaboration among industry, government and research that is required to advance refrigeration technology.

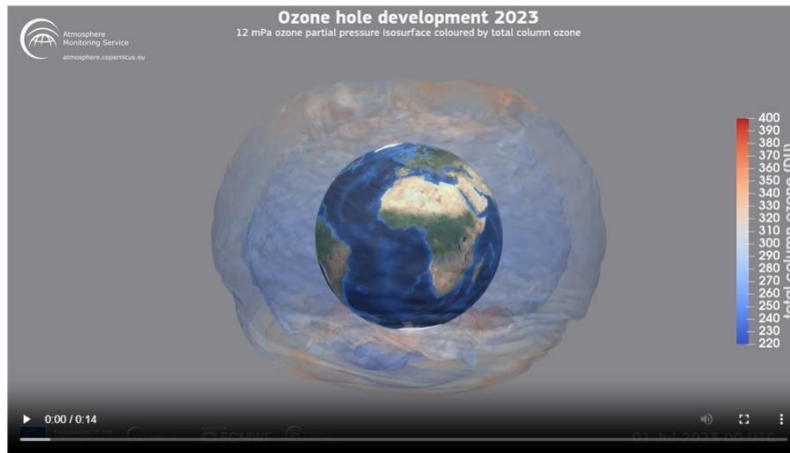
South Korea will host the 27th ICR in four years' time. Details can be found at the related [IIR webpage](#).

Author: Lambert J.M. Kuijpers, Senior Expert, A/gent Consultancy, September 2023.

Image: Lambert Kuijpers

4. Antarctic ozone hole starts amid questions about the impact of Hunga Tonga eruption

The monitoring of the early stages of the Ozone Hole over the South Pole during 2023 by the [Copernicus Atmosphere Monitoring Service \(CAMS\)](#) has detected a slightly earlier development. Lower ozone column values in comparison to the previous 43 years of satellite observations, together with other key indicators, mark an early start to the ozone hole this year. However, the evolution observed over the last week and the CAMS forecast for the coming days show that the situation is coming closer to average. The early formation is possibly related to the impact that the January 2022 eruption of the Hunga-Tonga-Hunga Ha'apai volcano had on the composition of the upper atmosphere. It is an open question whether it will lead to stronger ozone depletion and a larger than usual ozone hole for 2023.



CAMS total column ozone analyses over the South Pole between 01.07.2023 and 28.08.2023

The Antarctic ozone hole is an atmospheric phenomenon that occurs during spring each year. Under normal conditions in the Southern Hemisphere stratosphere the hole starts to form in mid- to late August, as the Sun rises over the South Pole, and closes towards the end of November. The combination of the ERA-5 and CAMS reanalyses provides a 43-year dataset of total column ozone (TCO3) giving context to each year's development. In 2023 the development has started unusually early following some of the lowest minimum total column ozone values for the Southern Hemisphere in the last four decades throughout July. Because of this, its total area is currently relatively high, although its progression has followed a fairly typical pattern of growth.

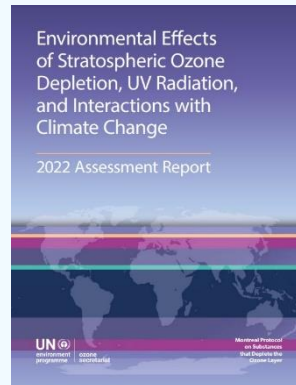
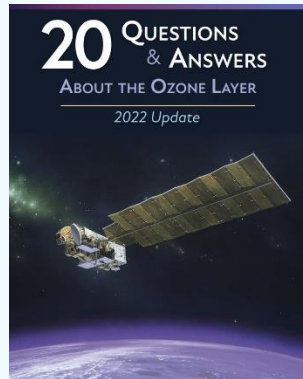
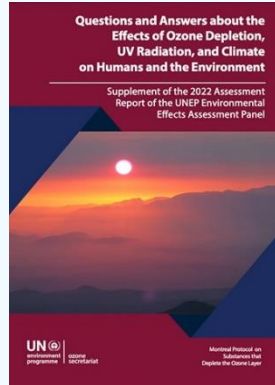
One of the potential reasons that could explain this unusual start of the ozone hole season is the increase in water vapour brought to the atmosphere by the eruption of the Hunga Tonga volcano in December 2021 and January 2022. This mechanism takes place because ozone depletion is fuelled by chemical processes occurring on polar stratospheric clouds, which are more likely to form when water vapor levels on the stratosphere are high.

The long-lived Ozone Depleting Substances (ODS) that have accumulated in the stratosphere and cause a drastic decrease of ozone concentration over Antarctica in Spring each year are mainly of human origin and had been emitted by a range of industries since the 1960s. Since the adoption of the Montreal Protocol in 1987, which phased out new emissions, ODS concentrations in the stratosphere have curbed and there are significant signs of recovery of the ozone layer. It is important to note that ODS will affect the ozone layer for many decades as it takes a long time for these to be eventually removed from the atmosphere. It is expected that in 50 years their concentrations in the stratosphere will have returned to the pre-industrial levels and ozone holes will no longer be experienced.

CAMS Director, Vincent-Henri Peuch comments: "Our ability to provide three-dimensional analyses and forecasts of the ozone in the poles is a powerful approach to monitor in real time how ozone holes develop, and to assess what are the key drivers behind what is being observed. This gives us insights about the extent to which particular events affect this year's development of the Antarctic ozone hole, such as the Hunga Tonga-Hunga Ha'apai eruption of last year that increased the amount of water vapour in the stratosphere. It is currently indeed an open question for scientists, and CAMS will continue to provide its detailed monitoring information until the 2023 ozone hole dissolves later in November or December."

The Copernicus Atmosphere Monitoring Service (CAMS), implemented by the European Centre for Medium-Range Weather Forecasts on behalf of the European Commission with funding from the European Union, supports international efforts to preserve the ozone layer through its continual monitoring and provision of data on its current state.

Copernicus, 31 August 2023 *Image: Copernicus*



Watch out for Illegal Trade of HCFCs and HFCs: Lessons learnt from the Global Montreal Protocol Award for Customs and Enforcement Officers. This publication provides an analysis of the cases submitted in the context of the **Global Montreal Protocol Award for Customs and Enforcement Officers**. The Global Award was launched in 2018 by UNEP OzonAction. This Global Award is intended to raise awareness about the Montreal Protocol and to recognise customs and enforcement officials for their efforts in preventing and combating illicit traffic in Montreal Protocol and Kigali Amendment-regulated substances. Ozone-depleting substances (ODS) include hydrochlorofluorocarbons (HCFCs) and other compounds with a high Global Warming Potential (GWP), particularly hydrofluorocarbons (HFCs).



UNEP OzonAction, ASHRAE, April 2023 Fact sheet: [Update on New Refrigerants Designations and Safety Classifications](#). The purpose of this fact sheet is to provide an update on ASHRAE standards for refrigerants and to introduce the new refrigerants that have been awarded an «R» number over the last few years and introduced into the international market.



Sustainable cold chains: Virtual Exhibition - The virtual exhibition for sustainable cold chains aims to highlight the critical role of cold chains in ensuring food safety and security, access to vaccines, reducing global warming and preventing ozone layer depletion.

The exhibition showcases commercially available cold chain technologies for food and vaccines, mainly targeting applications and equipment with refrigeration and cooling cycles that use ozone and climate-friendly refrigerants and have enhanced energy efficiency characteristics. It also aims to promote game-changing and systemic approaches, relevant initiatives, and not-in-kind solutions to cold chains

These technologies and approaches directly contribute to meeting national obligations under the Montreal Protocol on Substances that Deplete the Ozone Layer including its Kigali Amendment and the Paris Agreement on Climate Change. Sustainable cold chain contributes to the achievement of many [Sustainable Development Goals](#).

The exhibition is ongoing and continuously updated with submissions accepted on a rolling basis. The partners of the exhibition will continue promoting the exhibition at all relevant events throughout 2022 and beyond.



Click [here](#) for more information / submit a nomination >>>

Image: Sustainable cold chains website

Categories



1 exhibits
On site post-harvesting
and/or pre-cooling
applications



8 exhibits
Storage of product, e.g.
large warehouses /
Distribution centers



11 exhibits
Storage on board ships,
aircraft, and containers



4 exhibits
Food processing plants



1 exhibits
Transport (large and
smaller trucks, smaller
containers)



8 exhibits
Supermarkets (wholesale
markets & Retailers)



1 exhibits
Food services
(Restaurants, cafes,
tourism facilities, etc)



2 exhibits
Vaccines and other
pharmaceutical
products



0 exhibits
Game-changing and
systemic approaches

AFRICA

5. Road to COP28: Energy efficiency, the key to sustainable cooling in Africa - IIR interviews

According to Francis Sempore, director of ECREEE, energy efficiency is a key sustainability issue that needs to be promoted, funded and supported through the implementation of regional programs and projects in West Africa.

Road to **COP28**: the IIR interviews experts on sustainable refrigeration



As stated by the UN Environment Programme, the refrigeration sector is becoming a global priority. The 2023 UN Climate Change Conference will take place in Dubai, United Arab Emirates (UAE) from November 30 to December 12. Sustainable cooling will be the focus of COP 28 as one of the key solutions to tackle climate change. The IIR will be partnering with UNEP's Cool Coalition and several other organisations to deliver a "Global Cooling Stocktake report" program promoting sustainable cooling.

In the run-up to COP28, the IIR's monthly newsletter features the views of experts on sustainability in various areas of refrigeration.

Francis Semporé, Executive Director of [ECREEE](#) (ECOWAS Centre for Renewable Energies and Energy Efficiency), points out that in the specific context of the 15 member countries of ECOWAS (Economic Community of West African States), energy efficiency is a key point of sustainability in the refrigeration sector. The energy-water-food nexus* is also a topic of interest in relation to sustainability in the refrigeration sector. Finally, the development of sustainable finance should support initiatives in relation to sustainability in the refrigeration sector.

Priorities and barriers to achieve sustainability

Mr. Semporé believes that the priorities to be set to achieve sustainability are:

- Promoting energy efficiency
- Integrating renewable energies
- Capacity-building for all involved in the refrigeration sector and related fields
- Mobilising resources to support programs and projects with a strong socio-economic impact: innovative financing, income-generating activities through the promotion of SMEs and industries operating in the refrigeration sector.

The question of funding is a priority, as it is also a hurdle to be overcome if regional programs and projects are to be implemented through dedicated agencies like ECREEE. It is also important to strengthen institutional and regulatory frameworks, as well as capacity building for the various stakeholders involved.

Key technologies on the road to sustainability

In the specific context of the 15 ECOWAS countries, directives on the use of efficient appliances issued by ECOWAS and the UEMOA (Union économique monétaire ouest-africaine) are being implemented, and some countries have introduced energy labelling schemes. However, effective systems for measuring and verifying savings are lacking.

The West African Economic and Monetary Union (UEMOA) and its 8 member countries (Benin, Burkina Faso, Côte d'Ivoire, Guinea Bissau, Mali, Niger, Senegal and Togo) have adopted energy labelling for household appliances, a project implemented as part of the Regional Energy Efficiency Program. ^[1] A regional energy labelling standard and an energy label for refrigerators have been adopted. [Directive no. 04/2020/CM/UEMOA of June 26, 2020](#), on the energy labelling of new electric lamps and household appliances in UEMOA member states, has been published. ^[1]

What are drivers of successful implementation in low- and middle-income countries?

Regional initiatives led by dedicated agencies such as ECREEE, in partnership with member countries and with the participation of various entities (Energy, Environment...), will enable the effective deployment of energy labelling and related mechanisms in the 15 ECOWAS member countries. These initiatives are carried out in synergy with the UEMOA Energy

Department to ensure the efficiency of the actions undertaken by the ECOWAS and UEMOA commissions.

[1] Fiche technique [PRISME](#). Réfrigération efficace.

International Institute of Refrigeration, 25 September 2023

Image: IIR website

6. Workshop for customs, ozone officers set (Namibia)

The Ministry of Industrialisation and Trade hosted a three-day workshop and border dialogue for national ozone and customs officers.

According to a statement issued by the ministry, the workshop, held in conjunction with the United Nations Environment Programme OzonAction, took place from 6 to 8 September in Windhoek.



Workshop for customs, ozone officers set

The workshop's objective is to focus on selected countries with challenges, as well as practical aspects where cooperation between national ozone units (NOU) and customs authorities could potentially tackle these specific ozone-depleting substances (ODS) and trade issues, noted the ministry.

National ozone units are the government units in developing countries that are responsible for managing national programmes to comply with the Montreal Protocol on substances that deplete the ozone layer. Each developing country has an NOU [national ozone unit] that is supported by the multilateral fund through an institutional strengthening project.

The ministry noted that the proposed workshop will also focus on matters related to strengthening cooperation between countries, discussing border-related issues (border dialogues), and training of new ozone officers and customs trainers on Montreal Protocol obligations, and will be given to several Southern African Development Community countries, including Angola, South Africa, Tanzania, and Zimbabwe.

Adopted in 1987, the Montreal Protocol is the sole protocol to the 1985 Vienna Convention for the Protection of the Ozone Layer. Since its inception, the protocol has sought to control and phase out ODS such as chlorofluorocarbons (CFCs), halons, carbon tetrachloride methyl chloroform, methyl bromide, hydrobromofluorocarbons, and hydrochlorofluorocarbons (HCFCs).

"In support of the protocol, the Kigali Amendment, which came into force in 2019, will work towards reducing hydrofluorocarbon (HFCs), greenhouse gases with powerful climate warming potential and damaging to the environment," noted the ministry.

Namibia became a signatory to the protocol in 1993 and the ministry established a national ozone unit within the Directorate of Industrial Development to oversee the implementation of Namibia's obligation to the Montreal Protocol.

Namibia was one of the first countries in Africa to phase out CFCs in 2008, and the country remains committed to eliminating HCFCs in all sectors and has already been drastically reduced by 80% from the baseline by 2020.

The Namibian, 5 September 2023

Image: The Namibian website

ASIA AND THE PACIFIC

7. Use of HCFCs in Mongolia reviewed

Mongolia is a party to the Montreal Protocol on Substances that Deplete the Ozone Layer and is committed to gradually reducing the use of hydrochlorofluorocarbons (HCFCs) and eliminating them.

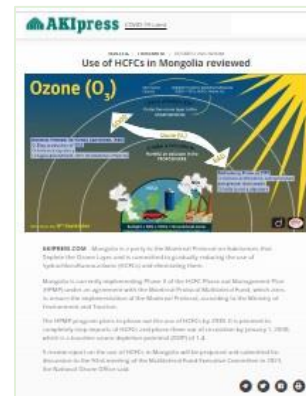
Mongolia is currently implementing Phase II of the HCFC Phase out Management Plan (HPMP) under an agreement with the Montreal Protocol Multilateral Fund, which aims to ensure the implementation of the Montreal Protocol, according to the Ministry of Environment and Tourism.

The HPMP program plans to phase out the use of HCFCs by 2030. It is planned to completely stop imports of HCFCs and phase them out of circulation by January 1, 2030, which is a baseline ozone depletion potential (ODP) of 1.4.

A review report on the use of HCFCs in Mongolia will be prepared and submitted for discussion to the 93rd meeting of the Multilateral Fund Executive Committee in 2023, the National Ozone Office said.

AKIPRESS, 2 October 2023

Image: AKIPRESS website



Vanuatu's Case Study on Integrating ODS/HFC Module into the National Single Window System - The National Single Window is a centralized system that links all relevant government approving authorities and acts as a 'one-stop-shop' where importers and exporters may submit applications electronically including information and all required paperwork to support the application and approval process. [Read / Download the Factsheet >>>](#)

[UN Environment Programme, OzonAction, July 2023](#)



Recognition of Prior Learning Scheme for Refrigeration and Air-Conditioning Servicing Technicians in Mongolia - The Recognition of Prior Learning (RPL) process can help those in the industry acquire a formal qualification that matches their knowledge and skills and thereby contributes to improving their employability, mobility, and lifelong learning. RPL can make a significant contribution to providing the relevant learning framework necessary for the present and ongoing maintenance of a quality workforce, especially in the RAC servicing sector. In Mongolia, the RPL process has been rolled out in over 30 TVET trades in the construction, mining, and other sectors, including apparel and culinary etc. Mongolia initiated the RPL scheme for RAC servicing technicians as part of their implementation of the HPMP in cooperation with various national stakeholders. [Read/ Download the Factsheet >>>](#) [UN Environment Programme, OzonAction, July 2023](#)



NORTH AMERICA

8. U.N. Environment Program members, top scientists find collaboration at CSU climate workshop



Scientists from the United Nations Environment Programme's Environmental Effects Assessment Panel, NASA, NOAA, NCAR, Colorado State University and other universities gathered Sept. 18 at CSU to share climate research and form new collaborations. Credit: George Janson

It can be hard to find hope in the face of an unprecedented climate crisis. But history holds at least one example of a time when the world united to avert environmental disaster, proving that global collaboration is possible.

Scientists from the United Nations' leading environmental authority and national scientific organizations gathered Sept. 18 at Colorado State University to share research, form new collaborations and reflect on a moment in history when 198 countries passed an international treaty to rein in a global threat.

The Montreal Protocol of 1987 – with some adjustments over time – successfully phased out the production of ozone-depleting substances that were once common. If the hole in the ozone layer had continued to grow, humanity would have faced millions more cases of skin cancer and an even steeper global temperature hike, according to speakers at a Sept. 18 workshop at CSU.

The workshop, co-organized by the United Nations Environment Programme's [Environmental Effects Assessment Panel](#) and the [USDA UV-B Monitoring and Research Program](#) in CSU's Natural Resource Ecology Laboratory, provided an opportunity for CSU faculty, researchers and students to exchange research and foster new partnerships with visiting scientists from the U.N., NASA, NOAA, NCAR and other universities.

The UNEP Environmental Effects Assessment Panel is one of three panels established by the Montreal Protocol, tasked with assessing the impacts of stratospheric ozone depletion, changes in ultraviolet radiation and how they affect climate change. Policymakers worldwide rely on the panel's reports for ongoing adjustments to the international agreements protecting stratospheric ozone and life on Earth.

CSU President Amy Parsons welcomed scientists and CSU students to the Monitoring, Modeling, and Assessing the Environmental Effects of Changes in Solar UV Radiation and Climate Workshop.

"We value your partnership and collaboration as we share discovery and work toward solving some of the most challenging issues facing environmental and human health in our world today," Parsons said.

UNEP officials Sophia Mylona and Janet Bornman also expressed hope for future collaboration between the panel and CSU research program.

“The workshop outcomes will foster cooperation between the two entities and will support the EEAP’s efforts in advising the parties to the Montreal Protocol on pertinent issues,” said Mylona, senior environmental affairs officer for the UNEP Ozone Secretariat.

“The workshop has already prepared the way for our diverse yet overlapping expertise to come together for innovative thinking and collaboration,” added Panel Co-chair Bornman.

During the week, the panel held their annual meeting at CSU, with 37 representatives from over 20 countries. Their agenda included preparing a report for the United Nations on issues related to ozone depletion and ultraviolet radiation.

The USDA UV-B Monitoring and Research Program, directed by Ecosystem Science and Sustainability Professor Wei Gao, is the only U.S. network providing nationwide surface monitoring of UV and other shortwave radiation. The program has established baseline and long-term trend measurements and studies the effects of UV-B radiation in combination with other environmental stress factors on crops.

“The challenges posed by ozone depletion, UV radiation and climate change require a collective effort from the global scientific community,” Gao said. “This workshop provided an opportunity to develop innovative solutions, share expertise, and forge partnerships that will contribute to a sustainable and healthier planet for future generations.”

Colorado State University, 29 September 2023, By Jayme DeLoss

Image: Colorado State University

9. Montreal Protocol Champions Earn Planetary Guardians Ozone Award



Left to Right: Dr. Donald Blake (colleague from UC Irving accepting for Sherry Rowland), Guadalupe Alvarez Limon (wife of Mario Molina accepting on his behalf), Dr. Stephen O. Andersen, Richard Branson, Marco Gonzalez, Dr. Johan Rockström, Jean Oelwang, and Dr. Suely Carvalho

During New York Climate Week, Virgin Group Founder and Executive Richard Branson and partners launched the “Planetary Guardians” initiative to use new science to persuade environmental authorities to make life on Earth sustainable and equitable for humans and other species.

The launch included Planetary Guardians Ozone Awards to *Drs Mario J. Molina* (1943-2020) and *F. Sherwood (“Sherry”) Rowland* (1927-2012) who in 1974 warned that chlorocarbons (CFCs) deplete stratospheric ozone; *Jonathan Shanklin* who in 1985 with Joseph Farman and Brian G. Gardiner discovered the Antarctic Ozone Hole and implied that it must be caused by fluorocarbons; *Marco Gonzalez* who as Executive Secretary of the Ozone Secretariat helped secure universal ratification and the 2007 HCFC Adjustment that made the Montreal Protocol a Climate Treaty; *Dr Helen Tope* who helps guide the phase-out of medical and chemical uses of ozone-depleting substances (ODSs) and hydrofluorocarbons (HFCs); *Dr Suely Carvalho* who Co-Chaired the Technology and Economic Assessment Panel (TEAP) and was Director of the Montreal Protocol and Chemicals Unit at United Nations Development Program (UNDP) plus held numerous other senior positions protecting ozone and climate over more than 35 years; and *Dr Stephen O. Andersen* who since 1974 has assessed the impact of ozone depletion and climate change including as a founder and Co-Chair of TEAP and has organized voluntary government, industry and military partnerships to phaseout faster than compliance.

The premise of Planetary Guardians is industrial activity has already exceeded most “safe and just” Earth system boundaries. The good news story is that when stratospheric ozone depletion exceeded the safe Earth system boundary, public, corporate, and governmental organizations acted quickly to phase out ozone-depleting substances (ODSs), with the ozone layer expected to recover. Because most ODSs are also powerful greenhouse gases (GHGs) the phase-out also avoided a doubling of the atmospheric impact of carbon dioxide, which would have ended much of life on Earth.

Thus, the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol) is proof that humans CAN organize to protect the global commons against exceeding planetary boundaries and is a case study of how governments and industry can work together with the United Nations to accomplish environmental miracles.

The Institute for Governance & Sustainable Development's (IGSD), 18 September 2023

Image: IGSD website

10. US EPA Approves New Refrigerants For Refrigeration

The newly listed nonflammable substitutes include R-471A and R-515B

As part of its Significant New Alternatives Policy (SNAP) program, the **Environmental Protection Agency (EPA)** recently issued a determination of acceptability (**Notice 38**), which expands the list of acceptable refrigerant substitutes for the refrigeration market. The new substitutes include the nonflammable refrigerants, R-471A and R-515B.

EPA found R-471A (marketed under the trade name Solstice® 471A) acceptable as a substitute for use in:



- Retail food refrigeration—stand-alone equipment (new equipment only);
- Retail food refrigeration—refrigerated food processing and dispensing equipment (new equipment only);
- Retail food refrigeration—remote condensing units (new equipment only);
- Retail food refrigeration—supermarket systems (new equipment only);
- Industrial process refrigeration (new equipment only); and
- Cold storage warehouses (new equipment only).

R-471A, which is classified as an A1 refrigerant, has a GWP of about 144 and an ODP of zero. According to Honeywell, Solstice 471A is 13% more energy efficient as compared to R-404A and 30% more energy efficient compared with CO₂.

In addition, EPA found R-515B acceptable as a substitute for use in:

- Retail food refrigeration—refrigerated food processing and dispensing equipment (new equipment only);
- Retail food refrigeration—remote condensing units (new equipment only);
- Retail food refrigeration—supermarket systems (new equipment only);
- Commercial ice machines (new equipment only); and
- Cold storage warehouses (new equipment only).

R-515B is also classified as an A1 refrigerant and has a GWP of about 287 and an ODP of zero. For remote condensing units and supermarket systems, EPA states that R-515B's GWP is comparable to or lower than that of other acceptable substitutes for new equipment, such as R-450A (GWP of 601), R-513A (GWP of 630), R-407A (GWP of 2,110), and R-421A (GWP of 2,630).

For additional information on SNAP, visit the SNAP portion of EPA's Ozone Layer Protection website at: www.epa.gov/snap

ACHR News, 29 September 2023

Image: achr news website

EUROPE & CENTRAL ASIA

11. Ozone-depleting substances 2023

Man-made ozone-depleting substances destroy the protective ozone layer and, in 1987, the international community established the Montreal Protocol to cut their consumption and production. To fulfil its obligations under the Montreal Protocol, the EU has adopted the more ambitious EU Ozone Regulation. This online data viewer contains information on ozone-depleting substances in the EU, based on aggregated data reported by companies since 2006 under the Ozone Regulation.



**European
Environment
Agency**

INTRODUCTION

In 1989, the Montreal Protocol on Substances that Deplete the Ozone Layer entered into force. Its objective is to protect the stratospheric ozone layer by phasing out the production of **ozone-depleting substances (ODS)**. The protocol covers around 100 individual substances with a high **ozone-depleting potential (ODP)**, including chlorofluorocarbons (CFCs), halons, carbon tetrachloride (CTC), 1,1,1-trichloroethane (TCA), hydrochlorofluorocarbons (HCFCs), hydrobromofluorocarbons (HBFCs), bromochloromethane (BCM) and methyl bromide (MB), all of which are referred to as 'controlled substances'.

Within the European Union (EU), the use of and trade in these substances is regulated by Regulation (EC) No 1005/2009 (known as the **Ozone Regulation**). This regulation stipulates that all companies producing controlled substances or importing them into and/or exporting them out of the EU, as well as feedstock users, process agent users and destruction facilities, must report their activities concerning controlled substances annually. The Ozone Regulation also encompasses five additional ODS that are not covered by the Montreal Protocol. These 'new substances' are halon 1202, methyl chloride (MC), ethyl bromide (EB), trifluoriodomethane (TFIM) and n-propyl bromide (n-PB). Producers, importers, and exporters also have to report their activities for these new substances.

The European Environment Agency (EEA) is responsible for collecting, archiving, checking and aggregating information contained in these company reports. The EEA also supports the companies in fulfilling their reporting obligations. The EU data on production, imports and exports are presented to the Ozone Secretariat of the United Nations Environment Protocol within the Montreal Protocol in order to monitor progress in phasing out ODS in compliance with the Protocol. In 2023, 195 companies reported on their 2022 activities under the Ozone Regulation.

The EU has already achieved its phase-out goals under the Montreal Protocol and reports on the uses that are still allowed.

This online data viewer summarizes the most recent data reported by companies under the Ozone Regulation and looks at trends since 2006. Data from 2012 onwards were also updated, based on reports resubmitted after the reporting deadlines for these years.

Since the potential to harm the ozone layer varies among substances, results are expressed in both metric tonnes and ODP tonnes (see definition of ODP or ozone depleting potential in the terminology below). The observed trends can differ significantly depending on the unit used. Controlled substances with a relatively high ODP (e.g. CFCs and CTC) exhibit a different trend from those with a relatively low ODP (e.g. HCFCs). [...]

[The European Environment Agency \(EEA\), 15 September 2023](#)

Image: EEA

12. Green Cooling Summit 2023 – Green Cooling along the Cold Chain

Get ready for the third edition of the Green Cooling Summit that will explore policy approaches, technology solutions and innovative business models for Green Cooling along the cold chain! Join us on 10 and 11 October 2023 online for a

comprehensive look at how Green Cooling solutions can help reduce food waste, improve food security, enhance medical cold chains, and contribute to a more sustainable future.

In addition to informative sessions and panel discussions, participants will also have the opportunity to network with professionals from across the industry and connect with leading companies that are driving innovation in Green Cooling technologies.



Online worldwide

10 - 11 October 2023



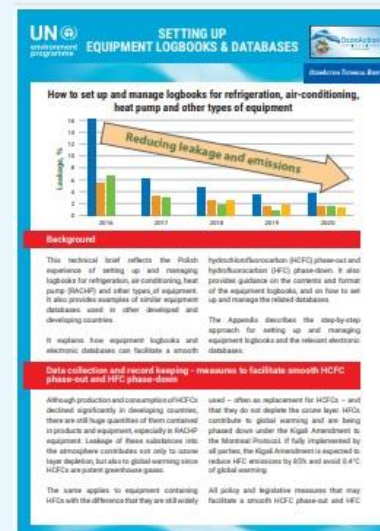
Don't miss this unique opportunity to learn from the best, and gain valuable insights into the latest trends and developments in **Green Cooling along the cold chain**.

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), October 2023

Image: GCS

How to set up and manage logbooks for refrigeration, air-conditioning, heat pump and other types of equipment

- Background: This technical brief reflects the Polish experience of setting up and managing logbooks for refrigeration, air-conditioning, heat pump (RACHP) and other types of equipment. It also provides examples of similar equipment databases used in other developed and developing countries. It explains how equipment logbooks and electronic databases can facilitate a smooth hydrochlorofluorocarbon (HCFC) phase-out and hydrofluorocarbon (HFC) phase-down. It also provides guidance on the contents and format of the equipment logbooks, and on how to set up and manage the related databases. The Appendix describes the step-by-step approach for setting up and managing equipment logbooks and the relevant electronic databases.



This factsheet is available in **English** and **Russian**
UN Environment, OzonAction, August 2023

FEATURED

Summary of the 45th meeting of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer: 2-7 July 2023. Read/Download the full [Summary Report](#)

See also >>>

- [IISD daily reporting/highlights*](#)- [UNEP Ozone Secretariat/OEWG-45](#)

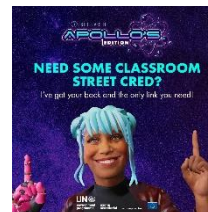
Overview for the meetings of the ozone treaties - Click [here](#) for upcoming and past Montreal Protocol Meetings dates and venues.

World Ozone Day 2023 theme announced: Montreal Protocol: fixing the ozone layer and reducing climate change - On World Ozone Day, we celebrate the achievements of the Montreal Protocol on Substances that Deplete the Ozone Layer in fixing the ozone layer and reducing climate change. The theme for the 2023 International Day for the Preservation of the Ozone Layer, to be marked on 16 September, is **Montreal Protocol: fixing the ozone layer and reducing climate change**. This reiterates the recent finding by the Scientific Assessment Panel of the positive impact the Montreal Protocol has on climate change, that ozone recovery is on track and how climate challenges can be supported through the Kigali Amendment.



The theme and other related materials available [here](#) in the six UN official languages.

New gaming technology to create environment simulation game for teenagers-The UN Environment Programme's (UNEP) Ozone Secretariat today launched a simulator game and avatar using the latest software technology. **Apollo's Edition** is the latest addition to the [Reset Earth education platform](#). Targeting 13-18-year-olds, the free online education material developed provides educators with



resources to teach students the importance of environmental protection.

Online introductory course 'International legal framework on ozone layer protection' - Designed for government representatives and national stakeholders new to the Vienna Convention and Montreal Protocol, students of environmental law, and anyone interested in learning about the ozone treaties, the [online course](#) launched by the Ozone Secretariat aims to provide an introduction to the international legal framework on ozone layer protection.

[United Nations Environment Programme \(UNEP\), Ozone Secretariat](#)



Free teaching kits on ozone layer and environmental protection

- New free online teacher toolkits and lesson plans based on the success of UNEP's Ozone Secretariat's [Reset Earth](#) animation and video game
- Targeting Tweens by adopting animation and gamification to create innovative online lessons to raise awareness on ozone layer and environmental protection
- Available online in digital and print format for universal access



Read/download >>> [Ozone Secretariat's education platform](#)

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:

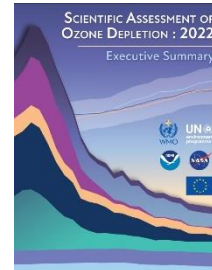
- [The Technology and Economic Assessment Panel](#)
- [The Scientific Assessment Panel](#)
- [The Environmental Effects Assessment Panel](#)

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 >>>](#)

Scientific Assessment of Ozone Depletion: 2022 - Executive Summary

United Nations Environment Programme (UNEP), Ozone Secretariat



The Multilateral Fund for the Implementation of the Montreal Protocol

The Fund is dedicated to reversing the deterioration of the Earth's ozone layer. It was established by a decision of the Second Meeting of the Parties to the Montreal Protocol (London, June 1990) and began its operation in 1991. The main objective of the Fund is to assist developing country parties to the Montreal Protocol whose annual level of consumption of the ozone depleting substances (ODS) chlorofluorocarbons (CFCs) and halons is less than 0.3 kilograms per capita to comply with the control measures of the Protocol. Currently, 147 of the 197 Parties to the Montreal Protocol meet these criteria. They are referred to as Article 5 countries.

The Multilateral Fund is managed by an Executive Committee with equal membership from developed and developing countries. Since the inception of the Fund, the Executive Committee has held 91 meetings. The Fund Secretariat, located in Montreal, assists the Executive Committee in its tasks. Projects and activities supported by the Fund are implemented by four international implementing agencies and a few bilateral agencies.

Last 16 July 2022, following the adoption of interim budgets for the Multilateral Fund due to the Covid-19 pandemic, the Fifth Extraordinary Meeting of the Parties to the Montreal Protocol (5th ExMOP) decided on the replenishment of the Multilateral Fund for the triennium 2021-2023. The Parties agreed on a budget of US \$540 million for the triennium.

As at 5 December 2022, the contributions received by the Multilateral Fund from developed countries, or non-Article 5 countries, totalled over US\$ 5.02 billion. The Fund has also received additional voluntary contributions amounting to US \$25.5 million from a group of

donor countries to finance fast-start activities for the implementation of the HFC phase-down.

To facilitate phase-out by Article 5 countries, the Executive Committee has approved 144 country programmes, 144 HCFC phase-out management plans and has funded the establishment and the operating costs of ozone offices in 145 Article 5 countries.

New and updated guides and submission forms for the preparation of project proposals:

- Guide for funding requests for preparation of national inventories of banks of used or unwanted controlled substances and a plan for the collection, transport and disposal of such substances >>>
- Updated interim guide for the presentation of stage I of Kigali HFC implementation plans (July 2023) >>>
- Updated guide for the presentation of new stages of HCFC phase-out management plans (July 2023) >>>

All guides and submission forms are available [here](#)

Upcoming events:

- The 93rd meeting is scheduled for 11 to 15 December 2023, in Montreal, Canada
- Click [here](#) for the Executive Committee upcoming and past Meetings and related documents.



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

Considerations for establishing national HFC Quota System - As HFC consumption in most countries is determined by their import, this document aims to highlight guiding principles and key aspects that countries need to consider when developing their import quota system. The underlying principles and approaches are equally applicable for production and export quota allocation. [Read/download the full document](#)



Every Action Counts: Kigali Amendment - UNEP 2022 - This brochure targets the general public and explains in a simplified manner what the Montreal Protocol and its Kigali Amendment signify. It includes some actions that everybody can do to support the Kigali Amendment. It also covers the relationship between the Kigali Amendment and Sustainable Development Goals. It introduces some examples of successful communication campaigns on the Kigali Amendment. [English/ Spanish](#)



Gender Mainstreaming in the Montreal Protocol: Experiences in Latin America and the Caribbean - Taking into account that women and girls constitute half of the world's population and, therefore, represent half of the potential and innovation necessary to face the "triple planetary crisis" – climate change, nature and biodiversity loss, pollution and waste –, positioning people and the planet as central pillars of the transformation necessary to overcome it, and considering the guiding principles and the scopes of action of the Operational Policy on Gender Mainstreaming of the Multilateral Fund, the United Nations Environment Programme (Latin America and the Caribbean Office). [English / Spanish](#)



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.

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.



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

Gas Card Tool: Web-based Visual Printable Cards of Refrigerant Gases

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 Card web-based tool

- The Gas Card 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 (HPMP)	Quantity (Licence)	Country	Date	Status
...
...
...

HCFC Quota and Licence Tracker - 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 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)

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](#)

Updated OzonAction "WhatGas?" Mobile App

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



This latest release includes the 2022 Harmonized System (HS) Codes for HFCs and blends, which facilitates the process of inspection and identification of controlled and alternative substances.

Scan the QR code to download the app (*currently available for Android devices only*). If you've already downloaded the app, to update visit the [Google Play Store](#)

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 for 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



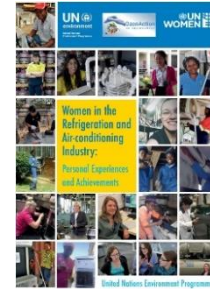
If you prefer to access the video clips via the OzonAction smartphone application, just search for "RAC Technician Video Series" or UNEP in the Google Play Store and iTunes/App Store or scan the QR code –**Free to download!**

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

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 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.



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 field and follow in their footsteps. **Read/download the publication**



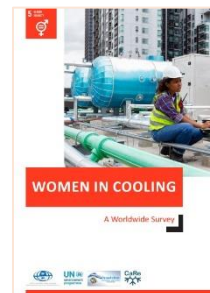
As part of IIR and UNEP OzonAction's partnership, a set of Cold Chain Technology Briefs was released over the past few years, which includes in-depth summaries about the cold chain in different key sectors. They include descriptions of technology, refrigerant options and trends and conclude with prospects and challenges. They cover the main cold chain sub-sectors, i.e., **Production & Processing, Cold Storage, Transport Refrigeration, Commercial & Domestic**, and **Fishing Vessels**.

Download the Cold Chain Technology brief in [English](#) | [French](#) | [Russian](#) | [Spanish](#)

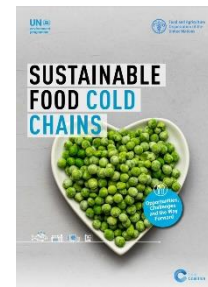


PUBLICATIONS

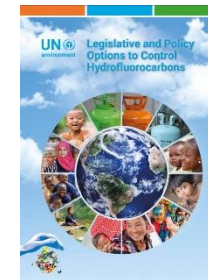
Results of a Worldwide Survey about Women in Cooling Released by IIR and UNEP OzonAction - Refrigeration, Air-Conditioning, and Heat-pumps (RACHP) are crucial for our health, nutrition, comfort, and well-being. It is one of the sectors that crosscuts many of the UN sustainable development goals and can contribute significantly to safeguard the environment, advance welfare of humanity and support the growth of employment and economics worldwide. Women are highly under-represented in this sector as indicated by the fact that only 6% of the members of national refrigeration associations/organisations/institutions are women. In order to better understand the background, motivation, challenges, and opportunities faced by women working in RACHP a worldwide survey was undertaken by the International Institute of Refrigeration (IIR) and OzonAction of UN Environment Programme (UNEP) in cooperation with several partners. **Read/Download the Full Report**



Sustainable Food Cold Chains: Opportunities, Challenges and the Way Forward-This [UNEP-FAO] report explores how food cold chain development can become more sustainable and makes a series of important recommendations. These include governments and other cold chain stakeholders collaborating to adopt a systems approach and develop National Cooling Action Plans, backing plans with financing and targets, implementing, and enforcing ambitious minimum efficiency standards. At a time when the international community must act to meet the Sustainable Development Goals, sustainable food cold chains can make an important difference.



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. **10-2022** (in Italian).



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](#)



E-Book on Process Safety Management (PSM) Training for Ammonia Refrigeration - a new e-book about the critical elements of a process safety management (PSM) training program for facilities operating an ammonia refrigeration system.

The e-book, titled "**7 Keys to a Compliant PSM Training Program for Ammonia Refrigeration**," outlines important questions a facility's program should address and questions that trained plant personnel should be able to answer. Topics covered include:

- Safety hazards and health considerations
- Emergency shutdown procedures
- Addressing deviations from system operating limits

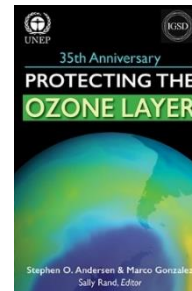


- Risks and costs of non-compliance with regulatory standards

Request free Download [here](#)

Protecting the Ozone Layer - 35th Anniversary Edition - a new book celebrating the 35th Anniversary of the Montreal Protocol. **The electronic version (Kindle Edition) of the book has become available for purchase \$3.03 on Amazon.** The book highlights successes and documents innovation during the first 35 years and inspires new ambition to strengthen protection of stratospheric ozone and climate before Earth passes tipping points. The book tells the story of the Montreal Protocol, revealing a model of cooperation, collaboration, universal ratification, record of compliance with over 99 per cent of controlled ozone-depleting substances (ODSs) phased out, the ozone layer on the path to recovery, the 2007 Montreal Adjustment, and the 2016 Kigali Amendment moving the Montreal Protocol further into environmental protection. Unfinished business includes: HCFC phase out, ODS bank management, HFC phase down, uncontrolled ozone-depleting greenhouse gas nitrous oxide (N₂O), feedstock exemptions for plastics production, and dumping of obsolete cooling appliances.

The book was released at 34th Meeting of the Parties to the Montreal Protocol on 31 October 2022.



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Prepared by: Samira Korban-de Gobert
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