Volume XXII | 15 November 2022

In this issue:

GLOBAL

1. Kigali Amendment latest ratifications

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

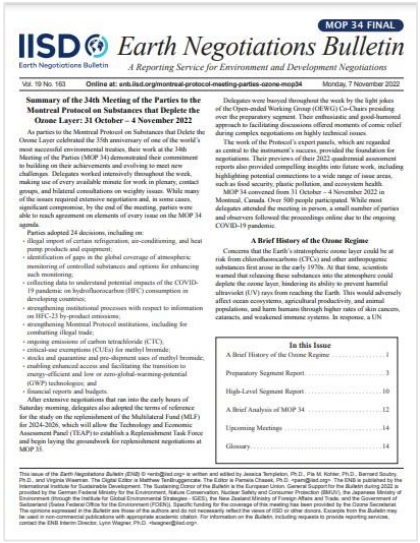
Philippines, 3 November 2022
Belarus, 3 November 2022
Nauru, 3 November 2022
St. Vincent and the Grenadines, 7 November 2022

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. Summary of the 34th Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (MOP34), 31 October – 4 November 2022 | Montreal, Canada



MOP 34 FINAL

IISD Earth Negotiations Bulletin — *Earth Negotiations Bulletin*
A Reporting Service for Environment and Development Negotiations

Vol. 19 No. 163 | Online at: enb.iisd.org/montreal-protocol-meeting-parties-ozone-mop34 | Monday, 7 November 2022

Summary of the 34th Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer: 31 October – 4 November 2022

As parties to the Montreal Protocol on Substances that Delete the Ozone Layer celebrated the 35th anniversary of one of the world's most successful environmental treaties, their work at the 34th Meeting of the Parties (MOP 34) demonstrated their commitment to building on their achievements and evolving to meet new challenges. Delegates worked intensively throughout the week, making use of every available minute for work in plenary, contact groups, and bilateral consultations on weighty issues. While many of the issues required extensive negotiation and, in some cases, significant compromise, by the end of the meeting, parties were able to reach agreement on elements of every issue on the MOP 34 agenda.

Parties adopted 24 decisions, including on:

- illegal import of certain refrigeration, air-conditioning, and heat pump products and equipment;
- identification of gaps in the global coverage of atmospheric monitoring of controlled substances and options for enhancing such monitoring;
- collecting data to understand potential impacts of the COVID-19 pandemic on hydrofluorocarbon (HFC) consumption in developing countries;
- strengthening institutional processes with respect to information on HFC-23 by-product emissions;
- strengthening Montreal Protocol institutions, including for combatting illegal trade;
- ongoing emissions of carbon tetrachloride (CTC);
- critical-use exemptions (CUEs) for methyl bromide;
- stocks and quarantine and pre-shipment uses of methyl bromide;
- enabling enhanced access and facilitating the transition to energy-efficient and low or zero-global-warming-potential (GWP) technologies; and
- financial reports and budgets.

After extensive negotiations that ran into the early hours of Saturday morning, delegates also adopted the terms of reference for the study on the replenishment of the Multilateral Fund (MLF) for 2024-2026, which will allow the Technology and Economic Assessment Panel (TEAP) to establish a Replenishment Task Force and begin laying the groundwork for replenishment negotiations at MOP 35.

Delegates were buoyed throughout the week by the light jokes of the Open-ended Working Group (OEWG) Co-Chairs presiding over the preparatory segment. Their enthusiastic and good-humored approach to facilitating discussions offered moments of comic relief during complex negotiations on highly technical issues.

The work of the Protocol's expert panels, which are regarded as central to the instrument's success, provided the foundation for negotiations. Their previews of their 2022 quadrennial assessment reports also provided compelling insights into future work, including highlighting potential connections to a wide range of issue areas, such as food security, plastic pollution, and ecosystem health.

MOP 34 convened from 31 October – 4 November 2022 in Montreal, Canada. Over 500 people participated. While most delegates attended the meeting in person, a small number of parties and observers followed the proceedings online due to the ongoing COVID-19 pandemic.

A Brief History of the Ozone Regime

Concerns that the Earth's stratospheric ozone layer could be at risk from chlorofluorocarbons (CFCs) and other anthropogenic substances first arose in the early 1970s. At that time, scientists warned that releasing these substances into the atmosphere could deplete the ozone layer, hindering its ability to prevent harmful ultraviolet (UV) rays from reaching the Earth. This would adversely affect ocean ecosystems, agricultural productivity, and animal populations, and harm humans through higher rates of skin cancers, cataracts, and weakened immune systems. In response, a UN

In this Issue

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•collecting data to understand potential impacts of the COVID19 pandemic on hydrofluorocarbon (HFC) consumption in developing countries;

•strengthening institutional processes with respect to information on HFC-23 by-product emissions;

•strengthening Montreal Protocol institutions, including for combatting illegal trade;

•ongoing emissions of carbon tetrachloride (CTC);

•critical-use exemptions (CUEs) for methyl bromide;

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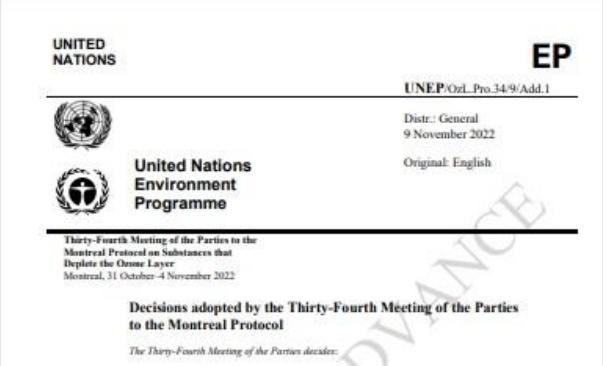
>>> Access the **MOP-34** pre/post documents, United Nations Environment Programme (UNEP), Ozone Secretariat
>>> Earth Negotiations Bulletin-International Institute for Sustainable Development (IISD) **Daily highlights**
>>> Presentations and statements
>>> Side events
Image: ENB-IISD website

3. Decisions adopted by the Thirty-Fourth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer:


UNITED NATIONS

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United Nations Environment Programme

Thirty-Fourth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer
Montreal, 31 October–4 November 2022

Decisions adopted by the Thirty-Fourth Meeting of the Parties to the Montreal Protocol

The Thirty-Fourth Meeting of the Parties decides:

ADVANCE

- Decision XXXIV/1: Recognition of the achievements of Paul Jozef Crutzen, Mario José Molina and Frank Sherwood Rowland, winners of the Nobel Prize in Chemistry in 1995

- Decision XXXIV/2: Terms of reference for the study on the 2024–2026 replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol

- Decision XXXIV/3: Enabling enhanced access and facilitating the transition to energy-efficient and low or zero-global-warming-potential technologies

- Decision XXXIV/4: Illegal import of certain refrigeration, air-conditioning and heat pump products and equipment

- Decision XXXIV/5: Identification of gaps in the global coverage of atmospheric monitoring of controlled substances and options for enhancing such monitoring

- Decision XXXIV/6: Ongoing emissions of carbon tetrachloride

- Decision XXXIV/7: Strengthening institutional processes with respect to information on HFC-23 by-product emissions

- Decision XXXIV/8: Strengthening Montreal Protocol institutions, including for combatting illegal trade

- Decision XXXIV/9: Critical-use exemptions for methyl bromide for 2023 and 2024

- Decision XXXIV/10: Stocks and quarantine and pre-shipment uses of methyl bromide

- Decision XXXIV/11: Composition, balance and workload of the Technology and Economic Assessment Panel and its technical options committees

- Decision XXXIV/12: Updating the information on relevant safety standards

- Decision XXXIV/13: Collecting data to understand potential impacts of the coronavirus disease (COVID-19) pandemic on hydrofluorocarbon consumption for Group 1 Article 5 parties

- Decision XXXIV/14: Data and information provided by the parties in accordance with Article 7 of the Montreal Protocol

- Decision XXXIV/15: Status of the establishment of licensing systems under Article 4B, paragraph 2 bis, of the Montreal Protocol

- Decision XXXIV/16: Revision of the baseline data for Madagascar

- Decision XXXIV/17: Enhancing participation in the work of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol through co-option

- Decision XXXIV/18: Changes in the membership of the Technology and Economic Assessment Panel

- Decision XXXIV/19: Membership of the Implementation Committee

- Decision XXXIV/20: Membership of the Executive Committee of the Multilateral Fund

- Decision XXXIV/21: Co-Chairs of the Open-ended Working Group of the Parties to the Montreal Protocol

- Decision XXXIV/22: Status of ratification of the Kigali Amendment to the Montreal Protocol
- Decision XXXIV/23: Thirty-Fifth Meeting of the Parties to the Montreal Protocol

- Decision XXXIV/24: Financial reports and budgets for the Montreal Protocol on Substances that Deplete the Ozone Layer

Read/Download the (*Unedited advance*) **full report**

MOP-34 documents and information, The United Nations Environment Programme (UNEP), Ozone Secretariat

Image: UNEP, Ozone Secretariat website

4. What we can learn from a healing Ozone layer

Speech delivered by: **Inger Andersen**, High-level segment of the Thirty-Fourth Meeting of the Parties to the Montreal Protocol (MOP34).

Ministers, Delegates, Colleagues, and friends.

On the 35th anniversary of the Montreal Protocol, it is fitting that you have returned to the city where it all began. Congratulations to all Parties and others involved for carrying out a repair job on a planetary scale. The ozone layer is now healing. Your work has delivered so many benefits, by both protecting the planet from UV radiation and slowing climate change.
By 2030, two million cases of skin cancer will be avoided. By 2060, we will avoid almost 500 billion an estimated USD 460 billion in damages to agriculture, fisheries and other resources. will have been avoided. By the end of the century, one study has even estimated that up to 2.5°C temperature rise could be avoided – thanks to both the phasing out of climate-warming ozone-depleting substances and the protection of carbon sinks.

As we look ahead, the Montreal Protocol has so much more to give.

Over 99 per cent of ozone-depleting substances have been phased out. The task now is to maintain the gains and push to phase out the remaining gases, largely HCFCs. But the bigger piece of work is on climate.

The Kigali Amendment is expected to avoid up to 0.5°C of global warming by phasing down hydrofluorocarbons. Given how far behind the world is on the decarbonization of economies, this would be a huge contribution. The phase-down will also help expand cooling to those who need it – in cities hit by heatwaves and in developing countries that need more cold chains – without further warming the planet.

Increased adoption of energy efficient cooling technology must accompany the phase-down. However, for the expansion of cooling to succeed – and potentially double the climate gains of the Kigali Amendment, we need action and action now.

There will, of course, be other challenges and opportunities for the Kigali Amendment, which you will discuss during this MOP. Energy efficiency is one such issue. You will also discuss strategies and tools, action being taken by industries and lessons you can share with other global environmental agreements – for example, the deal to end plastic pollution under negotiation. Attaining universal ratification of the Kigali Amendment is another key issue, and I urge nations who have not yet done so to ratify and start implementing the amendment.

Friends, as you work, the Protocol will continue to be supported by sound science and funding.

Reports from the Scientific Assessment Panel, **Environmental Effects Assessment Panel** and **the Technology and Economic Assessment Panel** will provide you with the information you need to make sound policy decisions. My thanks to the panels and we look forward to the completion of their quadrennial assessments this year.

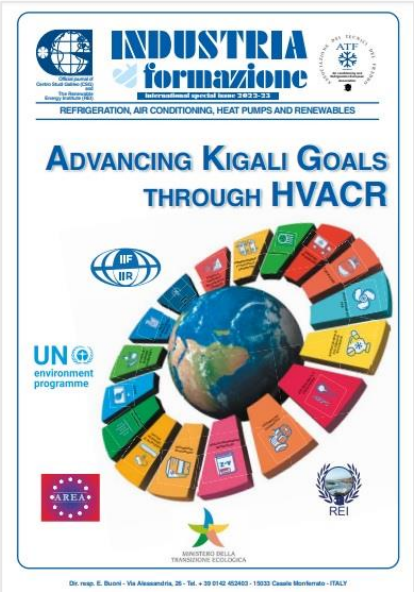
Thank you also to Parties for finalizing the replenishment of the Multilateral Fund for 2021-2023. The funding is important to kick start activities for the Kigali Amendment in many Article 5 parties. I wish you well for the discussion on the replenishment study terms of reference, and on the many other issues on your agenda.

My congratulations again on 35 years of determined and committed action. I look forward to seeing many more successes.

Thank you.

The United Nations Environment Programme (UNEP), 3 November 2022
Image: UNEP website

5. Advancing Kigali goals through HVACR - *International Special Issue 2022- 2023*



To provide an update on this global effort, The Centro Studi Galileo (CSG) and the Renewable Energy Institute (REI), with support from the International Institute of Refrigeration (IIR), The United Nations Environment Programme-OzonAction, (UNEP- OzonAction) and The Air conditioning and Refrigeration European Association (AREA), Ministero Della Transizione Ecologica, have collected experiences from around the world, compiled in this special publication, featuring papers from leading global institutions and experts, addressing the current situation, the challenges ahead, and sharing opinions from different National Ozone Units, on issues related among others to HVAC&R, training, and the role of women in the cooling industry.

The ***International Special Issue 2022- 2023*** was officially launched during a side event at the Thirty-Fourth Meeting of the Parties to the Montreal Protocol in Montreal, (MOP34), 31 October – 4 November 2022 | Montreal, Canada

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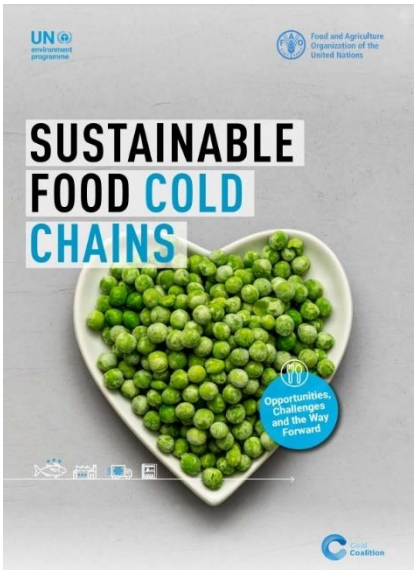
Read/download the full **International Special Issue**

Image: Industria y formazione

6. Sustainable Food Cold Chains: Opportunities, Challenges and the Way Forward



Abstract:

An estimated 14 percent of the total food produced for human consumption is lost, while 17 per cent is wasted. This is enough to feed around 1 billion people in a world where currently 811 million people are hungry and 3 billion cannot afford a healthy diet. The lack of effective refrigeration is a leading contributor to this challenge, resulting in the loss of 12 percent of total food production, in 2017. Moreover, the food cold chain is responsible for 4 percent of global greenhouse gas emissions, including from cold chain technologies and food loss and waste due to lack of refrigeration.

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.

The Montreal Protocol on Substances that Deplete the Ozone Layer – a universally ratified multilateral environmental agreement – can contribute to mobilizing and scaling up solutions for delivering sustainable, efficient, and environmentally friendly cooling through its Kigali Amendment and Rome Declaration. Reducing non-CO_2 emissions, including refrigerants used in cold chain technologies is key to achieve the Paris Agreement targets, as highlighted in the latest mitigation report from the Intergovernmental Panel on Climate Change (IPCC).

At a time when the international community must act to meet the Sustainable Development Goals, sustainable food cold chains can make an important difference.

The United Nations Environment Programme (UNEP), 12 November 2022
Image: UNEP website

7. COP27: A global methane agreement can prevent climate catastrophe

FILE – Flares burn off methane and other hydrocarbons at an oil and gas facility in Lenorah, Texas, Friday, Oct. 15, 2021. Climate scientists have found that methane emissions from the oil and gas industry are far worse than what companies are reporting, despite claims by some major firms that they've reduced their emissions. (AP Photo/David Goldman, File)

All the parties participating in the climate negotiations in Sharm el-Sheikh, Egypt this week and next would do well to remember that today's climate emergency is about two basic concepts: time and temperature. It's too hot, and we've left ourselves too little time to slow and eventually reverse the accelerating increase in temperature that humans are causing.

At this late date, cutting fossil fuel emissions by shifting to clean energy can't cut warming fast enough to slow the self-reinforcing feedbacks that are accelerating us down the "highway to climate hell," to borrow a phrase from UN Secretary General Antonio Guterres's **opening speech** in Egypt.

As important as decarbonization will be post-2050, it is essential to couple it with a strategy to immediately cut methane and the other short-lived super climate pollutants, as this can avoid four times more warming at mid-century than decarbonization alone can. Cutting the super climate pollutants is the only known way to take our foot off the accelerator to give us a fighting chance to slow the self-reinforcing feedbacks, avoid tipping points and keep the planet from the existential risk of "Hothouse Earth." The current temperature is 1.1 to 1.2 degrees Celsius (2 degrees Fahrenheit) above pre-industrial times, and we're cruising along the highway to hell to add 50 percent more to this in the next decade. Even with today's warming, we're seeing punishing climate impacts all over the world. And this isn't the worst.

The impacts of adding 50 percent more warming in the next decade will be far worse than 50 percent more punishment than we're experiencing today. Climate impacts are not going to continue scaling in a linear way, where a bit more warming causes a bit more impact. Rather, a bit more warming will further accelerate the self-reinforcing feedback mechanisms where the Earth warms itself beyond what we humans have started — and this will push the planet past a series of irreversible tipping points with impacts that are likely to be catastrophic.

The Arctic provides an illustration. Historically, the Arctic region has functioned as a great white shield reflecting incoming solar radiation safely back to space. But the current rate of Arctic warming — which is four times the global average, and seven times faster in some areas — is melting the reflective sea ice. We've melted half of the extent of Arctic sea ice, and are down to just a few percent of the strong multi-year ice. When we melt the remaining sea ice, we'll add the equivalent of 25 years of current emissions, around 1 trillion tons of carbon dioxide. The loss of the reflective land-based snow and ice could double this. And the Arctic is just one of more than a dozen natural systems, which may be turned from net warming inhibitors to net warming contributors.

Cutting methane and the other short-lived climate pollutants can reduce projected warming in the Arctic by two-thirds and the rate of global warming by half. (The other short-lived climate pollutants are black carbon soot, tropospheric — or ground level — ozone and hydrofluorocarbon refrigerants, collectively known as super climate pollutants.) Combining this fast mitigation sprint with the decarbonization marathon also would help address the ethical issues of intergenerational equity by giving societies urgently needed time to adapt to unavoidable changes and build resilience.

The governments of the world have already started reducing hydrofluorocarbons (HFCs) refrigerants through the **Kigali Amendment** to the Montreal Protocol on substances that deplete the ozone layer. Reducing the HFCs has the potential to avoid up to 0.5 degrees Celsius of warming by end of century, using the treaty widely acknowledged to be the best environmental treaty the world has ever produced.

The 1987 Montreal Protocol, with its universal membership of all UN countries, earned its reputation by solving the first great threat to the global atmosphere — that chlorofluorocarbons and other refrigerants were destroying the stratospheric ozone layer — and also by contributing more for climate protection that any other agreement. The latest analysis calculates that the Montreal Protocol will avoid 2.5 degrees Celsius of warming by end of century. Nearly 1 degree Celsius is from repairing the stratospheric ozone layer and preventing excess ultraviolet radiation from damaging forests and other carbon sinks. The other 1.7 degrees Celsius of avoided warming is from reducing the refrigerant gases. The next target for avoiding near-term warming is to cut the super pollutant methane, which increased faster last year than any time since systematic record-keeping began in 1983. Reducing the methane emissions that humans cause can avoid nearly 0.3 degrees Celsius of warming by 2040s, making this the single biggest and fastest way to slow warming in the critical next two decades, according to the Climate and Clean Air Coalition. […]

The Montreal Protocol provides the inspiration and some of the architecture that can be borrowed for a methane agreement, including how the protocol balances the North-South dynamic and implements the principle of common but differentiated responsibilities.

Human caused methane emissions comes from three sectors — fossil fuels (35 percent), waste (20 percent), and agriculture (40 percent). Each sector may require a separate protocol. The fossil fuel sector is ripe for action today, and several oil and gas companies, including those in the Oil and Gas Climate Initiative […] have committed to reducing their aggregate upstream oil and gas methane emissions to well below 0.2 percent by 2025 from a 2017 baseline of 0.3 percent. They also are supporting Zero Routine Flaring by 2030. Natural gas (really “fossil gas”) is mostly methane. Half of methane mitigation can be done at negative cost, leaving more product to sell in a tight market. […]

The Montreal Protocol’s funding mechanism is a useful model, where the wealthier developed countries pay the agreed incremental cost for developing countries to comply. […]

In the face of the climate emergency, global leaders should build on the success of the Montreal Protocol and use this powerful sectoral agreement as inspiration to develop a global methane agreement as quickly as possible to prevent a climate catastrophe.

The Hill, 9 November 2022, By: Durwood Zaelke, Paul Bledsoe and Gabrielle Dreyfus
Image: The Hill website / AP Photo/David Goldman

ATLANTA/PARIS (October 28, 2022) – Entries are now being accepted for the ASHRAE and OzonAction of the UN Environment Programme (UNEP) **2022 Lower GWP Refrigeration & Air-Conditioning Innovation Award**. The award promotes innovative design, research and practice by recognizing people who have developed or implemented innovative technological concepts applied in developing countries to minimize global warming potential (GWP) through refrigeration and air-conditioning applications. The award is part of the ASHRAE-UNEP OzonAction joint workplan for 2021-2023 under the global cooperation agreement established by both parties in 2007.

Due to the global pandemic, judging of submissions received for the 2020 award was not completed. However, entries submitted for the 2020 award will be automatically entered into consideration for the 2022 award. Those who submitted entries for 2020 will be allowed and encouraged to update those entries if desired.

"We must support and recognize innovative efforts that seek to minimize negative impacts on our environment," said 2022-23 ASHRAE President Farooq Mehboob, Fellow Life Member. "ASHRAE is proud to continue our partnership with UNEP OzonAction to sponsor this award in support of pioneering refrigerant technologies that will play a crucial role in our global marketplace and help us to achieve important climate management goals."

The award's selection criteria include:

- Description of innovation in field of lower-GWP refrigerants.
- Confirmation project has been implemented in a developing country.
- Extent of need.
- Environmental impact achieved including specific reference to the GWP chemicals' contribution.
- Description of further application in developing countries from both the technology and economic perspectives, including how the innovation is financially feasible to be replicated.

The entry period ends 31 December 2022.

Information about the award and the online submission form can be found at ashrae.org/lowerGWP. Entries will be judged by an international jury of experts in the field of refrigerant research and management selected by ASHRAE and UNEP.

The individuals who worked on projects selected for 2022 awards will be announced at Montreal Protocol related events. ASHRAE and UNEP will also team to disseminate information to specialists and government officials in developing countries about the projects selected to raise awareness of successful technology applications.

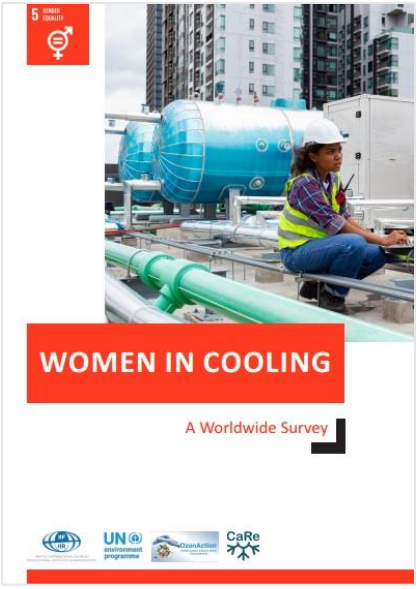
In 2019, ASHRAE and UNEP identified five projects – two Residential Applications and three Commercial/Industrial Applications for awards.

- *Low Charge Ammonia Vapor Compression Refrigeration System implemented in India*
- *HFC-161 Application for High Cooling Capacity Household Air Conditioners implemented in China*
- *Packaged Chillers with Integrated Air Handling Units Using HFC-32 and HC-290 implemented in Saudi Arabia*
- *CO_2Transcritical Refrigeration System for a Hot-and-Humid Region implemented in Thailand*
- *Low Charge Propane Chiller for a Supermarket Refrigeration System implemented in Brazil*

Contact:
Karen Buckley Washington, ASHRAE Senior public relations specialist
Amr Abdelhai, Montreal Protocol officer, UNEP OzonAction

Image: ASHRAE website

8. 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.

Over 15 million people are employed worldwide in the refrigeration industry, which means that almost 5 out of 1000 people have a job linked to the manufacturing, installation, maintenance and servicing of refrigeration equipment. 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.

As the need for RACHP professionals continues to grow, a high potential that can be unleashed by encouraging women to pursue education and job opportunities in this sector. In 2019, the UNEP OzonAction and UN Women published a booklet of stories of 107 women from 50 countries who work in the RACHP sector to raise awareness of the opportunities available to women and recognise their success. The booklet showcased inspirational career experiences from many women across the globe, but also highlighted some of the challenges.

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 >>>

Contact:
Sonja Wagner, Programme Management Officer, **OzonAction**, Law Division, UNEP
Ina Colombo-Youla, Deputy General Director, **International Institute of Refrigeration**

Image: Women in Cooling Survey Report

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 and throughout 2022 and beyond.

Click here for more information / submit a nomination >>>
Image: Sustainable cold chains website

ASIA AND THE PACIFIC

9. New South Asia-Southeast Asia Ozone Officers trained in Montreal Protocol operations

Chiang Mai, Thailand, 6-7 October 2022 – Twenty-one new National Ozone Unit (NOU) staff (female 11, male 10) in the South-Asia (SA) and Southeast Asia (SEA) Networks met on 6-7 October 2022 in Chiang Mai, Thailand to learn how to connect their day-to-day activities with the legacy of the Montreal Protocol.

The two-day training included engaging interactive sessions for both participants and trainers. New NOU staff were trained on ozone depletion, Montreal Protocol overview, structure, bodies, and control measures, National Framework for implementation of the Montreal Protocol, enforcement, Multilateral Fund projects, Country Programme and Article 7 data reporting, working with stakeholders and alternatives to ozone depleting substances (ODS) and hydrofluorocarbons (HFCs). The training comprised of a series of standardized training tools prepared by UNEP CAP including concise background documents, presentations, handouts, checklists for NOU staff, quizzes, crosswords, innovative activity exercises, evaluation documents, guides for additional work by NOU staff before and after training sessions, and lists of useful additional resources.

The new NOU staff training for the SA and SEA Networks was organized by UNEP **OzonAction** Compliance Assistance Programme (CAP) as part of its approved 2022 Work Programme under the Multilateral Fund.

Contact:
Shaofeng Hu, Senior Montreal Protocol Regional Coordinator, Compliance Assistance Programme (CAP), UNEP Asia and Pacific Office

Mikheil Tushishvili, Programme Officer, Compliance Assistance Programme (CAP), UNEP Law Division

Images: OzonAction Website

10. 14 Pacific Island Countries brainstorm to prepare for HFC freeze in 2024

Coral Coast, Fiji, 3 November 2022 – National Ozone Officers from the Pacific Island Countries (PICs) met in Fiji for their Network Meeting from 10-12 October 2022 to prepare countries to meet the hydrofluorocarbon (HFC) freeze from 1 January 2024, while sustaining hydrochlorofluorocarbon (HCFC) phase-out. Back-to-back with this meeting was the training workshop of new National Ozone Unit (NOU) staff held from 13 - 14 October 2022. The purpose of this workshop was to strengthen the capacity of NOU staff to implement the Montreal Protocol.

Forty participants (24 female and 16 male) from all 14 PICs, as well as representatives from the Government of Australia, the Multilateral Fund Secretariat, the Secretariat of Pacific Community, the Oceania Customs Organisation (OCO) and the Air-conditioning and Refrigerant Equipment Manufacturers Association of Australia (AREMA).

Participants at the Network meeting discussed actions necessary for countries in the PIC to meet the first control obligation, i.e. freezing HFC consumption in the next 15 months under the Kigali Amendment, which was ratified by 12 out of 14 countries. Options for enforcement of HFC quota and licensing system, trade data monitoring & reporting, verification and reconciliation, and collaboration with Customs Authorities in a holistic manner were explored, and challenges in data reporting were reviewed. The participants also discussed the modality of how to collect HFC data for the preparation of the Kigali HFC Implementation Plans (KIPs).

All 14 PICs have reduced their HCFC consumption by 91% from the baseline level. A small deviation in importation could cause a country to become non-compliance. It is therefore important for National Ozone Officers to closely monitor HCFC consumption to sustain their achievements and to integrate good servicing practices in Technical and Vocational Education and Training (TVET) and the stand-alone certification system. Participants also brainstormed on activities to integrate energy efficiency into Montreal Protocol implementation following the ExCom Decision 89/6 to provide additional funding from the Multilateral Fund to promote energy efficiency in the refrigeration and air conditioning sector.

During the break-out group discussions on three main topics - ‘Administration and Financial Management’, ‘Regional KIP Preparation’ and ‘Energy Efficiency Initiatives under HPMP’, countries further improved their understanding of various issues, exchanged ideas and shared their needs. A set of concrete actions to be implemented during 2022 and 2023 was agreed upon by each participating country.

As the first in-person training since the COVID-19 pandemic in 2020, the Training workshop for new Ozone staff was participated by 25 participants from 10 countries (15 Female/10 Male). The training covered essential information, knowledge, and skills for the implementation of the Montreal Protocol. The two-day training was delivered using a series of standardized training tools prepared by the UNEP Compliance Assistance Programme (CAP) Global team.

The PICs Network Meeting and the Training workshop of National Ozone Unit staff were organized by the UNEP OzonAction CAP, Asia and the Pacific Office as part of its approved 2022 Work Programme under the Multilateral Fund.

Contact:
Shaofeng Hu, Senior Montreal Protocol Regional Coordinator, Compliance Assistance Programme (CAP), UNEP Asia and Pacific Office

Images: OzonAction Website

11. Beijing Winter Olympics tech to power low-carbon cold-chain storage


China.org.cn

Beijing Winter Olympics tech to power low-carbon cold-chain storage

China.org.cn, November 10, 2022

The cutting-edge CO2 refrigeration technology used at Beijing Winter Olympics venues will be adopted at a smart logistics port under construction in southeastern Beijing to power low-carbon cold-chain storage.

According to the construction team, the new technology is different from using conventional refrigerants like Freon and ammonia. Instead, it uses the nontoxic and incombustible CO2 as refrigerant, which can cut carbon emissions and damage to the ozone layer while ensuring personnel and food safety.

The three-story logistics port will cover a total construction area of about 170,000 square meters and be commissioned at the end of 2024. After completion, it will become a high-end logistics demonstration project, and offer quality cold-chain services to the capital city and its surrounding areas.

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China.org.cn, 10 November 2022
Images: China.org.cn Website

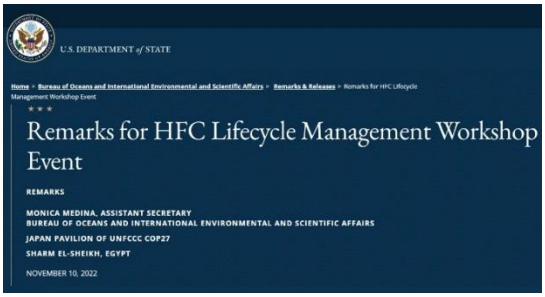
NORTH AMERICA

12. Remarks for HFC Lifecycle Management Workshop Event

MONICA MEDINA, ASSISTANT SECRETARY

BUREAU OF OCEANS AND INTERNATIONAL ENVIRONMENTAL AND SCIENTIFIC AFFAIRS

JAPAN PAVILION OF UNFCCC COP27, SHARM EL-SHEIKH, EGYPT, NOVEMBER 10, 2022



Thank you, Vice Minister Ono, for that kind introduction. Greetings to my fellow panelists and participants. I'm honored to join you today to share our expertise on reducing hydrofluorocarbons, or HFCs, and discuss how our actions will support global efforts to tackle the climate crisis.

HFCs are super-polluting greenhouse gases that are hundreds to thousands of times more powerful than carbon dioxide. They are entirely man-made and used in refrigeration, air-conditioning, insulating foams, and aerosol propellants. HFCs make up only one percent of total greenhouse gases in the atmosphere. However, increasing demand for refrigeration and air-conditioning has led them to become some of the fastest growing greenhouse gases.

More production and consumption of HFCs means more emissions into the atmosphere – countering other efforts to avoid further global temperature rises. That is why we need a global phase down of HFC production and consumption. Replacing high-global-warming-potential (GWP) HFCs with next generation refrigerants, combined with improvements in energy efficiency, can help reduce emissions and prevent temperature rises.

Gobal implementation of the Kigali Amendment to the Montreal Protocol requires parties to cut the production and consumption of HFCs by more than 80 percent over the next 30 years. This is huge. The world can prevent more than 70 billion metric tons of carbon dioxide equivalent emissions by the middle of the century. This would allow us to avoid 0.1° Celsius of warming by 2050 and avoid up to 0.5° Celsius more of warming by the end of the century.

The time to step up is now because time is not on our side. There can also be indirect benefits from a global HFC phase down. For example, we can improve the energy efficiency of the equipment we design as replacements, and see reductions in other air pollutants. The United States will take full advantage of this climate mitigation opportunity by using the institutions of the Montreal Protocol. Particularly the Multilateral Fund, where we can maximize the climate benefits of the HFC phasedown to gain even more benefits than what I already described.

Another way we can maximize these climate benefits is to increase the capture and reuse of HFCs already inside our refrigeration and air conditioning equipment. Yes, we can go beyond the requirements of the Kigali Amendment. The Biden Administration is leading by example. Our actions match our ambitions.

Ahead of our meeting here, the United States ratified the Kigali Amendment to the Montreal Protocol. This paves the way to further global efforts to reduce HFCs through innovation

and the manufacture of HFC alternatives. It's also spurs economic development by supporting an estimated 33,000 new U.S. manufacturing jobs and generating $12.5 billion in new investments over the next decade. We can export new technologies to help countries access energy efficient products and low-GWP alternatives. And it's going to reduce the demand for HFCs by facilitating the transition to next-generation technologies through sector-based restrictions.

The United States is working hard to phase down super polluting HFCs domestically under the "2020 American Innovation and Manufacturing Act," or the AIM Act. Elements of the AIM Act include controlling the production and consumption of HFCs, and reclaiming and reusing HFCs that have already been produced. The AIM Act provisions on increasing opportunities for reclamation and releases are new for the HFC phasedown as compared to other ozone depleting substances covered by the Montreal Protocol. And this shows a growing recognition that this area is important for managing our transitions, and ensuring we are not leaving additional emissions reductions on the table.

Like all aspects of the HFC phasedown, efforts to minimize emissions requires close cooperation with our industry stakeholders. Rest assured that these efforts will contribute to achieving HFC emissions reductions and help us meet our climate goals. We appreciate the work undertaken by so many other countries that have ratified the Kigali Amendment and are working on new ways to reduce HFCs. Through our joint efforts, we will transition the world toward a net-zero economy. We must do everything we can to ensure we are successful in reducing HFCs and become more adaptive and resilient to climate change.

It's an honor to be here alongside other panelists who are playing an important role in reducing HFCs to combat the climate crisis. Together, we can meet this moment and achieve our climate goals. Thank you.

The United States Department of State, 10 November 2022

Image: U.S. Department of State website

EUROPE AND CENTRAL ASIA

13. Fluorinated greenhouse gases 2022

Data reported by companies on the production, import, export and destruction of fluorinated greenhouse gases in the European Union, 2007-2021.

Introduction

Fluorinated greenhouse gases (F-gases) contribute to climate change and in 2020 made up 2.8% of total greenhouse gas emissions in the EU-27 (EEA, 2022a). F-gases have a range of applications, particularly in the refrigeration, air conditioning and heat pump sector. Most F-gases have much higher global warming potentials than other greenhouse gases. As a consequence, even small amounts of F-gases have a negative impact on our climate, and it is thus important to reduce and eventually replace their usage in order to limit F-gas emissions.

This briefing outlines the important trends in the EU supply of F-gases for the period 2007-2021 and monitors EU progress under the HFC (hydrofluorocarbons) phase-down schemes of the EU F-gas Regulation and the Montreal Protocol.

Key messages

• After a slight increase in 2020, the total supply of F-gases to the EU continued its decrease in 2021. Refrigeration, air conditioning and heat pumps continue to be key applications for these gases.

• In 2021, EU consumption of HFCs was at 40% of the maximum imposed by the Montreal Protocol's Kigali Amendment.

• The EU remains on track under the HFC phase-down phase of the EU F-gas Regulation, with the EU-27 having achieved a cut of about one third of HFCs between 2020 and 2021. EU -wide placing on the market of HFCs in 2021 was 4% below the market limit.

• In 2021, the use of quota authorisations eligible to cover 2021 imports of refrigeration, air conditioning and heat pump equipment under the HFC phase-down exceeded the amount of quota authorisations freshly issued in that year. Jointly with the transfer of EU quota authorisations to the UK HFC quota system at the end of the Brexit transition period, this led to a decrease of the reserve of EU quota authorisation by 12%. However, the current size of the reserve still accounts for more than five times the amount of such equipment imported in 2021.

Hydrofluorocarbons (HFCs) account for the majority of fluorinated gas (F-gas) emissions. To reduce these, the F-gas Regulation (EU) No 517/2014 introduced an EU HFC phase-down scheme and a quota system for companies. Since 2019, the EU has also been bound

by an obligation to reduce HFC use, agreed internationally under the Kigali Amendment to the Montreal Protocol.

The European Environment Agency (EEA), 8 November 2022, By Sylvie Ludig, Wolfram Jörß and Victoria Liste (Öko-Institut)

Image: EEA website

FEATURED

OZONE SECRETARIAT

Overview for the meetings of the ozone treaties in 2022 - Click **here** for past and upcoming Montreal Protocol Meetings dates and venues.

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
Image: UNEP, Ozone Secretariat website

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

Image: UNEP, Ozone Secretariat website

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 >>>**

Multilateral Fund
for the Implementation of the Montreal Protocol

THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL

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 90 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.

As of September 2022, the contributions received by the Multilateral Fund from developed countries, or non-Article 5 countries, totalled over US$ 4.49 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.

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.

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.

- **Updated guide for the presentation of stage II of HCFC phase-out management plans (August 2022)**, 9/19/2022
- **The provisional agenda for the 91st meeting is now posted,** 9/14/2022
- **The Information Note for the 91st meeting is now available,** 9/9/2022

>>> Click **here** for the Executive Committee upcoming and past Meetings and related documents.

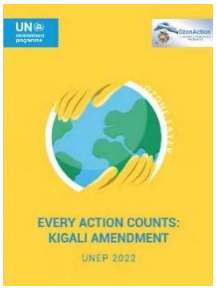
OzonAction

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

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



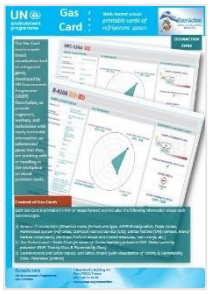
Gender Mainstreaming in the Montreal Protocol: Experiences in Latin America and the Caribbean-Taking into account that women and girls constitute half of the world's population and, therefore, represent half of the potential and innovation necessary to face the "triple planetary crisis"-climate change, 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

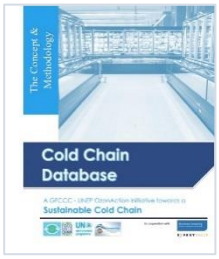


Gas Card Tool: Web-based Visual Printable Cards of Refrigerant Gases - **Content of Gas Cards -** Each Gas Card is printable (in PDF or image format) and includes the following information about each substance/gas: a) General Characteristics (Chemical name, formula and type, ASHRAE designation, Trade 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 the 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)*



OzonAction and GFCCC launch the methodology questionnaires the Cold Chain Database Initiative - The Global Food Cold Chain Council (GFCCC) and the United Nations Environment Programme (UNEP) OzonAction announced the launch of their Cold Chain Database and Modeling initiative. The initiative marks the first formal step to assist developing countries in identifying their cold chain baseline along with consumption of relevant HCFCs or HFCs or other refrigerants. The initiative was conceived in 2019 and kicked off during the 31st Meeting of Parties to the Montreal Protocol (Rome, Italy), which concluded with the Rome Declaration on "The Contribution of the Montreal Protocol to Food Loss Reduction through Sustainable Cold Chain Development".

> *GFCCC-UNEP OzonAction Cold Chain Modelling Press Release*
> *GFCCC-UNEP Cold Chain Database Methodology Final*
> *For countries or partners interested to use the model data collection detailed questionnaires, please fill in the Expression of Interest and NDA of Cold Chain Database form and return to* UNEP, OzonAction

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 CO_2-equivalent tonnes". Data are extremely important for the Montreal Protocol community, and the data reporting formats for both A7, and CP have changed recently, to a large degree triggered by the Kigali Amendment. HFCs, blends, CO_2-equivalent values, etc., now have to be addressed much more frequently by Ozone Officers during their daily work. Sometimes the terminology and values are complex and can be confusing, and it helps to have it all the official facts and figures in one place. Conversion formulas need to be applied to calculate CO_2-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 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**

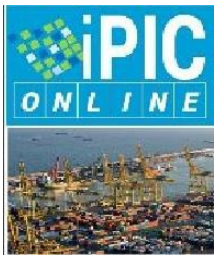
If you prefer to access the video clips via the OzonAction smartphone application, just search for "RAC Technician Video Series" or UNEP in the Google Play Store and iTunes/App Store or scan the QR code –**Free to download!**

The flyer is available from the **OzonAction website**.

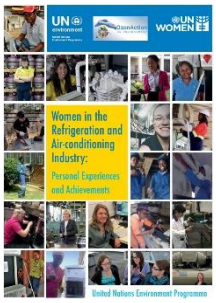
Refrigerant Cylinder Colours: What has Changed - *A new UNEP OzonAction factsheet on the new AHRI revised guideline on a major change to refrigerant cylinder colours* - One of the ways in which refrigeration cylinders are quickly identified is by cylinder colour. Although there was never a truly globally 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.
Read/download the factsheet
Contact: **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**



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**.
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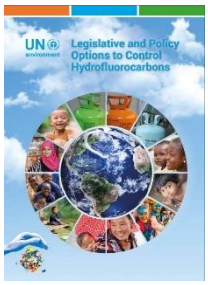
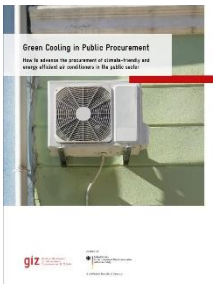
PUBLICATIONS

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**

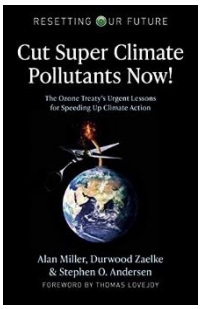


Latest issue of Centro Studi Galileo magazine,
Industria & Formazione, n. **8-2022**
(in Italian).

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**



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.

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

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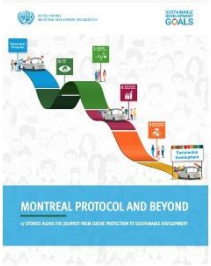
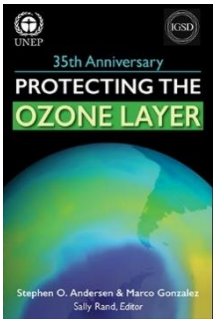
Montreal Protocol and beyond: 17 stories along the journey from ozone layer protection to sustainable development - The 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals (SDGs) embody the global commitment to build a more sustainable future for all. These universally agreed objectives address the most urgent environmental, social, and economic challenges of our time... **Read/Download here**



Photovoltaic-powered Air Conditioning in Buildings - Space cooling in buildings is characterized by enormous growth rates, due to increasing ambient temperatures, growing population and urbanisation. Air-conditioned buildings in many countries are largely dominated by mid to low appliance energy efficiency levels, highly climate-damaging refrigerants as well as fossil-fuel based electricity supply. This in sum generates a huge amount of greenhouse gas (GHG) emissions, furthering climate change. The objective of this paper is to further unfold the technical and economic potential of solar PV-powered green air conditioners. Therefore, it focuses on the most widely applied type of active cooling appliance: single split-type air conditioning systems with a cooling capacity up to 5 kW. It looks at the current development of technical main components and based on that defines model cases for hybrid and off-grid solutions for private and small commercial applications. The technical and economic potential for these cases is then analysed for 13 countries worldwide. Subsequently, a case study on Médecins Sans Frontières' (MSF) solar AC project in Haiti provides practical insights on the use of PV-powered AC systems in the context of off-grid social infrastructure. **Read/Download the study here**



Protecting the Ozone Layer - 35th Anniversary Edition - a new book celebrating the 35th Anniversary of the Montreal Protocol. 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 is anticipated to be released at 34th Meeting of the Parties to the Montreal Protocol on 31 October 2022.**

MISCELLANEOUS

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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*

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Prepared by: Samira Korban-de Gobert
Reviewed by: James S. Curlin

If you wish to submit articles, invite new subscribers, please contact:
Samira Korban-de Gobert, samira.degobert@un.org

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