

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:

[Georgia, 11 July 2023](#)

[Spain, 9 June 2023](#)

[Bahamas, 30 May 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



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

New and updated guides and submission forms for the preparation of project proposals are now available on the MLF website. These include:

- 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](#)

[The Multilateral Fund Secretariat, July 2023](#)

Image: UN MLF



3. A review of current understanding of HFC-23 emissions and contributing source processes

A side event (5th July 2023) at the Montreal Protocol 45th OEWG meeting in Bangkok presented new data on the atmospheric measurements of HFC-23 and sources of HFC-23 by-production and emissions. The [presentation by Steve Montzka](#), for the Scientific Assessment Panel (SAP) included recent data, available since the SAP 2022 Assessment Report. The presentation summary stated:

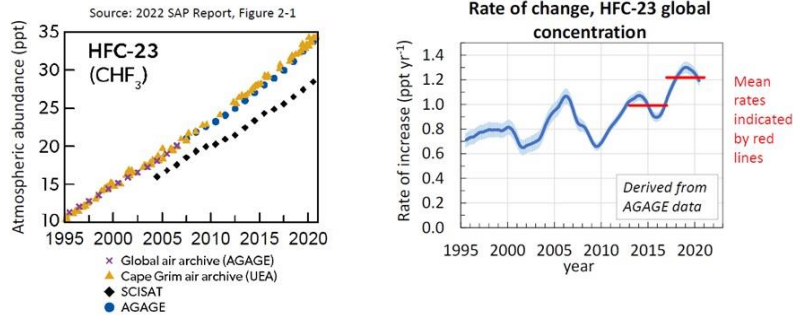
- Surface measurements of HFC-23 provide accurate quantification of global emissions and trends.
- HFC-23 emissions during 2016 to 2020 were larger than any other time in the measurement record and are substantially larger than expected given reports of mitigation (17.2 ± 0.8 vs 2.2 kt/yr in 2019).
- The high value of global HFC-23 emissions and their increasing trend is “inconsistent with new information suggesting a substantial rise in abatement independent of Kigali Amendment controls.”
- The effective global ratio Emission HFC-23/Production HCFC-22 has not decreased in recent years.
- Updated surface data show a hint of slightly lower global emission in 2021 compared to 2020.
- HFC-23 emissions from eastern China:
 - have increased since 2015-16 despite reporting of substantial mitigation during that time.

Notes:

1. *In China, from 15th September 2021, the Regulation “Circular on Controlling the Emissions of HFC-23 By-products” prohibits direct emissions of hydrofluorocarbon-23 (HFC-23) from production processes for hydrochlorofluorocarbon-22 (HCFC-22) and hydrofluorocarbons (HFCs) as of its effective date. It also provides that, except for feedstock and controlled usages, HFC-23 shall be destroyed to the extent practicable using technology approved by the Parties to the Montreal Protocol. This is consistent with language from the Kigali Amendment. This means that emissions of HFC-23 from China from September 2021 might be expected to be greatly reduced. See [China Takes Steps to Address HFC-23 Emissions in Advance of International Ozone Day - IGSD](#).*
 2. *The EU reports a very minor contribution to global emissions of HFC-23. In its National Inventory Report submission in 2023 (available at [European Union. 2023 National Inventory Report \(NIR\). | UNFCCC](#)). In 2021, the reported emissions of HFC-23, according to the Common Reporting Format Table 2(II)BHs-1, are 17.81 tonnes as a by-product from HCFC-22 production and 8.05 tonnes fugitive emissions from chemical production. The SAP 2022 Assessment Report also notes that up until 2013, global bottom-up emissions track (within ± 2 Gg yr⁻¹) the global emissions derived from atmospheric measurements.*
 3. *According to SAP 2022, the contribution to the global atmospheric HFC-23 budget from the photolysis of trifluoroacetaldehyde (CF₃CHO), a minor degradation product of some fluorinated compounds, is assessed to be negligible.*
-

HFC-23 atmospheric abundance continues to increase

→ The increase from 2017-2020 was faster than measured during 2013-2016



Slide 3 reproduced from the presentation by Steve Montzka

The side event second presentation “**HFC-23 By-production and Emissions**” by Helen Tope and Nick Campbell, for the Technical and Economic Assessment Panel (TEAP), discussed sources of HFC-23 emissions, and their relative importance to total HFC-23 emissions. Information presented is from the **2023 TEAP Progress Report** and the **2022 MCTOC Assessment Report**. While HCFC-22 production is the main pathway generating HFC-23 by-product (2-4% generation rate), for other processes, very low generation rates are possible. The presentation noted that fluorochemical plants with integral destruction facility to treat gaseous fluorocarbon containing vents will emit only a fraction of total generated HFC-23.

The 2023 TEAP Progress Report in Section 5.3 Response to Decision XXXIV/5: Identification of gaps in the global coverage of atmospheric monitoring of controlled substances and options for enhancing such monitoring provides detailed information on:

1. Chemical pathways in which substantial emissions of controlled substances are likely.
2. Best practices available to control these emissions.
3. Gaps in understanding the sources of emissions referred to in point (a) above.

The European FluoroCarbons Technical Committee (EFCTC), 27 July 2023

Image: EFCTC

4. “Towards efficient, controlled and smart Refrigeration”

26th International Congress of Refrigeration, 21-25 August 2023, Paris Congress Center | Paris, France.

Refrigeration is both ubiquitous in our world and indispensable to our society. The Covid-19 pandemic that we have been experiencing since the beginning of 2020 has clearly shown this. But this very useful refrigeration is also a major energy consumer and contributes significantly to the greenhouse effect.

In the 21st century, refrigeration will either be sustainable, or it won't be! This is why the organizing committee has decided to organize this congress under the theme “**Towards efficient, controlled and smart Refrigeration**”

We believe that today we can reverse the trend and make the benefits of refrigeration more important for the environment than its harms. By reducing food waste, ensuring the safety of perishable food and health products, enabling superconductivity and energy storage, improving living conditions, ... refrigeration will enable our society to be sustainable. We believe that we can build refrigeration with a positive impact.

The International Congress of Refrigeration 2023 is the world's largest gathering of scientists, experts, technicians, and professionals in the field of refrigeration and air conditioning. It provides a unique forum to present and disseminate the results of research, development, and innovation.

The 2023 edition of the IIR International Congress of Refrigeration is set to be a meeting ground for policymakers, engineers, and researchers active in the field. The IIR congress 2023 will cover:

- Cryogenics and liquefied gases
- Thermodynamics, equipment, and systems
- Biology and food technology
- Storage and transport
- Air conditioning, heat pumps and energy recovery.

[International Congress of Refrigeration \(ICR\), August 2023](#)

Image: ICR



5. A Cooler Future: The Role of Solid-State Cooling in Reducing Carbon Emissions



As the world grapples with the pressing need to reduce carbon emissions and mitigate the effects of climate change, innovative technologies are emerging to help us achieve a more sustainable future. One such technology is solid state cooling, which has the potential to revolutionize the way we cool our homes, offices, and vehicles, while significantly reducing our carbon footprint.

Solid state cooling is a relatively new field of research that focuses on the development of cooling systems that do not rely on traditional refrigerants, such as hydrofluorocarbons (HFCs) and chlorofluorocarbons (CFCs). These substances are known to have a detrimental impact on the environment, as they contribute to global warming and the depletion of the ozone layer. In contrast, solid state cooling systems utilize advanced materials and innovative designs to provide efficient, environmentally friendly cooling solutions.

One of the most promising approaches to solid state cooling is the use of thermoelectric materials, which can convert heat into electricity and vice versa. When a voltage is applied to a thermoelectric material, it can create a temperature difference between its two sides, effectively transferring heat from one side to the other. This phenomenon, known as the Peltier effect, can be harnessed to create compact, energy-efficient cooling systems that do not rely on harmful refrigerants.

Thermoelectric cooling systems have several advantages over traditional cooling methods. First and foremost, they are more environmentally friendly, as they do not produce greenhouse gas emissions or contribute to ozone depletion. Additionally, they are highly efficient, as they can directly convert waste heat into useful cooling power. This means that they can potentially reduce the overall energy consumption of a building or vehicle, further reducing its carbon footprint.

Moreover, solid state cooling systems are highly scalable and can be easily integrated into existing infrastructure. They can be used in a wide range of applications, from small-scale electronics cooling to large-scale building and vehicle air conditioning. This versatility makes them an attractive option for both new construction projects and retrofitting existing systems.

Despite these advantages, there are still several challenges that must be overcome before solid state cooling can become a mainstream technology. One of the main obstacles is the relatively high cost of thermoelectric materials, which can make solid state cooling systems more expensive than traditional solutions. However, ongoing research and development efforts are focused on finding more cost-effective materials and improving the efficiency of thermoelectric devices, which could help to bring down costs in the future.

Another challenge is the need for more efficient heat exchangers and heat sinks, which are essential components of solid-state cooling systems. As these systems rely on the transfer of heat between different materials, it is crucial to develop components that can effectively dissipate heat and maintain optimal performance. Researchers are currently

exploring new materials and designs that can improve the efficiency of heat exchangers and heat sinks, paving the way for more effective solid state cooling solutions.

In conclusion, solid state cooling represents a promising avenue for reducing carbon emissions and achieving a more sustainable future. By harnessing the power of thermoelectric materials and innovative designs, these systems have the potential to revolutionize the way we cool our homes, offices, and vehicles, while significantly reducing our environmental impact. As research and development efforts continue to advance this technology, we can look forward to a cooler, greener future.

[EnergyPortal.eu](https://www.energyportal.eu), 7 July 2023

Image: [EnergyPortal.eu](https://www.energyportal.eu)

6. The Pros and Cons of Magnetic Refrigeration Systems

Magnetic refrigeration systems, an innovative and eco-friendly technology, have been making waves in the world of cooling and heating solutions. As the demand for energy-efficient and environmentally friendly appliances grows, magnetic refrigeration has emerged as a promising alternative to traditional vapor-compression refrigeration systems. While this technology offers several advantages, it also has its share of drawbacks. In this article, we will explore the pros and cons of magnetic refrigeration systems to help you make an informed decision about whether this technology is right for your needs.



One of the most significant advantages of magnetic refrigeration systems is their energy efficiency. These systems operate on the principle of magnetocaloric effect (MCE), which involves the heating and cooling of certain materials when exposed to a changing magnetic field. This process requires significantly less energy than conventional refrigeration methods, which rely on the compression and expansion of refrigerant gases. As a result, magnetic refrigeration systems can reduce energy consumption by up to 50% compared to traditional systems, leading to significant cost savings for consumers and reduced greenhouse gas emissions.

Another benefit of magnetic refrigeration is its environmentally friendly nature. Unlike traditional refrigeration systems that use refrigerants like hydrofluorocarbons (HFCs) and chlorofluorocarbons (CFCs), which contribute to ozone depletion and global warming, magnetic refrigeration systems use solid magnetic materials. These materials do not emit harmful greenhouse gases or ozone-depleting substances, making magnetic refrigeration a more sustainable and eco-friendly option.

Magnetic refrigeration systems also offer the advantage of low noise levels. Traditional refrigeration systems can be quite noisy due to the operation of compressors and fans. In contrast, magnetic refrigeration systems have no moving parts, resulting in near-silent

operation. This can be particularly beneficial in residential settings or other environments where noise reduction is a priority.

Despite these advantages, there are also some drawbacks to magnetic refrigeration systems that must be considered. One of the primary challenges is the high initial cost of these systems. The magnetic materials used in magnetic refrigeration systems, such as gadolinium and its alloys, can be expensive. Additionally, the technology is still relatively new, and there are limited options available in the market, which can drive up prices. However, as the technology becomes more widespread and economies of scale come into play, it is expected that the cost of magnetic refrigeration systems will decrease over time.

Another potential drawback of magnetic refrigeration systems is their limited cooling capacity. While these systems can achieve significant energy savings, they may not be suitable for all applications due to their lower cooling capacity compared to traditional systems. This limitation may make magnetic refrigeration systems less suitable for large-scale industrial applications or areas with extreme temperature requirements.

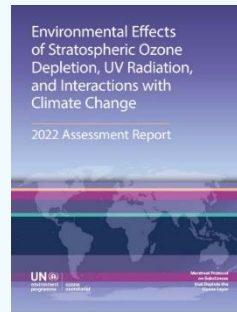
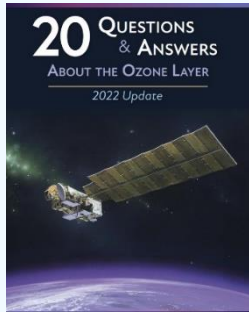
Finally, the long-term reliability and durability of magnetic refrigeration systems have yet to be fully established. As a relatively new technology, there is limited data on the lifespan and maintenance requirements of these systems. However, ongoing research and development efforts are focused on improving the reliability and performance of magnetic refrigeration systems, and it is expected that these issues will be addressed as the technology matures.

In conclusion, magnetic refrigeration systems offer several advantages, including energy efficiency, environmental sustainability, and low noise levels. However, they also come with some drawbacks, such as high initial costs, limited cooling capacity, and uncertain long-term reliability. As the technology continues to develop and becomes more widely available, it is likely that many of these drawbacks will be addressed, making magnetic refrigeration an increasingly attractive option for a wide range of applications.

[EnergyPortal.eu](https://energyportal.eu), 25 July 2023

Image: [EnergyPortal.eu](https://energyportal.eu)





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, and throughout 2022 and beyond.

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



Categories



1 exhibits

On site post-harvesting
and/or precooling
applications



8 exhibits

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



0 exhibits

Storage on board ships,
aircraft, and containers



4 exhibits

Food processing plants



1 exhibits

Transport (large and
smaller trucks, smaller
containers)



6 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

Image: Sustainable cold chains website

AFRICA

7. Combating depleting ozone layer: EPA to certify refrigeration technicians (Ghana)

The Environmental Protection Agency (EPA) is preparing a roadmap for the certification of all refrigeration technicians across the country as part of efforts to combat the depletion of the ozone layer.



Dr Henry Kwabena Kokofu (2nd from left), Executive Director, Environmental Protection Agency, presenting the refrigeration tools and equipment to Solomon Quaye (2nd from right), National President of the National Air-conditioning and Refrigeration Workshop Owners Association. Those with them are Stephen Kansuk (left), Head of Climate Change, UNDP and some members of NARWOA. Picture: EDNA SALVO-KOTIY

The Executive Director of the EPA, Dr Henry Kwabena Kokofu, who made this known yesterday, said it

was to incorporate standardisation, a code of professionalism and the use of right practices to help protect the ozone layer.

“This is to ensure that professionalism is incorporated into their practices so as to provide better services while ensuring environmental protection in the sector,” he stressed.

Event

Dr Kokofu was speaking at a ceremony held in Accra to hand over 40 sets of refrigeration tools and equipment to the National Air conditioning and Refrigeration Workshop Owners Association (NARWOA).

Each set contained appropriate tools and equipment suitable for use in the current technological trends including Piercing plier, Leak detector, Digital Vacuum pump, Flaring and swaging tools, Tube expander, Reamer, Vacuum gauge, and Tube cutter.

The presentation, which was in collaboration with the United Nations Development Programme (UNDP), brought together directors and staff of the organisations and senior members of NARWOA.

Eliminating HCFC

Dr Kokofu explained that the country’s consumption of hydrochlorofluorocarbons (HCFC), an ozone-depleting substance (ODS), was in the servicing of refrigeration and air conditioning (RAC) equipment.

Therefore, he said, the provision of some basic tools and equipment to the refrigeration association formed part of the country’s Hydrochlorofluorocarbon Phaseout Management Plan (HPMP) Stage II project which sought to continue gradually to eliminate the use of HCFCs.

The EPA Executive Director said the cost of most of those tools and equipment had resulted in members of the association and their technicians using unprofessional means to approach their work resulting in associated hazards and negative environmental consequences.

“However, these tools and equipment will strengthen the capacity of the association and enhance the effectiveness in mobilising them while coordinating and promoting self-regulation, norms, and standards of good service to their customers,” he added.

Targets

The Head of Environment and Climate at the UNDP, Stephen Kansuk, expressed the optimism that the country was on course to meet the targets of the Montreal Protocol on Ozone Depleting Substances.

This is an international treaty designed to protect the earth’s fragile ozone layer by banning as well as phasing out the production and consumption of ozone-depleting substances and reducing their abundance in the atmosphere.

He, therefore, urged the association to make proper use of the gadgets, in spite of their limited number and equally urged the media to spread the word about the dangers of such greenhouses and added that combating ozone depletion was a collective responsibility.

The President of the association, Solomon Quaye, who received the tools on behalf of the association, expressed gratitude to the agency and the UNDP for adhering to their pleas.

Mr. Quaye, also, said out of about 5,000 members of the association, the two organisations had, over the years, successfully trained about 2000 of them in recovery, recycling and good refrigeration practices and safe handling. He assured that they would continue to avail themselves for training in how to keep the environment safe.

[Graphic Online, 28 July 2023, By Dickson Worlanyo Dotse](#)

Image: Graphic Online / EDNA SALVO-KOTEY

LATIN AMERICA AND CARIBBEAN

8. Establishing the refrigerant recovery and reclaim (RRR) centres network in Chile

Interview with Claudia Paratori Cortés, Coordinator of the National Ozone Unit (NOU) in Chile

What are the main components of the HCFC phase-out management plan (HPMP) in Chile and how are these linked to the Kigali HFC Implementation Plan (KIP)? How do the refrigerant recovery and reclamation networks contribute to these objectives?

Chile is currently implementing the HPMP Stage II in the country. The focus is on the demonstration projects of industrial conversions in refrigeration and air conditioning (RAC) systems and establishing three refrigerant reclamation centres. These activities are complemented with training courses on good practices in refrigeration.

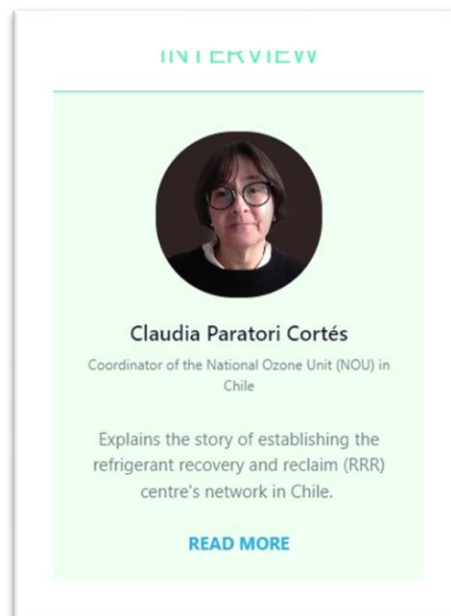
HPMP Stage III will reinforce these activities by implementing the Zero Leaks Programme, providing technical assistance to reclamation centres and certification of women technicians in the RAC sector.

We hope to present the Kigali Implementation Plan at the 95th Meeting of the Executive Committee of the Multilateral Fund (MLF). The HPMP and the KIP can be synergized through activities focused on replacing refrigerants with alternatives having lower global warming potential (GWP), such as natural refrigerants (CO₂, NH₃, hydrocarbons). Chile has made great progress in the implementation of CO₂ trans-critical systems, which has proven to be a suitable technology for the country. It is also exploring hybrid systems with natural and new synthetic refrigerants.

A potential area of synergy between the two is the Zero Leaks Programme, which is perfect to integrate the HPMP and KIP, since it involves best practices in refrigerant management, reduction of leakages, energy efficiency and technicians' certification. This programme will lay the foundation for conversion towards non-HFC and zero GWP alternatives. Additionally, refrigerant reclamation plays a crucial role in both programmes, ensuring the availability of reclaimed refrigerants for users undergoing conversion, in compliance with the Montreal Protocol.

Describe the journey of setting up the RRR centres network in Chile. What were the key drivers of this process? What kind of challenges did you face and how did you address them?

The process of establishing an RRR network was first considered in Chile under the Refrigerant Management Plan (RMP), but it was not feasible at that time due to existing market conditions. However, under the HPMP Stage I, programme design for reclamation was developed, providing the technical guidelines and business models. Regener Chile was selected as the pilot agency for the first refrigerant reclamation centre. The visionary



approach of Regener's Manager, José Luis Rojas, who sought to incorporate circular economy into all processes, was key for this initiative. Regener was included in a GEF project on the replacement of domestic refrigerators and now reclaims refrigerants and recycles/reuses cylinders and various components. As the National Ozone Unit (NOU), we were able to combine the reclamation project with the conversion projects under the MLF, so that the refrigerants banned under these projects had to be transferred to Regener.

In HPMP Stage II, we found a more favourable market interested in reclaimed refrigerants. This could be because of the measures put in place to reduce HCFC imports, equivalent to a 65% reduction compared to the baseline. Now that less HCFCs are on the market, there is a greater interest in reclamation.

For the establishment of the three reclamation centres, the NOU held workshops to identify potential interested parties with an even geographical distribution as well as their equipment needs. Sustenta Chile (in the central part of Chile) and Sofrisur (southern part) and Comercial JJR, a subsidiary of Regener (northern part), were selected to participate in the initiative.

The main promoters of these centres, in addition to the NOU and Regener Chile, were the technicians and refrigerant distribution companies or refrigeration system installers/maintainers. The Ministry of Environment was also instrumental in supporting recycling, circular economy, and the implementation of the Extended Producer Responsibility (EPR) Law.

One challenge that remains is the assurance of the quality of the reclaimed refrigerants, since there is no laboratory in Chile that analyses refrigerants periodically, making each analysis done abroad, excessively expensive. Regener addressed this by requesting the analysis of composite samples (i.e. of several cylinders) and then, due to the high cost, with portable identifiers, which it maintains with periodic calibration and expert personnel. Under HPMP Stage II, we are addressing this by providing portable analyser kits and Göetz Tubes.

What are the lessons learnt from your experience with the RRR centres' network? What can National Ozone Officers in other countries learn from Chile's experience in designing/strengthening their respective national networks?

The lessons learnt? There are many!

- Starting with the demand for reclaimed refrigerants, which is linked to the reduction or elimination of substances controlled by the Montreal Protocol, and with local regulations.
 - Raising awareness on the benefits of a reclamation centre, especially demolishing the myths about reclaimed refrigerants and their quality, clarifying that their use is safe. In this line, also demolishing the myth that refrigerants are "consumables", continued through the Zero Leaks Programme in HPMP Stage III.
 - Conducting an initial study on the implementation of a reclamation centre, with its technical, technological, and economic options, is crucial for discussion and calculation.
-

- Processes of open public calls, preceded by face-to-face or virtual dissemination workshops, and accompanied by the NOU was highly appreciated by the interested parties.
- Co-financing of the MLF for the implementation of the centres is a crucial initial impulse for facilitating decision-making.
- Subsidies for the first amounts reclaimed made it easier for the centres to start operations and set reclamation goals for them, which prompted them to look for customers.
- The union between the government (Ministry of Environment) and the implementing agency (UNIDO) generated confidence among the interested parties were important to give guarantees.
- The training offered by the international expert generated confidence in the quality of equipment and facilitated the capacity building of the beneficiaries.
- Ongoing support of the NOU, including monitoring the reclamation amounts and involving them in relevant activities.
- The visits of the UNIDO counterparts to the reclamation centres generated trust and support for the work that is being carried out in each centre.

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

The next steps in the HPMP Stage III and the KIP are to:

- Focus on strengthening the reclamation centres, mainly on the quality of the reclaimed refrigerants and on adequate equipment to meet market demand.
- Support the achievement of the reduction targets under the Montreal Protocol: for HCFCs reduction of 67.5% by 2025 and 100% by 2030, and for HFCs of freezing in 2024 and 10% by 2029.
- Monitoring the existing reclamation centres and evaluating the creation of new centres where needed.
- Address challenges related to the treatment or the reclamation of zeotropic mixtures (i.e. R-4xx series mixtures), analysing the technological options and/or strengthen training on their use and management.
- For the NOU's future vision, it is essential to involve the reclamation centres in an integral cycle of good use and management of refrigerants, supported by regulations, training and technological conversions, and demolishing the erroneous myth that "refrigerants are consumables."

UNIDOs Montreal Protocol News, Issue 11, July 2023

Image: UNIDO

9. Cool MRV: Combining emissions reporting with enforcement of standards and labelling for cooling products in Latin America and the Caribbean (04 August 2023, 14:00 – 15:00 UTC, Spanish)

When it comes to climate action in the refrigeration and air conditioning sector, effective measurement, reporting and verification (MRV) of emissions is crucial and required under the United Nations Framework Convention on Climate Change (UNFCCC) as well as advisable under the Montreal Protocol (MP) and its Kigali Amendment. An MRV system forms the basis for developing and implementing effective mitigation strategies for the cooling sector. The challenge: data collection is often not systematic and the MRV approach is not clear.



This webinar will provide an overview on how an effective MRV system for the cooling sector can look like and will demonstrate United For Efficiency's (U4E) activities on Product Registration Systems to enforce standards and labels for cooling products and will also present a free of charge prototype.

This webinar will be held in Spanish.

Green Cooling Initiative, August 2023

Image: GCI

10. Peru: Legislative decree approving the Law for the Integral Management of Chemical Substances published

On 28 May 2023, Legislative Decree No. 1570, which approves the Law of Integral Management of Chemical Substances (DL), was published, with the aim of protecting human health and the environment from the hazards and risks associated with the use of hazardous chemical substances. The law will become effective as of the day following the publication of its regulations ("Regulations"), which must be approved by MINAM within a period of no more than one year.



The aforementioned regulation is made within the framework of Legislative Resolutions N° 26178, N° 28417 and N° 30352, which approve the "Montreal Protocol on Substances that Deplete the Ozone Layer," the "Rotterdam Convention for the Application of the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade," and the "Minamata Convention on Mercury," as well as Supreme Decree No. 067-2005-RE, which ratifies the "Stockholm Convention on Persistent Organic Pollutants" through which the state has adopted international commitments related to the

management of chemical substances in order to prevent their adverse effects on the environment and on human health.

This law seeks to establish obligations, attributions and responsibilities of public entities and users of chemical substances for their integral management. [...]

Click [here](#) to access the Spanish version.

Global Compliance News, 26 July 2023, By Valentin Paniagua

Image: Global Compliance News

ASIA AND THE PACIFIC

11. 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

Image: OzonAction Website



12. 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

Image: OzonAction Website



WEST ASIA

13. Qatar organises first forum on handling hazardous materials

The Ministry of Environment and Climate Change, represented by the Chemicals and Hazardous Waste Department, recently organised the first awareness forum on the handling of hazardous materials.

Representatives of more than 45 customs clearance companies attended the forum.

The forum aimed to raise awareness of ways to deal with hazardous materials, educate about



legislation, and work to open channels of direct communication with companies working in this field, in addition to identifying the needs of stakeholders and their views on work mechanisms and procedures for dealing with chemicals, which contributes to developing the Ministry's system.

The forum included two workshops held to explain everything related to the import of hazardous materials and ways to deal with them. [...]

the forum shed light on environmental laws and legislation related to the import and circulation of these materials, indicating that the forum is in the interest of preserving the environment and public health, by educating all stakeholders on the correct ways to deal with hazardous materials.

The forum provided company representatives with detailed explanations of all the international agreements and treaties signed by the State of Qatar in this regard, which are the treaties that govern the methods of dealing with these substances, such as the Vienna Convention on the Protection of the Ozone Layer, the Montreal Protocol on Substances that Deplete the Ozone, the Stockholm Convention on Persistent Organic Pollutants, the International (Basel) Convention for the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, and the Minamata Convention for the Protection of Human Health and the Environment from Mercury Emissions.

The forum also gave a detailed explanation of ways to identify hazardous materials, by carefully reading the safety data sheet on the packages, which includes identification and warning labels, the procedures, and stages for releasing hazardous materials at the ports, and the duties of the customs broker, in terms of preparing documents and using personal protective equipment before inspection.

The Peninsula, 22 July 2023

Image: The Flagshop

NORTH AMERICA

14. ATMO America: U.S. EPA to Propose HFC Management Provisions by End of Summer

The U.S. Environmental Protection Agency (EPA) will publish its proposed HFC management provisions under the American Innovation and Manufacturing (AIM) Act by the end of the summer, according to Cindy Newberg, Director of the agency's Stratospheric Protection Division.



The proposal will consider several factors, including requirements for leak repair, leak-detection equipment and refrigerant reclaim, she said.

“What do we do with the stock of HFCs that are out there?” she asked. “More importantly, what do we do with the stock of equipment that is out there? We have always felt that we didn’t want to necessarily shorten the useful lifetime of large capital investments, so we look at opportunities to recovery, recycle and reuse refrigerants.”

Newberg delivered her remarks during the Technology Transition Policy Panel session at the ATMOsphere (ATMO) America Summit 2023 on natural refrigerants. The conference took place June 12–13 in Washington, D.C., and was organized by ATMOsphere, publisher of R744.com.

A ‘three-legged stool’

“I think of the [AIM Act] as a three-legged stool,” explained Newberg during her presentation. “The first leg is to phase down HFCs and get in place that schedule [and] the regulations around it. The second leg is the technology transitions rule, and the third leg of our stool, which we’ll be proposing before the end of the summer, is the HFC management provisions.”

On July 11, the EPA announced its latest plans to phase down the use of HFCs by 40% below historic levels between 2024 and 2028.

On the technology transitions rule, which sets the GWP limits for several end uses, the EPA released its proposal in December 2022. The proposed rule sets a 150-GWP limit on the use of refrigerants in many new refrigeration systems and a 700-GWP limit on the use of refrigerants in new residential and light commercial air-conditioning and heat pump systems as well as other applications. The regulation is due to be finalized by October 7. According to Newberg, the rule will be a driver for innovation.

At present, the EPA is finalizing its proposed rules around HFC management, which includes establishing the “trigger rate” for leak repair, whether certain applications require refrigerant reclaim only and when leak detection equipment is needed. AIM Act provisions around leak repair will apply to HFCs in addition to HCFCs; this will restore rules enacted by the Obama administration in 2016 that were rescinded in 2020 under the Trump administration.

Newberg also noted that there will be at least two more pieces of regulation under the AIM Act, which are expected in 2024. This includes reviewing certain non-HVAC&R applications and assessing alternative refrigerant options. [...]

[r744, 25 July 2023](#)

Image: r744 / Marc Chasserot, CEO of ATMOsphere, and Cindy Newberg, U.S. Environmental Protection Agency, at ATMO America 2023.

15. Plant Protection Today - APHIS' Recent Successes in Reducing Methyl Bromide Use Finding Alternatives to an Ozone-Depleting Chemical



Finding alternatives to the fumigant methyl bromide is an acute need for USDA's Animal and Plant Health Inspection Service (APHIS). Methyl bromide effectively treats commodities against a wide range of plant pests and diseases, and U.S. importers and exporters often rely on its use to conduct safe trade. However, it is also an ozone-depleting chemical, and an international treaty called The Montreal Protocol—which the United States signed in 1987—aims to phase out the production and use of methyl bromide and almost 100 other chemicals. The protocol's goal is to protect and restore Earth's ozone layer. The good news for industry and our planet's ozone layer is that APHIS has made some recent—and significant—successes in finding alternatives.

The EU Accepts U.S. Hardwood Logs for Veneer

The European Union (EU) stopped accepting methyl bromide-treated oak logs with bark from the United States, and no oak logs with bark have shipped to the EU since January 2021. APHIS has been working hard on solutions.

"We made great progress with the EU for exported U.S. oak logs intended as veneer," said John "Tyrone" Jones, APHIS' Trade Director for Global Forestry Products. "The EU accepted APHIS' systems approach using sulfuryl fluoride as a methyl bromide alternative."

This agreement is also notable because it's the first one that has dual treatment in the United States and in the EU. Stateside, it involves field selection of the logs and safeguarding and treating them. In the EU, the systems approach continues with safeguarding the logs, storing them under water, and heat treating them in a water vat.

"This success is good news for industry," Jones said, "because the EU market for U.S. oak logs for veneer is worth \$12 million annually."

Bangladesh Eliminates Methyl Bromide Fumigation Requirement

Another recent success: Bangladesh's government has removed a significant trade barrier for U.S. cotton exports by no longer requiring upon-arrival methyl bromide fumigation of U.S. baled cotton. The Bangladeshi government announced this change effective as of May 16, 2023.

APHIS formally requested Bangladesh to remove the fumigation requirement in 2017, based on U.S. industry practices, supporting research, and risk analysis. Subsequently, representatives from APHIS and USDA's Foreign Agricultural Service (FAS) in Dhaka and Washington engaged with Bangladeshi officials via meetings, letters, phone calls, and site visits to the United States, partnering with the U.S. cotton industry to provide scientific information and field demonstrations verifying that there is no risk of boll weevil on U.S. baled cotton.

Because of these successful negotiations, APHIS gained approval from Bangladesh's Ministry of Agriculture to allow U.S. cotton to be exported to Bangladesh with a

phytosanitary certificate and an additional declaration stating that the cotton is free from boll weevil.

“Removing the fumigation requirement is the result of decades of hard work by USDA and the U.S. cotton industry,” said Mark Davidson, Deputy Administrator for APHIS’ Plant Protection and Quarantine. “This important U.S. export market was valued at more than \$475 million last year and has the potential to increase with this removal of the fumigation trade barrier.”

What made this international trade accomplishment possible is APHIS’ and the U.S. cotton industry’s battle against cotton pests like the boll weevil. Our national cooperative boll weevil eradication program is considered to be one of the most consequential agricultural programs in U.S. history due to its effectiveness, with Federal and State agencies and the cotton industry successfully eradicating this pest from more than 98 percent of U.S. cotton acreage.

Bangladesh is the world’s second-largest exporter of ready-made garments, and its garment industry relies on imported cotton, including high-quality, sustainably produced U.S. cotton. Bangladeshi importers were previously paying more than \$1 million annually for fumigation of U.S. cotton.

USDA Animal and Plant Health Inspection Service (APHIS), 26 July 2023, By April Dawson

Image: APHIS

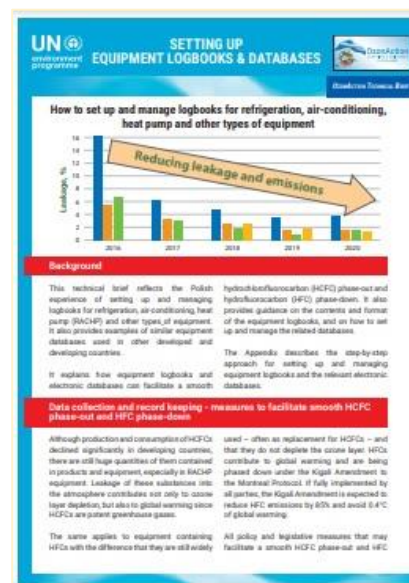
EUROPE & CENTRAL ASIA

16. 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

Image: OzonAction

17. Les bénéfices environnementaux du refroidisseur adiabatique : une alternative écologique aux climatiseurs traditionnels

Face à l'urgence climatique, la quête de solutions respectueuses de l'environnement est primordiale. L'une

d'entre elles, le refroidisseur adiabatique, se présente comme une alternative écologique aux climatiseurs classiques. Ce dispositif, méconnu du grand public, possède pourtant de nombreux avantages environnementaux. Son fonctionnement se fonde sur des principes naturels et nécessite moins d'énergie. Il ne rejette pas de gaz à effet de serre. Ce dispositif pourrait ainsi contribuer à réduire notre impact sur l'environnement tout en nous offrant le confort nécessaire lors des épisodes de fortes chaleurs.



Au sein de l'article de presse 'Les bénéfices environnementaux du refroidisseur adiabatique : une alternative écologique aux climatiseurs traditionnels', nous abordons maintenant la section consacrée aux avantages économiques offerts par cet appareil novateur. Le refroidisseur adiabatique se distingue notamment par sa faible consommation d'énergie, ce qui a un impact significatif sur les factures d'électricité des utilisateurs. Effectivement, comparé aux climatiseurs classiques, le dispositif adiabatique permet des économies substantielles [...] Son fonctionnement simple et peu coûteux en entretien réduit aussi les coûts associés à l'utilisation et à la maintenance d'un système de climatisation traditionnel. Les entreprises et les particuliers peuvent donc réaliser des économies financières tout en préservant l'environnement grâce à cette alternative écologiquement responsable.

Il faut souligner que le refroidissement adiabatique ne nécessite pas de gaz réfrigérants chimiques nocifs pour la couche d'ozone ou contribuant au réchauffement planétaire, comme c'est souvent le cas avec les systèmes conventionnels. Cette caractéristique fait du refroidisseur adiabatique une option respectueuse de notre écosystème fragile.

Ce dispositif utilise principalement l'eau comme moyen naturel pour rafraîchir l'air ambiant, évitant ainsi toute émission polluante dans l'air extérieur. Contrairement aux climatisations traditionnelles qui extraient la chaleur intérieure vers l'extérieur (ce qui augmente la température de l'air extérieur), le refroidisseur adiabatique n'a pas d'effet néfaste sur les conditions climatiques locales. Cela permet donc de maintenir un équilibre

thermique plus stable et de réduire l’empreinte carbone associée aux systèmes conventionnels. [...]

ActuMag, 24 juillet 2023

Image: ActuMag

Heat pumps - action plan to accelerate roll-out across the EU-The use of efficient heat pumps in buildings, industry & local heat networks, is key for cutting greenhouse gases and achieving the Green Deal & REPowerEU targets. The action plan on accelerating the heat pump market and deployment sets out 4 strands of action:

- partnership between the Commission, EU countries and the sector (including R&I)
- communication to all interest groups & a skills partnership for rolling out heat pumps
- legislation (ecodesign & energy labelling)
- accessible financing.

**Refrigeration
Industry** online magazine
and directory

**Heat pumps - action plan to
accelerate roll-out across
the EU**

Consultation period 07 June 2023 - 30 August 2023 (*midnight Brussels time*) [Go to consultation >>>](#)

The Commission would like to hear your views. This public consultation is open. Your input will be taken into account as we further develop and fine-tune this initiative. We will summarise the input we receive in a synopsis report, explaining how we have taken it into account. Feedback received will be published on this site and therefore must adhere to the [feedback rules](#).

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](#)

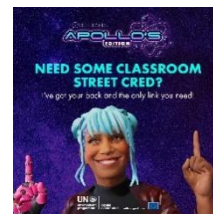
Overview for the meetings of the ozone treaties - Click [here](#) for upcoming and past Montreal Protocol Meetings dates and venues.

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](#)

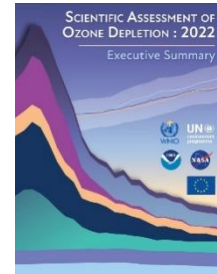
The Assessment Panels have been vital components of ozone protection since the Montreal Protocol was first established. They support parties with scientific, technological, and financial information in order to reach decisions about ozone layer protection and they play a critical role in ensuring the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



[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 ODP	Licence
Substance 1	1000000	1000000
Substance 2	2000000	2000000
Substance 3	3000000	3000000

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**

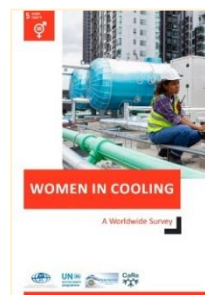


As part of IIR and UNEP OzonAction's partnership, a set of Cold Chain Technology Briefs was released over the past few years, which includes in-depth summaries about the cold chain in different key sectors. They include descriptions of technology, refrigerant options and trends and conclude with prospects 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](#)**

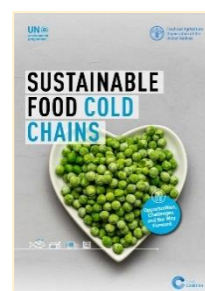


PUBLICATIONS

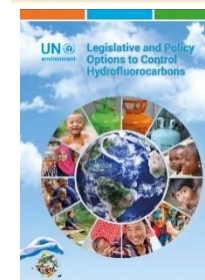
Results of a Worldwide Survey about Women in Cooling Released by IIR and UNEP OzonAction - Refrigeration, Air-Conditioning, and Heat-pumps (RACHP) are crucial for our health, nutrition, comfort, and well-being. It is one of the sectors that crosscuts many of the UN sustainable development goals and can 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:

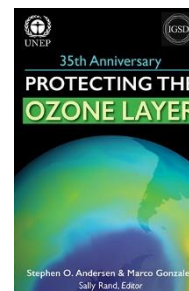
- Safety hazards and health considerations
- Emergency shutdown procedures
- Addressing deviations from system operating limits
- Risks and costs of non-compliance with regulatory standards

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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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