

OzoNews

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

Volume XXIV | 30 May 2024

In this issue:

1. Kigali Amendment latest ratifications
2. World Ozone Day 2024 theme announced "Montreal Protocol: Advancing Climate Action"
3. Continuing benefits of the Montreal Protocol and protection of the stratospheric ozone layer for human health and the environment
4. ASHRAE and UNEP Renew Cooperation Agreement
5. Update Refrigerants Designations and Safety Classifications – Factsheet
6. EU backs four-year rural cold chain sustainability project
7. Vietnam's GHG emission regulations draft emphasizes carbon footprint verification
8. Tuvalu: Cold Storage (solar) Specialist: Expression of Interest
9. Colombia: El Ministerio de Salud publicó eliminaría el bromuro de metilo en el país ¿Por qué?
10. European Commission Publishes Proposed Natural Refrigerant, F-gas Training Certificate Regulation
11. Investigan dos talleres y un desguace de Soria y Guadalajara por la gestión ilegal de gases que afectan a la capa de ozono
12. The Incredible Impact of Lord Kelvin - World Refrigeration Day celebration webinar

GLOBAL

1. Kigali Amendment latest ratifications

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

[United Arab Emirates, 19 April 2024](#)

[Thailand, 3 April 2024](#)

[Djibouti, 8 Mar 2024](#)

[Guatemala, 11 January 2024](#)



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](#).

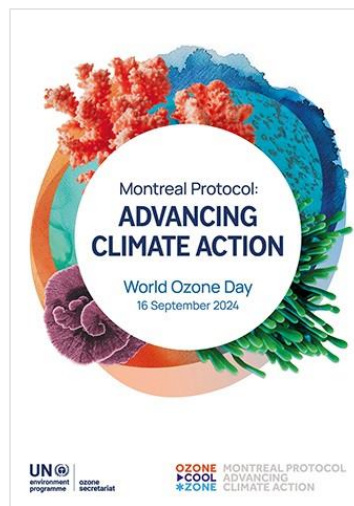
United Nations Treaty Collection

Image: UN Treaty Collection website

2. World Ozone Day 2024 theme announced "*Montreal Protocol: Advancing Climate Action*"

The aim of this year's World Ozone Day is to raise awareness of how far the Montreal Protocol has progressed from ozone layer protection to also become a recognized powerful climate action tool.

As temperature records keep getting broken, the planet continues to heat up, and the demand for cooling is increasing fast. As the world looks for ways to mitigate climate warming, the potential of the Montreal Protocol should not be underestimated. Its Kigali Amendment is a significant climate action tool and could avoid as much as 1°C of warming by the end of the century if it is universally ratified, fully implemented and includes energy efficiency measures.



The Ozone Secretariat invites all parties to join the celebration of World Ozone Day and use the assets created around this year's theme to raise awareness among the public on the important work of the Montreal Protocol to safeguard us and the planet.

As always, the World Ozone Day theme and taglines are available in all the six official UN languages on the [WOD 2024 website](#).

To further support your World Ozone Day communication activities, the Secretariat will also develop a comprehensive social media package in all the six official UN languages along with additional materials such as the video message from UNEP's Executive Director, which will be made available for further dissemination nearer World Ozone Day 2024.

World Ozone Day is also a great opportunity to engage with schools and clubs using the materials developed for the education portal such as [Reset Earth](#) and [Apollo's Edition](#), particularly the [Reset Earth Impact Simulator](#) game, which has proven to be very popular among teenagers.

As you prepare for your events, we would also be pleased to receive any information on your planned commemoration of World Ozone Day 2024 to be featured on our website and social media channels ([Instagram](#), [X \(Twitter\)](#), [Facebook](#), [Threads](#) and [LinkedIn](#))

The Secretariat is pleased to provide limited financial assistance to a few selected developing countries to contribute towards organizing their national activities to

commemorate the day. Interested parties are invited to submit their plans of celebration activities, including a planned budget, and requests for assistance by Friday, 28 June 2024. Kindly send them to the Secretariat at mea-ozoneinfo@un.org with a copy to stephanie.haysmith@un.org

As in previous years, the United Nations Secretary-General's message for World Ozone Day will be shared prior to the day.

United Nations Environment Programme, Ozone Secretariat, May 2024

Image: UNEP Ozone Secretariat

- > Campaign theme in [Arabic](#) [Chinese](#) [English](#) [French](#) [Russian](#) [Spanish](#)
- > **Graphic visualisation** of this year's WOD theme. Preview and download full range of A1 posters with crop marks for printing: [Arabic](#) [Chinese](#) [English](#) [French](#) [Russian](#) [Spanish](#)

3. Continuing benefits of the Montreal Protocol and protection of the stratospheric ozone layer for human health and the environment

Abstract

The protection of Earth's stratospheric ozone (O₃) is an ongoing process under the auspices of the universally ratified Montreal Protocol and its Amendments and adjustments. A critical part of this process is the assessment of the environmental issues related to changes in O₃.

The United Nations Environment Programme's Environmental Effects Assessment Panel provides annual scientific evaluations of some of the key issues arising in the recent collective knowledge base.

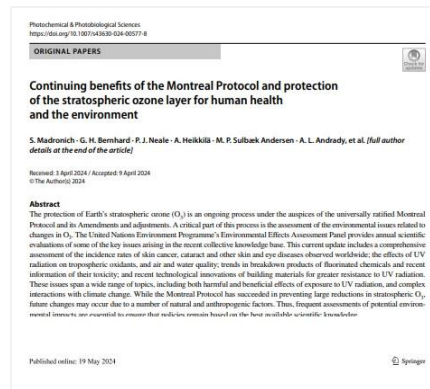
This current update includes a comprehensive assessment of the incidence rates of skin cancer, cataract and other skin and eye diseases observed worldwide; the effects of UV radiation on tropospheric oxidants, and air and water quality; trends in breakdown products of fluorinated chemicals and recent information of their toxicity; and recent technological innovations of building materials for greater resistance to UV radiation. These issues span a wide range of topics, including both harmful and beneficial effects of exposure to UV radiation, and complex interactions with climate change.

While the Montreal Protocol has succeeded in preventing large reductions in stratospheric O₃, future changes may occur due to a number of natural and anthropogenic factors. Thus, frequent assessments of potential environmental impacts are essential to ensure that policies remain based on the best available scientific knowledge.

Authors: S. Madronich, G. H. Bernhard, P. J. Neale, A. Heikkilä · M. P. Sulbæk Andersen, A. L. Andrady, et al.

Photochemical & Photobiological Sciences, 19 May 2024

Image: Photochemical & Photobiological Sciences



4. ASHRAE and UNEP Renew Cooperation Agreement

Paris, France, 13 May 2024 - ASHRAE and UNEP's OzonAction have signed a new Memorandum of Understanding (MOU) to renew and expand their long-standing collaboration on environmental protection and sustainable development in the refrigeration and air conditioning sectors. Ginger Scoggins, ASHRAE President, signed the agreement at



UNEP's Paris Duty Station during meetings with Jim Curlin, Head of the OzonAction Branch. Patricia Kameri-Mbote, Director of UNEP's Law Division, signed on behalf of UNEP. This new MOU is the latest in a series of cooperation agreements between the two organizations dating back to 2007.

The new ASHRAE-UNEP MOU calls for collaboration to support the evolving needs of developing countries by providing specialized products and services that facilitate refrigerant management for climate protection and energy efficiency. Both parties agree to explore opportunities to advance standards, codes, norms, and guidelines concerning refrigerant management, including aspects related to flammability, operation, and maintenance. The joint effort will contribute to enhancing the safety and sustainability of refrigeration and air-conditioning systems.

The ASHRAE UNEP partnership actively promotes activities that emphasize sustainability and state-of-the-art technologies, while also aligning with the United Nations Sustainable Development Goals (SDGs). This includes encouraging the adoption of lower global warming potential (GWP) alternative refrigerants, efficient energy systems, and innovative building designs, all aimed at reducing emissions and environmental impact. The collaboration develops resources accessible to specialists and policymakers, aiding them in understanding the importance and application of emerging technologies that promote environmental protection. Also covered by the MOU is advancing workforce development through gender mainstreaming including, but not limited to, cooperation under the International Network of Women in Cooling (INWIC).

Operational aspects of the partnership are steered by a collaborative ASHRAE-UNEP liaison working group, responsible for implementing a biennial work plan. This working group met on May 13-14, 2024, and is currently engaged in the implementation plan for 2024-2026 under the newly signed MOU.

Contact: [Amr Abdel Hai](#), Programme Management Officer, UNEP OzonAction

[UNEP, OzonAction, 13 May 2024](#)

Image: OzonAction

See also >>> ASHRAE and UNEP announce the opening for submissions for the [2024 Lower GWP Refrigeration & Air-Conditioning Innovation Award](#) until the [closing date, 15 August 2024](#).

5. Update Refrigerants Designations and Safety Classifications – Factsheet

ASHRAE has released an updated factsheet on refrigerant designations and safety classifications, introducing several new low-Global Warming Potential (GWP) refrigerants that align with international climate change mitigation efforts.

The factsheet highlights ASHRAE Standards 34 and 15, which provide essential guidelines for the safe and responsible use of refrigerants in various applications. The updated fact sheet is a valuable resource for industry professionals, policymakers, and anyone interested in the latest developments in refrigerant technology.

ASHRAE's partnership and collaboration with UNEP underscores the global significance of these updates, the partnership aims to ensure that the latest technical information and standards are accessible to stakeholders worldwide, promoting the adoption of ozone and climate-friendly refrigeration and air-conditioning technologies.”

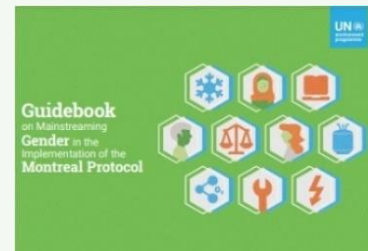
[English](#) | [Spanish](#)

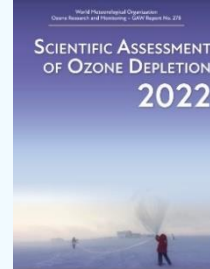
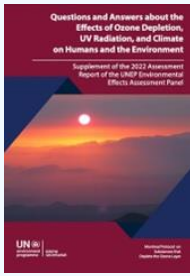
[UNEP OzonAction, May 2024](#)

Image: OzonAction



Guidebook on Mainstreaming Gender in the Implementation of the Montreal Protocol - OzonAction, in consultation with UN Women and a gender expert, has developed this [Guidebook on Mainstreaming Gender in the Implementation of the Montreal Protocol](#) to advance the agenda of gender equality and women's empowerment through the implementation of Montreal Protocol activities. The Guidebook is designed to assist National Ozone Officers with addressing gender issues through their daily work and operations. [Read/download English](#) | [Russian](#)





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



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



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

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

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

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



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

Image: Sustainable cold chains website

Categories

 <p>1 exhibits On site post-harvesting and/or precooling applications</p>	 <p>8 exhibits Storage of product, e.g. large warehouses / Distribution centers</p>	 <p>0 exhibits Storage on board ships, aircraft, and containers</p>
 <p>4 exhibits Food processing plants</p>	 <p>1 exhibits Transport (large and smaller trucks, smaller containers)</p>	 <p>8 exhibits Supermarkets (wholesale markets & Retailers)</p>
 <p>1 exhibits Food services (Restaurants, cafes, tourism facilities, etc)</p>	 <p>2 exhibits Vaccines and other pharmaceutical products</p>	 <p>0 exhibits Game-changing and systemic approaches</p>

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 >>>](#)



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](#)



AFRICA

6. EU backs four-year rural cold chain sustainability project

Funds will be provided via EU research project to develop a new cooling technology for protecting food produce that can be used at scale in a number of African countries

A four-year research project backed with EU funding will look at the creation of sustainable cold chain technologies that can be provided to rural communities across sub-Saharan Africa.

The AGRI-COOL project will see over a dozen organisations, including the International Institute of Refrigeration (IIR), partnering on work to introduce a "containerised solution" for storing and cooling produce.

The full name of the AGRI-COOL project stands for 'Advancing sustainable agriculture through off-grid energy and cooling solutions in Africa'. One of the main aims of the project's work is to help improve food security through access to lower emissions technologies and cooling methods.



This work is also intended to assist rural communities in countries across Africa with cutting emissions in line with requirements set out under the Paris Climate Change agreement and other related commitments. It also aims to protect food supplies and limit food waste.

The project will be coordinated by the University of Twente in the Netherlands and be backed through funding provided via the European Commission's Horizon Europe research project.

AGRI-COOL will officially launch from June this year with 13 organisations working alongside the IIR to create a solution that can help communities to lower food waste rates, while at the same time reducing the use of power generators that rely on fossil fuels.

The IIR stated that its involvement on the project would include leading a 'work package' to engage with other project stakeholders and help disseminate information and findings.

It stated that large areas of sub-Saharan Africa had limited access to a stable electricity grid. This limited access serves to create significant challenges for farmers to cool their harvests in an affordable way.

The IIR added: "This results in an enormous loss and waste of food, which is responsible for more than 10 per cent of total greenhouse gas emissions worldwide."

Over the four-year span of the project, a new approach to store and cool food products is expected to be developed that can be both affordable and scalable for use in a range of countries.

The IIR said the project aimed to look at the use of renewable systems such as photovoltaic technology and how this can be combined with energy storage, controls, and chiller functions, as well as studying the use of phase change materials.

Any technologies developed for the project are expected to be used and tested in rural communities in countries including Cape Verde, Somalia, South Africa, and Zimbabwe to show the potential for use in a range of climates and markets.

RAC PLUS, 3 May 2024, BY Neil Merrett

Image: IIR

ASIA AND THE PACIFIC

7. Vietnam's GHG emission regulations draft emphasizes carbon footprint verification

Vietnamese government proposed to amend and supplement the "Regulations on reduction of greenhouse gas (GHG) emissions and protection of the ozone layer". There is significant attention regarding details of GHG inventory and emission quota allocation.



Regarding the GHG inventory regulations, the proposed draft shows that provincial People's Committees will no longer handle the verification of emission inventory results of enterprises. Instead, the independent third-party unit will conduct the verification and then submit the inventory results to the government, aiming to enhance the accuracy and transparency of the inventory results.

According to the original regulations, verification units must comply with the United Nations Framework Convention on Climate Change (UNFCCC) or the Vietnamese TCVN ISO 14065 standard in GHG inventory, or technical personnel of such units must have completed GHG inventory courses and obtained certification as per UNFCCC requirements.

Vietnamese Ministry of Natural Resources and Environment (MONRE) has noted that local auditing capacity is limited. Therefore, the draft amendment includes additional pathways for technical personnel to acquire qualifications, such as completing training courses for the Vietnamese TCVN ISO 14064-3. Additionally, the draft clarifies the procedures for publishing the list of qualified organizations in the future.

The draft also included the livestock industry in the GHG inventory list, with the addition of enterprises in other industries, the total number of enterprises that need to conduct the GHG inventory has now increased to 2,893 entities.

Additionally, the draft specifies that GHG emission quotas allowance will be gradually distributed by industry during the period from 2026 to 2030. Among these, approximately 200 enterprises in the thermal power generation, steel, and cement manufacturing industries have the highest emissions, accounting for 45% of the total emissions of 2,893 entities and will be listed in the first phase acquire the allowance.

MONRE emphasizes that the GHG inventories is the basis for the operation of carbon credit markets, and the government will adjust industry emission allowance based on the number of enterprises submitting GHG inventory results.

Furthermore, Article 10 of the "Regulations on reduction of GHG emissions the stage of soliciting public opinions and protection of the ozone layer" stipulates that the GHG reduction results of enterprises must undergo verification. However, the draft proposes to remove this requirement while adding a new provision that GHG reduction plans of enterprises must be verified.

The draft has been published for the collection of public comments so far, and then MONRE will compile the feedback of all parties before submitting the draft to the Ministry of Justice for evaluation.

Recessary, 3 May 2024

Image: Recessary

8. Tuvalu: Cold Storage (solar) Specialist: Expression of Interest

The Tuvalu Fisheries Department has received an advance financing from the World Bank/International Development Association (WB/IDA) for the Tuvalu Pacific



Islands Regional Oceanscape Program for Economic Resilience (PROPER) and intends to apply part of the proceeds for consulting services.

The consulting services (“the Services”) include an Individual Consultant to inform the procurement of refrigeration equipment for the fisheries cold chain in Tuvalu which will be powered by renewable energy and use environmentally friendly refrigerants.

This will contribute to national goals of mitigating greenhouse gas emissions and ozone depleting substances, as well as reducing the operating costs of conventional refrigeration systems for fish and fishery products.

The equipment needs to be simple, robust, and reliable, as it will be operating in remote locations where there is limited capacity for refrigeration repairs and maintenance.

The detailed Terms of Reference (TOR) for the assignment can be found [here](#)

The Tuvalu Fisheries Department, 28 May 2024, By Fetau Latasi

Image: The Tuvalu Fisheries Department website

LATIN AMERICA AND CARIBBEAN

9. Colombia: El Ministerio de Salud publicó eliminaría el bromuro de metilo en el país ¿Por qué?

El Ministerio de Salud publicó un proyecto de resolución con el que busca prohibir en todo el territorio nacional la importación, fabricación, comercialización y uso del ingrediente activo bromuro de metilo, así como de los productos plaguicidas que lo contengan.



La entidad señaló que Colombia ratificó el Convenio de Viena y el Protocolo de Montreal para la protección de la capa de ozono, comprometiéndose a eliminar el consumo de sustancias agotadoras como el bromuro de metilo.

Esta sustancia en la actualidad solo está permitido su uso para tratamientos cuarentenarios y de preembarque en puertos y pasos fronterizos, dentro de un radio de 10 km, por lo que se advierte en la necesidad de suspender su uso debido a los efectos que genera en el medio ambiente.

El Instituto Colombiano Agropecuario (ICA) informó que Colombia no ha importado bromuro de metilo desde 2006 y no lo utiliza desde 2013, por lo que no existen registros vigentes de productos con esta sustancia.

La Resolución 2152 de 1996 restringió severamente el uso de bromuro de metilo en Colombia por su toxicidad y daño a la capa de ozono.

Destaca que se considera que las medidas fitosanitarias establecidas por el ICA a través del análisis de riesgo son suficientes para garantizar la seguridad sin necesidad de utilizar bromuro de metilo.

Por lo anterior, se propone prohibir totalmente la importación, fabricación, comercialización y uso de bromuro de metilo y productos que lo contengan en Colombia.

Destacó que con este borrador que se encuentra en la fase de comentario se derogan las resoluciones 2152 de 1996 y 5049 de 2008 que permitían su uso restringido.

Esta es una medida ambiental para eliminar por completo el uso del bromuro de metilo en Colombia, en línea con los compromisos internacionales asumidos para proteger la capa de ozono.

La Fm Radio, 4 May 2024

Image: La FM radio - Gobernación de Antioquia

EUROPE & CENTRAL ASIA

10. European Commission Publishes Proposed Natural Refrigerant, F-gas Training Certificate Regulation

The proposed regulation is open for public comment until June 10.



The European Commission **has released a proposed regulation** that would establish minimum requirements for certification programs for engineers working with natural refrigerants – specifically CO₂ (R744), hydrocarbons and ammonia (R717) – and f-gases, as mandated by the recently **revised EU F-gas Regulation**.

The scope: Under the proposal, a certificate would be required to conduct leak checks, install equipment and to repair, service and decommission equipment using fluorinated or natural refrigerants, the latter of which are referred to as “alternatives” or “alternative substances” by the Commission.

- The equipment covered includes stationary refrigeration, air-conditioning, and heat pumps.
- Organic Rankine cycles, refrigeration units in refrigerated trucks and refrigerated trailers, and refrigeration units of refrigerated light-duty vehicles, intermodal containers and train wagons are also included in the proposal.
- The regulation would also apply to third parties that install, repair, maintain or decommission equipment using f-gases or natural refrigerants. Equipment manufacturers would not be subject to the regulation provided manufacturing, repairing or “related activities” are done “at the site of the manufacturer.”

Individual certificates: Under the proposal, five certificate types would be created. EU member states would be allowed to issue individual or combined certificates specifying the specific activities covered:

- **Certificate A:** required to work with f-gases or hydrocarbons
-

- **Certificate B:** required to work with CO₂
- **Certificate C:** required to work with ammonia
- **Certificate D:** required to work with equipment containing less than 1kg (2.2lbs) of f-gases
- **Certificate E:** required to do work on f-gas equipment that does not require “breaking into the refrigeration circuit”

Course content: The Commission has proposed that, to earn a certificate, applicants must pass practical and theoretical examinations organized by an “independent” and “impartial” certification body. Exams can also be organized by an “evaluation body” designated by the certification entity.

- The annex to the proposal [lays out the exam content](#), which is grouped into 14 categories and classified as being part of the theoretical or practical test.
- All certificate types will feature theoretical and practical questions from the same seven categories, which include the environmental impact of refrigerants and relevant environmental regulation, information on relevant technologies to replace or to reduce the use of fluorinated greenhouse gases and their safe handling, and checks for leakage.
- Those seeking certificates to work with natural refrigerants will be required to answer test questions from refrigerant-specific categories.
- In addition, those seeking Certificate A will have to answer at least two questions related to the specifics of natural refrigerants and the energy efficiency of natural refrigerant equipment and complete at least one practical exercise involving natural refrigerants.

Feedback period: The EU Commission [is soliciting public comments](#) on the proposed regulation, which can be made until June 10 at 11:59 pm CET.

[Natural Refrigerants, 17 May 2024, By Saroj Thapa](#)

Image: European Union flags flying in front of the European Commission building in Brussels. Photo credit: CristiDumi for Shutterstock

11. Investigan dos talleres y un desguace de Soria y Guadalajara por la gestión ilegal de gases que afectan a la capa de ozono

Las empresas, cuyos vehículos contenían gases refrigerantes en los aires acondicionados, se enfrentan a un delito contra los recursos naturales y el medio ambiente.



La Guardia Civil de Soria ha procedido a investigar a tres empresas, dos talleres y un desguace, por irregularidades en la gestión de gases de efecto invernadero contenidos en los sistemas de aire acondicionado de vehículos que se encuentran en desuso.

Después de seis meses de investigación, agentes de la Guardia Civil detectaron la presencia de gases refrigerantes contenidos en los aires acondicionados procedentes de vehículos dados de baja. Durante la investigación, se comprobó que existía un desfase entre la cantidad de gas declarada y la que debería de haber sido recuperada.

Estos gases refrigerantes se deben acumular en unas bombonas específicas para su almacenaje. Posteriormente, los datos se deben comunicar en una memoria ambiental a la Autoridad competente en materia de recursos de la Comunidad Autónoma. Una vez recuperados, se gestionarán a través de un gestor autorizado de recursos peligrosos.

La mala gestión de estos gases fluorados de efecto invernadero afecta a la capa de ozono, propiciando el aumento de la cantidad de CO₂ emitida a la atmósfera y favoreciendo el calentamiento global.

Los dos talleres y el desguace implicado se enfrentan a un delito contra los recursos naturales y el medio ambiente. Los acusados han sido puestos a disposición del Juzgado de Primera Instancia e Instrucción nº 1 de Almazán y del Juzgado competente del partido judicial de Soria. La incidencia se ha puesto en conocimiento del Servicio Territorial de Medio Ambiente de la Junta de Castilla y León por infracción a la normativa sobre residuos.

La operación 'SORIACAT', se desarrolló en los meses de octubre a diciembre en las provincias de Castilla y León con la intención de comprobar la correcta gestión de los gases fluorados utilizados en los sistemas de refrigeración de los vehículos a motos de todos los centros autorizados para el tratamiento de vehículos (CAT) de la provincia de Soria.

[El Español, 3 mayo 2024, Nuria Galindo](#)

Image: El Español - Inspección de gases que afectan a la capa de ozono

12. The Incredible Impact of Lord Kelvin - World Refrigeration Day celebration - Webinar

Overview

The Institute of Refrigeration (IOR) is celebrating the 200th anniversary of Lord Kelvin this World Refrigeration Day.

Lord Kelvin is often considered the founder of mechanical refrigeration, but he achieved so much more during his illustrious and industrious career. This lively discussion will help raise awareness of Lord Kelvin's contribution to scientific advancement.



The two panelists [Dr Helen Czerski, University College London, and Alok Jha - Journalist, Author and Broadcaster] are discussing the life and legacy of the man who formulated the second law of thermodynamics – which states that heat will not flow from a colder to a hotter body. Hear why Lord Kelvin's contribution is still important and its relevance to refrigeration and the world today.

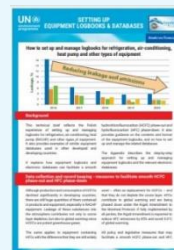
This webinar will be available at 9:00am, 4:00pm and 8:00pm on 26 June 2024.

[Register here](#)

[Institute of Refrigeration \(IOR\), 26 June 2024](#)

Image: IOR

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](#)**



FEATURED



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

Avoided CO₂e - The CO₂e App available from the Ozone Secretariat aims to raise awareness and enhance understanding of the contributions of the Montreal Protocol and its Kigali Amendment to climate change mitigation.



World Ozone Day 2023 theme: 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 >>>](#)

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



The Multilateral Fund for the Implementation of the Montreal Protocol

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

The Multilateral Fund is managed by an Executive Committee with equal membership from developed and developing countries. Since the inception of the Fund, the Executive Committee has held 93 meetings. The Fund Secretariat, located in Montreal, assists the Executive Committee in its tasks. Projects and activities supported by the Fund are implemented by four international implementing agencies and a few bilateral agencies.

On 27 October 2023, the Thirty-Fifth Meeting of the Parties to the Montreal Protocol (35thMOP) decided on the replenishment of the Multilateral Fund for the triennium 2024-2026. The Parties agreed on a budget of US \$965 million for the triennium, a record amount.

As of 8 November 2023, the contributions received by the Multilateral Fund from developed countries, or non-Article 5 countries, totalled over US\$ 4.7 billion. The Fund has also received additional voluntary contributions amounting to US \$25.5 million from a group of donor countries to finance fast-start activities for the implementation of the HFC phase-down.

To facilitate phase-out by Article 5 countries, the Executive Committee has approved 144 country programmes, 144 HCFC phase-out management plans (HPMPs), 24 Kigali HFC implementation plans (KIPs), pilot projects to maintain and/or enhance energy efficiency in the context of HFC phase-down and has funded the establishment and the operating costs of ozone offices in 145 Article 5 countries.

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

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

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

- Click [here](#) for the Executive Committee upcoming and past Meetings and related documents.



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

The section below features several of our most recent products.

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

Images in this section are by OzonAction

OzonAction: Celebrating International Women's Day, 8 March 2024 - on the occasion of International Women's Day (IWD), UNEP OzonAction would like to express our best wishes and sincere thanks to all our female colleagues working in National Ozone Units for your leadership, outstanding dedication, great intellectual input, and tireless work on the Montreal Protocol! This treaty is often referred to as the most successful multilateral environmental agreement to date, and both women and men take equal credit in making this amazing achievement possible. OzonAction is extremely proud of all the female Ozone Officers, Assistant Ozone Officers, technical experts, and support staff, as well the women in national stakeholder groups and partner organizations, notably those in the refrigeration, air conditioning, and customs. Through your work, you are providing girls and young women who are interested in pursuing careers in environmental protection with a role model by showing them that there are successful women in Montreal Protocol fields – you are indirectly investing in their future. [...]



- **Miruza Mohamed:** A Woman Behind the Maldives' Environmental Transformation
- **Samira de Gobert:** Leading Change in Environmental Communication and Women's Empowerment
- **Colleen Keyworth** - From Family Roots to Industry Beacon: Leading Advocate for Women in HVACR
- **Laura López:** Impulsando la implementación del Protocolo de Montreal y la equidad de género en Guatemala
- **Marta Pizano:** A trailblazer's path from research to global policy
- **Liazzat Rabbiosi:** A Woman Facilitating International Environmental Policy-making
- **Cecilia Mercado:** Breaking Barriers-A legacy of environmental leadership and empowerment
- **Sarah Nakanyika:** A Woman Leading Cooling Advancement in Zambia
- **Yvette Gauthe Boko:** Une femme forte à la tête du Bureau national de l'ozone au Bénin

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 UNEP 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).

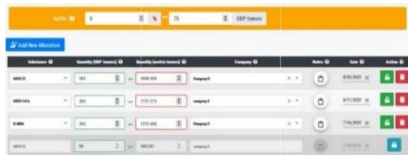


More Information - The Gas Card web-based tool is part of UNEP OzonAction's portfolio of activities and tools to assist various stakeholders in developing countries, including customs officers and technicians, to achieve and maintain compliance with the Montreal Protocol on Substances that Deplete the 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)



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**

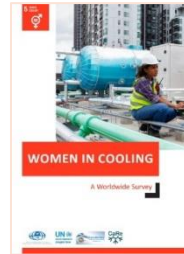


As part of IIR and UNEP OzonAction's partnership, a set of Cold Chain Technology Briefs was released over the past few years, which includes in-depth summaries about the cold chain in different key sectors. They include descriptions of technology, refrigerant options and trends and conclude with prospects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

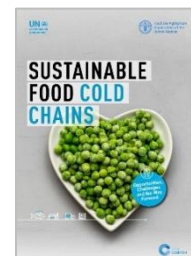


PUBLICATIONS

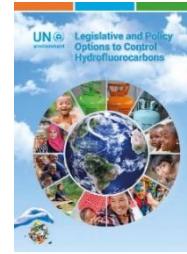
Results of a Worldwide Survey about Women in Cooling Released by IIR and UNEP OzonAction - Refrigeration, Air-Conditioning, and Heat-pumps (RACHP) are crucial for our health, nutrition, comfort, and well-being. It is one of the sectors that crosscuts many of the UN sustainable development goals and can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



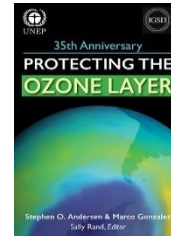
Legislative and Policy Options to Control Hydrofluorocarbons - In order to follow and facilitate the HFC phase-down schedules contained in the Kigali Amendment, the Parties, including both developed and developing countries, will have to implement certain measures. This booklet contains a recommended 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](#)



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](#)



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.](#)



The International Institute of Refrigeration (IIR) **IIR Activity Report 2023 | Rapport d'activité de l'IIR - 2023** is available online. It is a must-read for everything you need to know about advances in the field of refrigeration! Read/Download the full report to discover the IIR's actions and achievements in 2023 in its quest for a cooler, greener and more sustainable future! [English](#) | [French](#)





[Click here](#) for recent OzoNews Issues

[Request a PDF of the current issue](#)



[Subscribe to OzoNews](#)

Disclaimer:

The United Nations Environment (UNEP), Law Division, OzonAction, provides OzoNews as a free news clipping service for the members of the Montreal Protocol community under UNEP's mandate as an Implementing Agency of the Montreal Protocol's Multilateral Fund. Since its inception in January 2000, the goal of OzoNews is to provide current news relating to ozone depletion and the implementation of the Montreal Protocol, to stimulate discussion and promote cooperation in support of compliance with this multilateral environmental agreement. With the exception of items written by UNEP and occasional contributions solicited from other organizations, the news is sourced from on-line newspapers, journals, and websites.

The views expressed in articles written by external authors are solely the viewpoints of those authors and do not represent the policy or viewpoint of UNEP. While UNEP strives to avoid inclusion of misleading or inaccurate information, it is ultimately the responsibility of the reader to evaluate the accuracy of any news article in OzoNews. The citing of commercial technologies, products or services does not constitute endorsement of those items by UNEP.

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

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

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



UNEP, OzonAction, 1, rue Miollis, Bldg. VII – 75015, Paris • France

