

OzoNews

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

Volume XXIII | 15 April 2023

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GLOBAL

1. Kigali Amendment latest ratifications

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

[Eritrea, 7 February 2023](#)

[Republic of Korea, 19 January 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).

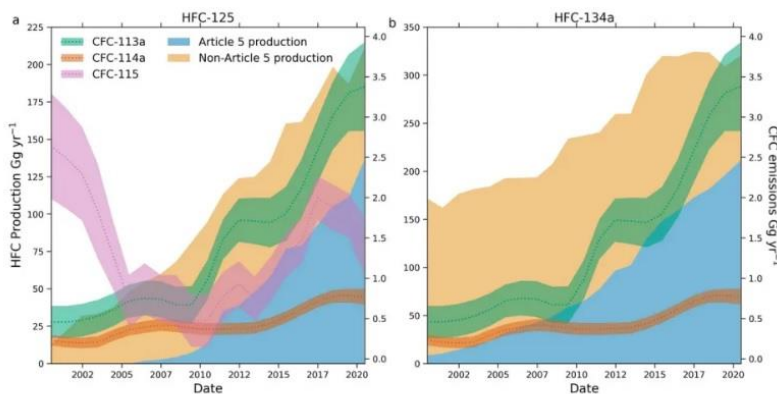
Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Status of Ratification 15 October 2016 to [date](#).

[United Nations Treaty Collection](#)

Image: *UN Treaty Collection website*



2. Research finds global emissions of several banned ozone-destroying chemicals are increasing



Comparison of HFC production and CFC emissions, which may be associated with HFC production.

New analysis has found increasing emissions of several ozone-depleting chemicals despite their production being banned for most uses under the Montreal Protocol—and a loophole in the rules is likely responsible.

The research, published today in *Nature Geoscience* and led by the University of Bristol and National Oceanic and Atmospheric Administration (NOAA), puts the rise in part down to the chemicals, known as chlorofluorocarbons or CFCs, being used to make other ozone-friendly

alternatives to CFCs. This is an exception allowed under the Montreal Protocol, but contrary to its wider goals.

Lead author Dr. Luke Western, a Research Fellow at the University of Bristol and researcher at the NOAA's Global Monitoring Laboratory (GML), said, "We're paying attention to these emissions now because of the success of the Montreal Protocol. CFC emissions from more widespread uses that are now banned have dropped to such low levels that emissions of CFCs from previously minor sources are more on our radar and under scrutiny."

According to the researchers, emissions from these CFCs currently do not significantly threaten ozone recovery. But because they're potent greenhouse gases, they still affect the climate.

"Combined, their emissions are equal to the CO₂ emissions in 2020 for a smaller developed country like Switzerland, said Western. That's equivalent to about one percent of the total greenhouse gas emissions in the United States," added Dr. Western.

The international study was conducted by a team of scientists from the UK, US, Switzerland, Australia, and Germany.

CFCs are chemicals known to destroy Earth's protective ozone layer. Once widely used in the manufacture of hundreds of products including aerosol sprays, such as blowing agents for foams and packing materials, solvents, and in refrigeration, CFC production for such uses was banned under the Montreal Protocol in 2010.

However, the international treaty didn't eliminate the creation of CFCs during production of other chemicals including hydrofluorocarbons or HFCs, which were developed as second-generation replacements for CFCs.

This study focused on five CFCs with few, or no, known current uses—CFC-13, CFC-112a, CFC-113a, CFC-114a, and CFC-115—and that have atmospheric lifetimes ranging from 52-640 years. In terms of their impact on the ozone layer, these emissions were equivalent to around one quarter of a recently detected rise in emissions of CFC-11, a substance controlled under the Montreal Protocol, thought to be due to unreported new production.

In this study, the team used measurements from the Advanced Global Atmospheric Gases Experiment (AGAGE), in which the University of Bristol plays a pivotal role, as well as others made by Forschungszentrum Jülich, in Germany, the University of East Anglia, and NOAA in the US. These were combined with an atmospheric transport model to show that global atmospheric abundances and emissions of these CFCs increased after their production for most uses was phased out in 2010.

The researchers determined that for three CFCs they studied—CFC-113a, CFC-114a and CFC-115—the increased emissions may be partly due to their use in the production of two common HFCs used primarily in refrigeration and air conditioning. The drivers behind increasing emissions of the other two CFCs, CFC-13 and CFC-112a, are less certain.

Although the team found rising global emissions, they weren't able to identify particular locations.

"Given the continued rise of these chemicals in the atmosphere, perhaps it is time to think about sharpening the Montreal Protocol a bit more," said study co-author Dr. Johannes Laube, from the Institute of Energy and Climate Research (IEK) at Forschungszentrum Jülich.

According to the researchers, if emissions of these five CFCs continue to rise, their impact may negate some of the benefits gained under the Montreal Protocol. The study noted these emissions might be reduced or avoided by reducing leakages associated with HFC production and by properly destroying any co-produced CFCs.

Dr. Western concluded, "The key takeaway is that the production process for some of the CFC-replacement chemicals may not be entirely ozone-friendly, even if the replacement chemicals themselves are."

PhysOrg, 9 April 2023

Image: Global emissions weighted by impact on ozone depletion and climate. Credit: Nature Geoscience (2023). DOI: 10.1038/s41561-023-01147-w. Nature Geoscience (2023). DOI: [10.1038/s41561-023-01147-w](https://doi.org/10.1038/s41561-023-01147-w)

3. Sustainable Retrofit of Existing Buildings: Impact Assessment of Residual Fluorocarbons through Uncertainty and Sensitivity Analyses

Abstract

Fluorocarbons are an important category of greenhouse gas emissions, and currently, their use is prohibited due to their significant contribution to the global ozone depletion potential (ODP).

During this century, they will continue to emit greenhouse gases into the environment since they are present in the thermal insulation foam and HVAC systems in existing buildings; however, proper disposal of these banks of CFCs/HFCs from existing buildings can limit their effects on the environment.

However, there are no studies that have investigated quantifying the achievable environmental savings in this case. In this study, a comparative life cycle assessment (LCA) is conducted to evaluate, for the first time in the literature, the environmental savings achievable through the removal and disposal of CFC/HFC banks from buildings including damage-related emissions. To cope with the scarcity of data, uncertainty and sensitivity analysis techniques are applied.

The results show that, for the selected archetype building, the largest annual emissions of CFCs/HFCs come from the external thermal insulation of the envelope. The removal of this material can lead to an additional significant reduction in the GWP (up to 569 kgCO₂eq/m²) and the ODP (up to 117 × 10⁻³ kgCFC-11eq/m²), i.e., higher than that achievable by reducing energy consumption through energy retrofit measures (276 and 0, respectively). Thus, CFC/HFC banks should not be neglected in LCA studies of existing buildings due to their possible significant impact on a building's ecoprofile.

Authors: Gianluca Maracchini, Rocco Di Filippo, Rossano Albatici, Oreste S. Bursi and Rosa Di Maggio

Energies, 6 April 2023



Image: Energies website

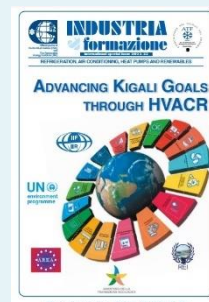
Watch out for Illegal Trade of HCFCs and HFCs: Lessons learnt from the Global Montreal Protocol Award for Customs and Enforcement Officers. This publication provides an analysis of the cases submitted in the context of the **Global Montreal Protocol Award for Customs and Enforcement Officers**. The Global 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.



Advancing Kigali goals through HVACR - International Special Issue 2022- 2023 - To provide an update on this global effort, The Centro Studi Galileo (CSG) and the Renewable Energy Institute (REI), with support from the International Institute of Refrigeration (IIR), The United Nations Environment Programme-OzonAction, (UNEP- OzonAction) and The Air conditioning and Refrigeration European Association (AREA), Ministero Della Transizione Ecologica, have collected experiences from around the world, compiled in this special publication, featuring papers from leading global institutions and experts, addressing the current situation, the challenges ahead, and sharing opinions from different National Ozone Units, on issues related among others to HVAC&R, training, and the role of women in the cooling industry.



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

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

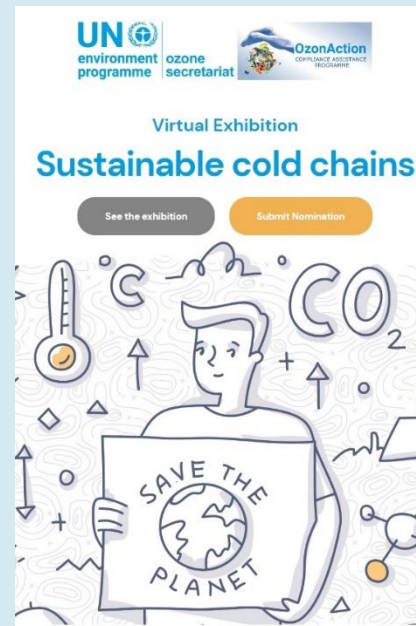
The exhibition showcases commercially available cold chain technologies for food and vaccines, mainly targeting applications and equipment with refrigeration and cooling cycles that use ozone and climate-friendly refrigerants and have enhanced energy efficiency characteristics. It also aims to promote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

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

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

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

Image: Sustainable cold chains website



Categories



1 exhibits

On site post-harvesting
and/or 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)



8 exhibits

Supermarkets (wholesale
markets & Retailers)



1 exhibits

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



2 exhibits

Vaccines and other
pharmaceutical
products



0 exhibits

Game-changing and
systemic approaches

AFRICA

4. Niger submitted the first ever Kigali Implementation Plan (KIP)

Niger submitted the first ever Kigali Implementation Plan (KIP) that will help the country comply with the requirements under the Kigali Amendment, which is a pioneering and a forward-looking step. A discussion with the National Ozone Officer of Niger, Ali Seydou Moussa and an International Technical Expert, Bassam Elassaad, on the factors leading to the plan in the interview below.



In 2022, Niger requested UNIDO to prepare and submit on their behalf the first Kigali HFC Implementation Plan – prior to the approval of cost guidelines – what were the driving factors behind this?

Niger is highly committed to the phase-down of hydrofluorocarbons (HFCs) as it ratified the Kigali Amendment on 29 August 2018. It also initiated a wide range of preparatory activities for the HFC phase-down. The National Ozone Unit (NOU) updated the licensing system to include HFCs and their mixtures in December 2020. The NOU then reviewed the policy options that would facilitate the phase-down of HFCs, to define short-term measures that could be included in the future strategy. Based on this analysis, the NOU commenced awareness raising and consultation with stakeholders (governmental actors, the private sector, the Association of Refrigeration Professionals (APFN), importers of refrigerants and large workshops) on the development of the KIP. The country was then well placed to begin the first phase of its HFC phase-down plan.

Article 5 parties that have ratified the Kigali Amendment are required to implement an HFC consumption freeze (at baseline) in 2024 and must achieve a 10% reduction by 2029. Given this timeline, the Government of Niger took the decision to submit the first phase of the KIP in the absence of cost guidelines.

What was the process for the development of the KIP Stage I proposal?

When Niger began working on the KIP in early 2022, there were no cost guidelines and little guidance existed, beyond the recommendation to limit the duration and funding of Stage I to 2030. Moreover, the data required for the calculating the baseline, derived from the 2020 to 2022 consumption, was not available since the consumption values for 2022 were unknown.

Niger has always been committed to the Montreal Protocol process; implementing activities in a timely manner, to meet the compliance commitments even in adverse local and global conditions. The NOU team follows up closely with stakeholders to ensure an equitable and fair process in allocating quotas that meet the market requirements, while complying with the phase-out schedule. Through their dedication and presence in every event—whether training sessions or for the disbursement of tools in all regions of the country, the NOU team has gained the trust of various stakeholders.

The KIP preparation process involved periodic consultations through conference calls with the NOU, the national consultants, the technical expert, and the UNIDO management team. The NOU formed a Steering Committee made up of public and private parties to help with the collection of information and the validation of the elements of the strategy. The trust gained

by the NOU among the members of the Steering Committee ensured that the exchanges were open and focused on the common benefit of the country.

The KIP covers more substances and includes more sub-sectors than the Hydrochlorofluorocarbons Phase-out Management Plan (HPMP). This added a certain complexity as to what to include in Stage I, which coincides with HPMP Stage II in Niger. It was crucial to include the elements that could not be included in the final Stage of the HPMP due to the limited funding available to Low Volume Consumption Countries (LVC) like Niger. The approach was based on a concept introduced by the Technology and Economic Assessment Panel (TEAP)'s Decision XXXI/1 Replenishment Task Force (RTF) report of 2019. Termed "Maintain and Build" (M&B), the strategy states that the spending on programmes under the HPMP to phase-out HCFCs are maintained while using the KIP Stage I to build on those programmes to phase down HFCs.

The M&B strategy has enabled Niger to prioritize activities according to its needs in three priority sectors: refrigeration, air conditioning and automotive air conditioning.

The main activities for the sectors are:

1. Training, including updating curricula;
2. Awareness campaigns for industry stakeholders;
3. Programs for end users;
4. Support for the Association of Refrigeration Professionals in Niger (APFN) and other associations in the refrigeration and air conditioning sector.

In order to engage additional stakeholders in the development of the KIP, the Government of Niger adopted Order No. 0042/MELCD/SG/DGEDD on 22 February 2023 on the creation, attribution, and composition of a National Ozone Committee to include other stakeholders involved in HFCs (Energy Sector, Standardization etc.).

For the Parties that are currently collecting data for their KIP proposals, what is the critical information that needs to be collected?

The methodology for collecting information is similar to that under the HPMP or the ODS-alternatives survey conducted in 2017 but is more rigorous. This is necessary to define the history and trends by substance and by sub-sector.

The first element of the data collection process is the pre-preparation stage. The NOU and the Steering Committee worked together to ensure that respondents understood the importance of providing accurate data, necessary for preparing the strategy, and that they would respond honestly and accurately. In particular, it was important to clarify the purpose of the survey and that the results would be used only to determine key decision points, from the national HFC reduction targets to the funding for the projects.

The second element of the data collection process is to prepare a well-designed questionnaire that maximizes the information collected. Redundant data makes questionnaires long and difficult to fill, while unclear questions can lead to confusion and wrong input.

The last element after the collection of data is the analysis stage. Aggregated data needs to be checked against economic indicators and technical ones. For example, on the economic side, the number of domestic refrigerators in the country is mainly a factor of the number of households with access to electricity, while the number of commercial refrigeration equipment

is a factor of the number of businesses in the cold chain. On the technical side, the consumption in a certain sub-sector is a function of the leakage rate in that sub-sector plus the amounts used in charging equipment at local assemblers and on site.

Accuracy is critical. Inaccurate data can reflect on the credibility of data presented under Article 7 and in the Country Programme data reports. Exaggerated numbers can easily be challenged, while under-reported data will reflect on the baseline calculations and deprive the country of funding that could otherwise be available.

The essential data required are: socio-economic data, information on the regulatory framework, data on use and consumption, equipment bank, data in the refrigeration servicing sector, vocational and training schools, associations of refrigeration professionals, information on customs, commercial and anti-fraud capacities, and finally, standards and codes. In collaboration with UNIDO, the NOU developed a set of key tools that allow the countries to develop and effectively implement their KIP in view of achieving the objectives of the Kigali Amendment to honour Niger's commitments to the international community.

What are the key lessons learned from this process and what are your recommendations for the Parties that are now developing their KIP proposals?

The main lessons learned in the preparation of the Niger KIP was the need for discipline in presenting the funding request when little guidance and background was available. There was no template to follow so the team used a mixture of what they termed as "stability and flexibility". Stability in the sense that irrespective of the project being presented, the Multilateral Fund (MLF) and the Executive Committee (ExCom) expect a certain degree of uniformity. Flexibility, on the other hand, introduces a certain degree of innovation in the approach whenever possible by developing a set of tools to provide justification for various activities proposed for Stage I.

Second, a sectoral approach for budgeting the activities under the KIP provides a good basis for integrating the KIP activities with those under the HPMP and identifies the areas where parallel implementation of activities optimizes operations.

Third, is the need for the prioritization of sectors, another innovation introduced in the Niger project document. Since the baseline calculation is based on tonnes of CO₂ equivalent that is equal to metric tonnes multiplied by the Global Warming Potential (GWP) of the substance, the prioritization process is more complex. It has to take into consideration the substance and the sub-sector (or the application) where that substance is used. Under the HPMP, different substances are used for different applications, for example HCFC-141b used in foams while HCFC-22 used in the refrigeration and air conditioning (RAC) sector across all of its applications. Under the KIP, for example, HFC-134a and R-404A are both used for the same sub-sector as in commercial refrigeration; however, HFC-134a is also used for mobile air conditioning (MAC) where R-404A is not used. Prioritization under KIP is based on selecting certain factors and then rating them according to agreed criteria. The rating process was through voting by members of the Steering Committee, which considered all viewpoints.

Finally, the anticipation of comments from the MLF Secretariat and working with them to arrive at the best-negotiated proposal to present to the ExCom. The MLF Secretariat needs to justify their recommendations to the ExCom to ensure a swift approval and can provide useful tips on improving the proposal.

The main lessons learned include:

- The involvement of all stakeholders is decisive in the process;
- The collection of reliable data is essential;
- Communication with stakeholders on the process is necessary.

Recommendations for Parties currently developing their KIP proposals are:

- Choose a leading agency such as UNIDO for the submission of the proposal to the ExCom;
- Carry out an exhaustive survey to collect data and information from various actors;
- Invite the Parties that are currently developing their KIP proposals to redouble their efforts to address the problems related to climate change and the protection of the ozone layer.

The United Nations Industrial Development Organization, Newsletter #10 - April 2023

Image: UNIDO Website

ASIA AND THE PACIFIC

5. Southeast Asia Ozone Officers and Customs Authorities join forces to strengthen enforcement of ODS/HFC licensing system

Halong City, Viet Nam, 22 March 2023 – **UNEP's OzonAction Asia-Pacific Compliance Assistance Programme (CAP)** team in collaboration with the Government of Vietnam organized a Network Meeting of Southeast Asia (SEA) National Ozone Officers (NOOs) in Halong City from 13-15 March 2023 to facilitate the Network countries to share experiences/good practices in various areas under the Montreal Protocol. The meeting was also a platform to facilitate regional cooperation between SEA NOOs and Customs authorities to further strengthen enforcement of licensing system through integrated approaches at the **Twinning National Ozone Officers - Customs Workshop on ODS/HFC Trade Control and Reporting** held from 16–17 March 2023.



The Network Meeting had both plenary and breakout sessions with 38 participants in person (23 Female/15 Male) from 10 Network countries. Also in attendance were resource persons

and representatives from Australia, the Ozone Secretariat and the Multilateral Fund Secretariat, GIZ, UNDP, UNIDO, the World Bank, the United States Environmental Protection Agency, Vehicle Refrigerant WG/Japan Automobile Manufacturers Association, Tradewater, and Vietnam Automobile Manufacturers' Association.

In his remarks, Mr Shaofeng Hu, Senior Montreal Protocol Regional Coordinator for Asia-Pacific, said, "The safe and efficient cold chain for temperature-sensitive products like food and medication, comfort cooling for our homes and workplaces, safe vaccine storage, and skilled job creation are all benefits of the growing usage of refrigeration and air-conditioning equipment. HFC management strategies will help countries comply with the 2024 freeze while maintaining economic growth. However, developing the right approach requires understanding on how and where each HFC is used and the problems each sector has in phasing down HFCs."

SEA NOOs discussed the development of the Kigali HFC Implementation Plan (KIP), covering both project preparation and HFC phase-down strategy with linkages to energy efficiency and engaging with the industry to meet the country needs. Participants also recognized the need for engagement and intervention in the mobile air-conditioning (MAC) sector, which has not been involved since the CFC phase-out. Also discussed were the options for the environmentally sound management of used or unwanted controlled substances, and implementation of the Institutional Strengthening Project based on increased funding level as approved by the Executive Committee of the Multilateral Fund. The 2023 strategy for communications and outreach and gender mainstreaming were also covered as well as the 2023 CAP services to identify support needed from UNEP CAP.

Vietnam's National Ozone Coordinator, Ms. Nguyen Dang Thu Cuc, stated, "The meeting presents an excellent opportunity for the country because we are currently preparing our Kigali HFC phase-down implementation plan. The meeting's agenda has provided greater context, and the interactions we've had with other countries, implementing agencies, and other meeting participants—including advice on the phase-down of HFCs in the automotive sector—have provided more guidance to my country"

Following the Network Meeting, the Twinning NOOs-Customs Workshop on ODS/HFC Trade Control and Reporting was conducted on 16–17 March 2023. The functions of NOOs and the Customs in relation to the enforcement and monitoring of licensing system under the Montreal Protocol in light of a meaningful collaboration was the central theme of the workshop. Participants discussed and identified current mechanisms and further brainstormed existing workstream of the Customs in which the Montreal Protocol control could be integrated into the daily operation of Customs from the beginning to the end of the trade chain including trade control, customs clearance and declaration (national single window system, risk profiling, harmonized system code, monitoring and reporting of ODS/HFC trade control data (data management and reconciliation), enforcement beyond customs' checkpoint (market inspection, post-clearance audit) and regional collaboration.

The workshop had both plenary and breakout sessions with 42 participants in person (23 Female/19 Male) from 10 countries and resource persons from Australia, the Ozone Secretariat, the Multilateral Fund Secretariat and Regional Intelligence Liaison Office for Asia and the Pacific (RILO AP). Colleagues from UNEP Law Division also attended the workshop as observers.

The NOOs were encouraged to explore collaboration opportunities with the Customs and other national enforcement agencies in relevant workstreams to strengthen enforcement of the licensing system not only at the customs checkpoint but also beyond. The collaboration among different stakeholders is believed to effectively empower the joint efforts in enforcement into tangible successes.

“Customs have the mandate to facilitate trade while complying with national regulation. The use of different mechanisms can enhance the enforcement of the licensing system to fight against illegal trade of banned substances.”. This meeting brought good practices in other countries and could be a good starting point for NOOs and Customs to explore potential areas of collaboration suitable for the country context. said Mr. Kong Sokphallakun, Cambodia’s Deputy Director of Finance and Personnel Department.

The UNEP CAP team and SEA network countries expressed their gratitude to the Department of Climate Change and the General Department of Vietnam Customs for their hospitality and collaboration.

Noting the important roles of Customs, the Green Customs Initiative was organized in parallel with the Network Meeting from 13–15 March 2023 to educate the customs authorities on their roles in the implementation of national legislation in compliance with multilateral environmental agreements.

The meetings were organized by the UN Environment Programme (UNEP), OzonAction Compliance Assistance Programme (CAP), Asia and the Pacific Office as part of its approved 2023 Work Programme under the Multilateral Fund.

Contact: [Pipat Poopeerasupong](#), Montreal Protocol Regional Coordinator – Southeast Asia/Pacific Island Countries Network, UNEP, CAP Asia and Pacific Office.

UNEP, OzonAction, 30 March 2023

Images: UNEP OzonAction website

LATIN AMERICA AND CARIBBEAN

6. Oficiales Nacionales del Protocolo de Montreal Cierran Exitosa Semana de Reunión en Panamá

31 de marzo de 2023, Panamá - El encuentro temático que se llevó a cabo los días 23 y 24 de marzo, y que fue organizado por el Programa AcciónOzono del Programa de las Naciones Unidas para el Medio Ambiente (PNUMA), contó con una amplia participación de los países de la región y sus equipos técnicos, los cuáles mostraron los principales avances y preparaciones en el contexto de la inminente implementación de la Enmienda de Kigali.



Primeramente, el Programa AcciónOzono presentó una serie de herramientas de asistencia para los Planes de Implementación para la Enmienda de Kigali (KIP, por sus siglas en inglés). “Con este trabajo de asistencia buscamos apoyar a los países en la preparación de los KIP, mediante la entrega de insumos técnicos y metodológicos que faciliten el trabajo de las oficinas nacionales, y además les permitan levantar y sistematizar la información que se requiere para el desarrollo de los Planes”, señaló Markus Hoffmann, Oficial de Programa de PNUMA para el Protocolo de Montreal.

Parte importante del trabajo que las Oficinas Técnicas de Ozono enfrentan en esta materia son los “Inventarios de Hidrofluorocarbonos (HFC)” los cuales permiten caracterizar e identificar las necesidades de cada sector, y así preparar e implementar proyectos de inversión y asistencia técnica para apoyar a los sectores usuarios prioritarios en el cumplimiento de las metas contraídas por los países ante el Protocolo de Montreal.

En este sentido, se discutieron temas relacionados con las partidas arancelarias de HFCs (puras y mezclas); importación/exportación de HFC/HCFs y alternativas; caracterización por sector y subsector (residencial, comercial, industrial AA móvil, Chillers, transporte refrigerado, marino, pesca, extinción de incendios, etc.); sector de servicios en refrigeración; sector de ensamblaje; bancos de equipos, entre otros.

En el ámbito de las regulaciones, y los procesos asociados que se desarrollan en los diferentes países, se presentaron experiencias en materia de sistema de licencias y cuotas; regulaciones para el sector de servicios; mecanismos de capacitación para aduanas y otros organismos de control; y otros instrumentos para el control/prohibición de equipos basados en HFC.

La reunión también contó con dos paneles de expertos y expertas de los países y en los cuales participaron las Agencias que también forman parte del Protocolo de Montreal como el Programa de las Naciones Unidas para el Desarrollo (PNUD), la Organización de las Naciones Unidas para el Desarrollo Industrial (ONUDI) y la Sociedad Alemana para la Cooperación Internacional (GIZ por sus siglas en inglés), las cuales abordaron temas como la capacitación y certificación de técnicos en sustancias inflamables; el fortalecimiento de la capacidad de centros tecnológicos, los procesos de certificación, eficiencia energética, la capacitación en buenas prácticas, así como las medidas en el corto y mediano plazo para enfrentar los desafíos que presentan los sectores de aire acondicionado automotriz y refrigeración comercial.

Respecto de las experiencias de los países, el trabajo estuvo enfocado en las sinergias y potencial cooperación de la “refrigeración” con otras políticas o programas nacionales. En este marco, se presentó el nuevo proyecto de Hermanamiento de Oficiales de Ozono y Oficiales de

Política en Eficiencia Energética aprobado para el PNUMA, el caso de las Cadenas de frío (Paraguay) y los Distritos térmicos y edificios sostenibles (Colombia).

Finalmente, en la reunión también se abordaron la presentación de la Estrategia de Comunicaciones para la Enmienda de Kigali a través de la cual se espera entregar herramientas a los países para apoyar los procesos de sensibilización y divulgación.

El Programa AcciónOzono brindó apoyo y capacitación a nivel regional para los Oficiales Nacionales del Ozono de América Latina con el apoyo financiero del Fondo Multilateral del Protocolo de Montreal en español.

El curso de capacitación tuvo una duración de 3 días en Ciudad de Panamá, el 24, 25 y 27 de Marzo del 2023; la experiencia estuvo dirigida hacia los nuevos Oficiales Nacionales del Ozono, con el objetivo de proporcionar información clave sobre el Protocolo de Montreal y las actividades llevadas a cabo por las Unidades Nacionales del Ozono (UNO). El curso cubrió temas como el agotamiento del ozono, los efectos negativos en la salud y el medio ambiente, la estructura organizativa y los órganos del Protocolo, los compromisos globales, la ejecución de proyectos del Fondo Multilateral, entre otros. Además, el entrenamiento incluyó presentaciones, documentos escritos, actividades grupales y técnicas interactivas para mejorar el aprendizaje.

El resultado inmediato fue que el personal recibiera información y conocimientos útiles para su labor diaria, incluyendo fuentes de información. A largo plazo, se espera que los equipos de las UNO puedan llevar a cabo su trabajo con mayor eficacia y que los gobiernos nacionales cumplan con éxito los compromisos acordados en virtud del Protocolo de Montreal.

Indira Vifallana, Presidenta de FONDOIN, Venezuela, señaló que “la formación logró aclarar muchas de mis dudas y también me permitió intercambiar experiencias, conocer los aportes de otros países e identificar posibles vínculos que potencien nuestras capacidades y esfuerzos conjuntos. Sabemos que es un tema muy denso y 3 días no son suficientes para abarcar todo el contenido, pero valoramos el esfuerzo emprendido y esperamos seguir intercambiando aprendizajes en la materia. Recibimos con mucho agrado el nivel de receptividad a las propuestas que hicimos llegar en materia tecnológica y comunicacional, lo que permitió tener un espacio colaborativo y de afinidad en todos los sentidos. Reiteramos nuestras intenciones de seguir aportando a la Red y avanzar en una sola dirección para el fortalecimiento regional”.

Los participantes continuarán siendo apoyados por el equipo regional de AcciónOzono del PNUMA.

Contact: [Marco Pinzon](#), Coordinador Regional de América Latina para el Protocolo de Montreal

UNEP, OzonAction, 30 March 2023

Images: UNEP OzonAction website

7. En Andacollo ya opera primer centro de reciclaje y regeneración de refrigerantes de la zona norte

Esta planta reducirá el consumo de gases que agotan la capa de ozono y tienen alto potencial de calentamiento global, ayudando a cumplir con la normativa internacional, la Ley Marco de Cambio Climático, la Contribución Nacional Determinada y la Estrategia Climática de Largo Plazo.



Viernes 14 de abril de 2023.- Con el objetivo de disminuir los efectos negativos de gases utilizados en equipos de refrigeración y aire acondicionado, para evitar que sean liberados a la atmósfera dañando la capa de ozono, se inauguró en Andacollo el primer Centro de Reciclaje y Regeneración de Refrigerantes de la Zona Norte. La iniciativa, además, contribuirá a mitigar el cambio climático, toda vez que algunos de esos gases son precursores del calentamiento global.

La planta fue adjudicada por llamado público a la empresa Comercializadora JJR, Coquimbo, filial de Regener Chile de la Región Metropolitana. Su trabajo está enfocado en acopiar, reciclar y recuperar gases refrigerantes para devolverlos al mercado como aptos para nuevos usos, aportando así a la economía circular.

El tratamiento de regeneración consiste en reutilizar el refrigerante mediante procedimientos de filtrado, deshidratación, destilación y tratamiento químico, para cumplir con las especificaciones de un nuevo producto.

El Seremi del Medio Ambiente de la región de Coquimbo, Leonardo Gros, relevó el valor social de esta iniciativa privada: "La implementación de este centro, único en la región, se enmarca en las acciones desarrolladas por el Ministerio del Medio Ambiente para hacer frente al agotamiento de la capa de ozono y al cambio climático". Luego añadió: "Los centros permitirán regenerar gases como Hidroclorofluorcarbonos (HCFC), sustancias agotadoras de la capa de ozono e Hidrofluorcarbonos (HFC), que tienen un alto potencial de calentamiento global. Mediante tecnologías específicas, es posible eliminar los contaminantes (sólido, humedad y ácidos) de los gases refrigerantes, obteniéndose un gas refrigerante apto para ser reutilizado".

Chile y el Protocolo de Montreal

En las próximas décadas, la capa de ozono podría recuperarse y volver a los valores previos a 1980, antes que se detectara su deterioro. Gracias a la aplicación del Protocolo de Montreal y la eliminación global de los productos químicos se ha logrado un significativo aporte a los esfuerzos para mitigar el cambio climático.

El Protocolo de Montreal y sus enmiendas, todas ratificadas por Chile, establece medidas para reducir y eliminar el uso de las sustancias controladas, mediante metas sucesivas de reducción gradual del consumo.

Para esto, durante el año 2022, la Unidad de Ozono del Ministerio del Medio Ambiente desarrolló procesos de licitación pública en el marco del "Programa de Regeneración", que se ejecuta bajo la segunda fase del Plan de Eliminación para los HCFC, lo que permitió seleccionar entidades que implementen y operen Centros Regionales de Regeneración de Gases Refrigerantes, en las zonas norte, centro y sur del país.

InduAmbiente, 15 Abril 2023

Images: InduAmbiente website

8. Cursos para especialistas de climatización y refrigeración

Una nueva oportunidad se abre para los mecánicos y técnicos de refrigeración y climatización. El Ministerio de Educación y las delegaciones territoriales del Ministerio de Ciencia, Tecnología y Medio Ambiente (Citma) los convocan a cursos de capacitación de buenas prácticas en el ejercicio de ambas especialidades.

El programa abarcará una semana de aprendizaje, que coincidirá con la última de cada mes, y 80% de las clases serán dedicadas al adiestramiento práctico.



Foto: Otoz protegiendo la capa de ozono en Cuba / facebook

Para ampliar la información y aclarar dudas, los interesados pueden visitar en Facebook, el perfil [Otoz protegiendo la capa de ozono en Cuba](#) o llamar al 7838 29 20, extensión 310, del departamento de Capacitación de la Educación Técnica del MINED.

La iniciativa evidencia la vocación ambientalista de la Isla, en su empeño de excluir las sustancias agotadoras del ozono (SAO), y forma parte del proyecto Plan Nacional de eliminación de los HCFC (hidrofluorocarbonos o gases de efecto invernadero), en su fase II, cuyas emisiones tanto contribuyen al calentamiento global.

Coordinados por la Unidad Técnica de Ozono de Cubaenergía, los cursos se insertan asimismo en el plan de implementación en el país de la enmienda de Kigali, al protocolo de Montreal (1987), del cual Cuba es signataria, como también lo es del Convenio de Viena para la Protección de la Capa de Ozono (1985), "ambos relacionados con el control y paulatina eliminación de la producción y el consumo de productos químicos industriales, dañinos al medio ambiente".

La Enmienda de Kigali entró en vigor el 1 de enero de 2019. Contempla reducir, en las tres décadas vendieras, en más del 80% la producción y el consumo proyectados de los hidrofluorocarbonos.

Ve [el folio](#)

Tribuna de la Habana, 8 Abril 2023, Autor: Elías Argudín

Images: Tribuna de la Habana website / OTOZ

NORTH AMERICA



UNITED STATES COAST GUARD NEWS
DEPARTMENT OF HOMELAND SECURITY

9. Unified command responds to vessel fire in Tacoma, Washington

SEATTLE — The Tacoma Fire Department, the Coast Guard, the Environmental Protection Agency, the Washington Department of Ecology and other agencies are continuing their response to the fishing vessel, Kodiak Enterprise, that caught fire early Saturday morning while moored at Trident Seafoods in the Hylebos Waterway in Tacoma.

The fire has progressed throughout the ship and was last reported approximately 100 feet from the vessel's freon tanks.

The vessel is reported to have an estimated 55,000 gallons of diesel and 19,000 pounds of freon onboard. The heat from the fire can cause pressure to build in the freon tanks.

The freon tanks are designed with built-in heat-activated pressure relief valves which are designed to release the freon tanks' pressure in an emergency situation. While freon can be toxic if inhaled in large quantities or in a confined space, the release of freon into the atmosphere is not expected to pose any health and safety risks to the public.

As a precautionary measure, the EPA has been conducting air monitoring to assess air quality in the surrounding areas. Today they are being augmented by contractors from CTEH to further refine air monitoring capabilities.

To ensure the safety of the public, the City of Tacoma Fire Department is issuing a temporary shelter in place order for NE Tacoma, Browns Point and Dash Point neighborhoods. People in the aforementioned areas should remain indoors and limit exposure to smoke. [...]

U.S. Department of Homeland Security, United States Coast Guard News, 9 April 2023

Image: U.S. Department of Homeland Security website

10. USEPA GreenChill is hosting two webinars in April

Subsection (h) Under the American Innovation and Manufacturing (AIM) Act

12 April 2023 | 4 – 5 PM Eastern

Presenters from the U.S. Environmental Protection Agency (EPA) will provide an overview of subsection (h). Subsection (h) authorizes EPA to establish regulations to control, where appropriate, practices, processes, or activities regarding the servicing, repair, disposal, or installation of equipment, for purposes of maximizing the reclamation and minimizing the release of certain hydrofluorocarbons (HFCs) from equipment and ensuring the safety of technicians and consumers.

[Register Now! Subsection \(h\) Under the AIM Act](#)



Commissioning and Retro-Commissioning for Food Retailers

April 27 | 2 – 3 PM Eastern

Join GreenChill for a webinar on April 27, 2023, from 2 - 3 PM Eastern! Commissioning and retro-commissioning play key roles in ensuring that stores operate at peak efficiency. Presenters from Danfoss will review best practices for new store commissioning including how to ensure equipment is installed per specification and performance matches the reality of installation. Presenters will also discuss strategies for successful retro-commissioning, particularly adequate planning.

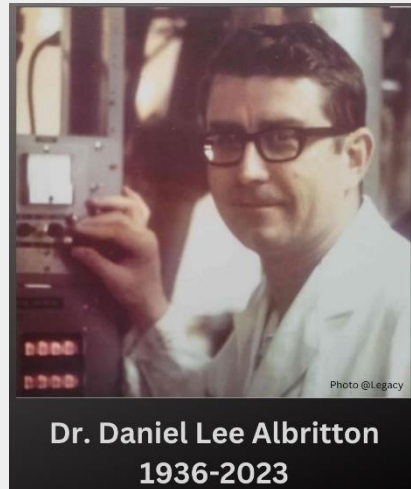
[Register Now! Commissioning and Retro-Commissioning for Food Retailers](#)

Image: USEPA GreenChill website

It is with great sadness that we learnt about the passing of Dr. Daniel Lee Albritton, 1936-2023.

Dr. Daniel Lee Albritton, one of the first co-chairs of the Scientific Assessment Panel (SAP) of the Montreal Protocol and head of the National Oceanic and Atmospheric Administration's (NOAA) earlier Aeronomy Laboratory from 1986 until his retirement in 2006.

Dr. Albritton was a pioneer in atmospheric science, especially in bringing critical scientific issues such as ozone layer depletion, acid rain, and climate change to decision-makers. In addition to his many scientific findings, he is most remembered for instituting the science assessment process used for the ozone layer, climate change, and air quality science at the national and international levels. As SAP co-chair, he successfully co-led the work of the Panel in producing several milestone scientific reports and quadrennial assessments during the first two decades of the life of the Montreal Protocol. His career has been a prime example of science and scientists serving national and international needs and using science for the benefit of humanity.



Dr. Albritton was also an unsurpassed communicator. As a major spokesman on atmospheric science to policymakers, scientists, and the general public alike, he conveyed complex science in a language people could understand. His hand-drawn figures and cartoons are legendary. They were even published in the NY Times!

Those who had the privilege of knowing him note that he was extraordinarily hard-working but still found time for his family and colleagues; that he was a gentle, kind, and incredibly humane person who treated everyone with respect, tolerance, and kindness. He leaves a large hole in the field of science and the ozone family. He will be sorely missed.

Our deep condolences to his family and friends.

EUROPE & CENTRAL ASIA

11. How the EU reduces greenhouse gases beyond CO₂

As the EU works hard to reduce CO₂ emissions, it is also making efforts to regulate other greenhouse gases heating up planet Earth, such as methane, fluorinated gases - also known as F-gases - and ozone-depleting substances. Although they are present in smaller volumes than CO₂ in the atmosphere, they can have a significant warming effect.



MEPs call for ambitious emission reductions of fluorinated greenhouse gases and ozone-depleting substances. They support [the European Commission's proposals](#) to encourage the use of alternatives to fluorinated greenhouse gases and ozone-depleting substances where possible or to put measures in place to reduce their leakage and emission during production or use.

On 30 March 2023, Parliament adopted its positions on [fluorinated gas emission reductions](#) and ozone-depleting substances, enabling it to start negotiations with EU governments.

Fluorinated gases are man-made and can be found in common appliances such as refrigerators, air conditioning or heat pumps, aerosols, solvents, and foam blowing agents. They account for around 2.5% of the EU's greenhouse gas emissions.

Even though F-gases are found in smaller volumes in the atmosphere than CO₂, they can capture more sun energy. The EU must reduce their emissions to achieve its 2050 goal of cutting down emissions to net zero.

As they do not damage the atmospheric ozone layer, F-gases are often used as substitutes for ozone-depleting substances.

What has the EU done so far?

F-gases are covered by the [Paris Agreement](#) together with CO₂, methane and nitrous oxide as well as under international agreements on ozone-depleting substances.

To control emissions from F-gases, the EU has adopted the [F-gas Regulation](#) and the [Mobile Air Conditioning systems Directive](#). Every year the [European Environment Agency reports](#) on the production, import, export, destruction and feedstock use of F-gases emitted by companies in the EU.

What does Parliament want?

To further reduce F-gases in the EU, MEPs want to:

- Strengthen new requirements proposed by the Commission that prohibit the placing on the single market of products containing F-gases
- Phase out hydrofluorocarbons (HFCs) - commonly used in air conditioning and refrigeration - placed on the EU market by 2050.
- Have close monitoring to ensure the HFC phase-down does not endanger the [RePowerEU](#) heat pump deployment targets.
- Increase enforcement to prevent illegal trade and non-compliance

The Commission estimates that its proposals for the F-gas Regulation would save 310 million tonnes of CO₂ equivalent until 2050, which is the same as the total annual greenhouse gas emissions of Spain in 2019.

Phasing out ozone-depleting gases

What are ozone-depleting substances?

Found in similar appliances as F-gases, ozone-depleting substances are also man-made chemicals. When they reach the upper atmosphere, these substances may damage the ozone layer, which keeps the Earth from dangerous solar radiation.

What has the EU done so far?

Because of their impact on the environment, ozone-depleting substances are being phased out by the EU in line with a global agreement from 1989 known as the [Montreal Protocol on Substances that Deplete the Ozone Layer](#) and to comply with [the EU climate goals](#) and the Paris Agreement.

What does Parliament want?

In order to further cut emissions of ozone-depleting substances, MEPs support [the Commission's proposal for an update of the legislation](#), including a ban on the production, use or trade of such substances, except for strictly defined cases. They also call for better monitoring, improved enforcement, and stricter penalties to avoid illegal activities.

According to the Commission, the proposed changes in the regulation on ozone-depleting substances would lead to savings of another 180 million tonnes of CO₂ equivalent by 2050 - the same as the total annual greenhouse gas emissions of the Netherlands in 2019.

Reducing methane emissions

What is methane?

Methane occurs naturally in the atmosphere but is also generated through human activities, such as agriculture, industry, and the combustion of fossil fuels. It accounted for 12% of the impact of the EU's greenhouse gas emissions in 2021.

What is the EU doing?

Parliament adopted a resolution on an [EU proposal for a strategy to reduce methane emissions](#) in October 2021, calling on the Commission to set binding methane reduction targets and measures for all sectors, through the Effort Sharing Regulation. MEPs will vote on Parliament's position of [methane reductions in the energy sector](#) later this year.

EU Reporter, 13 April 2023

Image: EU Reporter website - Lumos sp/Adobe Stock

See also >>> [Fluorinated gases and ozone depleting substances: member states ready to negotiate with Parliament](#), Press release on the website of the Council of the EU, 5 April 2023,

12. The Republic of Moldova is gradually switching to natural cooling agents, with the goal of eliminating fluorinated gases by 2050

The Republic of Moldova will gradually reduce, starting 1 January 2024, the import and use of fluorinated greenhouse gases and will replace them with natural cooling agents, according to the provisions of the new law on fluorinated greenhouse gases, voted in the final reading by the Parliament. The law was developed with the support of the EU4Climate project, financed by the European Union and implemented by UNDP Moldova and is to enter into force six months after its publication. Until now, the import and use of F-gases was not regulated in Moldova.



Fluorinated gases, also known as F-gases, are used as refrigerants in refrigeration and air conditioning, including in road transport and have a global warming potential over 14 thousand times bigger than CO₂. Their use registers the fastest growth in recent years, in Moldova being imported annually between 90 and 180 tons of hydrofluorocarbons (HFCs) which are part of F-gases. Emissions due to HFCs increased between 1995-2019 by 76 times (from 3.27 kt CO₂ equivalent to 247.02 kt CO₂), especially from expandable foams, as well as accidental emissions from the refrigeration and air conditioning sector.

Thus, the law will accelerate the greening of refrigeration and air conditioning systems operating based on HFCs. Alternative refrigerants, such as CO₂, isobutane, propane, ammonia, etc., apart from environmental protection benefits, have as well excellent energy-saving potential. At the same time, the replacement of F-gases creates new business opportunities for Moldovan entrepreneurs.

If in industrialized countries the process of suppressing the use of hydrofluorocarbons have already started in 2019, then in developing countries, such as Moldova, will be implemented starting with 2029. Thus, between 2024 and 2028 the level of domestic consumption of F-

gases will be frozen at the level of basic consumption, calculated as the average of the years 2020, 2021, 2022, to which 65% of the basic level (production/consumption) of HFCs) is summed up and in the next period the country is to undertake activities for the gradual suppression of these substances, according to the timetable established in the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, namely:

- 2029-2034 (stage I) – consumption reduction by 10%;
- 2035-2039 (stage II) – consumption reduction by 30%;
- 2040-2044 (stage III) – consumption reduction by 50%;
- 2045 and later (stage IV) – reduction of consumption by 80% (from the base level).

"The lack of regulation regarding the reduction of the environmental impact of F-gases prevents the fair and correct transition towards a green, climate-neutral, and competitive economy, in accordance with the objectives of the National Development Strategy European Moldova 2030. The Republic of Moldova is one of the countries which is most vulnerable to climate change, 18 of the last 20 years being among the hottest years ever recorded, with extreme weather phenomena," said Valentina Țapeș, National Coordinator of the EU4Climate project.

The gradual suppression of F-gases will also contribute to the achievement of the minimum 70% reduction target of greenhouse gas emissions by 2030, committed by the updated National Determined Contribution (NDC) of the Republic of Moldova.

With a total budget of 8.8 million euros, the EU4Climate project is implementing during 2019-2023 and has the following components: (i) updating the National Contributions Determined to the Paris Agreement; (ii) the development of national low-emission development strategies towards the year 2050; (iii) introducing and strengthening the framework for monitoring, reporting, and verifying greenhouse gas emissions; (iv) alignment with the community acquis in the climate field; (v) integrating the climate dimension into sectoral policy documents, raising awareness and developing sectoral guidelines for the implementation of the Paris Agreement; (vi) attracting climate change investments; (vii) better climate change adaptation planning.

United Nations Development Programme (UNDP), 11 April 2023

Image: UNDP website - by Ashkan Forouzani/Unsplash

10th International Conference, on Ammonia and CO₂ Refrigeration Technologies, 27-29 April 2023, Ohrid, R. Macedonia. **REGISTER** and learn more about:

- design of modern ammonia and CO₂ systems and technological innovations,
- improving energy efficiency, various applications (commercial, industrial, chillers, heat pumps, ...),
- heat exchangers and other components,



- technical guidelines and safety regulations.

Learn more >>>

AREA: EU Women in cooling video competition

AREA (Air conditioning and Refrigeration European Association) and World Refrigeration Day (WRD) have partnered to launch a competition on best practices for all EU women in cooling.

The challenge is to provide a video showing their best practices (e.g. installation, repair, charging, leak checking, recovery...) using the right PPE, right tools, etc.... (please refer to the modalities); the video will be provided by uploading it on AREA's Facebook page within the **deadline of May 13th**.

AREA's appointed judges will decide the winner, who will be awarded:

- by AREA (through ATF) of flight, accommodation, and conference fee
- and by Steve Gill (WRD) of a check in the value of 1,000 EUR
- receiving the prize in the frame of **UNEP-IIR-AREA-CSG 20th European Conference (Milan, 8-9 June 2023)**.

Any AREA language is welcome.

Thank you, very much, and good luck, to EU women in cooling!

- [Specifications for the award WOMAN IN COOLING.pdf](#)
- [WOMEN IN COOLING leaflet.pdf](#)

AREA (Air conditioning and Refrigeration European Association), February 2023

Image: AREA website



FEATURED

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

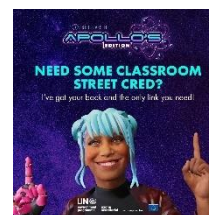
- Read/Download the [full report](#)
- pre/post documents, United Nations Environment Programme (UNEP), Ozone Secretariat [MOP-34](#)
- [Daily highlights](#) Earth Negotiations Bulletin-International Institute for Sustainable Development (IISD) / [Presentations and statements](#) / [Side events](#)



Image: ENB-IISD website

Overview for the meetings of the ozone treaties in 2022-2023 - Click [here](#) for upcoming and past Montreal Protocol Meetings dates and venues.

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

Image: UNEP, Ozone Secretariat website

Free teaching kits on ozone layer and environmental protection

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



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

Image: UNEP, Ozone Secretariat website

The UN Environment Assessment Panels

The Assessment Panels have been vital components of ozone protection since the Montreal Protocol was first established. They support parties with scientific, technological and financial information in order to reach decisions about ozone layer protection and they play a critical role in ensuring the Protocol achieves its mandate. The Assessment Panels were first agreed in 1988 to assess various direct and indirect impacts on the ozone layer. The original three panels are:

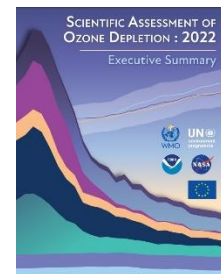
- [The Technology and Economic Assessment Panel](#)
- [The Scientific Assessment Panel](#)
- [The Environmental Effects Assessment Panel](#)

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

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

Scientific Assessment of Ozone Depletion: 2022 - [Executive Summary](#)

United Nations Environment Programme (UNEP), Ozone Secretariat, November 2022





The Multilateral Fund for the Implementation of the Montreal Protocol

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

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

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

As at 5 December 2022, the contributions received by the Multilateral Fund from developed countries, or non-Article 5 countries, totalled over US\$ 5.02 billion. The Fund has also received additional voluntary contributions amounting to US \$25.5 million from a group of donor countries to finance fast-start activities for the implementation of the HFC phase-down.

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

Latest News and Announcement:

[Updated guide for the presentation of new stages of HCFC phase-out management plans \(February 2023\)](#), [3/7/2023](#)

[Updated guide for the presentation of tranches of HPMPs \(Updated, March 2023\)](#), [3/7/2023](#)

The 92nd meeting is scheduled for 29 May to 2 June 2023, in Montreal, Canada

The 93rd meeting is scheduled for 11 to 15 December 2023, in Montreal, Canada

>>> Click [here](#) for the Executive Committee upcoming/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

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)



Substance	Quantity (ODP-tonnes)	Quantity (GWP-tonnes)	Category	Year	Value	Action
R404A	100	100.000	Import	2015	830,000 €	+
R404A	100	100.000	Import	2015	830,000 €	+
R404A	100	100.000	Import	2015	790,000 €	+
R404A	100	100.000	Import	2015	790,000 €	+

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 it all the official facts and figures in one place.

Conversion formulas need to be applied to calculate CO₂-eq values from both GWP and metric tonne values. This free app from OzonAction is a practical tool for Ozone Officers to help demystify some of this process and put frequently-needed information at their fingertips.



What’s new in the app:

- An updated more user-friendly interface
- Multilingual interface: English, French and Spanish
- A new **Kigali Amendment mode** - in this mode the GWP values used to calculate the refrigerant blends/mixtures only include GWP contributions from components that are controlled HFCs
- Latest updated ODP and GWP values from the recent reports from the Montreal Protocol technology and scientific expert panels as well as the Intergovernmental Panel on Climate Change (IPCC) reports
- References added for sources of all values
- New refrigerant mixtures (with ASHRAE -approved refrigerant designations)

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



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



PUBLICATIONS

Results of a Worldwide Survey about Women in Cooling Released by IIR and UNEP OzonAction - Refrigeration, Air-Conditioning, and Heat-pumps

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

Read/Download the Full Report

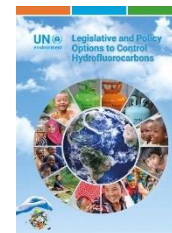
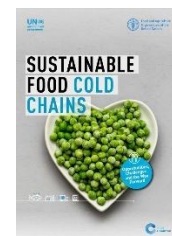
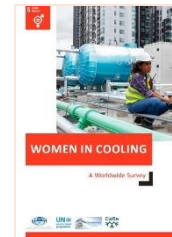
Sustainable Food Cold Chains: Opportunities, Challenges and the Way Forward

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

Legislative and Policy Options to Control Hydrofluorocarbons - In order to follow and facilitate the HFC phase-down schedules contained in the Kigali Amendment, the Parties, including both developed and developing countries, will have to implement certain measures. This booklet contains a recommended set of legislative and policy options which the developing (Article 5) countries may wish to consider for implementation. It is intended to be a guide/tool for countries. **Read/download**

Latest issue of Centro Studi Galileo magazine,
Industria & Formazione, n. **10-2022**
(in Italian).

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



E-Book on Process Safety Management (PSM) Training for Ammonia Refrigeration - a new e-book about the critical elements of a process safety management (PSM) training program for facilities operating an ammonia refrigeration system. The e-book, titled "[7 Keys to a Compliant PSM Training Program for Ammonia Refrigeration](#)," outlines important questions a facility's program should address and questions that trained plant personnel should be able to answer. Topics covered include:

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

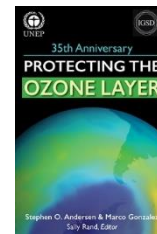


Request free Download [here](#)

Protecting the Ozone Layer-35th Anniversary Edition - a new book celebrating the 35th Anniversary of the Montreal Protocol. **The electronic version (Kindle Edition) of the book has become available for purchase \$3.03 on Amazon.**

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

[The book was released at 34th Meeting of the Parties to the Montreal Protocol on 31 October 2022.](#)



MISCELLANEOUS

To be organised by the French Association of Refrigeration (AFF) under the theme "**Towards Efficient, Controlled and Smart Refrigeration**", the **26th IIR International Congress of Refrigeration will be held in Paris (France) on August 21-25, 2023.**

Participate in sharing the latest developments in the industry with the international refrigeration community.

This international event will bring together scientific and technical experts in all fields of refrigeration from across the globe to provide perspectives on the future of the industry in line with sustainable development.

[Learn more >>>](#)





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