

# OzoNews

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

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## GLOBAL



### 1. Kigali Amendment latest ratifications

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

[Morocco, 22 April 2022](#)

[United Republic of Tanzania, 25 March 2022](#)

[Spain, Provisional application under Article V, 20 January 2022](#)

At the Twenty-Eighth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, held in Kigali from 10 to 15 October 2016, the Parties adopted, in accordance with the procedure laid down in paragraph 4 of article 9 of the 1985 Vienna Convention for the Protection of the Ozone Layer, a further amendment to the Montreal Protocol as set out in Annex I to the report of the Twenty-Eighth Meeting of the Parties (Decision XXVIII/1).

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

### United Nations Treaty Collection

Image: UN Treaty Collection website

## 2. Lesser known ozone layer's outsized role in planet warming-Air pollution heating up the Southern Ocean



New research has identified a lesser-known form of ozone playing a big role in heating the Southern Ocean – one of Earth's main cooling systems.

Ozone is a gas composed of three oxygen atoms. Many studies have described ozone in the stratosphere, and its role in shielding people from the sun's harmful ultraviolet radiation. Closer to ground level, in the troposphere, ozone is harmful to humans.

New research led by UC Riverside scientists reveals this lower-level ozone is adding a great deal of heat to the Southern Ocean – more than scientists previously understood.

This finding has now been [published](#) in the journal Nature Climate Change.

"People haven't paid much attention in the past to tropospheric ozone in terms of ocean heat uptake. Based on our models, they should be," said Wei Liu, UCR climate scientist and lead author of the new study.

Oceans remove a majority of the carbon and heat that enter the atmosphere when humans burn fossil fuels. The Southern Ocean, also called the Antarctic Ocean, collects a third of all excess carbon in the world's atmosphere, and an estimated 75% of the excess heat collected by the world's oceans.

It is important to understand this heating so it can be controlled. Increased ocean warming is contributing to well-documented issues of sea levels rising.

To further this understanding, Liu and an international team of scientists explored climate model simulations with changes in ozone levels between 1955 and 2000. These model simulations isolated both stratospheric and tropospheric ozone from other influences on Southern Ocean temperatures, allowing them to see how each factor contributes.

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While both stratospheric and tropospheric ozone contribute to the Southern Ocean warming, the team found that the latter contributes more.

“Historically, about a third of the ocean’s warming is attributable to ozone. For this third, about 40% is from the stratosphere, and the rest is troposphere,” Liu said.

In the 1980s, growing concern about a pollution-generated hole in the protective upper ozone layer led to the Montreal Protocol. A landmark environmental agreement, it codified the resolve of all 198 members of the United Nations to regulate chemicals generating that hole.

Though satellite images still show low levels of stratospheric ozone over the Antarctic, there have been improvements.

“Since the protocol was ratified, ozone depletion has recovered somewhat in the stratosphere, and climate models project it will continue to gradually recover,” Liu said.

Liu believes the results of this study are useful for showing where people can make further changes that will improve the environment.

Volatile organic compounds, or VOCs, from products like pesticides, tobacco smoke and automobiles are gases that form the building blocks of tropospheric ozone. The same is true for nitrogen oxides produced by combustion, or carbon monoxide from furnaces, gas stoves, and automobile exhaust. Many of these products can be modified to produce fewer VOCs.

“Tropospheric ozone is an air pollutant,” Liu said. “If we reduce our production of this, we get the dual benefits of less air pollution and most likely, less Southern Ocean warming as well.”

## [The University of California, 22 April 2022](#)

*Image: Andrew Dunlop/iStock/Getty Images-UCR website*

### 3. Meeting arrangements for 89<sup>th</sup> and 90<sup>th</sup> meetings of the Executive Committee



Meeting arrangements for 89<sup>th</sup> and 90<sup>th</sup> meetings of the Executive Committee  
In view of the global COVID-19 situation and the relevant directives released by the Governments of Canada and Quebec in response to the pandemic, on 18 January 2022 the Secretariat informed the Executive Committee that the in-person 89<sup>th</sup> meeting, planned for 7 to 11 March 2022, in line with decision 87/60(a) would not take place.  
Following discussions with the Executive Committee, the following contingency plan was approved:  
(a) The 89<sup>th</sup> meeting will be held in two parts:  
(i) Part I: Virtually, on 16, 18 and 20 May 2022, to consider items listed in the agenda of part I of the 89<sup>th</sup> meeting contained in document UNEP/OzL.Pro/ExCom/89/Add.1;  
(ii) Part II: In-person, from 16 to 18 June 2022, in Montreal, Canada, at the International Civil Aviation Organization (ICAO);  
(b) A “televised” informal session for Executive Committee members will be organized on agenda item 7(a) of the 89<sup>th</sup> meeting, development of the cost guidelines for the phase-down of HFCs in Article 2 countries, and will continue for funding decision 89/20(a), on 15 June 2022 from 8 a.m. to 8 p.m. in Montreal, Canada, at the 2022 Conference Centre, and  
(c) The 90<sup>th</sup> meeting will be held from 20 to 23 June 2022, in Montreal, Canada at ICAO.  
In light of the Canadian Grand Prix being held the weekend of 17 to 19 June, all attendees are advised to make lodging arrangements as soon as possible.

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(b) A "refresher" informal session for Executive Committee members will be organized on agenda item 7(a) of the 89<sup>th</sup> meeting, development of the cost guidelines for the phase-down of HFCs in Article 5 countries: draft criteria for funding (decision 83/65(d)), on 15 June 2022 from 4 p.m. to 6 p.m., in Montreal, Canada, at Le 1000, Conference Centre; and

(c) The 90<sup>th</sup> meeting will be held from 20 to 23 June 2022, in Montreal, Canada at ICAO. In light of the Canadian Grand Prix being held the weekend of 17 to 19 June, all attendees are advised to make lodging arrangements as soon as possible.

## [The Multilateral Fund for the Implementation of the Montreal Protocol, March 2022](#)

Image: UNMLF website

### 4. International contest of scholar articles (Republic of Uzbekistan)

Regulation on the procedure for selecting scholar articles devoted to the protection of the ozone layer for the international contest under the Joint project of the State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection and UNDP/GEF 'Complete HCFC Phase-out in Uzbekistan through Promotion of Zero ODS Low GWP Energy Efficient Technologies'.



#### I. General provisions

1. This Regulation determines the process and procedure for the selection (*hereinafter referred to as the "Contest"*) of scholar articles on the topic of **"The Ozone Layer and Life on Earth"**. The contest encourages the participation of both men and women;
  2. This contest is open for bachelor's, master's and doctoral degree students from accredited educational institutions from all over the world conducting research in the field of ozone layer protection, refrigeration and air conditioning;
  3. The papers shall be accepted either in English or in Russian, provided that an abstract of the paper is submitted in one of the mentioned languages. For example, if the paper is written in English, the abstract should be in Russian and vice versa;
  4. The paper should be up to 8,000 words, not including the list of references;
  5. The paper must be published on web platforms or scientific publications between January 1, 2021 and July 31, 2022, and the link shall be sent to the organizers along with an electronic version of the paper;
  6. The contest is held in two categories:
    - Best scholar article on Central Asia (CA): The paper raises the issues on the consequences of ozone depletion in Central Asia and include practical recommendations for mitigating and preventing ozone depletion, including the role of women and girls in this regard;
    - Best scholar article in general: The paper raises the issues on the consequences of ozone depletion in the world and include practical recommendations for mitigating and preventing ozone depletion, including the role of women and girls in this regard;
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- Two (2) winners (one man and one woman) shall be awarded in each nomination. "The winners in each nomination will be awarded a laptop"

7. Granting of copyright: By submitting scholar article the candidate consents to distribute and use his/her article by the organizing committee and partner organizations. The Organizing Committee and partner organizations are obliged to credit the author of the work in their publications.

Applications and electronic versions of scholar articles, including a link to the published paper on web-platforms or a scanned copy shall be sent to [ozone.o3.uz@gmail.com](mailto:ozone.o3.uz@gmail.com) by August 1, 2022

The award ceremony will take place at the event dedicated to the International Day for the Preservation of the Ozone Layer, on September 16, 2022.

Learn more >>> <https://bit.ly/3L3xl3n> (English) <https://bit.ly/3GnBSzE> (Russian)

### [State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection, April 2022](#)

*Image: website of the State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection*

#### **"Cooling Matters": World Refrigeration Day 2022 Theme**

Food available when and where we choose. Apps that make our cell phones personal assistants and inanimate products SMART. Vaccines to protect us from disease, and medicines to cure disease. Cities thriving in places once inhabitable. They all require cooling.

"Cooling is at the very heart of modern life. It enables people to live and work comfortably, it saves lives, it enables people to achieve. The need for cooling is everywhere, it touches lives in fantastic, though often unnoticed ways. However, we look at it, cooling matters to us." said Steve Gill, founder of World Refrigeration Day. "Cooling Matters will tell the story of how our wellbeing depends upon cooling and how cooling technology choices can safeguard the well-being of future generations.

We encourage the whole refrigeration and air-conditioning industry to join us in celebrating World Refrigeration Day 2022. Join the global community conversation using the hashtags #coolingmatters and WREFD22."

Learn more about [World Refrigeration Day "Cooling Matters"](#)  
Contact [info@worldrefrigerationday.org](mailto:info@worldrefrigerationday.org)



**World Refrigeration Day is celebrated on and around June 26**



# AFRICA

## 5. Liberia: EPA Ozone Unit Holds training on Refrigeration, Air Conditioning

The Environmental Protection Agency of Liberia (EPA), through its National Ozone Unit (NOU) and in conjunction with GIZ the (German Agency for International Cooperation) over the weekend, concluded a series of refrigeration and air-conditioning technician training workshops under the Hydrochlorofluorocarbon Phase out Management Plan (HPMP).



The training workshops were held under the theme: “Refrigeration and Air-conditioning Techniques, Safety and Best Practices”.

The workshops were held at the Monrovia Vocational Center (MVTC), Somalia Drive, Paynesville, with participants from Bong, Cape Mount, Grand Bassa and Montserrado Counties.

The training for technicians from Bong, Cape Mount, Montserrado and Grand Bassa counties considered several topics including ‘Emphasis on the Safe Handling of Hydrocarbon Refrigerants’, ‘Focus on Practical Learning and Hands on Training’, ‘Proper Brazing Techniques and System Leak Prevention’.

Speaking at the start of the training, Seta Marshall, National Focal Point for the Montreal Protocol and Head of the National Ozone Unit said as Liberia prepares to enforce obligations under the Kigali Amendment it was crucial to train refrigeration and air-conditioning technicians in “Good Refrigeration practices”.

Mr. Marshall disclosed the training fostered the use of new technologies, which is in line with the Kigali Amendment and strengthened capacities in their safe use.

Liberia is a Party to the Vienna Convention, which gave birth to the “Montreal Protocol on Substances that Deplete the Ozone Layer”.

Liberia has ratified the Montreal Protocol and all of its amendments, including the Kigali Amendment which was ratified on July 12, 2020.

The Montreal Protocol, according to Mr. Marshall, is a landmark agreement that identified the major ozone depleting chemicals and established a timetable for their eventual phase out.

“Under this protocol, the production and consumption of ozone depleting substances (ODS) is to be reduced and eventually eliminated through the development of chemical substitutes and alternative manufacturing processes,” Mr. Marshall said.

On 15<sup>th</sup> October 2016, following seven years of intensive negotiations, the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer finally reached an historic

agreement at their 28<sup>th</sup> Meeting of the Parties (MOP) held in Kigali, Rwanda, to phase down production and consumption of a list 18 Hydrofluorocarbons (HFCs).

Mr. Marshall disclosed that HFCs are commonly used alternatives to ozone depleting substances in the refrigeration and air-conditioning industry.

“HFCs do not deplete the ozone layer, but they are portent “Greenhouse Gases” (GHGs) with high Global Warming Potentials (GWPs) ranging from 12 to 14,800,” Mr. Marshall explained.

Prior to him, Charles Dennis, Assistant Head of the National Ozone Unit disclosed that the workshop was in continuations of a workshop that was supposed to be held last year, but didn’t happen due to COVID 19 outbreak.

Mr. Charles H. Dennis, assistant Ozone Officer, told participants that the training wasn’t intended to make technicians, but rather to refresh them on new developments in the sector so that they make adjustments.

For his part, the Dean of Students at MVTC, Samuel J. Moribah lauded the EPA and its National Ozone Unit for the opportunity provided to the technicians of the refrigeration and air-conditioning industry.

### [The Daily Observer, 25 April 2022](#)

Image: *The Daily Observer website*

## 6. Don’t “Clean Up Your Country at the Expense of Our Country”

### Ghana’s Campaign to Avoid Dumping of Damaging Appliances

A new paper published today in the Duke Law & Policy Forum reveals the burdens developing countries like Ghana face as exporting countries transition to more efficient and climate-friendly cooling products. It underscores opportunities to strengthen the Montreal Protocol to make good on its mission to protect stratospheric ozone and climate while fostering environmental justice.

The Importance of Stopping Environmental Dumping In Ghana: The Case of Inefficient New and Used Cooling Appliances with Obsolete Refrigerants, authored by a team of international climate and ozone technical experts, explains how environmentally harmful product dumping (“environmental dumping”) of new and used low-efficiency cooling appliances with obsolete ozone-depleting and climate-damaging refrigerants in African countries impoverishes communities, hinders economic development, threatens ecological systems, and harms public health. The use of low-efficiency cooling appliances increases energy demand, leading to higher emissions and limiting affordable energy access in African countries. These low-efficiency appliances contain refrigerants with high global-warming potential (GWP) and may also contain ozone-depleting substances.

#### THE IMPORTANCE OF STOPPING ENVIRONMENTAL DUMPING IN GHANA: THE CASE OF INEFFICIENT NEW AND USED COOLING APPLIANCES WITH OBSOLETE REFRIGERANTS

*Oman beye yie a, efri yin ara  
For a nation to develop, it depends on us. (Akan Proverb, Ghana.)*

KOFI A. AGYARKO, STEPHEN O. ANDERSEN, RICHARD “TAD” FERRIS, HUBERT ZAN, EMMANUEL OSAE-QUANSAH, GABRIELLE DREYFUS, MOHAMED RIDA DERDER, LESLIE OLONYI BOSIRE, LAURA BLOOMER, AND XIAOPU SUN\*

#### ABSTRACT

Environmentally harmful product dumping (“environmental dumping”) of new and used low-efficiency cooling appliances with obsolete ozone-depleting and greenhouse gas refrigerants in African countries impoverishes communities, hinders economic development, threatens ecological systems, and harms public health. The use of low-efficiency cooling appliances increases energy demand, leading to higher power plant emissions and limiting affordable energy access in

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Powering refrigerators and ACs consumes about 17% of global electricity generation and makes up an increasing share of electricity demand in buildings. In many African countries, running a refrigerator for a year costs more than 10% of gross domestic product (GDP) per capita, assuming 459 kWh/yr consumption, which is well below the measured consumption of refrigerators in Ghana prior to the adoption of energy efficiency policies.

Money wasted on electricity pollutes air, water, and land with an increase in health care costs and associated misery. However, money saved on electricity can be spent locally on health, education, nutrition, and quality of life.

This pathbreaking publication is a blueprint for the shared responsibility of exporting countries, manufacturers, and importing countries. The publication calls on exporting countries to update and enhance the enforcement of their laws and urges global manufacturers to stop exporting inefficient products with obsolete refrigerants to Ghana and other African countries. Implicit in the article is the need for all involved to consider the environmental justice implications of policies that allow exporting products or components to the developing world that would not conform to the shipping or manufacturing country's own standards.

"The high ambition of this paper is to raise the bar on global cooperation for stratospheric ozone and climate protection," said Kofi A. Agyarko, Director, Renewable Energy, Energy Efficiency, & Climate Change (REEECC), Ghana Energy Commission. "Ghana and all of Africa are demanding that trading partners help enforce the laws of importing countries that aim to protect the Earth for future generations. It is incumbent on all such partners not to add to the burdens our own enforcement personnel face as a result of environmentally harmful product dumping."

"The junk appliances dumped in Ghana are energy vampires that are stealing energy needed for development, accelerating climate change, and harming the ozone layer, said Durwood Zaelke, President of the Institute for Governance & Sustainable Development (IGSD). "We'll continue to support those working to stop these crimes."

"It is quite remarkable when authorities from different government agencies come together on a policy of global importance. In this case, the Ghana Environmental Protection Agency and Ghana Energy Commission saw eye-to-eye on how to stop dumping of inefficient and obsolete cooling equipment and strengthened our resolve to continue this effort for Ghana, for all of Africa, and for the world," said Emmanuel Osae-Quansah, Director, National Ozone Unit and Head of Climate Change, Ghana Environmental Protection Agency."

"As a Senior Enforcement Officer for the Ghana Energy Commission I appreciate how powerful this publication will be in Africa's vital efforts to fulfill the obligations of the Montreal Protocol and Paris Climate Agreement," said Hubert Zan. "I am optimistic that governments of countries that export cooling appliances to Africa will realize that everyone benefits from energy efficiency improvement and the ban or phasedown of synthetic chemicals that are powerful ozone-depleting and greenhouse gases."

The study was authored by Kofi A. Agyarko, Director, and Hubert Zan, Senior Enforcement Officer, Renewable Energy, Energy Efficiency, & Climate Change (REEECC), Ghana Energy Commission; and Emmanuel Osae-Quansah, Director, National Ozone Unit, Ghana Environmental Protection Agency; as well as Africa- and North America-based IGSD experts Stephen O. Andersen, Director of Research; Tad Ferris, Senior Counsel; Gabrielle Dreyfus, Chief Scientist; Xiaopu Sun, Senior China Counsel; Mohamed Rida Derder, Special Counsel for North Africa; Leslie Olonyi Bosire, Legal Advisor, Kenya; and Laura Bloomer, Staff Attorney.

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*The Importance of Stopping Environmental Dumping In Ghana: The Case of Inefficient New and Used Cooling Appliances with Obsolete Refrigerants*, available for download [here](#).

[The Institute for Governance & Sustainable Development's \(IGSD\), April 2022](#)

Image: IGSD website

## LATIN AMERICA AND CARIBBEAN

### 7. El país se trazó reducir 51% las emisiones de gases de efecto invernadero para 2030 (Colombia)

Participantes del Panel coincidieron en que el camino hacia un sector de refrigerantes más ecológico es largo, pero el país va por buen camino

El país se ha trazado la meta de reducir 51% las emisiones de gases de efecto invernadero (GEI) hacia 2030, y para lograrlo, uno de los ejes fundamentales de actuación está llamado a ser el sector de la refrigeración. Esta es una de las conclusiones que se desprenden del Foro LR 'Servicios Energéticos Ecosostenibles', celebrado en alianza con la empresa GreenYellow.

Participaron representantes del Grupo Éxito y Ransa Colombia, además de entidades como la Dirección de Asuntos Ambientales Sectorial y Urbana (Daasu) del MinAmbiente, y el Programa de las Naciones Unidas para el Desarrollo (Pnud).

Andrea Corzo Álvarez, directora de la Daasu, enumeró los acuerdos y protocolos internacionales, como los de Montreal, a los que se llegaron el siglo pasado. El gran propósito que une a la industria es frenar el deterioro de la capa de ozono. Según Álvarez, este tema y objetivo ha sido prioridad desde 1994. Al día de hoy, afirmó que el país "ha logrado reducir en 71,9% el uso de los químicos, especialmente los fluorocarbonos (Hcfc), en las diferentes industrias que anteriormente los utilizaban", como la refrigerante.

También resaltó los proyectos que se han adelantado por gestión del Gobierno Nacional, con apoyos de organismos multilaterales. Estos, que alcanzan una inversión de US\$39 millones, han logrado reducir el consumo del país a menos de 600 millones de toneladas de los Hcfc, cuando para 2013, esta sobrepasaba los 2.000 millones.

Romain Viscaye, director de operaciones de eficiencia energética de GreenYellow; Pablo Montoya, director de sostenibilidad de Grupo Éxito; Carlo Cavassa, gerente general de Ransa Colombia, y Diego Olarte, asesor senior especialista en desarrollo sostenible del Pnud, coincidieron en que Colombia es uno de los líderes del continente en transición energética y que, si bien hace falta avanzar en algunos aspectos, "de esto solo se es consciente cuando se comienza a recorrer el camino", dijo Montoya.



Los panelistas concluyeron en la necesidad de hacer este proceso de transición, que no es imposible ni costoso. El Foro LR finalizó resaltando el rol de la industria en el cuidado del medio ambiente, destacando el papel de los refrigerantes naturales para reducir las emisiones contaminantes y la huella de carbono, así como la reconversión y los mantenimientos oportunos.

### **“Se ha eliminado casi 100% de la base de compuestos como fluorocarbonados”**

Andrea Corzo Álvarez, directora del Daasu, resaltó las medidas que viene impulsando el Gobierno.

Los fluorocarbonados (Hcfc), utilizados principalmente en los sistemas de refrigeración, son los responsables de una producción mayor a la mitad de los gases de efecto invernadero. Según la funcionaria Andrea Corzo, el programa que desarrolló el MinAmbiente generó algo que se puede comparar a sacar más de 120.000 carros de circulación. Según el cronograma de sustancias controladas por el protocolo de Montreal, se espera que el país, para 2045, reduzca cerca de 85% del consumo de hidrofluocarburos (HFC) y para 2040 la totalidad de los Hcfc.

### **“El reto requiere un enfoque integral entre sector privado y sector público”**

Pablo Montoya, director de sostenibilidad de Grupo Éxito, destacó iniciativas en la cadena de frío.

Cerca de 72% de la huella de carbono se debe a los gases refrigerantes. Si bien la inflación y crisis logística podrían aplazar los plazos para el cumplimiento de las metas, no es el caso del Grupo Éxito, pues para 2021, lograron la reducción de 37% de sus emisiones, destacó Pablo Montoya, quien enfatizó que el desafío de reducir GEI requiere un compromiso tanto público como privado. Señaló que más de 24% de los suelos netos del grupo están intervenidos en cuanto a los gases refrigerantes. Entre los beneficios de contar con un mejor sistema de fríos, se encuentra una mejor calidad del producto.

### **“Ransa hará una inversión en el país cercana a los US\$70 millones”**

Carlo Cavassa, gerente general de Ransa, anunció inversiones con enfoque de sostenibilidad.

Según el gerente Carlo Cavassa, la compañía, dedicada a la logística de transportes refrigerados, ha venido realizando un plan de reconversión con dos objetivos que a veces pueden parecer opuestos: ayudar al medio ambiente y tener una mayor eficiencia energética “Esa reconversión de instalaciones y de centros de distribución a nivel nacional incluye ciudades como Medellín, Bogotá, Cali y Pereira, en donde la compañía está haciendo una inversión aproximada de US\$70 millones”, afirmó Cavassa respecto al avance en la reducción de su huella de carbono.

### **“Pnud está haciendo el acompañamiento al Gobierno para la sostenibilidad”**

Diego Olarte, asesor del Pnud, destacó los esfuerzos que viene liderando el país en la materia.

La asistencia técnica y el apoyo no se le debe proporcionar solo a las grandes empresas del país sino también a los pequeños y medianos, puesto que, según Olarte, allí se encuentra el reto. Señaló además que las políticas estatales deben enfocarse también en buscar un aliado con el sector privado. “No es un tema solo del Gobierno, también debemos apropiarnos de eso y ver cómo la sociedad civil y el sector privado podemos avanzar en la implementación de estas medidas”, dijo. Olarte también afirmó que se está trabajando en dos leyes para impulsar más esta transición.

[La Republica-Colombia, 27 de abril de 2022, Por Juan Pablo Vargas Cuellar](#)

*Image: La Republica website*

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## 8. Congreso insta a preservar el medio ambiente (Guatemala)

Cuidar y proteger el planeta es una tarea de todos los que habitamos en ella; el planeta atraviesa una crisis climática de manera constante, de acuerdo con las Naciones Unidas, la celebración del Día Internacional de la Madre Tierra, cada 22 de abril, ha de conducirnos a la reflexión y el compromiso para su conservación.



El ente internacional establece que no hay Planeta B. La tierra es el único hogar que tenemos y es por ello que es tan importante cuidarla. La contaminación, el cambio climático y la sobreexplotación en temas de recursos naturales amenazan cada vez más nuestra única fuente de sustento, nuestro planeta.

Por esta razón, la Organización de las Naciones Unidas (ONU) estableció el 22 de abril de cada año como Día Internacional de la Madre Tierra, con el objetivo de conmemorar que la Madre Tierra es la que nos provee la vida.

El Congreso de la República se une a la conmemoración de este día e insta a la ciudadanía, para que, de manera individual y grupal, cuidemos el planeta y sus ecosistemas, porque nos dan el sustento y los recursos, y a su vez asumimos la responsabilidad colectiva de crear conciencia sobre la importancia de reciclar, reutilizar y apreciar nuestro planeta.

Dentro de estos recursos, uno de los más importantes es el agua cuyo aprovechamiento y por ser un bien de dominio público, inalterable e imprescriptible, su aprovechamiento, uso y goce de manera eficiente, observando en su utilización ante todo el interés social, de acuerdo con el Artículo 127 de la Constitución Política de la República de Guatemala.

Cada uno de los recursos naturales son primordiales para la supervivencia del ser humano, por eso la importancia de su conservación.

### Acciones legislativas

El Organismo Legislativo ha contribuido en la aprobación de leyes a favor de la preservación y cuidado del medio ambiente, con el objetivo de reducir el impacto ambiental, detener y prevenir el daño a los ecosistemas.

Con la aprobación del Decreto número 68-86 del Congreso de la República, Ley de Protección y Mejoramiento de Medio Ambiente, que tiene por objetivo velar por el mantenimiento del equilibrio ecológico y el estado del medio ambiente para mejorar la calidad de vida de los habitantes en Guatemala. [...]

La actual Legislatura también conoció en el pleno la Quinta Enmienda del Protocolo de Montreal, a través de la Iniciativa 5593, la cual recibió de la Comisión de Relaciones Exteriores y tiene por finalidad proteger la capa de ozono de la tierra, con la meta de eliminar el uso de sustancias que agotan la capa de ozono (SAO). Guatemala formó parte de los países que firmaron dicho acuerdo en 1989.

Los parlamentarios igualmente han efectuado labor de fiscalización en las diferentes entidades encargadas del tema, para verificar el cumplimiento de las leyes y las acciones a favor del medio ambiente.

De acuerdo con la ONU, los Estados Miembros de Naciones Unidas, al que forma parte Guatemala, asumió la existente necesidad de reducir considerablemente el número de muertes y enfermedades causadas por productos químicos peligrosos y por la polución y contaminación del aire, el agua y el suelo de aquí a 2030, y de reducir el impacto ambiental

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negativo per cápita de las ciudades, incluso prestando especial atención a la calidad del aire y la gestión de los desechos municipales y de otro tipo.

El Congreso de la República, enfocado en su labor a favor de todos los guatemaltecos, seguirá impulsando normativas y acciones de fiscalización para preservar la tierra, para reducir, detener y prevenir el impacto de los daños causados por la degradación del medio ambiente, así como proteger los recursos naturales, ecosistemas y la calidad de vida de los ciudadanos.

***El cuidado del medio ambiente es una colaboración de todos.***

**[El Congreso de la República de Guatemala, 22 de abril de 2022, Por Sahara Dávila](#)**

*Image: Arte: Mario Sierra*

## NORTH AMERICA

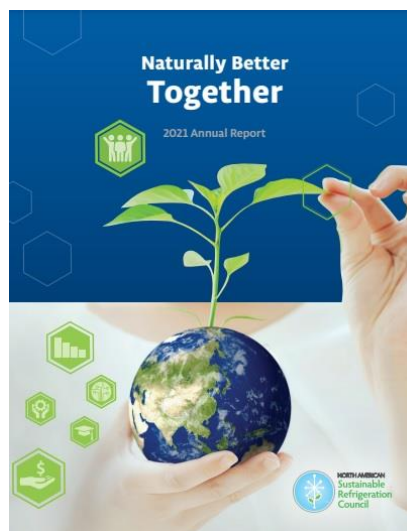
### **9. Eliminating HFCs could avoid up to 0.5°C of global warming by the end of the century**

Natural refrigerants, such as carbon dioxide, ammonia, and propane, are the most climate-friendly refrigerant alternatives and offer a future-proof solution to high global warming potential (GWP) Hydrofluorocarbon refrigerants (HFCs) commonly used in supermarkets.

Once considered a suitable replacement for ozone-depleting substances (ODS), HFCs are now the world's fastest-growing GHGs and one of the most potent drivers of climate change. Pound for pound, these super-pollutants trap thousands of times more heat in the atmosphere than carbon dioxide. Scientists estimate that eliminating HFCs could avoid up to 0.5°C of global warming by the end of the century.

Supermarket refrigeration is considered one of the most impactful and cost-effective opportunities to reduce HFC emissions. The average supermarket uses large quantities of HFC refrigerant in each system and has a very high leak rate of approximately 25% of the refrigerant charge annually. The climate impact from supermarket refrigeration leaks alone is estimated to be 55 million Metric Tons of CO<sub>2</sub> equivalent emissions (MTCO<sub>2</sub>e) annually or 550 million MTCO<sub>2</sub>e over 10 years.

Natural refrigerants have zero or near-zero GWP and are considered technically viable, future-proof, and climate-friendly alternatives to HFCs. However, less than 2% of U.S. supermarkets use HFC-free natural refrigerant systems. These meager adoption rates are due to a unique set of market barriers in the U.S., including upfront cost premiums, limited technology options, and service workforce readiness. Today, new policies at the U.S. state and federal levels are driving a transition away from HFCs. Still, they will not create the



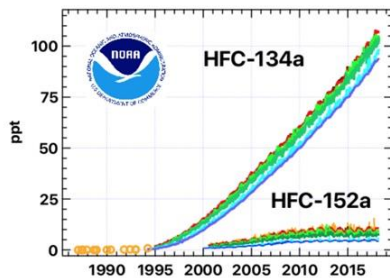
market conditions to enable the widescale transition to natural refrigerants. [...]

## [Excerpt from the "Naturally Better Together 2021 Annual Report", NASRC 2022](#)

Image: NASRC website

### 10. NOAA's observations help EPA track emissions of a family of greenhouse gases

For the first time, the U.S. Environmental Protection Agency is using NOAA atmospheric measurements to help support a national inventory of emissions from an important family of greenhouse gases.



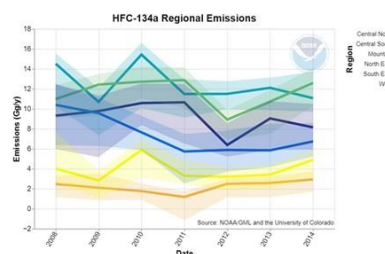
This graph depicts the rapid rise in the super-potent greenhouse gas hydrofluorocarbon-134, one of a family of gases developed to replace industrial chemicals responsible for destroying ozone in the stratosphere and creating the annual ozone hole over Antarctica. While less damaging to the ozone layer, man-made HFCs are super-potent greenhouse gases in their own right. Measurements are in parts per trillion. Credit: Global Monitoring Laboratory

The family of gases, called hydrofluorocarbons or HFCs, were developed to replace industrial chemicals responsible for destroying ozone in the stratosphere and creating the annual ozone hole over Antarctica. While less damaging to the ozone layer, man-made HFCs are super-potent greenhouse gases in their own right. As ozone-destroying predecessors like chlorofluorocarbons - also potent greenhouse gases - have been phased out, HFC emissions and their concentrations in the atmosphere have increased dramatically. Because of HFCs' growing climate impact, the [Kigali Amendment](#) of the Montreal Protocol has established a schedule for the

international phase-down of their future production and consumption. In the U.S., the [American Innovation and Manufacturing Act of 2020](#) calls for an 85% reduction in HFC production and consumption by 2036.

#### Estimating emissions: Top down and bottom up

Greenhouse gas emissions estimates are generally calculated by one of two primary types of methods. "Bottom up" inventories are generally developed through an accounting of all activities that generate emissions, the application of measurement-based or model-based emissions factors to those activities, and use of facility-specific data, where available. This is the approach used by the EPA and basis for reporting national emissions and sinks annually to the United Nations Framework Convention on Climate Change.



The Global Monitoring Laboratory's new Emission Tracker provides emission magnitudes for certain potent greenhouse gases, such as replacements for ozone-destroying synthetic chemicals, derived from atmospheric measurements at sites across the U.S. This graph shows regional emissions trends for HFC-134 in parts per trillion. Credit: Global Monitoring Laboratory

Greenhouse gas emissions can also be estimated by careful measurements of atmospheric samples collected downwind of a source region. This method is known as "atmosphere-based" or "top down," and is a standard research approach used by NOAA's Global Monitoring Laboratory.

This year, EPA has included a comparison of NOAA's atmospheric emission estimates of four HFCs to its own inventory-based estimates in the just-released [U.S. Inventory of Greenhouse Gas Emissions and Sinks](#), based on results first

reported in the 2017 Geophysical Research Letters study by a team that included scientists from NOAA, CIRES, EPA, and Lawrence Berkley National Laboratories.

"The comparisons show reasonable consistencies between the two independently derived estimates, suggesting a robust understanding of HFC emissions," said Lei



Hu, CIRES scientist at the Global Monitoring Laboratory who leads a team supplying the atmosphere-based estimates. "Where we see differences, further analysis will be beneficial."

### **HFCs well-suited for comparing inventory-based and atmosphere-based estimates**

Accurate estimates of human-caused greenhouse gas emissions are important for understanding contributions to climate change, and for evaluating the effectiveness of emissions reduction activities. While "top down" and "bottom up" approaches each have limitations, they can complement each other, and comparisons can help target measurement or data collection improvements. Improved understanding of GHG emissions helps provide policymakers guidance when developing and assessing emission reduction strategies.

HFCs are some of the most suitable greenhouse gases for comparisons between the bottom-up inventory and atmosphere-based estimates because they are engineered chemicals with no natural sources, and they persist in the atmosphere, which reduces the complexity of estimating emissions.

"Interagency collaboration strengthens our collective abilities to quantify HFC emissions in the U.S.," said Ariel Stein, the director of the Global Monitoring Laboratory. "We look forward to more opportunities to work together in understanding emissive processes and guiding emission reductions."

The HFC emission estimates have recently been incorporated into the Global Monitoring Laboratory's new [Emission Tracker web page](#), which provides atmosphere-based estimates at national and regional levels for 2008-2014 for HFCs and several other synthetic gases. NOAA Global Monitoring Laboratory plans to continue to provide national- and global-scale observations of the atmosphere and build tools that guide informed decisions for a Climate Ready Nation.

For more information, contact [Theo Stein](#), NOAA Communications.

### **[The National Oceanic and Atmospheric Administration \(NOAA\), 22 April 2022](#)**

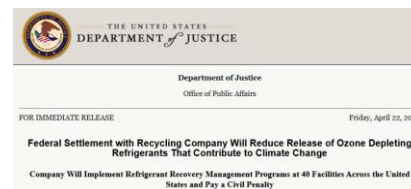
Image: NOAA website

### **11. Federal Settlement with Recycling Company Will Reduce Release of Ozone Depleting Refrigerants That Contribute to Climate Change**

Company Will Implement Refrigerant Recovery Management Programs at 40 Facilities Across the United States and Pay a Civil Penalty.

The United States, on behalf of the Environmental Protection Agency (EPA), has reached a proposed settlement with Schnitzer Steel Inc. of Portland, Oregon, to resolve alleged violations of the Clean Air Act and regulations designed to protect stratospheric ozone at 40 scrap metal recycling facilities throughout the United States.

If approved by the court, the settlement will require the company to pay a civil penalty of \$1,550,000, implement compliance measures worth over \$1,700,000 to prevent the release of ozone-depleting refrigerants and non-exempt substitutes from refrigerant-containing items during their processing and disposal and complete an environmental mitigation project. The complaint filed together with the consent decree alleges that Schnitzer failed





to recover refrigerant from small appliances and motor vehicle air conditioners before disposal or to verify from the supplier that the refrigerant had been properly recovered prior to delivery to Schnitzer's facilities.

"To help protect stratospheric ozone and reduce the risks of climate change, the Department of Justice will seek to ensure companies like Schnitzer comply with the Clean Air Act when recycling appliances and motor vehicles containing harmful refrigerants," said Assistant Attorney General Todd Kim of the Justice Department's Environment and Natural Resources Division.

"Many refrigerants are potent greenhouse gases that contribute to global warming if released into the atmosphere," said Acting Assistant Administrator Larry Starfield for EPA's Office of Enforcement and Compliance Assurance. "This settlement will help protect our climate by ensuring that these chemicals are managed properly at 40 recycling facilities across the country."

Under the settlement, Schnitzer must implement an EPA-approved Refrigerant Recovery Management Program (RRMP) at its 40 U.S. facilities. The RRMP includes, among other things: installation of refrigerant recovery systems at Schnitzer's facilities; screening procedures for scrap appliances and vehicles; new forms for statements and contracts to verify any refrigerant recovery from appliances and motor vehicles prior to receipt by Schnitzer; notices to customers regarding proper procedures for delivering items currently or previously containing refrigerants; employee training on procedures for ensuring compliance with regulations designed to prevent the release of refrigerants; and recordkeeping and reporting obligations.

The settlement also requires Schnitzer to perform an environmental mitigation project involving the destruction of all R-12 refrigerant in scrapped appliances and automobiles received at its facilities. R-12 contains chlorofluorocarbons and has over 10,000 times the global warming potential of carbon dioxide.

Today's action was filed by the United States, on behalf of the EPA.

### [The U.S. Department of Justice, 22 April 2022](#)

*Image: DoJ website*

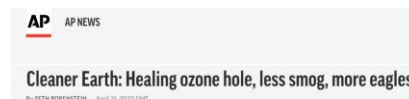
## 12. Cleaner Earth: Healing ozone hole, less smog, more eagles

With climate change, plastic pollution and a potential sixth mass extinction, humanity has made some incredible messes in the world.

But when people, political factions and nations have pulled together, they have also cleaned up some of those human-caused environmental problems, including healing the ozone hole, clearing perpetually smoggy air and saving many species from the brink of extinction.

"We can be good at cleaning up our messes, it's whether or not we choose to be and what we prioritize," said Michigan State University environmental sustainability researcher Sheril Kirshenbaum.

For Earth Day, The Associated Press asked more than 25 environmental scientists and policy experts, including two former U.S. Environmental Protection Agency chiefs and the



current director of the United Nations Environment Programme, to share their top stories about environmental problems that the world fixed.

“There are some amazing success stories,” said Stanford University environmental scientist Rob Jackson. “It’s easy for us to get tunnel vision with everything going wrong, and there is a lot that needs to change quickly. But it’s wonderful to remind ourselves that other people in the past have succeeded and that society has succeeded too, both nationally here in the U.S. and also internationally.”

Here are the four successes mentioned most often and a key aspect that so many ecological wins have in common.

### **Healing the ozone hole**

Fixing ozone depletion was by far the top choice of scientists, officials and environmental policy experts.

“It was a moment where countries that usually compete with each other grasped the collective threat and decided to implement a solution,” former EPA chief Carol Browner said in an email.

Scientists in the 1970s had discovered that a certain class of chemicals, often used in aerosol sprays and refrigeration, was eating away the protective ozone layer in Earth’s atmosphere that shields the planet from harmful ultraviolet radiation linked to skin cancer.

The ozone layer was thinning everywhere, creating a hole over Antarctica, which not only threatened increased skin cancer cases, but cataracts and widespread changes to ecosystems around the globe, said University of North Carolina atmospheric scientist Jason West.

“It’s the first time we created a planet-killing problem and then we turned around and solved it,” Stanford’s Jackson said.

In 1987, the countries of the world signed the Montreal Protocol, a first of its kind treaty that banned the ozone-munching chemicals. At this point every nation in the world has adopted the treaty, 99% of the ozone-depleting chemicals have been phased out, “saving 2 million people every year from skin cancer,” United Nations Environment Programme Director Inger Andersen said in an email.

The ozone hole over Antarctica worsened for a couple decades, but over the last several years it has slowly started to heal in fits and spurts. The United Nations Environment Programme projects that the ozone “ will heal completely by the 2030s.”

While activists point to the Montreal Protocol as a hope and example for the fight against climate change, it’s not quite the same. In the case of the banned ozone-sapping chemicals the corporations that manufactured them also made their replacements. But with climate change “it’s more of an existential threat to the oil and gas companies,” Jackson said. [...]

The treaty to heal the ozone hole is the example for what working together can accomplish, Syracuse’s Tuttle said: “This agreement proved that the international community could come together to create an enforceable framework to tackle an environmental problem of global significance.”

[The Associated Press \(AP21 April 2022, By Seth Borenstein,](#)

*Image: AP website*

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### 13. GreenChill Webinar: Deconstructing Flammable Refrigerants

Invitation to join GreenChill webinar on **May 3 from 2 – 3 PM Eastern**. Learn more about the who, what, why, and how of flammable refrigerants! Presenters from Chemours will cover safety classifications, best practices for managing flammable refrigerants, codes, and standards, and more.



#### To join:

- on your computer or mobile app [Click here to join the meeting](#)

- with a video conferencing device

sip:teams@video.epa.gov

Video Conference ID: 116 880 563 9

[Alternate VTC instructions](#)

Or call in (audio only)

[+1 202-991-0477,850473130#](#) United States, Washington DC

Phone Conference ID: 850 473 130#

[Find a local number](#) | [Reset PIN](#)

[The US EPA GreenChill, May 2022](#)

The US EPA GreenChill, May 2022

*Image: GreenChill website*

## EUROPE & CENTRAL ASIA

### 14. ECA meeting on certification schemes for RACHP technicians / companies

The 24<sup>th</sup> ECA meeting on certification schemes for RACHP technicians / companies, took place on 13 April 2022. The meeting is part of the activities of UNEP OzonAction's Regional Montreal Protocol Network for Europe and Central Asia (ECA network).



Participants included Montreal Protocol and RACHP experts from ECA / CEIT countries, bilateral partners, partner agencies, secretariats and interested audience from other regions.

Following UNEP OzonAction's introduction, Mr. Arno Kaschl of the European Commission, DG Climate Action, explained the proposed changes in the EU F-gas regulation, including those related to certification of technicians and companies (see [https://ec.europa.eu/clima/system/files/2022-04/f-gases\\_proposal\\_en.pdf](https://ec.europa.eu/clima/system/files/2022-04/f-gases_proposal_en.pdf)). They were recently released for public review and comments.

Mr. Marco Buoni of AREA / Centro Studi Galileo provided an update on the voluntary Real Alternatives training and certification scheme on alternative technologies (see <https://www.realalternatives.eu/home>). He will also present the mandatory training and certification schemes in Spain and Netherlands.

Ms. Qingrui Huang, UNEP consultant, explained how to integrate good servicing practices into national technical and vocational education and training (TVET) schemes for refrigeration servicing technicians. The TVET training and certification schemes are voluntary.

Ms. Knarik Yeghiazaryan and Ms. Liana Ghahramanyan of Armenia's Montreal Protocol Unit, shared their approach and lessons learned from initiating a mandatory certification scheme in Armenia.

**Contact:** Halvart Koeppen, OzonAction Montreal Protocol Regional Coordinator for Europe and Central Asia | [halvart.koppen@un.org](mailto:halvart.koppen@un.org)  
[UNEP, Law Division, OzonAction, 13 April 2022](#)

*Image: OzonAction website*

### 15. Cool Up Program Calls for Early and Swift Adoption of NatRefs in MENA Countries

**Cool Up**, a German-financed program to upgrade cooling systems in Egypt, Jordan, Lebanon and Turkey (MENA), has issued a warning that the significant increase in demand for refrigerants in these countries will result in an increase in f-gas emissions unless a rapid transition to natural refrigerants takes place.



"It is crucial to implement low-GWP practices before or in the early stages of market growth," said Barbara Gschrey, Managing Director at Öko-Recherche, Cool Up's research partner. By transitioning to natural refrigerants sooner rather than later, countries could prevent locking in polluting technologies for decades to come as demand increases.

Gschrey and other Cool Up representatives shared insights from the first two years of the six-year program during the "[MENA \[Middle East and North Africa\] Region in Focus](#)" session at the [ATMO World Summit 2022](#), held online March 30–31. ATMO World Summit was organized by ATMOSphere (formerly shecco), publisher of R744.com.

The presentation follows a [COP12/MOP33 side event](#) last October on the Cool Up program, which is financed by the International Climate Initiative through the German Ministry for the Environment.

According to Öko-Recherche's data, the refrigeration and air-conditioning market in MENA is worth around €8 million (US\$8.65 million). This is expected to grow by 5% annually until 2024 due to economic growth, population growth and improved living standards in the region.

The German Ministry of the Environment has called natural refrigerants and ambitious energy efficiency standards "the choice of the future" for the four Cool Up countries. Already an NH<sub>3</sub>/CO<sub>2</sub> (ammonia (R717)/R744) cold room cascade system has been

installed at an ice cream manufacturing plant in Turkey, according to the ATMO World Summit presenters.

But according to data shared during the presentation, existing residential and commercial systems across MENA are still heavily reliant on HCFCs, particularly R22, and HFCs like R410A, R407C and R134a.

When asked what the main obstacles and drivers were for the uptake of natural refrigerants in MENA, Öko-Recherche's Gschrey attributed the slow transition to a lack of awareness and capacity among technicians, particularly around the handling of flammable refrigerants and CO<sub>2</sub> systems.

"There's a lot of skepticism around flammability, so the international situation in terms of standards should act as a bit of a driver," she said. "We are expecting the standard revisions for major applications soon and increases [in] charge sizes, so the possibilities will grow in this respect."

"It's maybe comparable to the situation in Europe 10–15 years ago," she continued. "There was a lot of concern that has been overcome since then, and I would say the situation is similar in [MENA] countries."

She noted that the parallel regimes of the Montreal Protocol and its Kigali Amendment give "the opportunity for leapfrogging to switch from HCFCs to non-HFC alternatives."

### **Three HFC-reduction measures**

The Cool Up program is focusing on three measures to achieve the necessary reduction in HFC emissions: reducing the leakage rate of existing systems, promoting the development of low-GWP solutions for both new equipment and retrofitting, and adopting better recovery, recycling and reclamation programs to reduce end-of-life emissions and the demand for virgin HFCs.

A key to success, according to Katja Dinges, Associate Director at Guidehouse (Cool Up's project management partner) is "to bring all the different stakeholders together ... to encourage the use of natural refrigerants and reduce cooling demand [as well as to] streamline all the different activities."

"All the market and policy and finance perspectives need to be brought together," added Dinges.

As a parting note, Gschrey speculated that the example of the EU market "will be a good driver and set a good example for companies and players in the [MENA] market to move in this direction."

During the event, Cool Up also issued a request for further examples of sustainable air-conditioning or refrigeration systems from across MENA – the only condition being that they must run on natural refrigerants only.

[\*\*r744, 19 April 2022, By Christina Hayes\*\*](#)

*Image: r744 website*

**FEATURED**

**Overview for the meetings of the ozone treaties in 2022**

**68<sup>th</sup> IMPCOM**, Bangkok, Thailand | 09 July 2022  
**44<sup>th</sup> OEWG**, Bangkok, Thailand | 11 - 16 July 2022  
**5<sup>th</sup> ExMOP**, Bangkok, Thailand | 16 July 2022  
**69<sup>th</sup> IMPCOM**, Venue – to be determined | 29 October 2022  
**33<sup>rd</sup> MOP Bureau**, Venue – to be determined | 30 October 2022  
**34<sup>th</sup> MOP**, Venue – to be determined | 31 October - 04 November 2022

Click [here](#) for past and upcoming Montreal Protocol Meetings Dates and Venue.

Summary of the Combined Twelfth Meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer (part II) and the Thirty-Third Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer: 23-29 October 2021.

[The Earth Negotiations Bulletin, 1 November 2021, Vol. 19 No. 157](#)

See also [>>> IISD Daily coverage and photos](#)

**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, 14 February 2022](#)

*Image: UNEP, Ozone Secretariat website*

**UNEP Ozone Secretariat launches 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 >>>](#)



## THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL

- [Evaluation of regional networks of national ozone officers \(desk study and terms of reference for the second phase\)](#)
- [Evaluation of regional networks of national ozone officers \(desk study and terms of reference for the second phase\): Corrigendum](#)
- [Guide for project preparation of Stage I of Kigali HFC implementation plans \(KIP\) \(February 2022\)](#)
- [Updated guide for the presentation of stage II of HCFC phase-out management plans \(February 2022\)](#)
- [Executive Committee Primer 2022](#)

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



## OzonAction

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

**The section below features several of our most recent products.**

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

*Images in this section are by OzonAction*

**New OzonAction Knowledge Maps tool** - The UNEP OzonAction Knowledge Maps tool was developed to provide the National Ozone Units (NOUs) and different UNEP partners with a simple tool to help them access data and information about relevant stakeholders, who are mainly involved in the implementation of programmes and projects under the Montreal Protocol (MP) supported by Multilateral Fund (MLF).

**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** developed by the UN Environment Programme (UNEP) OzonAction, to provide engineers, workers, and technicians with easily accessible information on substances/ gases that they are working with or handling in the workplace on visual printable cards.

**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.\*

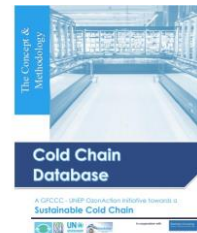
**Using the Gas Card web-based tool**

- 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)

## OzonAction and GFCCC launch the methodology questionnaires the Cold Chain Database Initiative

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



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

Contact: [Ayman Eltalouny](#), Coordinator International Partnerships, UNEP, OzonAction



## [HCFC Quota and Licence Tracker](#) - a new desktop application to assist with HCFC licences and quotas

National Ozone Officers have the great responsibility of managing the allocation and monitoring of quotas for substances controlled under the Montreal Protocol. This process can be complex with many importers, especially if the

country imports a range of different hydrochlorofluorocarbons (HCFCs) and mixtures containing HCFCs. To address this challenge, OzonAction developed a new desktop application that helps Ozone Officers with the tasks of planning, calculating, monitoring and managing consumption quotas and licences. It can be used on a daily basis to track and manage the current year's quota allocations for different importers, or for future planning by trying different scenarios that adjust the type of substances imported, their quantity, or the number of importers. The HCFC Quota and Licence Tracker allows Ozone Officers to see the effect of such scenarios on the national HCFC consumption and helps ensure that the quotas stay within agreed HCFC Phase-out Management Plan (HPMP) targets. For countries that have ratified the Kigali Amendment, in the future OzonAction will extend the tracker to include hydrofluorocarbons (HFCs) once countries begin designing their quota systems for those controlled substances.

Access the:

- [HCFC Quota tracker app](#)
- [Flyer for more information on the tracker](#)
- [Short video tutorial on the OzonAction YouTube Channel](#)

## [GWP-ODP Calculator Application](#) - Updated

**“Quickly, efficiently and accurately convert between values in metric tonnes, ODP tonnes and CO<sub>2</sub>-equivalent tonnes”**

Data are extremely important for the Montreal Protocol community, and the data reporting formats for both A7 and CP have changed recently, to a large degree triggered by the Kigali Amendment. HFCs, blends, CO<sub>2</sub>-equivalent values, etc, now have to be addressed much more frequently by Ozone Officers during their daily work. Sometimes the terminology and values are complex and can be confusing, and it helps to have it all the official facts and figures in one place. Conversion formulas need to be applied to calculate CO<sub>2</sub>-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](#) for more information

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## OzonAction [WhatGas?](#) Updated

### New features:

- An updated more user-friendly interface
- Multilingual interface: English, French and Spanish
- HFCs and HFC containing mixtures
- Latest updated ozone depleting potential and global warming potential values from the recent reports from the Montreal Protocol technology and scientific expert panels as well as the Intergovernmental Panel on Climate Change; as well as the standard ODP and GWP values as specified in the text of the Montreal Protocol
- References to sources of all values used
- New refrigerant mixtures (with ASHRAE approved refrigerant designations)
- Values for 'actual GWP' and 'Kigali Amendment context' GWP for pure substances and mixtures (i.e. only including GWP values/components assigned to controlled hydrofluorocarbons - HFCs).



**The WhatGas?** application is an information and identification tool for refrigerant gases: ozone depleting substances (ODS), HFCs and other alternatives. It is intended to provide a number of 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. If the user requires additional information or assistance in identifying a refrigerant gas they are inspecting or that is described in the relevant paperwork, this can be easily obtained by consulting the application.

### Using the application:

If you already have the application installed on your device, be sure to update to benefit from the new features.

**Smartphone Application:** Just search for "WhatGas?" or UNEP in the Google Play store or use the QR code – free to download!



**Desktop Application:** WhatGas? is also available online on the OzonAction [website](#)

**For more information:** Watch the new short introductory tutorial [video](#) on WhatGas? available on [YouTube](#)

See/download the [WhatGas? flyer](#)

**Over 10,000 installations on Android and iOS devices to date!**

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**[RAC Technician Videos](#) - Full length films! Two 'full length' videos for refrigeration and air-conditioning (RAC) sector servicing technicians: on 1) Techniques, Safety and Best Practice and 2) Flammable Refrigerant Safety.**




The OzonAction Refrigeration and Air-Conditioning Technician Video Series consists of instructional videos on techniques, security and best practice and flammable refrigerant safety. They are intended to serve as a complementary training tool RAC sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training. The videos are not intended to replace structured formal technician training, but to supplement and provide some revision of tips and skills and to build on training already undertaken.

These videos are based on the successful UNEP OzonAction smartphone application, the RAC Technician Video Series app. This application has been downloaded on more than **86,000** devices since its launch.

Following many requests to make the videos more versatile and better suited to classroom and training settings, OzonAction has responded to this demand and produced two 'full-length' instructional videos.

You may wish to share this message and the flyer with:

- Your national/regional RAC associations
- Training or vocational institutes
- Master RAC trainers in your country
- Any other interested national stakeholders

 You can watch these videos on the OzonAction YouTube Channel:

- [Techniques, Safety and Best Practice](#)
- [Flammable Refrigerant Safety](#)

 The videos are also available for download by request from UNEP OzonAction: [unep-ozonaction@un.org](mailto:unep-ozonaction@un.org)



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

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

## Refrigerant Cylinder Colours: What has Changed

A new UNEP OzonAction factsheet on the new AHRI revised guideline on a major change to refrigerant cylinder colours

One of the ways in which refrigeration cylinders are quickly identified is by cylinder colour. Although there was never a truly globally adopted international standard, the guideline from the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) although not required by law was used by the vast majority of industry and chemical producers around the world.

An AHRI revised guideline, first published in 2015, now removes paint colour assignments for refrigerant containers and specifies that all refrigerant containers should have the same paint colour from 2020 onwards.

NOOs and technicians should be aware of this change and inform national stakeholders, as well as familiarising themselves with relevant container labels and markings for refrigerants.

Read/download the [factsheet](#)



## Update on new refrigerants designations and safety classifications

- The latest version of the factsheet providing up to date information on refrigerant designations and safety classifications is now available (September 2020 update).

The factsheet, produced by **ASHRAE** in cooperation with **UN Environment Programme OzonAction** is updated every 6 months.

The purpose is to provide an update on ASHRAE standards for refrigerants and to introduce the new refrigerants that have been awarded an "R" number (or ASHRAE designation) over the last few years and which have been introduced into the international market.

Read/download the [factsheet](#)



The factsheet, as well as more information on ASHRAE-UNEP joint activities and tools, is also available on the [ASHRAE UNEP Portal](#).

**Contact:** [Ayman Eltalouny](#), OzonAction, UN Environment Programme

[OzonAction's iPIC platform - Updated](#) - Collaboration between China and Thailand using OzonAction's informal Prior Informed Consent (iPIC) system has resulted in the prevention of a huge consignment of ozone-depleting and climate damaging 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](#).

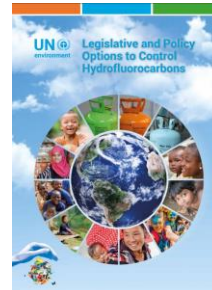
Download the Cold Chain Technology brief in [English](#) | [French](#) | [Russian](#) | [Spanish](#)



## PUBLICATIONS

**[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. 3-2022](#)  
(in Italian).



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



**Cut Super Climate Pollutants Now!**: The Ozone Treaty's Urgent Lessons for Speeding Up Climate Action (Resetting Our Future). We have a decade or less to radically slow global warming before we risk hitting irreversible tipping points that will lock in catastrophic climate change. The good news is that we know how to slow global warming enough to avert disaster. Cut Super Climate Pollutants Now! explains how a 10-year sprint to cut short-lived "super climate pollutants" -- primarily HFC refrigerants, black carbon (soot), and methane -- can cut the rate of global warming in half, so we can stay in the race to net zero climate emissions by 2050.



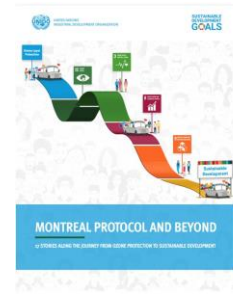
*Authors: Alan Miller, Durwood Zaelke, Stephen O. Andersen.*

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



## [Montreal Protocol and beyond: 17 stories along the journey from ozone layer protection to sustainable development](#) -

The 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals (SDGs) embody the global commitment to build a more sustainable future for all. These universally agreed objectives address the most urgent environmental, social and economic challenges of our time...  
Read/Download [here](#)



**NEW** The **Green Customs Guide to Multilateral Environmental Agreements** was designed to promote sustainable trade and encourage customs and border control officers to take on a proactive role in protecting the environment. The guide provides useful information and guidance about relevant trade-related multilateral environmental agreements (MEAs), thus facilitating legitimate trade in environmentally sensitive items while preventing illicit trade in such items and contributing to the achievement of the [Sustainable Development Goals](#).



Read/Download the [full report](#).

See pages 91-98 on "How the Montreal Protocol regulates trade", and "Montreal Protocol-specific training materials for customs officers."

## MISCELLANEOUS

### I am in the Montreal Protocol Who's Who... Why Aren't You?



The United Nations Environment Programme, OzonAction, in collaboration with Marco Gonzalez and Stephen O. Andersen are updating and expanding the "[Montreal Protocol Who's Who](#)".

We invite you to submit your nomination\*, and/or nominate Ozone Layer Champion(s). ***The short profile should reflect the nominee's valuable work related to the Montreal Protocol and ozone layer protection.***

Please notify and nominate worthy candidates

through the [on-line form](#).

We look forward to receiving your nomination(s), and please feel free to contact our team for any further assistance concerning your nomination.

**Take this opportunity to raise the profile of women and men who made an important contribution to the Montreal Protocol success and ozone layer protection.**

- View the «Montreal Protocol Who's Who» [Introductory video](#)
- Contact : [Samira Korban-de Gobert](#), UN Environment Programme, OzonAction

*\* If you are already nominated, no need to resubmit your profile*



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