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# 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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## 1. New research proves Montreal Protocol successful

By moving nations away from ozone-depleting refrigerants in the early 1990s, the treaty has avoided a 20% increase in UV radiation.

The Montreal Protocol treaty banning ozone-depleting gases has long been regarded as one of the most successful international agreements ever created. But now a research group has proven the Montreal Protocol's value in terms of curbing the amount of harmful ultraviolet (UV) radiation reaching Earth's surface. Without it, the amount would have been as much as 20% higher than it is today.

One of the main environmental concerns in the 1980s was an increased amount of UV-B radiation reaching Earth due to a diminishing ozone layer. This was potentially a very dangerous situation that led to the adoption of the Montreal Protocol in 1987.

However, despite claims regarding the protocol's success, no scientific research had been done proving that it had actually been effective, according to the new study published in Nature Scientific Reports. That is, until now.

"Previous published research about the Montreal Protocol show it has been successful in controlling the amount of ozone-harming chemicals, and the amount of ozone. But this is the first time scientists have looked at long term changes in UV radiation, and that's what matters in terms of human health," said Dr Richard McKenzie from New Zealand's National Institute of Water and Atmospheric Research, and lead author on the study, to New Zealand's Business.Scoop website.

The study concludes that without the measures included in the Montreal Protocol, UV Index (UVI) values at the Earth's sub-tropical and temperate zones would have increased by approximately 20% between the early 1990s and today (quadrupling by 2100), and by more than 100% in the spring and summer at the South Pole.

Dr McKenzie and his colleagues looked at UVI data from clean-air sites using instruments included in the Network for the Detection of Atmospheric Composition Change. They found that maximum daily values have remained essentially constant when considering all seasons over the past [MDV1] 20 years.

In the Southern Hemisphere, where the effects of ozone depletion were greater, the maximum daily value may even have decreased slightly, the group concludes, meaning that the continued depletion of the ozone layer has been halted.

The group compared the measurements with projections from theoretical chemistry-climate models representing two scenarios – the so-called "World Avoided" and "World Expected" models. The "World Avoided" model assumes that the concentration of ozone-depleting substances continues unabated, with no control by the Montreal Protocol. The "World Expected" model calculates the theoretical results of full compliance with the protocol.

The group found that the UVI at sites in the southern hemisphere has followed the "World Expected" scenario. The results from the mid-latitudes in the Northern Hemisphere are more complex and difficult to interpret because changes in aerosol and cloud cover can mask the effects of the ozone.

"This paper is hugely satisfying for me – it's the culmination of decades of work which has shown what a huge success the Montreal Protocol has been," Dr McKenzie noted. "It has worked and that shows we can fix these problems."

However, the group stressed in its conclusion that future UVI values remain uncertain due to a number of factors, including the effects of increasing greenhouse gasses and non-compliance with the Montreal Protocol.



**R744, 6 September 2019, By: Tine Stausholm**

## 2. Biarritz pledge for fast action on efficient cooling

Aware that the accelerating speed of climate change presents a risk that requires strong political leadership to deliver fast action on a scale capable of protecting the planet, its people, its biodiversity and ecosystem services;

Recognizing that the Kigali Amendment to the Montreal Protocol could prevent up to 0.4°C of warming by the end of the century, and that coordinated efforts to improve the energy efficiency of air conditioners and other cooling equipment will have additional environmental benefits, including the reduction of emissions, public health and food security;

Aware of the cost of using inefficient cooling equipment, which results in wastage of the energy needed for development, increases air pollution, raises consumers' operating costs, and requires additional capital for ensuring energy security;

Recognizing the importance of good servicing practices in maintaining the rated energy efficiency of cooling equipment and in reducing refrigerant leakage from the equipment, that also contribute to the reduction of both direct and indirect emissions of the cooling equipment throughout their life cycle;

We, Heads of State and Government, hereby agree to undertake immediate actions to improve efficiency in the cooling sector while phasing down HFC refrigerants as per the Kigali Amendment to the Montreal Protocol, including:

1. To undertake ambitious measures to improve energy efficiency in the cooling sector while phasing out HCFC and phasing down HFC refrigerants, such as developing national cooling plans based on domestic circumstances, using energy performance standards (MEPS) and labelling, and promoting use of good servicing practices; and to undertake efforts that the related GHG emissions reductions are reflected in the Nationally Determined Contributions to the Paris Agreement as per country priorities;
2. To use the state's bulk purchasing power and relevant measures to support the phase down of HFCs and improvements in the energy efficiency of the cooling sector beginning in 2020, while encouraging the private sector to do the same;
3. To facilitate market access for highly efficient and affordable cooling technologies using low- or zero-global-warming-potential (GWP) refrigerants;
4. To call on support from relevant financial institutions and funds to mobilize additional financing for improvements in energy efficiency in the cooling sector for activities beyond those covered under the Montreal Protocol and its Kigali Amendment;
5. To support the Efficient Cooling Initiative of the Climate and Clean Air Coalition and related initiatives;
6. To recruit other Heads of State and Government and private sector leaders to join in these efforts in order to gain political momentum and encourage the mobilization of additional financial resources from public and private actors.

This pledge will contribute to cooling commitments made at the UN Climate Action Summit, and progress toward its realization reported at other meetings of Heads of State and Government.

**Palais de l'Élysée, 22 August 2019**



**See also >>> [Led by France, several countries are committing to the Biarritz Pledge for Fast Action on Efficient Cooling.](#)**

### 3. Maximizing the benefits from the global phase-down of HFCs

[...] The Kigali Amendment has entered into force and each country that is Party to the Amendment is required to have in place an import and export licensing system for HFCs. To enable countries to effectively monitor, control and report data on imports and exports of specific HFCs and HFC-containing mixtures, the creation of specific individual HS codes for HFCs at the national level is therefore very much required.

The 2022 HS, which will include specific codes for HFC and HFC-containing mixtures will officially enter into force on 1 January, 2022. In advance of this release, there are actions which countries can take in the interim.

The suggested approach, recommended by the WCO, is to establish additional digits to the national HS codes to identify specific HFCs. These codes can be used in the interim until the country adopts the 2022 HS. This publication has provided an overview of the additional subdivisions that are recommended to be adopted and provided some examples of how this has been implemented. It is important to note that the adopted codes for the 2022 HS (indicated on pp.8-9) are prohibited from being used ahead of their official entry into force.

Current HS codes for HFCs All HFCs are covered by the single HS code: 2903.39 Mixtures containing HFCs are currently covered by the following HS code: 3824.78

The national system will then need to be adjusted when the 2022 HS enters into force. In countries where this takes some time, the 2017 HS (or previous version) can continue to be used with the additional subheadings.

The Harmonized System is a multipurpose international product nomenclature developed by the WCO. It forms the basis for Customs tariffs and for the collection of international trade statistics, with each identified by a six digit code arranged in a legal and logical structure. Over 98% of merchandise in international trade is classified in terms of the HS. WCO issues Amendments every five to six years to update the HS.3

Implementing import and export licensing systems for HFCs from 1<sup>st</sup> January, 2019 may present a challenge for countries whose HS edition did not include individual codes for HFCs and the next HS edition which will include specific HS codes for the most commonly traded HFCs and mixtures, will only enter into force in 2022.

**The Business Recorder, 17 September 2019**



### 4. HALO mission investigates ozone depletion and processes affecting our climate

The German research aircraft HALO will explore the southern hemisphere as part of the SouthTRAC (Transport and Composition of the Southern Hemisphere UTLS) project in September and November 2019. Data from the southern hemisphere is crucial to our understanding of how climate change is influencing global atmospheric flows. However, as yet almost no measurements have been taken in the southern hemisphere at altitudes of 10 to 15 kilometers. The SouthTRAC project aims to fill these gaps in our understanding.

The main goals of the first phase of this campaign are to investigate ozone depletion over the Antarctic in springtime, the so-called ozone hole, and to evaluate the importance of gravity waves over the southern tip of the Americas and the Antarctic to the circulation in the stratosphere. [...]

Trace gases such as carbon dioxide and water vapor are potent greenhouse gases and play an important role in climate change. This also includes stratospheric ozone, which acts as a greenhouse gas. Since the end of the 1980s, the Montreal Protocol has banned the use of chlorofluorocarbons (CFCs), which severely deplete the



ozone layer. However, it will take many decades for the ozone layer to recover. At the same time, climate change is affecting the water vapor content of the atmosphere. The SouthTRAC campaign scientists are currently looking in detail at the significance of this for the chemical composition of the air in the southern hemisphere and for global climate change.

A particularly region of severe ozone depletion is building up year by year over the Antarctic. The atmospheric conditions that contribute most to ozone depletion over the Antarctic are low temperatures and reduced air mass exchanges between mid and high latitudes in the stratosphere. The latter are enabled by a stable vortex, the so called Antarctic polar vortex.

The research groups involved are interested in polar ozone depletion itself and in the question of how air masses from the vortex affect the composition of the region at altitudes of 10 to 15 kilometers. This region is also of particular significance to the climate at ground level. Water vapor and ozone play key roles here, as their distribution directly influences the energy balance of the atmosphere. In addition to the effects of polar ozone chemistry, emissions from forest fires in the Amazon and Central Africa interfere with the chemical processes on the ground which determine the production and destruction of ozone and other substances.

The scientists will analyze the chemical as well as the dynamic effects that impact the distribution and mixing of substances affecting atmospheric chemistry and ultimately earth's climate. [...]

**Eureka!ert, 26 September 2019, By: Johannes Gutenberg Universitaet Mainz**

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## Africa

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### **5. Training workshop of national ozone officers from Western, Eastern, Northern and Southern regions of the Africa Anglophone Network in Ghana**



The adoption of the Montreal Protocol on Ozone Depletion some 32 years ago by countries has resulted in the elimination of over 98 per cent of ozone depleting substances, with the possibility of repairing the layer by the middle of the century.

The achievement has also been the result of countries' shared commitments and cooperation, coupled with the daily choices of individuals around the world, Mr John Pwamang, the Acting Executive Director of the Environmental Protection Agency (EPA), announced on Wednesday in Accra.

"Some may wonder why this matters. To this you can respond that thanks to the success of the Montreal Protocol, millions of cases of skin cancer have been avoided, and so have tens of millions of cases of eye cataracts," he said.

"It has also had huge positive impacts for agriculture, preventing significant loss of food crops and food security challenges."

"Likewise, the Protocol has also encouraged significant industrial innovation resulting in more energy efficient and environmentally friendly refrigeration systems."

Mr Pwamang was speaking at the official opening of the two parts, week-long sub-regional training workshop of national ozone officers from Western, Eastern, Northern and Southern regions of the Africa Anglophone Network in Accra.

The workshop is also geared towards enabling activities for Hydrofluorocarbons (HFC) phase down in countries as well as paving the way for information sharing.

It would also enhance national ozone officers and their legal counterparts the needed capacity to carry out their obligations in the implementation of the Montreal Protocol and its various amendments. [...]

Mr Pwamang said Ghana became the 79th country in the world to ratify the Kigali Amendment in August this year, which sets the tone for the country to implement the Amendments by gradually phasing out the HFCs.

He said the Kigali Amendment had received wide support from the private sector, which had been impressive as businesses were increasingly introducing alternatives to HFCs in developed and developing countries' market alike.

"These new technologies promise triple win: no harm to the ozone layer; being climate friendly; and increasing energy efficiency".

"By reducing or phasing down the use of Hydrofluorocarbons (HFCs) in refrigerators, air conditioners, and related facilities by 80 per cent over the next 30 years, together, we would avoid 0.4°C of global warming by the end of the century, while continuing to protect the ozone layer," Mr Pwamang said.

He said in Ghana, the National Ozone Unit (NOU) under the implementation of the Hydrochlorofluorocarbon Phase-out Management Plan (HPMP), had started the training of technicians from well-established air-conditioning installation workshops in the conversion of existing R-22 based Air conditioning units to run on Hydrocarbon R-290.

Mr Emmanuel Osae-Quansah, the Director, National Ozone Officer, EPA, said the workshop was in response to the ratification and the implementation of the Kigali Amendment that sought to phase down 19 identified Hydrochlorofluorocarbon refrigerants found in refrigerators, air-conditioning, cold storage systems and in the mortuaries. [...]

Mr Frank Turyatunga, the Deputy Regional Director, Africa Office, UN Environment Programme, said Ghana hosting the meeting demonstrated Government's continued commitment to working together with other countries to protect the ozone layer and mitigate climate change.

He said with funding from the Multilateral Fund, Parties were building their capacities, strengthening institutions and developing national strategies to ensure they tackled HFCs quickly and decisively.

"The addition of HFCs to the Montreal Protocol through the Kigali Amendment will not only help the recovery of the ozone layer but also prevent approximately 19 per cent of estimated total greenhouse gas emissions by 2050, compared to a business as usual scenario."

The UN Environment's law division - OzonAction Programme and the Compliance Assistance Programme of the same body organised the workshop, intended to facilitate the sharing of experiences, discuss and review findings, progress, and recommendations made regarding the implementation of Enabling Activities in various countries.

The Montreal Protocol is the only international environmental treaty that commands universal membership of all 197 states and the European Union with no state left outside its global coverage.

**Ghana News Agency, 5 September 2019, By Lydia Kukua Asamoah**

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## Asia Pacific

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### **6. Mongolia organises first Ozone2Climate technologies Roadshow and industry roundtable**

**Ulaanbaatar, 29 August 2019** – The Mongolian Ministry of Environment and Tourism, the National Ozone Authority of Mongolia in cooperation with UN Environment Programme (UNEP), organized an "Ozone2Climate

(O2C) Technologies Roadshow and Industry Roundtable” in Ulaanbaatar, Mongolia from 26-27 August 2019, with participation of industry, research institutes, education and training centers, and government agencies.

The main focus of this event was to create a platform for information exchange and discussions about national and international technology and policy trends, industry standards and constraints for the implementation of ozone and climate friendly alternatives within the Mongolian industry with support from policy-makers and consumers, and also to display the latest zero-ODP and low-GWP alternative technologies that are available in the local market of Mongolia such as R-290, R-600a, R-717, R-744 and R-1234yf.



Mr. Batbayar Ts, the Vice Minister of Environment and Tourism, Mongolia, Mr. Shaofeng Hu, the Montreal Protocol Regional Coordinator UNEP, and Usukhjargal Ts, President of Mongolian Heating, Ventilation, Air Conditioning and Refrigeration Association, delivered opening remarks at this remarkable event which was followed by a ribbon cutting ceremony for the first technologies roadshow in Mongolia.

The roadshow covered Mongolia’s 17 entities representing research institutes of mining, transportation, construction, commerce, education and training sectors. The event demonstrated ozone and climate friendly, energy efficient refrigeration and air conditioning (RAC) technologies in various applications/sub sectors, such as mobile air conditioners, commercial and household refrigerators and air conditioners that are available in Mongolia’s local markets.

More than 100 participants from different fields participated in the simultaneously held Industry Roundtable meeting, including industry experts, academics and government officials of Mongolia. This consisted of national and international sessions and discussed current developments, challenges, future prospects, and policy trends of the refrigeration and air conditioning sector.

In the first session, Alvin Jose from UNEP, Zhao Jin from China National Ozone Unit, and Niro Tohi from Japan presented on the topic of Global Policy and Technology trends, Technology Progress and Refrigeration and Air-conditioning Servicing Sector in China, and Policies and Technologies for HFC phase-down in Japan.

As an importing country, national stakeholders discussed technical and import difficulties and disposal mechanism with international experts.

In the last session, Mongolian representatives from the RAC sector discussed how efforts and challenges of alternative technologies in the country as well as readiness of the Mongolian market for the consequences of Kigali Amendment ratification. Representatives and experts demonstrated alternative technology development and their application in the RAC sector with the aim of maximizing benefits for ozone, climate and energy efficiency.

**Contact:** [Hu Shaofeng](#), Montreal Protocol Coordinator for Asia-Pacific, UN Environment Programme, OzonAction, Bangkok, Thailand

## 7. Việt Nam to reduce 35% HCFCs consumption by 2024



HÀ NỘI — Việt Nam plans to reduce 35 per cent of its Hydrochlorofluorocarbons (HCFCs) consumption by 2024 in an attempt to protect the ozone layer.

This was the main target of the second stage of the country's HCFC phase-out plan, officially launched yesterday in Hà Nội.

HCFCs are used in several industries, including refrigeration and air conditioning, fire extinguishers, foams, and solvents.

Under the plan, about 80 companies will receive support to change technologies in order to cut down the usage of 1,000 tonnes of HCFC-22 (a refrigerant widely used in the seafood processing industry) by 2024.

Tăng Thế Cường, head of the Climate Change Department under the Ministry of Natural Resources and Environment said that the launch ceremony was in response to the International Day for the Preservation of the Ozone Layer (September 16).

Cường said Việt Nam, one of the five countries suffering the most from climate change, had constantly made efforts to protect the ozone layer and mitigate the impacts of climate change for many years following the Montreal Protocol as well as the United Nations Framework Convention on Climate Change.

On September 4, the Government issued Resolution No 64/NQ-CP to officially approve the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, he said.

The approval of the amendment showed the responsibility of Việt Nam in implementing the protocol as an active member, he added.

Carrying out the amendment would help Việt Nam eliminate millions tonnes of carbon dioxide, contributing to the global efforts to protect the Earth's climate and reduce greenhouse gas emissions, he said.

Stefanie Stallmeister, Operations Manager for the World Bank in Việt Nam said she highly appreciated efforts that Việt Nam had made to change technologies and production methods to protect the environment and ozone layer.

Việt Nam officially signed the Montreal Protocol on Substances that Deplete the Ozone Layer in January 1994.

The protocol came into force on January 1989 and has been ratified by 197 parties, including 196 states and the European Union, making them one of the first universally ratified treaties in the United Nation's history.

**Việt Nam News, 17 September 2019**

## 8. Belarus to stop importing ozone-depleting substances as from 2020



Belarus plans to stop importing ozone-depleting substances as from 2020, Natalya Klimenko, a consultant of the department for regulation of impacts on the air and ozone layer at the Ministry of Natural Resources and Environment Protection, said in a press conference in Minsk, BelTA has learned.

“Almost all countries of the world have joined the Montreal Protocol on Substances that Deplete the Ozone Layer. It regulates 114 different chemicals, more than 50% of them has already been withdrawn from consumption. Belarus has not produced ozone-depleting substances throughout the entire period of the Montreal Protocol, therefore our consumption comes from import. Today, along with other countries, we are working to abandon the last group of ozone-depleting substances – hydrochlorofluorocarbons. We must stop importing them by 1 January 2020. At the same time, we still have a certain part of the equipment that runs on such substances. To refuel the existing equipment and technical devices we will use recoverable, recycled substances or stockpiles made before 2020. This equipment is planned to be decommissioned by 2030,” Natalya Klimenko noted.

The Montreal Protocol on Substances that Deplete the Ozone Layer was adopted in 1987. It provides for specific measures to reduce the production and consumption of ozone-depleting substances, which include chlorine or bromine-containing organic substances used as refrigerants in the refrigeration and air conditioning sector, propellants in household and medical aerosol products, fire extinguishing agents in fire extinguishing systems, solvents in electronic and precision engineering, blowing agents in the production of building materials. “Ozone-depleting substances are still used in our country in cooling and air conditioning systems. An inventory of equipment containing such substances is carried out every three years. As of the beginning of 2018, there were about 2,500 units of such equipment, with approximately 300 organizations using it,” she informed.

The Parties to the Montreal Protocol adopted the Kigali amendment to phase down production and consumption of hydrofluorocarbons (HFCs) worldwide. According to scientific estimates, this move would avoid up to 0.5°C of global warming by the end of the century.

Belarus was one of the first to sign the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer. The law on the protection of the ozone layer came into force in Belarus in 2001.

**BelTA - Belarus News Agency, 16 September 2019**

## 9. Turkmenistan holds workshop on preventing illegal trade of ozone-depleting substances



**Ashgabat, Turkmenistan, 4 September** - The Ozone Center at the Turkmen Ministry of Agriculture and Environmental Protection held a seminar on measures to prevent illegal trade in ozone-depleting substances, Trend reports referring to the State Customs Service of Turkmenistan.

The event held in Turkmenistan’s Lebap Region was organized as part of a joint project of the ministry with the UN Industrial Development Organization and is in line with the plan for the phased reduction of hydrochlorofluorocarbons (HCFCs).

Aspects of fulfilling the country’s obligations under the Montreal Protocol, the Kigali Amendment and the Vienna Convention for the Protection of the Ozone Layer, as well as the legislative acts and regulations on the protection of the ozone layer put forward in Turkmenistan, were highlighted during the seminar.

Turkmenistan has ratified all international agreements in this area. At the end of last year, it was reported that 99.95 percent of the main ozone-depleting substances have been phased out in Turkmenistan since 1995. The R-22 remaining in controlled use is planned to be withdrawn by 2040.

The law On the Protection of the Ozone Layer was adopted in the country in 2009. Legislative documents were prepared for comprehensive control of import-export and consumption of ozone-depleting substances. They mostly consist of gases that actively contribute to global warming.

Experts note that the reduction in the use of such substances has led to a significant reduction in greenhouse gas emissions and, as a result, contributed to the containment of climate change processes.

**Trend News Agency, 4 September 2019, By: Huseyn Hasanov**

## 10. La moitié des réfrigérateurs usagés ne sont pas dirigés vers les centres agréés (Belgium)

L'organisme "Recupel" tire la sonnette d'alarme. Un appareil de réfrigération mal traité équivaut aux émissions de CO<sub>2</sub> générées par un trajet en voiture d'environ 7500 kilomètres ! Et selon les estimations effectuées par Recupel, plus de 220.000 réfrigérateurs échappent au contrôle des récupérateurs agréés. [...]

Aujourd'hui pourtant tous les vendeurs de réfrigérateurs et de congélateurs doivent en principe récupérer les anciens appareils, une "obligation de reprise" qui faute de contrôle permet de diriger une partie importante de ces appareils mis au rebut vers des réseaux parallèles. C'est là que surgissent les problèmes car les récupérateurs de métaux ne disposent pas des outils adéquats pour évacuer les liquides réfrigérants nocifs.

Pour éviter ces rejets, Recupel plaide désormais pour une "obligation de dépôt" complémentaire à la reprise. Ce qui imposerait de diriger les appareils usagés vers les centres agréés pour les déchets "électro", là où les techniques de recyclage de pointe permettent de récupérer jusqu'à 98% des matériaux contenus dans un réfrigérateur.

**La RTBF, 16 Septembre 2019, By: Patrick Michalle**



## 11. Recovery, recycling, regeneration, storage and destruction of ODSs used for fire protection sector in the Czech Republic

In the past years, the Czech Republic invested through the Ministry of Environment substantial funds and exerted considerable effort at mitigating negative impacts of unprofessionally handled regulated substances, the so-called halons, which are used in fire extinguishers.

This effort brought success, from increased public awareness on such substances handling to actual collection of unused fire extinguishers containing controlled substances from final users, or replacing the same with environmentally-friendly options, and their subsequent recycling and storage for further use or destruction if they cannot be reused.

Based on long-term experience in this area and while being aware of the controlled substances being used for the so-called critical uses and at the same time still being found, though to a limited extent, in fire protection devices nearing the end of their useful life, the Ministry of Environment of the



Types of controlled substances according to Annex 1 of Regulation (EC) No. 1005/2009 which are found in the fire extinguishers and fire protection systems in the Czech Republic

Name	Chemical formula
HALON 1211	CF <sub>2</sub> BrCl
HALON 1301	CF <sub>3</sub> Br
HALON 2402	CF <sub>2</sub> Br <sub>2</sub>
Tetrachloromethane	CCl <sub>4</sub>
Bromodifluoromethane	CHF <sub>2</sub> Br
HCFC 123 ( part of the Halotron I extinguishing agent)	C <sub>2</sub> HF <sub>3</sub> Cl <sub>3</sub>
Bromochloromethane	CH <sub>2</sub> BrCl
Bromoethane	C <sub>2</sub> H <sub>5</sub> Br

Czech Republic decided to further support their gathering, collection, recovery, storage, extraction, detection and recycling.

Incorrect handling of the controlled substances may, in view of their high ozone depletion potential, high global warming potential and long atmospheric lifetimes, contribute to irreversible damage to atmosphere.

The objective of the project of the Ministry of Environment is to prevent such damage by free collection of the controlled substances from end users by professionals. Such collected substances will be recycled and regenerated using technical equipment purchased as part of the project or delivered for professional liquidation.

All collected substances will thus be stored and then used in a manner preventing their unauthorized use or unprofessional handling, or destroyed.

**Czech Republic, Ministry of Environment**

## 12. Participation sought for survey on low-GWP refrigerants

*Share your experiences and training needs in a short online questionnaire prepared by the Real Alternatives 4 Life project.*

In order to provide a true picture of the use of alternative refrigerants and related training needs, the [Real Alternatives 4 LIFE project](#) has launched a short online questionnaire.

Industry stakeholders are invited to share their experiences and training needs related to the use of low-GWP alternative refrigerants. Click [here](#) to take part in the survey.

Moreover, the Real Alternatives 4 Life has launched a learning platform that offers a free e-learning programme composed of nine modules covering safety, efficiency, reliability and containment of low-GWP alternatives refrigerants such as CO<sub>2</sub>, ammonia and hydrocarbons.

Click [here](#) for more information and registration to the free e-learning programme.

Besides being co-financed under the [EU's LIFE programme](#) funding instrument for the environment and climate action, the [LIFE FRONT](#) and Real Alternatives 4 Life projects share the common goal of helping to remove barriers to the safe use of alternatives to high-GWP refrigerants.

While promoting environmental sustainability, the available alternatives to high-GWP refrigerants present risks such as flammability and high pressures. The EU Real Alternatives 4 LIFE project has long highlighted the need for specific preparation associated with the use of the natural fluids CO<sub>2</sub>, hydrocarbons and ammonia.

The Real Alternatives 4 Life project has set the objective from the outset to investigate the "real" alternatives to the most widespread refrigerant gases that cause damage to the environment and contribute to climate change.

**Hydrocarbons21, 18 September 2019, By: Pauline Bruge**



— Latin America and Caribbean —

### 13. Jamaica training for refrigeration technicians in use of non-ozone depleting substances

The National Ozone Unit at the National Environment and Planning Agency (NEPA) is working to have local technicians of cooling equipment trained and licensed to handle the alternative substances to be used in refrigeration.

Under the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, to which Jamaica is party, ozone-depleting substances such as chlorofluorocarbons (CFCs) used in air-conditioning and refrigeration have been phased out.

Hydrochlorofluorocarbons (HCFCs), used as alternatives, are being eliminated and HCFC substitutes, hydrofluorocarbons (HFCs), will be phased down for preferred natural refrigerants.

Addressing a recent JIS Think Tank, Project Manager in the National Ozone Unit, Vivian Blake, said that the United Nations Development Programme (UNDP) is helping Jamaica implement the first stage of its Phase-out Management Programme of HCFCs.

“We are examining what it is that is going to be necessary to put in place, the framework for the certification and licensing of our refrigeration and air-conditioning technicians, and that is work that is under way.

“We have to ensure that with each coming generation of alternatives, our technicians who do the servicing and installation of cooling equipment have to be trained, because there are, with these new generation of gasses, health and safety concerns,” he noted.

Already, Jamaica is ahead of the national target for the phase-out of HCFCs, with 55 metric tonnes of imports in 2018. The target was to reduce imports to 241 metric tonnes by 2025.

The new generation of preferred gasses includes natural refrigerants such as carbon dioxide, ammonia, and hydrocarbons such as propane and isobutane.

Some of these are already on the Jamaican market, and while they are not ozone-depleting, they could have toxicity and flammability properties.

“That is why you have to have trained individuals within the refrigeration/air-conditioning sector who do the installation and servicing of the equipment. There is always a risk in using chemicals, but these risks can be minimised with the due diligence that is applied in each and every case,” Mr. Blake said.

**The Jamaica Information Service, 16 September 2019, BY: Charnele Henry**



## North America

### 14. R22 Refrigerant is set to expire beginning in 2020, what to consider for the coming year



As we approach 2020, R22 (Freon) will be set to expire or use in the USA. Many facilities with outdated equipment won't be able to purchase R22 to replenish a leaky system. For many years R22 was the HVAC industry standard until manufacturers began switching over R410a. The R22 refrigerant has been phased out due to the negative effect it has on the ozone layer. The scientific community has known since the 1970's that Freon has a negative impact on the planet. The US Environmental Protection Agency has set the date of

January 1, 2020, for R22 to longer to be manufactured or imported in the US. This poses a problem for how this will impact your commercial HVAC system.

Beginning in 2020 it will very expensive and difficult to obtain R22. This means there are only a few choices on how system owners can deal with the issue. Now is the time to plan on the correct path to deal with the deadline.

#### **The Three Options to Address the Problem**

- The first option is to hold on to the current system and hope it doesn't breakdown anytime soon. If the unit has been well maintained and is good shape there is a possibility a unit using R22 could run for several months or even years. However, system failure during a heatwave or during busy install times could be catastrophic. Your facility could experience extended downtime while the system is being serviced or replaced.

- Secondly, retrofitting a unit to handle new and more efficient refrigerants could be an option, but this could also be costly. Retrofitting is the process of converting your system to handle different refrigerants. Finding someone willing and able to retrofit a system could be another obstacle. If the unit is leaking refrigerant it could be difficult to find a technician willing and able to perform the retrofit. Additionally, not every system is subject to retrofitting or cost-effective if the unit is in poor condition. Also, if you have a fairly new unit, retrofitting may void your warranty.

- Replacing the unit with a brand-new HVAC unit is by far the best option. Although replacing a system can be a huge endeavor as well as costly. There are currently new tax rules in effect as of January 1, 2018: 26 U.S. Code § 179, that will allow for the offsetting of the cost of the equipment and installation.

Additionally, you can plan and schedule the install and not wait until replacement becomes a crisis situation. An added bonus to HVAC replacement is the positive impact it will have on the environment.

**United CoolAir Corporation, August 2019, By: Matt Hanson**

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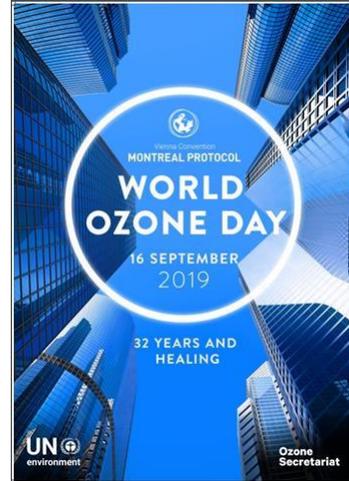
## Featured

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**OZONE SECRETARIAT**

## 32 Years and Healing World Ozone Day 2019



- [62<sup>nd</sup> Meeting of the Implementation Committee under the Non-Compliance Procedure of the Montreal Protocol](#), 29 June 2019, Bangkok, Thailand
- [41<sup>st</sup> Meeting of the Open-Ended Working Group of the Parties to the Montreal Protocol](#), 1 - 5 July 2019, Bangkok, Thailand
- [63<sup>rd</sup> Meeting of the Implementation Committee under the Non-Compliance Procedure of the Montreal Protocol](#), 2 November 2019, Rome, Italy
- [Bureau Meeting of the 30<sup>th</sup> Meeting of the Parties to the Montreal Protocol](#), 3 November 2019, Rome, Italy
- [31<sup>st</sup> Meeting of the Parties to the Montreal Protocol](#), 4 - 8 November 2019, Rome, Italy

Click [here](#) for Montreal Protocol upcoming Meetings Dates and Venues

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

## [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.



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

- [Executive Committee Primer – 2019](#) - An introduction to the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol

- [Report of the 83<sup>rd</sup> meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol](#), Montreal, Canada, 27-31 May 2019

- [83<sup>rd</sup> meeting of the Executive Committee](#)

- [82<sup>nd</sup> meeting of the Executive Committee](#)

[Learn more](#)



## OZONACTION



**World Ozone Day 2019** - OzonAction has a wide range of existing information and awareness-raising materials that could be used for your national celebrations. Please refer to the [Ozone Day webpage](#) in the [OzonAction website](#).

We would appreciate very much to receive information about your planned World Ozone Day activities or reports about what took place for posting on the OzonAction website. Please send this information to your Network's Montreal Protocol Coordinator or directly to Ms. [Jo Chona](#). Sharing such information is very encouraging, not only to us, but to the whole Montreal Protocol community.

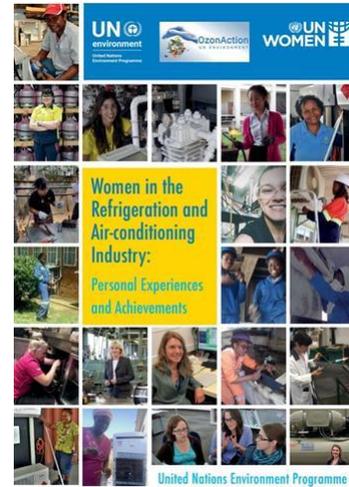
If you require assistance or any specific awareness material for your celebrations, please do not hesitate to contact [us](#) or your Network's Montreal Protocol Coordinator.

We thank you for your ongoing commitment to compliance with the Montreal Protocol and your excellent work in implementing your national strategies and projects.

**OzonAction CAP team wish you great success in this year's World Ozone Day celebration!**

**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.

[Download the publication](#)



Read/Download

**HS Codes for HFCs - Advice for countries in advance of the 2022 HS code update** - The Kigali Amendment requires Parties to put into place an import and export licensing system for hydrofluorocarbons (HFCs) by 1st January 2019 (or two years later if required).

To enable a licensing system to function effectively, it is important that the government is able to monitor and record imports and exports of each specific HFC individually.

Import and export statistics are normally collected by customs officers using the international product nomenclature system – the Harmonized Commodity Description and Coding System, or Harmonized System (HS).

However, until the HS is revised in 2022, all HFCs are contained in a single HS code which does not allow differentiation of the individual chemicals or of mixtures.

This document outlines a proactive interim approach, recommended by the World Customs Organization (WCO), to establish additional digits in the existing national HS codes to identify specific HFCs.

This practical document is suitable for outreach to the customs agencies, customs officers in the field, and others involved in controlling trade in HFCs.

Document prepared by the UN Environment Programme in cooperation with the World Customs Organization (WCO).

[Download the publication](#)

**Contact:** Dr. Ezra Clark, UNEP, OzonAction



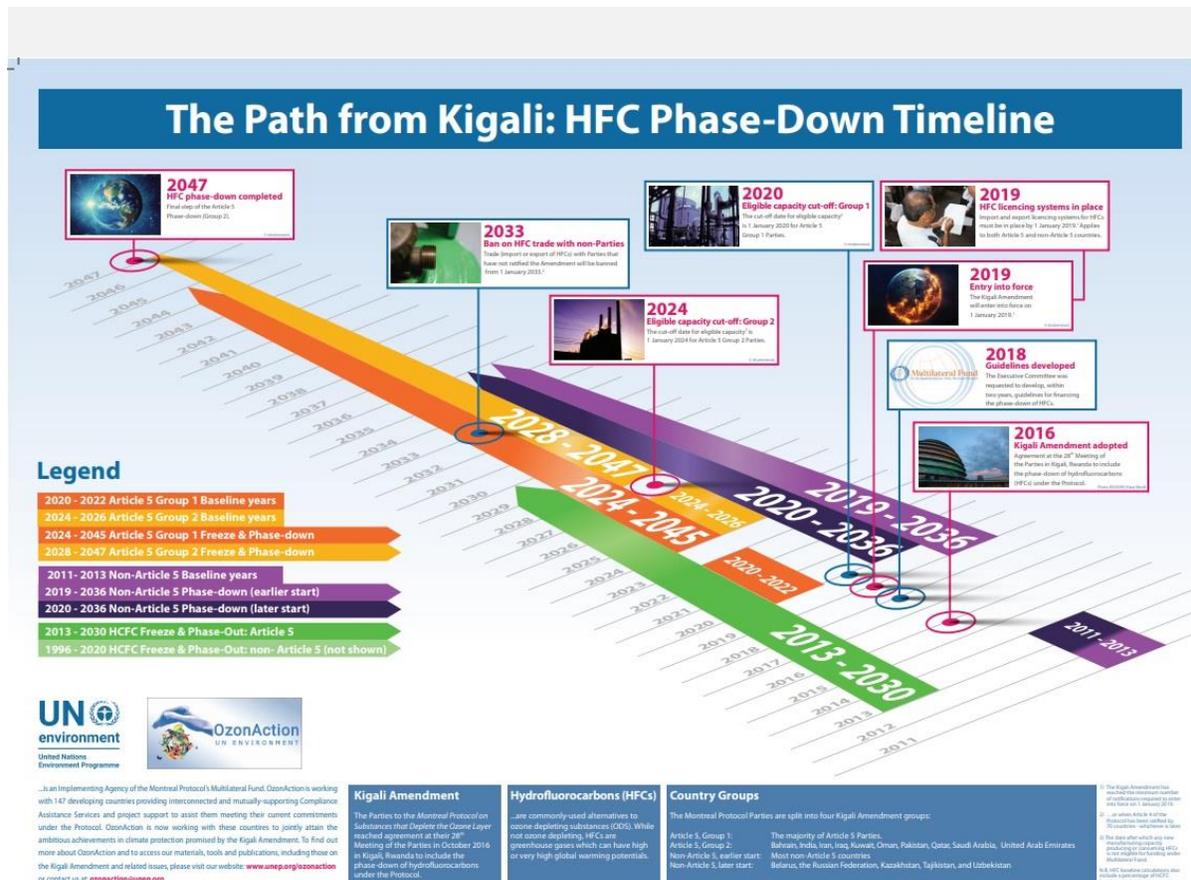
**Update on new refrigerants designations and safety classifications - factsheet** - The purpose of this fact sheet is to provide an update on ASHRAE standards for refrigerants and to introduce the new refrigerants that have been awarded an «R» number over the last few years and introduced into the international market.

The United Nations Environment Programme (UNEP), represented by the OzonAction-Law Division, and ASHRAE have a Memorandum of Understanding to establish technical cooperation and mutual coordination toward providing professional technical services to the refrigeration and air-conditioning stakeholders (governmental, private, and public). The organizations work to ensure that up-to-date related technical information and standards are properly introduced and promoted.

Download the [Factsheet](#)

Contact:

[W. Stephen Comstock](#), Manager of Business Development EMEA, ASHRAE  
[Ayman Eltalouny](#), Coordinator International Partnerships, UN Environment OzonAction



## The Path from Kigali: HFC Phase-Down Timeline

This timeline, produced by OzonAction, highlights key hydrofluorocarbons (HFCs) phase-down dates.

Click [here](#) to download the timeline



### Good Servicing: Flammable Refrigerants Quick Guide

This is the electronic and interactive version of the UN Environment OzonAction Quick Guide on Good Servicing Practices for Flammable Refrigerants. It offers easy reference to the key safety classification and technical properties of flammable refrigerants that are available in the market.

It also provides important safety guidance for the installation and servicing of room air-conditioners designed to use flammable refrigerants.

This interactive guide allows you to scroll and browse the text, jump to specific chapters or use the comprehensive dynamic index to locate specific keywords, figures and tables. The application also includes a refrigerant charge size calculator and a room size calculator for flammable refrigerants.

**Available for free on the [Google play store](#) (Apple version coming soon).**

**Search for “UNEP Quick guide” or use the QR code**



### Refrigerant Identifier Video Series

Guidance on how to identify refrigerants using a refrigerant identifier.

This new OzonAction video series consists of short instructional videos showing how to use and maintain a refrigerant identifier.

The videos provide useful guidance on safety and best practice, understanding the difference between different identifier units, testing procedures and identification of results.

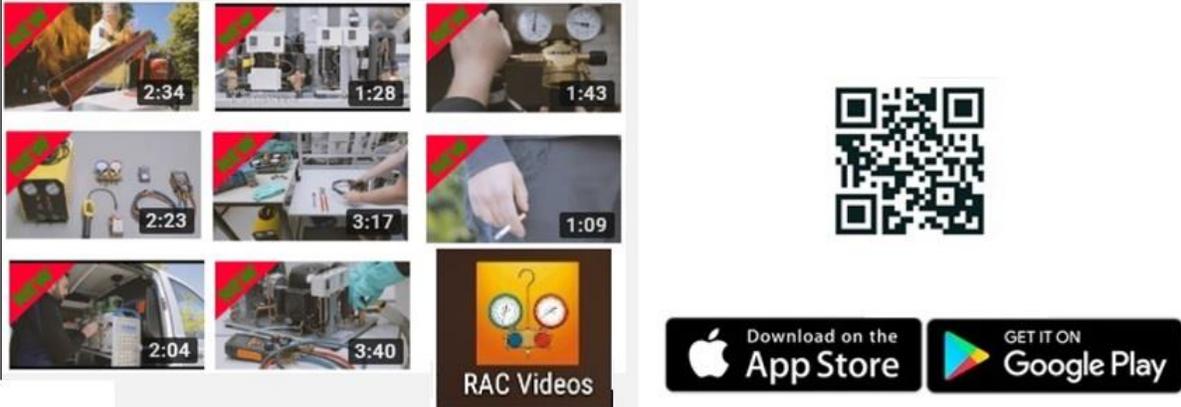
It is intended for use by Montreal Protocol National Ozone Officers, Customs and Enforcement Officers as well as technicians involved in the servicing and maintenance of refrigeration and air conditioning systems.

The application features 10 short instructional videos on the following topics:

- Refrigerant cylinder types
- Types of identifiers
- Getting to know your identifier
- Safety and precautions
- Testing a sample – vapour (gas)
- Testing a sample – liquid
- Results
- Faults & error messages
- Maintaining the unit
- Software updates

**Available for free on the Google play store (Apple version coming soon).**

**Search for “UNEP Refrigerant ID” or use the QR code**



RAC Videos

Download on the App Store

GET IT ON Google Play

### **New videos available on the OzonAction RAC video application**

A series of new videos has just been released on the Refrigeration and Air-conditioning Technician Video Series application, with a focus on working with flammable refrigerants ...

**50,000 downloads and counting!**

To install, search for “RAC Video” in the Google Playstore or Apple IOS store, or scan the QR code.



### **GWP-ODP Calculator Smartphone Application**

The application allow you to easily convert ODP, CO<sub>2</sub>-eq and metric quantities of refrigerants and other chemicals.

- Helps in understanding and reporting under the Montreal Protocol (and future commitments under the Kigali Amendment)
- The calculator will automatically perform the conversion between metric

tonnes, ODP tonnes and/or CO<sub>2</sub>-equivalent tonnes (or kg) and display the corresponding converted values

- The app includes both single component substances and refrigerant blends
- The components of a mixture and their relative proportions (metric, ODP, CO<sub>2</sub>-eq) are also displayed.

**Available for free from the Apple IOS store and Google PlayStore. Search for “GWP ODP CALC” in the Playstore to install!**

**Download it Now!**



### **OzonAction Smartphone Application WhatGas? Quickly search for the information you need**

- Chemical name
- Chemical formula
- Chemical type
- ASHRAE designation
- Trade names
- HS code
- CAS number
- UN number
- Montreal Protocol Annex and Control measures
- Ozone depleting potential (ODP)
- Global warming potential (GWP)
- Blend components
- Toxicity and flammability class
- Main uses

### **OzonAction Smartphone Application WhatGas?**

**Available for free in the Google Play and Apple IOS Store**

**Scan the QR code or search for “UNEP”, “OzonAction” or “WhatGas?”**



### **The Kigali Amendment to the Montreal Protocol - Opportunities and Next Steps - OzonAction Video**

The Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer reached agreement at their 28<sup>th</sup> Meeting of the Parties on 15 October 2016 in Kigali, Rwanda to phase down hydrofluorocarbons (HFCs). The UN Environment, OzonAction developed a video to find out from renowned international scientific, health, technical, financial and national experts about background and significance of this Kigali amendment.

The amendment presents many opportunities: improving the environment, refrigeration and air-conditioning systems and especially energy efficiency. It also presents new challenges. It is absolutely critical now for industry, governmental bodies and civil society to work together to adopt greener technologies in each country of the world and fight global warming.

[OzonAction YouTube](#) | See also: [United Nations Treaty Collection](#)



### **OzonAction Factsheets**





**UN Environment-ASHRAE Factsheet Update on New Refrigerants Designations and Safety Classifications**

OzonAction Series of 19 Fact Sheets related to the Kigali Amendment.

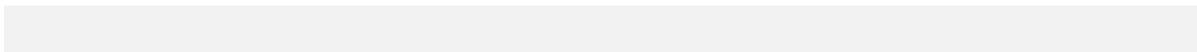
HS codes for HCFCs and certain other Ozone Depleting Substances ODS (post Kigali update).

**The Kigali Amendment to the Montreal Protocol: HFC Phase-down - The phase-down** of HFCs under the Montreal Protocol on Substances that Deplete the Ozone Layer has been under negotiation by the Parties since 2009 and the successful agreement on the Kigali Amendment at the 28<sup>th</sup> Meeting of the Parties on 15 October 2016 in Kigali, Rwanda to phase-down hydrofluorocarbons (HFCs) continues the historic legacy of the Montreal Protocol. This factsheet summarises and highlights the main elements of the Amendment of particular interest to countries operating under Article 5 of the Protocol (Article 5 Parties).

Refrigerant Blends: Calculating Global Warming Potentials (post-Kigali update).

Global Warming Potential (GWP) of Refrigerants: Why are Particular Values Used? (post-Kigali update).

Tools Commonly used by Refrigeration and Air-Conditioning Technicians.





### **OzonAction Multimedia Video Application: Refrigeration and Air-conditioning Technician Video Series - Over 50,000 downloads to date -**

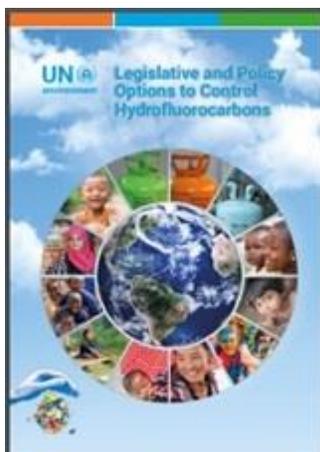
OzonAction has launched an exciting new application which hosts series of short instructional videos on techniques, safety and best practice for refrigeration and air-conditioning technicians. This application, consisting of short instructional videos on techniques, safety and best practice, serves as a complementary training tool for refrigeration and air-conditioning (RAC) sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training.

#### **New videos on flammable refrigerants just added!**

Please share with your RAC associations, technicians and other interested stakeholders...

OzonAction Multimedia Video Application: Refrigeration and Air-conditioning Technician Video Series  
Available in the [Android Play Store](#) and [Apple Store/iTunes](#).  
(Just search for "OzonAction", or scan this QR code)

## 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.



Latest issue of the Centro Studi Galileo - [Industria & Formazione](#). La rivista per il tecnico della refrigerazione e della climatizzazione, N. 6, 2019

## Events

### 2019

- [International Institute of Refrigeration](#) events
- [Refrigeration Week](#) - 16 - 20 September 2019. This year's event aims to prepare stakeholders for refrigerant change.

Please feel free to [share](#) with us relevant events to be featured.

## Reading

[Twenty Questions and Answers About the Ozone Layer](#), presents complex science in a straightforward manner. It complements the [2014 Scientific Assessment Report of Ozone Depletion](#) by WMO and the U.N. Environment Programme.

Lead Author:

Michaela I. Hegglin

Coauthors:

David W. Fahey, Mack McFarland, Stephen A. Montzka, Eric R. Nash



[Primer on Hydrofluorocarbons \(HFCs\)](#) - IGSD -11 January 2018

Summary:

Fast action under the Montreal Protocol can limit growth of hydrofluorocarbons (HFCs), prevent 100 to 200 billion tonnes of CO<sub>2</sub>-eq by 2050, and avoid up to 0.5°C of warming by 2100.

Lead authors:

Durwood Zaelke, Nathan Borgford-Parnell, and Stephen O. Andersen.

Contributing authors:

Kristin Campbell, Xiaopu Sun, Dennis Clare, Claire Phillips, Stela Herschmann, Yuzhe Peng Ling, Alex Milgroom, and Nancy J. Sherman.



The [IIR International Dictionary of Refrigeration](#) Available in 11 languages, the complete version of the International Institute of Refrigeration (IIR) International Dictionary of Refrigeration is now freely accessible online. The IIR International Dictionary of Refrigeration offers researchers, industrialist or administrations the practical resources required to produce content related to refrigeration technologies in multiple languages.

This online tool allows you to find definitions, in English and French, of scientific and technical terms, as well as identify terms in the language of your choice and find corresponding translations in the 10 other languages.

The dictionary provides term searches in Arabic, Chinese, Dutch, English, French, German, Italian, Japanese, Norwegian, Russian and Spanish.

Access the International Dictionary of Refrigeration on the [IIR website](#)



[Impact of Standards on Hydrocarbon Refrigerants in Europe – Market research report](#). The market research report was realised for the EU-funded [LIFE FRONT](#) project. Amongst the main result of the market research:

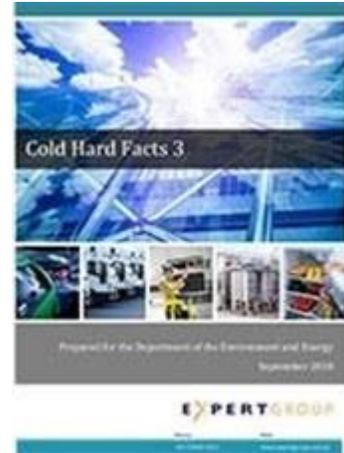
- Current charge limits set in standards both restrict and obstruct the development of hydrocarbon technology
- Over 50% survey respondents already work with hydrocarbons to some extent
- Most of those planning to start working with hydrocarbons in the future will do that in 2019-2020 timeframe - revision of standards could have a major impact on the scale of this shift
- Large proportion of respondents indicated they manufacture equipment using multiple refrigeration circuits - allowing higher hydrocarbon charge limits per single refrigeration circuit would have a profound impact on cost and availability of larger units.



[Tip of the Iceberg: Implications of Illegal CFC Production and Use](#). The Environmental Investigation Agency (EIA) recently released report urges Parties to the Montreal Protocol to address a number of remaining unanswered questions, in particular the absence of comprehensive data regarding the size of current banks of CFC-11 in PU foam and other products or equipment.



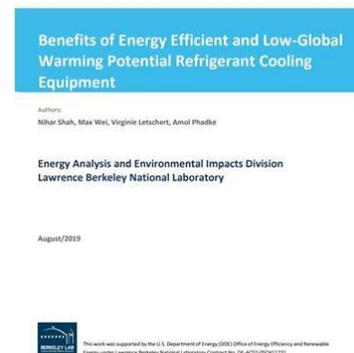
**Cold Hard Facts 3 - Review of the Refrigeration and Air Conditioning Industry in Australia** - The refrigeration and air conditioning industry is the largest user of synthetic greenhouse gases and ozone depleting substances in Australia. Cold Hard Facts 3 provides an economic and technological assessment of the refrigeration and air conditioning industry in Australia in 2016. The report includes an analysis of the size and economic value of the industry, the equipment and refrigerant gas bank, trends in gas imports and equipment, and direct and indirect emissions in this sector. [...] This study provides a broad view of the composition, size and value of the industry, and projections for its future. This will assist industry and policy makers with management of ozone depleting substances as they are phased out, and synthetic greenhouse gases, including hydrofluorocarbons (HFCs) which are being phased down from January 2018.



**Ozone-depleting substances 2019 Aggregated data reported by companies on the import, export, production, destruction, feedstock and process agent use of ozone-depleting substances in the European Union, 2006-2018** 1994-2019 - The 2019 edition of the European Environment Agency (EEA) report on ODS confirms that the EU has already achieved its goals on the phase-out of such substances under the Montreal Protocol. In particular, the report shows that in 2018, the consumption of ODS (an aggregated parameter that integrates imports, exports, production and destruction of ODS, except those for feedstock use) in the EU was negative (-1 505 metric tonnes), which means that more ODS were destroyed or exported than produced or imported. This was the case since 2010 with the exception of 2012. These negative values are the result of the phase-out according to Regulation (EC) No 1005/2009, which, in many aspects, goes further than the Montreal Protocol, in combination with rather high destruction rates and decreasing stocks. Companies in the EU have been consuming relatively small amounts of ODS under the Montreal Protocol.



**Benefits of Energy Efficient and Low-Global Warming Potential Refrigerant Cooling Equipment**  
 Authors: Nihar Shah, Max Wei, Virginie Letschert, Amol Phadke.  
 Energy Analysis and Environmental Impacts Division  
 Lawrence Berkeley National Laboratory  
 August/2019



# Miscellaneous



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

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

We are pleased to 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, OzonAction

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



## The International Institute of Refrigeration supports World Refrigeration Day -

As the only independent intergovernmental organisation in the field of refrigeration, the International Institute of Refrigeration (IIR) joins associations and companies worldwide to support the initiative of an official

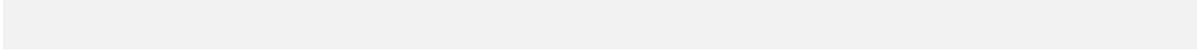
World Refrigeration Day on 26 June every year. The annual World Refrigeration Day, to be launched on 26 June 2019, aims to raise awareness among the wider public about the importance of refrigeration technologies in everyday life.

Refrigeration is essentially a question of temperature and, as such, it only seems natural to celebrate the field on the birthday of the pioneer at the origin of the international unit of temperature, Lord Kelvin (Sir William Thomson) – born 26 June 1824.

With increasing global stakes at hand, over the past years refrigeration has come to take a leading role at the

heart of international affairs.

The inauguration of a World Refrigeration Day would not only be an ideal way to recognise the many historical achievements of the industry, but also a means to anticipate and overcome together the challenges we face. ... Click [here](#) for more information.



**New International Journal of Refrigeration service for IIR members -**

Access the complete archives of the International Journal of Refrigeration (IJR) online. Designed with IIR members in mind, this new and practical electronic subscription gives members substantial advantages:

- Immediate and permanent access to the latest research and to IJR archive
- Access the latest articles as soon as they become available online.
- Browse, search and read each one of the nearly 4,500 papers since

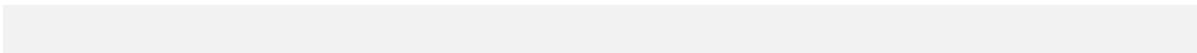
Volume 1, Issue 1.

- Unlimited access to seminal contributions to the field of refrigeration dating back to 1978.
- Keep up-to-date with subscriptions to customized e-alerts on New Volumes, Topics and saved Searches.

Enhanced content and functions

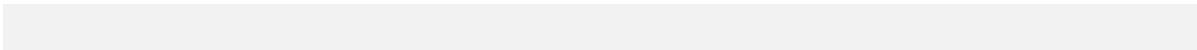
- Easily export references, citations and abstracts.
- Print, download or share articles with colleagues or peers.
- See which papers, published in Elsevier or elsewhere, have cited any selected article.
- Consult the research highlights overview of articles in volumes from 2012 onwards.

To access this new service, click "[activate my e-IJR subscription now](#)" and follow the instructions.



**International Observers - New AREA membership category** - Due to the significant worldwide interest in European legislative developments and the increase in competence of personnel who handle new refrigerants, AREA is pleased to introduce its brand new "International Observer" membership category. This provides a fantastic opportunity for non-European RACHP installer bodies the world, to benefit from the expertise and discussions

within Europe through access to AREA. Contact: [info@area-eur.be](mailto:info@area-eur.be)

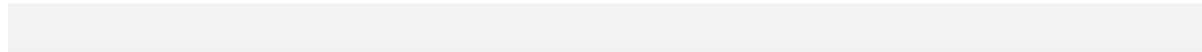




**OZONE HOLE: HOW WE SAVED THE PLANET** - New Documentary Tells the Remarkable Story of How Scientists Discovered the Deadly Hole in the Ozone – and the **Even More Remarkable Story of How the World’s Leaders Came Together to Fix It.**



**New program to scale up efficient, clean cooling in developing countries** - The World Bank announced today [24 April 2019] a new program to accelerate the uptake of sustainable cooling solutions, including air conditioning, refrigeration and cold chain in developing countries. The program will provide technical assistance to ensure that efficient cooling is included in new World Bank Group investment projects and mobilize further financing. Globally, demand for cooling is increasing, mainly driven by growing populations, urbanization and rising income levels in developing countries. Further exacerbating the issue, rising temperatures will increase demand for cooling appliances, which not only use large amounts of energy, but also leak refrigerants that contribute to global warming.

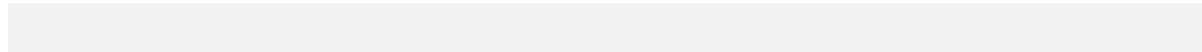


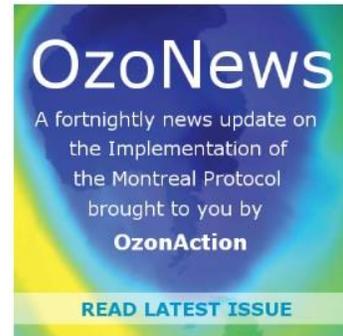
**Climate Action Summit - 23 September 2019**

Member states, local leadership, private sector, civil society leaders and youth have been responding to the **Secretary General's call for this summit to accelerate ambition and increase commitments to take action to address the climate crisis**, one year ahead of when the Paris Agreement comes into effect.



The United Nations Environment Programme is leading the **Nature Based Solutions to Climate Change track** and the NBS Coalition which received **150+ proposals** to bring to the summit.





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

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The United Nations Environment Programme (UNEP), Law Division, OzonAction provides OzoNews as a free service for internal, non-commercial use by members of the Montreal Protocol community. Since its inception in January 2000, the goal of OzoNews is to provide current news relating to ozone depletion and the implementation of the Montreal Protocol, to stimulate discussion and promote cooperation in support of compliance with the Montreal Protocol. With the exception of items written by UNEP and occasional contributions solicited from other organizations, the news is sourced from on-line newspapers, journals and websites.

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

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

Prepared by: Samira Korban-de Gobert, OzonAction

Reviewed by: Dr. Ezra Clark, OzonAction

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[samira.degobert@un.org](mailto:samira.degobert@un.org)



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