



OzoNews

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1. Emergence of ozone recovery evidenced by reduction in the occurrence of Antarctic ozone loss saturation

npj | Climate and Atmospheric Science

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Emergence of ozone recovery evidenced by reduction in the occurrence of Antarctic ozone loss saturation

J. Kuttippurath¹, P. Kumar¹, P. J. Nair¹ & P. C. Pandey¹

npj Climate and Atmospheric Science, Article number: 41 (2018) | [Download Citation](#)

Abstract

Industrial emissions of ozone depleting substances (ODSs) during the second half of the twentieth century have led to one of the most visible human impacts on the Earth: the Antarctic ozone hole. The ozone loss intensified in the 1980s and reached the level of saturation (i.e., complete loss of ozone) due to the high levels of ODSs in the atmosphere. Significant changes in the southern hemispheric climate have been observed in the past decades due to this unprecedented ozone loss. Although the most recent studies suggest healing in the Antarctic ozone hole, the status of ozone in the loss saturation layer (13–21 km) has not been discussed in detail. Here, a comprehensive analysis of vertical, spatial and temporal evolution of ozone loss saturation (ozone mixing ratio ≤ 0.1 ppmv) in the Antarctic vortex using high resolution measurements for the 1979–2017 period reveals that the loss saturation began in 1987 and continued to occur in all winters thereafter, except in the major warming winters of 1988 and 2002. However, our analysis shows a clear reduction in the frequency of occurrence of ozone loss saturation over the period 2001–2017 consistently throughout various datasets (e.g., ozonesonde and satellite measurements of ozone profiles and total columns), thereby revealing the emergence of an important milestone in ozone recovery.

Abstract

Industrial emissions of ozone depleting substances (ODSs) during the second half of the twentieth century have led to one of the most visible human impacts on the Earth: the Antarctic ozone hole. The ozone loss intensified in the 1980s and reached the level of saturation (i.e., complete loss of ozone) due to the high levels of ODSs in the atmosphere.

Significant changes in the southern hemispheric climate have been observed in the past decades due to this unprecedented ozone loss. Although the most recent studies suggest healing in the Antarctic ozone hole, the status of ozone in the loss saturation layer (~13–21 km) has not been discussed in detail.

Here, a comprehensive analysis of vertical, spatial and temporal evolution of ozone loss saturation (ozone mixing ratio ≤ 0.1 ppmv) in the Antarctic vortex using high resolution measurements for the 1979–2017 period reveals that the loss saturation began in 1987 and continued to occur in all winters thereafter, except in the major warming winters of 1988 and 2002.

However, our analysis shows a clear reduction in the frequency of occurrence of ozone loss saturation over the period 2001–2017 consistently throughout various datasets (e.g., ozonesonde and satellite measurements of ozone profiles and total columns), thereby revealing the emergence of an important milestone in ozone recovery.

Introduction

The ozone loss process in the stratosphere is relatively well understood, and much of the loss is driven by the chemical cycles involving chlorine and bromine compounds, whose abundance peaked around 2000 in the polar stratosphere.¹ With the abatement of atmospheric loading of ozone depleting substances (ODSs) due to the implementation of Montreal Protocol,² the extent of ozone loss is expected to have decreased since 2000.¹

Early signs of the rebound of Antarctic ozone have already been reported.^{3,4,5} However, one of the main difficulties in determining accurate trends in ozone in the southern polar stratosphere is the complete loss of ozone there. The saturation of ozone loss, i.e., the total or near-zero destruction of ozone in the lower stratospheric layers, mostly at 13–21 km, has reportedly begun in 1991,^{6,7,8} although there are references for the near-complete loss of ozone at some lower stratospheric altitudes in McMurdo observations in 1987.^{9,10} Nevertheless, those studies did not mention “saturation” of the ozone loss there.

Studies have shown that this loss saturation may hamper determining accurate trends, but has not been investigated in much detail.^{7,8} Both chemistry-climate and chemical transport modelling studies on the ozone loss and projection of ozone changes often struggle to simulate the features of loss saturation⁹ such as the altitude range of saturation and ozone values below 0.1 ppmv.^{11,12} Henceforth, precise information on the saturation of ozone loss in the Antarctic vortex would allow a better assessment of the evolution of ozone in that region towards its recovery detection.

In addition, although recent studies indicate a significant positive change and a healing in the Antarctic ozone hole, details of ozone change in the loss saturation altitudes in the polar vortex is not clearly known yet, albeit there are studies on ozone loss for individual or few years together.^{1,2,6,7,8,9,10}

This situation thus warrants a careful and detailed examination of ozone at these loss saturation altitudes to make a clear statement on ozone recovery and its robustness at this sensitive vertical region.

Here, we present, to our knowledge, the first detailed long-term (four decades) analysis of Antarctic ozone loss saturation in terms of its first occurrence, timing, spatial differences, vertical spread, inter-annual changes and temporal evolution using high-resolution ozonesondes and satellite measurements inside the vortex for the 1979–2017 period. [...]

Authors: J. Kuttippurath, P. Kumar, P. J. Nair & P. C. Pandey

Nature, 21 November 2018

2. Advancing nationally determined contributions (NDCs) through climate-friendly refrigeration and air conditioning: Guidance for policymakers



Advancing nationally determined contributions (NDCs) through climate-friendly refrigeration and air conditioning

Guidance for policymakers

Version 1.0

giz
On behalf of:
Federal Ministry
for the Environment, Nature Conservation,
Building and Nuclear Safety
of the Federal Republic of Germany

This guidance assists policymakers in designing national mitigation strategies for the refrigeration, air conditioning and foam (RAC&F) sector to meet the increasing ambition levels expected in revised NDCs. By aligning efforts taken under the two relevant international regimes, the UNFCCC and the Montreal Protocol, the RAC&F sector can make a significant contribution towards reaching the 2°C target, or even the 1.5°C target.

Introduction:

With the objective to hold the increase in global average temperature well below 2°C and the ambition to limit it to 1.5°C, parties to the United Nations Framework Convention on Climate Change (UNFCCC) agreed at the 21st Conference of the Parties (COP) in Paris in December 2015 to undertake and communicate more ambitious efforts to contribute to the global response to climate change. Parties are now asked to review and update their intended nationally determined contributions (INDCs) and submit them as nationally determined contributions (NDCs) until the global agreement officially starts in 2020.¹ At the same time, parties are advised to immediately assess economy-wide and sector-specific mitigation potential in order to comprehensively define ambition levels and engage in early mitigation action.

Population growth, urbanisation, an increasing middle class, changing lifestyles and rising ambient temperatures drive a growing demand for refrigeration, air conditioning and foam (RAC&F) products – a development that cannot be disregarded any longer. RAC&F applications are responsible for large amounts of CO₂ and hydrofluorocarbon (HFC) emissions – two greenhouse gases (GHG) reported under the UNFCCC. As the demand for cooling rises, the GHG emissions – resulting from both electricity consumption and the use of refrigerants and blowing agents with high global warming potential (GWP) – are also growing rapidly. Specifically HFCs have high GWPs of up to 4000 CO₂eq, which are these times increasingly used as substitutes to phase out hydrochlorofluorocarbons (HCFCs) – as ozone depleting substances (ODS) under the Montreal Protocol (MP).

At the 28th Meetings of the Parties (MOP) to the MP in October 2016 in Kigali, parties agreed to phase down HFC emissions over the next three decades, thereby building a fundamental pillar to achieving the ultimate goal set out in the Paris Agreement about a year earlier. According to an analysis by G. Velders et al (2016), the Kigali Amendment will avoid nearly 90 per cent of the temperature increase that HFCs could have caused.

The following guidance assists policymakers to design national mitigation strategies for their RAC&F sector to meet the increasing ambition levels expected in revised NDCs. By aligning efforts taken under the two relevant international regimes, the UNFCCC and the Montreal Protocol, the RAC&F sector can make a significant contribution towards reaching the 2°C target, or even better, the enhanced 1,5°C target.

¹ The Paris Agreement officially entered into force on 4th of November 2016.

Report ([English](#)) Report ([Spanish](#)) Infographic ([English](#)) Infographic ([French](#))

Contacts for further information: [Frauke Röser](#), [Marie-Jeanne Kurdziel](#)

NewClimate Institute, 23 November 2018

3. Conclusions of the "Technical report on energy efficiency in HFC-free supermarket refrigeration"

Eliminating high-GWP HFCs addresses only part of the battle for climate-friendly HVACR systems; energy usage must be considered simultaneously. As the largest energy consumer in a supermarket, the refrigeration and air-conditioning systems must be a primary target for energy efficiency measures.

Fortunately, the evidence from market leaders, case studies and an extensive literature review indicates that there are a variety of energy efficient HFC-free refrigeration technologies and no valid excuses why the commercial sector should not transition swiftly to such technologies.

There are energy efficient solutions available today for any type of application and store format, guaranteeing reliable operation, lower operation costs and proofing against future regulatory measures. Innovations such as parallel compression, ejectors, waterloop systems, optimised heat exchangers and others have made it possible to use energy efficient HFC-free systems in any climatic condition.

The possibility to integrate heating and airconditioning with the refrigeration system and harness the free rejected energy further increases the overall efficiency of stores.

Various energy efficient HFC-free commercial refrigeration options currently exist for different sizes of supermarkets and types of systems:

- Centralised systems utilising any form of CO₂ technology can achieve significant energy savings compared to traditional HFC technologies. The level of energy savings depends on the climatic conditions and the design of the system.
- HFC-free options for condensing units exist with CO₂ and to a lesser extent with hydrocarbons. According to case studies presented in this report, CO₂ condensing units have been reported to reach up to 27 per cent higher energy efficiency compared to their HFC counterparts, whereas HC-290 units have been reported to deliver up to 30 per cent higher energy efficiency. However, outdated refrigerant charge restrictions for hydrocarbons currently pose a barrier for a wider uptake of this type of condensing units in the market.
- According to most manufacturers higher energy efficiency is guaranteed from HC-290 plug-ins compared to their HFC counterparts. Most stated energy efficiency gains between 20-30 per cent, while a few indicated their HC-290 systems can be up to 40 per cent more energy efficient than HFC plug-ins. In addition, innovative waterloop solutions, designed to remove the heat generated from the plug-in units outside the store, have been developed and are being installed in the market, with companies reporting energy savings of up to 35 per cent. Switching refrigeration systems away from HFCs offers an ideal opportunity for supermarkets to simultaneously improve their energy efficiency.

Through careful planning and assessment of future proof decisions, supermarkets can now be designed and installed with both the climate and the bottom line in mind. An obvious example of this is full integration of heating and air-conditioning with refrigeration systems and utilising the free heat and free cooling to cover the needs otherwise requiring additional energy systems. Components, system and cabinet design, and control systems all play a vital role in the energy efficiency of a refrigeration system, including simple measures such as adding cabinet doors to reduce the refrigeration load of a supermarket by up to 40 per cent.

Furthermore, the addition of technologies such as parallel compression, ejectors, mechanical sub-cooling, and adiabatic/ evaporative cooling allow CO₂ systems to reach better energy performance than HFCs in high ambient climates.

Given the relatively long life of refrigeration systems, well-scheduled and structured implementation of both service and maintenance is the most cost-effective approach to ensure reliability and energy efficient operation of a refrigeration system (both new and existing). This will lead to significantly enhanced performance with small initial investments.

To achieve the most efficient performance, continuous monitoring and optimisation of the refrigeration system need to be conducted by trained engineers. To facilitate this work, a number of computational tools exist that can calculate important metrics such as energy costs, leakage rates, energy consumption and other useful indicators for the monitoring of refrigeration systems.

Read/download the full [report](#)



Report by: EIA and shecco who have partnered to work on an initiative funded by the Kigali Cooling Efficiency Program (KCEP) to bring about the consideration of energy efficiency requirements by members of the Consumer Goods Forum (CGF) as they roll out HFC-free commercial refrigeration. The two organisations have launched a “Technical report on energy efficiency in HFC-free supermarket refrigeration”, which should serve as an information source for end users looking for energy efficient HFC-free alternatives.

ISSUU, 20 November 2018



4. NEW OzonAction smartphone application: Good Servicing: Flammable Refrigerants Quick Guide

An interactive Quick Guide on Good Practices for Flammable Refrigerants.

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.

UN Environment, OzonAction, October 2018



5. NEW OzonAction smartphone application: 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.

Available for free on the Google play store (*Apple version coming soon*) Search for “UNEP Refrigerant ID” or use the QR code.

UN Environment, OzonAction, October 2018

6. Refrigeration and food security

Nature is wonderful: it provides us with the food and raw materials we need to eat and to live. But nature is impish: it yields an irregular production, depending on the season and the climate. In the past, abundance of food alternated with periods of scarcity. Thus, humans have always tried to preserve their food to ensure one of their vital needs: a regular supply of food.

Very early in history, our ancestors noticed that the cold made it possible to slow down the decaying of food products and to keep them as close as possible to their original state. Thus, from prehistory until the beginning of the 20th century, the natural cold, in the form of ice, was used to preserve some foods, especially animal products (meat, fish and dairy).

The first refrigeration machines were developed around 1830-1850.

Very quickly, the industrial developments were based on vapour compression cycles using the change of phase of a refrigerant.

Making use of these cycles has indeed proved to be the most efficient technique, providing temperatures required for food preservation. The refrigerants used at that time (diethylether, ethyl chloride, sulphur dioxide, among others) were produced by industry using basic chemistry. Those refrigerants were more or less efficient for the production of cold, but they were quite difficult to handle because of their toxicity and/or flammability.

The discovery of refrigerants belonging to the family of halogenated hydrocarbons in 1930, including chlorinated hydrocarbons (CFC, HCFC), enabled a tremendous development of artificial refrigeration.

Indeed, these new refrigerants had the advantage of being non-toxic, nonflammable and very efficient from a thermodynamic point of view. These properties allowed the development of refrigeration in industry, transport, and retail as well as in domestic applications, with the onset of household refrigerators in 1932.

Since then, the benefits of refrigeration have continued to be confirmed. It is acknowledged that refrigeration contributes significantly to the diversification of our food intake, to the reduction of food losses and to the improvement of the quality and safety of the food we eat. Thus, refrigeration definitely has a significant impact on our quality of life and on our living conditions, as shown by the extension of shelf life observed in recent decades.

Refrigeration and its applications in food preservation and conservation has played and will continue to play a major role in our societies. Refrigeration has to reconcile the three aspects defining the concept of sustainable development:

- The economic development pillar: the refrigeration industry supports more than 2 million jobs worldwide. Refrigeration is also essential for the development of many craft and industrial activities that are directly or indirectly related to the food chain.
- The social pillar: refrigeration contributes to a significant reduction in food losses, thus enabling healthy and diverse food products to be supplied to growing populations in crowded cities and rural areas.
- The environmental pillar: the refrigeration industry has the potential to have a negligible effect on climate change through the manufacture of low global warming and alternative technologies. This last point is probably the major challenge that will impact the future of refrigeration as we know it today, but which can be achieved through technology development and technologies for managing current refrigerants, supported by the 2016 Kigali Amendment to the Montreal Protocol. Indeed, the refrigeration technologies and the refrigerants developed since the 1930s have had a significant impact on our environment:
 - Chlorinated fluids (CFCs, HCFCs) are recognized as having a detrimental effect on the stratospheric ozone layer, and as such are prohibited from production and use by the Montreal Protocol. Thus, after the elimination of CFCs in 1998, the further production of the very effective refrigerant, HCFC-22, which is currently used in over 60% of industrial plants, has been prohibited in Europe since the end of 2014.
 - The fluorinated fluids (HFCs) used to replace CFCs and HCFCs have a high global warming potential and as such, are part of the list of greenhouse gases controlled by the Kyoto Protocol. The newly ratified Kigali Amendment to the Montreal Protocol will oversee the phase-down of the HFCs as of 2019.

But the energy consumption of refrigerating equipment working with these fluids is higher than those obtained with other refrigerants, and except with ammonia, hydrocarbons and possibly carbon dioxide. Unfortunately, the generalization of the use of these "natural" refrigerants cannot be proposed yet, due to their toxicity and/or flammability (or to their poor energy performances for carbon dioxide in hot countries).



But even if the food cold chain has a nonnegligible environmental impact it has to be developed. Indeed, it avoids food losses by extending the shelf life of food products, and permits safe and healthy food to the world's population. Therefore, refrigeration is indispensable for present and future food supply.

Author: Jacques Guilpart, President of section "Biology and Food technology", International Institute of Refrigeration
UN Environment, OzonAction, SCOOP#3, October 2018

Asia Pacific

7. OzonAction Partners with ISHRAE at India's First Refrigeration-Focused Expo

Gujarat, India, 24 November 2018 - REFCOLD 2018, India's first exposition focusing specifically on the refrigeration industry and the cold chain sector was organized by the Indian Society of Heating, Refrigeration & Air-Conditioning Engineers (ISHRAE). This major event, which was held in Gandhinagar, Gujarat on 22-24 November, provided a platform for all the relevant stakeholders in India's cold chain sector to share best practices and information on the latest technologies. REFCOLD 2018 also highlighted the importance and role of industries working in the cold chain to prevent food loss and waste in India. Mr. C. Subramanian, ISHRAE President, stated that "A sustainable and efficient cold chain is critical for farmers to receive the expected value of their produce, which would ultimately contribute immensely to the Government of India's goal of doubling farmers' income by 2022."

Reducing by half per capita global food waste at the retail and consumer levels, and reducing food losses along production and supply chains, including post-harvest losses by 2030, is a Sustainable Development Goal agreed by the world community. The expansion and improved performance of the refrigeration cold chain is critical to achieving this objective.

About 6,000 delegates visited REFCOLD 2018 with more than 150 exhibitors from the Indian and international refrigeration industry. There were several seminars organized that covered different aspects of the latest technology developments and innovative projects in the sector. Seminar topics included best practices in operations and maintenance of cold storages, advances in natural refrigerant technology, and the latest system designs and trends in sub-sector applications. REFCOLD 2018 also recognized the innovative achievements of the Indian refrigeration industry in various application areas.



Seizing on the opportunity this critical mass of India's refrigeration sector professionals being present in one spot, UN Environment Programme (UNEP) OzonAction partnered with ISHRAE, ASHRAE (American Society of Heating, Refrigeration & Air-Conditioning Engineers), the International Institute of Refrigeration (IIR) and the Global Food Chain Council (GFCCC) to organize a technical workshop on the Montreal Protocol on Substances that Deplete the Ozone Layer and the Cold Chain Sector in the margins of REFCOLD 2018 on 23 November.

About 200 industry delegates joined this event to discuss the global perspectives of the cold chain sector, its role in reducing food loss, and the technology trends driven by the Montreal Protocol, especially the recently-agreed Kigali Amendment. OzonAction also presented its experience in addressing the technology selection and phase-out challenges in marine vessels and the off-shore fisheries sectors.

There were also perspectives from Indian industry on the uptake of natural refrigerant-based technology in cold storage applications. The workshop highlighted the need to further outreach to the cold chain sector to better integrate with the ongoing Montreal Protocol implementation activities in the country.

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[Shaofeng Hu](#), Montreal Protocol Coordinator, South Asia and South-East Asia and Pacific, UN Environment Programme, OzonAction

8. European Union to join hands with India for the growth of sustainable technologies



In a joint communication, the EU has highlighted focus areas where it will partner with India to tackle domestic and global issues.

The European Union (EU) has issued a [joint communication](#) to the European Parliament and the Council through which the EU aims to reinforce EU-India strategic partnership, build a strong partnership for sustainable modernization, join forces to consolidate the rules-based global order, based on multilateralism with the UN and the WTO at its core, develop a shared approach at the multilateral level to address global challenges and seek common responses to security threats and regional issues.

In the paper, the EU recognizes that India's energy mix is currently dominated by coal (50 percent of primary energy consumption), however, the country has started implementing one of the world's largest clean energy transition programmes using its renewable energy potential. The EU believes that through the cooperation with India they can help to deliver reliable, sustainable and affordable energy systems, while at the same time contributing to the growth of the EU's energy technologies sector. [...]

Among the issues to be tackled:

[...] - Step-up coordination with India at multilateral level to strengthen global action on climate change, including the implementation of the Montreal Protocol, on the environment and clean energy, supported by enhanced cooperation in international fora on research and innovation.

- Support the implementation of the Paris Agreement, share knowledge on modelling and the development of low emissions scenarios to inform mid-century low greenhouse gas emission development strategies, as well as on climate change adaptation.

- Work together in addressing major environment challenges, stepping up the implementation of existing biodiversity targets and developing an ambitious new global biodiversity framework for adoption in 2020, while maximising links with climate change policies. [...]

MERCOM India, 26 November 2018, By: Shaurya Bajaj

9. EU countries urged to tackle illegal HFC trade



Policy experts at ATMO Europe identified the illegal trade in HFCs and obsolete safety standards as key hurdles for wider uptake of natural refrigerants.

Combatting illegal imports of hydrofluorocarbons (HFCs) and revising safety standards for flammable refrigerants to allow wider use of hydrocarbons remain crucial to achieving the HFC phasedown taking place under the EU F-Gas Regulation, heard participants in the ATMOsphere Europe 2018 conference yesterday.

“Tackling illegal imports of HFCs remains a priority: the EU F-Gas Regulation applies in all member states,” Bente Tranholm-Schwarz from the European Commission told the event, held at Lago di Garda, Italy from 19-21 November.

“Member states are already making a huge effort [to tackle] illegal trade,” Tranholm-Schwarz said, calling on national governments to keep up the pressure in this regard.

“It’s essential to fight against illegal imports of bulk HFC gases and equipment. Our system will only work if regulation is tight. We’re trying to help EU member states to enforce the regulation by exchanging information and training customs officers,” said Tranholm-Schwarz, who is deputy head of unit at the European Commission’s Directorate-General for Climate Action.

The Commission official said the EU executive was working on an automatic customs control system to monitor HFC trade within the European Union more effectively – a so-called ‘Single Window’ system.

Safety standards for flammable refrigerants

Focusing on the Italian market, Federica Moricci from the Italian National Institute for Environmental Protection & Research (ISPRA) pointed out that “flammability has been a major obstacle to the uptake of hydrocarbons in Italy”.

“Our classification system only rates refrigerants as flammable or non-flammable,” Moricci added.

“Another problem is environmental protection – schools and other public areas cannot use toxic substances without conducting a risk assessment. For flammable substances, local fire brigades can veto their use – that’s another obstacle,” she said.

Davide Sabbadin from Italian NGO Legambiente said Italian Ministerial Decrees that were currently restricting flammable refrigerants in public buildings could be revised.

Sabbadin also expressed fear that hydrocarbons could be disadvantaged in the standards debate. “I think there is a fox in the hen yard,”

“I’d urge the relevant trade associations to make their voices heard in standards discussions. Sometimes it feels like there is a fox in the hen’s yard when it comes to flammability – and the right voices aren’t around the table in the discussion on safety rules,” said Sabbadin, hinting at the impact of the HFO lobby.

Sabbadin called for financial support to be put in place to support the transition to natural refrigerant-based technologies. “We need incentives to promote wider uptake of natural refrigerants. Let’s shape green finance to support the change on the basis of improved efficiency,” he added. [...]

Hydrocarbons21, 21 Novemebr 2018, By: Marie Battesti

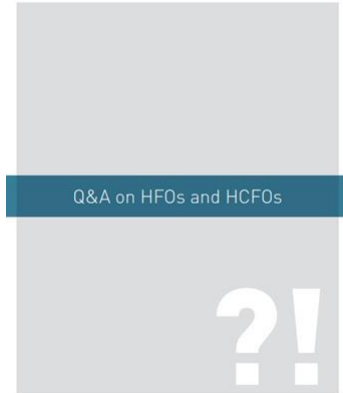
10. Q&A on HFOs and HCFOs



A Questions&Answers leaflet on the new low GWP HFO and HCFO refrigerants launched by The European Partnership for Energy and the Environment (EPEE).

What are HFOs? What are halo-olefins? What is the difference between HFOs and HCFOs? How are HFOs different from HFCs? What is the impact of HFOs on environment and safety? are some of the questions tackled in this free-to-download [leaflet](#).

The European Partnership for Energy and the Environment (EPEE), November 2018



11. Excerpt from Michael Gove speech on " UK Climate Change Projections"

[...] The UK has also been at the forefront of international efforts to control F-gases, a greenhouse gas found in some refrigeration and heating appliances. In 2016, we supported the Kigali amendment to the Montreal Protocol, which will introduce controls on the use of hydrofluorocarbons, a type of F-gas, from the start of next year. Estimates suggest this could avoid up to 0.5 degrees of warming by the end of the century.

However, as countries develop economically, the growth of air conditioning is a major challenge for reducing emissions. So, as well as taking action domestically to implement the amendment, we're supporting higher ambition internationally by making available an additional voluntary contribution of \$2m to incentivise energy efficiency improvements alongside reductions in hydrofluorocarbons

Conclusion

Collectively, collaboratively, we have the potential to protect and enhance our environment.

The answers lie in support for greater scientific investment and innovation. [...]

Gov.UK, Department for Environment, Food & Rural Affairs, 26 November 2018



12. Les députés adoptent une taxe sur les gaz réfrigérants HFC (France)



En séance publique, les députés ont adopté, le 16 novembre, un amendement porté par le groupe LREM, qui crée, à partir du 1er janvier 2021 une taxe sur les gaz réfrigérants contenant des hydrofluorocarbures (HFC). Cet amendement a été approuvé, lors de l'examen en première lecture du projet de loi de finances (PLF) pour 2019.

Pour rappel, le 3 octobre dernier, les députés de la commission du développement durable avaient validé cette taxe. Puis, le 10 octobre, les députés de la commission des finances l'avaient rejeté du texte.

Cette taxe des HFC refait finalement surface dans la loi de finances, "afin de mettre en place un signal-prix significatif pour orienter les investissements et les professionnels vers des solutions et des équipements plus

respectueux de l'environnement", soulignent les députés LREM dans leur amendement. Les gaz HFC sont à l'origine d'un peu plus de 5 % des émissions de gaz à effet de serre de la France.

L'amendement crée un nouvel article dans le code général des impôts afin de mettre en place une taxation, à compter de 2021, des premières livraisons ou premières utilisations, en France de ces gaz. Des exonérations sont prévues "au bénéfice des exportations et de certains usages (usages médicaux et certains usages industriels) afin de ne pas pénaliser la compétitivité des entreprises nationales, de tenir compte de l'absence de disponibilité ou du coût des solutions de substitution et préserver le pouvoir d'achat des utilisateurs des inhalateurs doseurs et l'équilibre financier de la sécurité sociale", ajoutent les députés.

Le taux de la taxe est fixé progressivement à 15 euros par tonne équivalent CO₂ (€/teqCO₂) en 2021, 18 €/teqCO₂ en 2022, 22 €/teqCO₂ en 2023, 26 €/teqCO₂ en 2024 et 30 €/teqCO₂ à compter de 2025.

Conformément au protocole de Montréal, à compter de janvier 2019, l'utilisation des gaz réfrigérants HFC sera progressivement réduite, au niveau mondial, pour limiter les émissions de GES dans l'atmosphère.

ActuEnvironnement, 19 novembre 2018, par: Rachida Boughriet

13. European Commission opened public consultations on energy labelling for refrigerating appliances with a direct sales function



The European Commission published a [draft delegated regulation](#) on Energy labelling for refrigerating appliances with a direct sales function.

Now, it is time for the industry and other stakeholders to participate in these open consultations period, which is available for 4 weeks, starting from 19 November 2018 until 17 December 2018.

The feedback will be taken into account for finalising this initiative. You can find a draft regulation together with the annex [here](#).

Federation of European Heating, Ventilation and Air Conditioning Associations (REHVA), November 2018

North America

14. EPA Settlements with Companies Across New England Improve Compliance to Help Prevent Chemical Accidents



BOSTON – Today [21 November 2018], the U.S. Environmental Protection Agency (EPA) announced seven settlements with companies in four New England states for alleged violations of chemical accident prevention and reporting laws. All the cases address the safe use of anhydrous ammonia in refrigeration and cooling units. Collectively, the seven companies have spent more than \$750,000 to comply with the laws and will pay more than \$580,000 in penalties to settle EPA's claims of alleged violations.

"These settlements reflect EPA's commitment to protect New Englanders from exposures to hazardous chemicals in the places they live, play and work," said EPA New England Regional Administrator Alexandra Dunn. "These agreements will improve compliance with important laws that help protect communities and provide critical resources for local emergency responders and communities."

Anhydrous ammonia is an efficient but toxic refrigerant. EPA is working to prevent ammonia releases from industrial refrigeration systems by helping companies comply, enforcing violations of chemical accident prevention and reporting laws, and hosting workshops to help emergency responders safely address ammonia leaks.

Anhydrous ammonia is used at a variety of businesses, such as cold storage warehouses, food processing, dairies, ice-makers, and skating rinks. It does not deplete the ozone layer as some other refrigerants do, but ammonia has some dangerous properties and must be handled with care. The chemical is highly corrosive, and inhaling ammonia gas can be fatal. It is also flammable at certain concentrations in the air, which is one reason why refrigeration machinery rooms must have proper ventilation. [...]

The companies all cooperated with EPA's New England regional office. Two of these settlements were with companies that EPA inspected after ammonia releases occurred, and five cases were undertaken to prevent such releases.

In 2017 and 2018, EPA co-sponsored ammonia safety trainings in all six New England states for about 300 company employees and emergency responders. These trainings included information about industry standards of care for preventing ammonia release and safe responses to any releases that do occur.

These settlements are part of an EPA National Compliance Initiative to reduce risk to human health and the environment by preventing chemical accidents. [Read more](#) about this Initiative.

The United States Environmental Protection Agency (US EPA), 21 November 2018, By: John Senn

15. Get your free EPA 608: 2019 Refrigerant Compliance checklist & guidelines



With revisions of the EPA Refrigerant Recycling and Emissions Reduction Program coming into effect in January 2019, it's important to understand what's required. Your free EPA 608 refrigerant compliance checklist and guidelines will help you on your way- which outlines the key requirements for equipment owners within the food retail sector.

Evolving compliance

Compliance with evolving legislation can be demanding while also ensuring product quality and the safety of colleagues and customers, reducing operating expense and improving margins, while striving for 24/7/365 equipment uptime. That's why we've summarized the 2019 regulation changes in a handy checklist for you- so you can focus on your operation while we focus on helping you reduce your refrigerant emissions.

The EPA Refrigerant Recycling & Emissions Reduction Program defines the following items:

1. Robust record keeping
2. Leak rate calculations
3. Equipment leak thresholds
4. Leak repair time frames
5. Leak inspection requirements
6. Retrofit and retirement timescales
7. Chronically leaking appliance reporting

Developed by Bacharach to provide guidance and support for each of these items, giving a clear road-map for EPA section 608 refrigerant compliance.

Submit this [form](#) to Download Free Refrigerant Management Compliance Checklist.

Bacharach, November 2018

16. Regional district to accept fridges and freezers for free



The Fraser-Fort George Regional District will be taking in old fridges, freezers and any other major appliances containing ozone-depleting substances at no charge starting in January.

It means the current charge of \$22.50 per unit will be waived with the Major Appliance Recycling Roundtable, an agency operating on behalf producers, covering the handling costs under a one-year pilot program.

FFGRD waste diversion program leader Laura Zapotichny said over 1,500 units were accepted at the Foothills landfill last year and there was an "overwhelming response" when the items were accepted for free during a roundup in conjunction with the Junk in the Trunk event in September.

"Based on what happened a couple short months ago with one round up event, I'm really hopeful that people will come and bring us back these appliances now at no charge because everything is being taken care of by this stewardship program."

The program will apply to much more than fridges and freezers. Zapotichny recited off an extensive list of items containing refrigerants and other gases harmful to the planet's ozone layer: wine coolers, air conditioners, dehumidifiers, washers, dryers, range hoods, ranges, built-in ovens, surface cooking units, dishwashers, food waste disposal units, trash compacters.

"The regional district has accepted most of those products already for no charge as most of our facilities have a metal-recycling bin," she added. "The bonus in signing on with MARR is that now they cover the cost of recovering the ozone-depleting substance - the freon - out of the chiller unit in it."

The FFGRD will launch an information campaign through its website and local media when the program starts up. "We're trying to hit all mediums so that people are aware," Zapotichny said.

Recycling and Environmental Action Planning Society executive director Terri McClymont welcomed the move. She also noted the strong response at Junk in the Trunk and added she hopes it will put a dent in illegal dumping. [...]

Prince George Citizen, 20 November 2018, By: Mark Nielsen

Featured



OZONE SECRETARIAT



OzoneHeroes is the 2018 Gold Winner in the "Communication & Marketing Campaign" category of the Hermes Creative Awards.

- [61st Meeting of the Implementation Committee under the Non-Compliance Procedure of the Montreal Protocol](#), Quito (Centro de Convenciones QUORUM, Cumbaya), Ecuador | 3rd Nov 2018
- [Bureau Meeting of the Twenty-Ninth Meeting of the Parties to the Montreal Protocol](#), Quito (Centro de Convenciones QUORUM, Cumbaya), Ecuador | 4th Nov 2018
- [30th Meeting of the Parties to the Montreal Protocol](#), Quito (Centro de Convenciones QUORUM, Cumbaya), Ecuador | 5 - 9 Nov 2018

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

- [40th Meeting of the Open-ended Working Group of the Parties to the Montreal Protocol](#), 11-14 July 2018, Vienna, Austria

The documents for the forthcoming 40th meeting of the Open-ended Working Group of the Parties to the Montreal Protocol (11 to 14 July 2018, Vienna), and the associated workshop on energy efficiency opportunities while phasing-down hydrofluorocarbons (9 and 10 July 2018) are available on the meeting portal and mobile app.

Read/download OEWG40 [Summary](#)
[OEWG-40 Daily coverage by IISD](#)

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

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

- [82nd meeting of the Executive Committee](#), 3-7 December 2018, Montreal, Canada
- [Adjusted Prorated 2018-2020 business plan of the Multilateral Fund \(16 August 2018\)](#)
- [81st meeting of the Executive Committee](#), Montreal, Canada, 18 to 22 June 2018
- [Reports of projects demonstrating alternatives to HCFC technologies \(updated 81st meeting\)](#)
- [2018 Executive Committee Primer](#)

[Learn more](#)



OZONACTION

Find out about 2018 World Ozone Day Country Activities

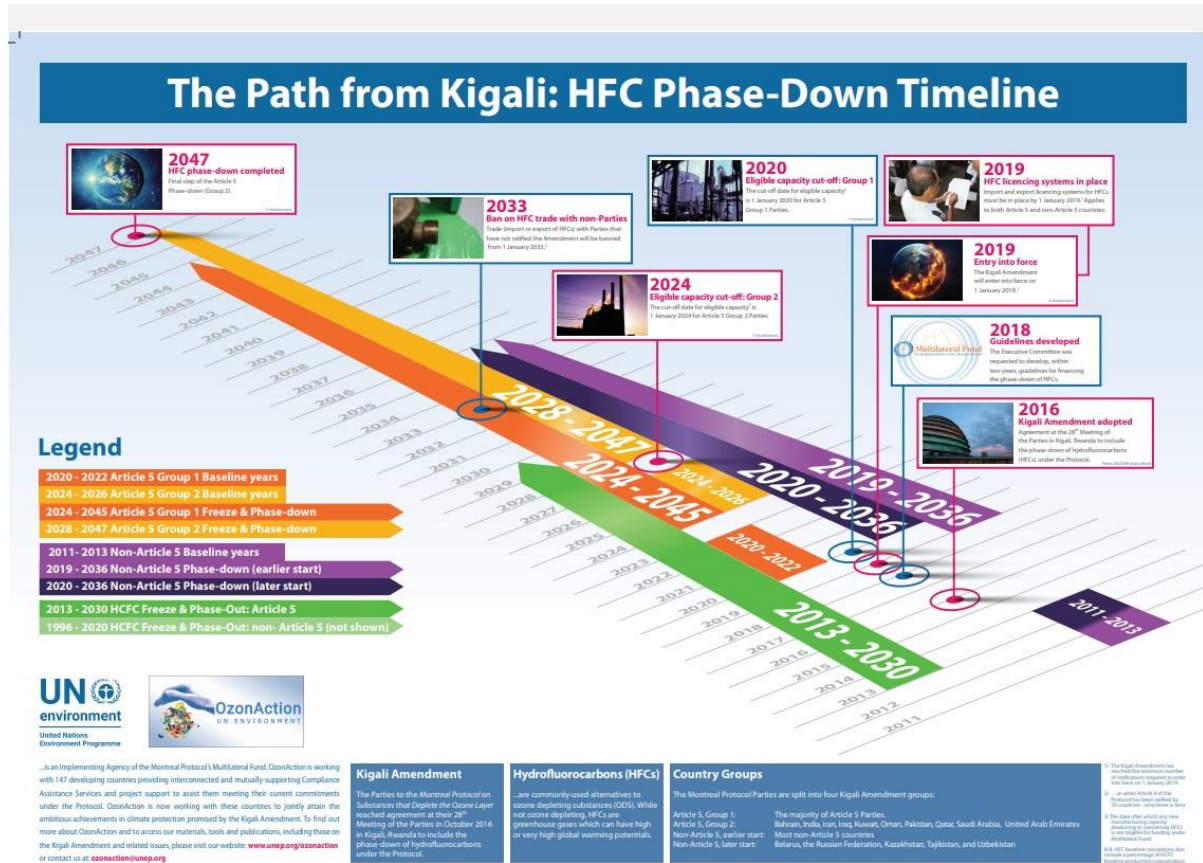


Ozone Day activities on 16 September - OzonAction is keen on highlighting your country's activities on the occasion of the 2018 World Ozone Day celebrations.

Find out about 2018 World Ozone Day Country Activities.

Take this opportunity to share your innovative and inspiring events with the world!

Please send us the related information/photos to this email



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



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, CO₂-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 CO₂-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,

CO₂-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

- | | |
|--|--|
| <ul style="list-style-type: none"> • Chemical name • Chemical formula • Chemical type • ASHRAE designation • Trade names • HS code • CAS number | <ul style="list-style-type: none"> • 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 28th 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



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

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

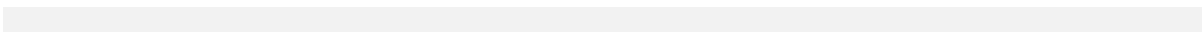
HS codes for HCFCs and certain other Ozone Depleting Substances ODS (post Kigali update).

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 28th Meeting of the Parties on 15 October 2016 in Kigali, Rwanda to phase-down hydrofluoro-carbons (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 download 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

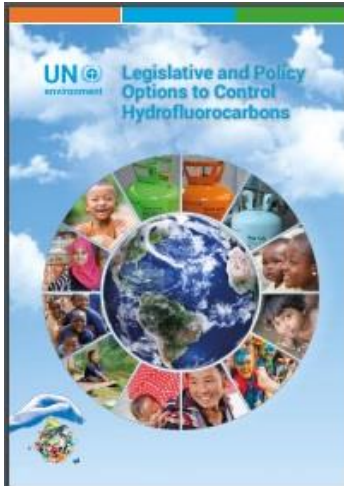
Available in the [Android Play Store](#) and [Apple Store/iTunes](#).
(Just search for "OzonAction", or scan this QR code)

Publications



"The Dawn of a New Refrigeration Era - The Kigali Amendment for a Brighter Future" The New International Industria&Formazione Special Issue 2018-2019 was launched on Tuesday 16 October in Chillventa. The seventh edition of this renowned international publication, edited in cooperation among Centro Studi Galileo, United Nations Environment and the International Institute of Refrigeration after months of tight joint action, will be also presented in a world premiere at the 30th Meeting of the Parties to the Montreal Protocol (MOP-30), 5-9 November 2018, Quito, Ecuador.

Request your free copy by filling out this [form](#)



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.

Events

2019

- **Natural Refrigerant Seminar & Live CO₂ Demo**, 10 January 2019, Register for this free seminar for an overview of natural refrigerant applications in supermarkets, and why they are considered a "future-proof" alternative to HFC refrigerants...

Call for abstracts - 15th Cryogenics 2019 Conference, 7-11 April 2019, Prague, Czech Republic

- **8th Conference on Ammonia and CO₂ Refrigeration Technologies**, 11-13 April 2019, Ohrid, Macedonia (FYROM)

- **25th IIR International Congress of Refrigeration** - 24-30 August 2019, Montreal, Canada

Click [here](#) for more information / [International Institute of Refrigeration](#)

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 CO₂-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](#)

Letter to the Editor

Refrigerants: There is still no vision for sustainable solutions

Risto Ciconkov

Refrigerants: There is still no vision for sustainable solutions

by Risto Ciconkov

Letter to the Editor, International Journal of Refrigeration

Abstract and highlights

Optimization, monitoring, and maintenance of cooling technology **KIGALI**


This Knowledge Brief from the Kigali Cooling Efficiency Program, outlines the need for maintaining and servicing of cooling technology. It estimates that better optimization, monitoring, and maintenance of cooling equipment the potential to save 30Gt of CO₂ emissions by 2050.

THE NEED FOR COOLING EFFICIENCY
 Cooling is essential to health, prosperity and the environment, underpinning many of the Sustainable Development Goals. The currently most cooling is energy intensive and highly polluting. Continued cooling expansion, to meet an urgent need to not only cut pollution from existing cooling but to ensure future cooling needs are met sustainably.

COOLING ACCOUNTS FOR ~1% OF GREENHOUSE
 Use of cooling technologies causes substantial global GHG emissions of between 3.8¹ and 4.1² GtCO₂e/a (17% global emissions). The International Institute of Refrigeration has estimated that cooling consumes 17.2% of global electricity (3,500 TWh/a based on 2012 consumption), indirect emissions from electricity to power cooling technologies causes 85% of cooling emissions³. The impact of global GHG emissions from cooling equipment is projected to grow between now and 2050 as developing nations gain access to energy and new technologies. It is estimated that improving the efficiency of cooling equipment between now and 2050 can avoid the emission of approximately 30Gt CO₂e.

OPTIMIZATION, MONITORING, & MAINTENANCE CAN REDUCE TOTAL COOLING EMISSIONS BY 15%
 Neglecting the optimization, monitoring, and maintenance of cooling equipment results in increased energy use, lower cooling performance, and shorter equipment life. Effective optimization,

monitoring, and maintenance of cooling equipment could deliver substantial electricity savings of up to 20% (50 TWh) annually. Equipment that has not been maintained is being thrown away to emissions savings of up to 15Gt CO₂e/a.



CARSON TEST
 The Carson Test is the International Institute of Refrigeration's standard for measuring the performance of cooling equipment.

BASE
 The International Institute of Refrigeration's program for the development of the Kigali Cooling Efficiency Program.

“Optimization, monitoring, and maintenance of cooling technology” outlines the need for maintaining and servicing of cooling technology. It estimates that better optimization, monitoring, and maintenance of cooling equipment the potential to save 30Gt of CO₂ emissions by 2050.

Cooling as a Service (CaaS) **KIGALI**

This brief presents a new approach to cooling – Cooling as a Service. This approach can benefit companies, governments and society at large and is based on the servitization concept which is rapidly penetrating other marketplaces.

WHAT IS CaaS?
 The standard business model of delivering cooling typically involves the manufacturer, sale, use, and disposal of equipment. Higher production volumes generally require more sales and more profit. As a result, manufacturers can lack a strong incentive to quickly focus on reducing the energy and resource use of cooling products. Alternative business models are possible – and can generate much more energy and resource efficient technologies.

CaaS is a paid service involves and customers paying for the cooling they receive, rather than the physical product or subscription that delivers the cooling. Elements of the CaaS model include direct cooling, where customers do not own the cooling technology, and pay per generation (PPG) models, where a technology provider installs and maintains the cooling equipment, and receives cash through periodic payments made by the customer. These payments are fixed cost per unit for the cooling service delivered (for example, dollars per tonne of refrigeration, or cubic metres of cooled air), and are based on actual usage. The payment is not dependent on the energy, in kWh or tCO₂ needed, but agreed in advance as a function of actual usage. This makes it easier and more transparent for the client, in a broader sense customers may also view some CaaS models as a form of CaaS as they pay for regular service of on-going service payments and avoid the upfront capital costs of cooling equipment.

KEY CaaS BENEFITS
 As the global cools, the anticipated reduction of demand for cooling in developing countries become more pronounced, and if substantial and planetary warming increases will lead to a rapid escalation of energy and resource use from cooling. The 8.6 projects that global annual energy use from space conditioning alone will triple to amount to 4,200 TWh in 2050. Global business are still \$100 billion in 2018. There is an urgent need to reduce the energy intensity and carbon pollution from cooling, and to ensure efficient cooling systems are affordable to all those who need them.



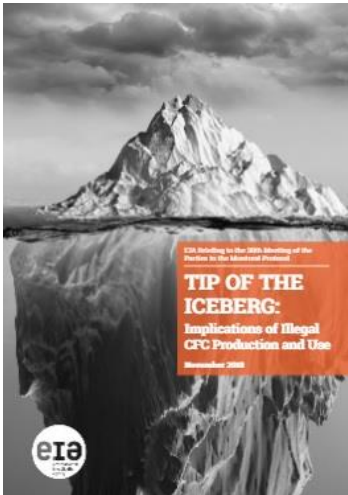
BASE
 The International Institute of Refrigeration's program for the development of the Kigali Cooling Efficiency Program.

“Cooling as a Service (CaaS)” presents a new service approach to cooling, which can benefit companies, governments and society at large and is based on the servitization concept which is rapidly penetrating other marketplaces.



[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.

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" as part of the 30th Anniversary of the Montreal Protocol celebration.

The new website was launched during the 29th Meeting of the Parties to the Montreal Protocol, Montreal, Canada, 20-24 November 2017.

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 men and women 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*



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



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.

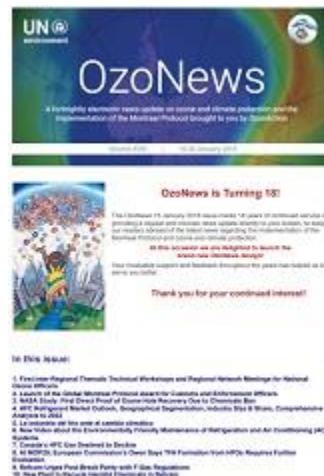
The inauguration of a World Refrigeration Day would not only be an ideal way to recognise the many historical achievements of the industry, but also a means to anticipate and overcome together the challenges we face. ... Click [here](#) for more information.



Global Cooling Prize - Cooling for all, without warming the planet.

An innovation competition to develop a climate-friendly residential cooling solution that can provide access to cooling to people around the world without warming the planet

Current and previous OzoNews Issues, are available from
OzonAction website
Download a PDF



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The United Nations Environment (UNEP), Economy 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: Shamila Nair-Bedouelle, Head OzonAction Branch, and Ezra Clark, OzonAction

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