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Global



1. Montreal Protocol and Energy Officials Find Their “Twins” to Promote Air Conditioning Solutions for Climate Protection

BEIJING, 17 April 2018— The first of a series of unique regional workshops to promote energy-efficient cooling concluded last Thursday in the Chinese capital. The “Twinning Workshop on Energy-Efficient and Climate-Friendly Refrigeration and Air Conditioning” aimed to strengthen cooperation between two traditionally separate communities – those responsible for managing compliance with the Montreal Protocol on Substances that Deplete the Ozone Layer, and those who craft national energy policies. With their combined expertise and remits, these officials are key to transitioning global markets toward better performing cooling products.

This two-day workshop included representatives from 31 governments in South Asia, South-East Asia, and West Asia. It was organized by UN Environment’s OzonAction and United for Efficiency initiatives in cooperation with the international engineering society ASHRAE, and hosted by China’s Ministry of Ecology and Environment (MEE). The International Energy Agency, as well as regional energy organisations and Chinese training institutes presented a variety of information on technology and policy solutions related to energy efficient cooling. The workshop series is supported by the Kigali Cooling Efficiency Program (K-CEP), a new philanthropic initiative that is committing US\$ 52 million to help developing countries transition to energy-efficient, climate-friendly, affordable cooling solutions.

The catalyst for the workshop series is the Montreal Protocol’s Kigali Amendment. The Kigali Amendment is helping to protect the climate by phasing down the use of hydrofluorocarbons (HFCs), which are powerful greenhouse gases that exacerbate climate change. HFCs are commonly used in the operation of air conditioners and refrigerators. Improving the energy efficiency of those products while transitioning to non-HFC alternatives will save consumers and businesses money on their electricity bills, help governments and utilities meet ever growing needs for power, and reduce impacts on the environment. By some estimates, the Montreal Protocol has prevented the equivalent of 135 billion tonnes of carbon dioxide (CO₂) emissions from entering the atmosphere, making it an extremely powerful tool for greenhouse gas reduction. It is poised to do even more under the Kigali Amendment, which enters into force on 1 January 2019.

The host country, China, has been making impressive strides in both the Montreal Protocol and energy efficiency. Mr. YU Lifeng, Deputy Director General of the Foreign Economic Cooperation Office of MEE, stated that “The Kigali Amendment is a milestone document after the Paris Agreement, and it commenced a new era of synergistic solution to global environmental issues such as ozone depletion and climate change. China has always actively participated in global environmental governance, attached great importance to energy efficiency and energy consumption reduction, and proposed green, low-carbon, recycling and sustainable modes of production and living. This meeting will provide an excellent opportunity for managers of different fields, senior representatives of governments and industry to share experiences and achievements and to strengthen exchanges and cooperation, build consensus, so as to jointly promote the development of environmentally friendly alternative technologies.”

Dr. Shamila Nair Bedouelle, head of UN Environment OzonAction said “The Kigali Amendment presents an opportunity for developing countries to make a truly historic contribution to climate protection by selecting energy-efficient cooling technologies during the coming HFC phase down. The road ahead requires enhanced cooperation between the Montreal Protocol and energy communities. UN Environment is honored to support this twinning process to empower action on HFCs and energy efficiency in line with national priorities.”

Dr. Bjarne W. Olesen, President of ASHRAE noted technologies are available to reduce the amount of energy that buildings use. He added, “It is critical that first we remember we do not build buildings to save energy. We build buildings to provide comfortable environments and sustain modern day life. ASHRAE can guide developing countries in the design of buildings and processes that require the least amount of energy necessary and then apply technologies to use it efficiently.”

Ms. Hu Min Hu of K-CEP explained the role of the twinning project as part of its larger portfolio. She noted that “The twinning project is one of the best example representing KCEP’s mission and core value to integrate energy efficiency and HFC phasing down while implementing Kigali amendment. We only have a very short time window to make a difference tackling climate change and we need to get it right by help putting the right people together.”

The meeting provided a platform for the national energy officials to learn more about the Kigali Amendment and for National Ozone Officers to better understand how energy efficiency considerations could be included in their regular work. All 100 participants particularly appreciated a hands-on technology demonstration that followed the initial presentations.

During the workshop, participants learned about policies for transforming refrigeration and air conditioning markets, and resources and funding options to do so. Successful case studies from three participating regions were presented and discussed. Important issues of identifying and engaging relevant stakeholders, considering gender norms and issues, collecting and utilizing data, and implementing model policies and programmes were covered through practical exercises and interactive discussion sessions. The workshop achieved its goal of starting a “twinning” dialogue between the Ozone Officers and energy officials and beginning the flow of information at the national level related to the energy efficiency and refrigerants nexus, the first step down the road towards realizing the goals of the Kigali Amendment.

Learn more

[Twinning of national ozone officers and energy policymakers, OzonAction](#)

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2. OzonAction launches initiative to highlight 'Women in the refrigeration and air-conditioning sector'

OzonAction, in cooperation with UN Women, is seeking to collect experiences and short 'stories' from women working in the refrigeration and air-conditioning (RAC) sector.

From female service technicians to installers, from designers to trainers, from manufactures to RAC associations, UN Environment OzonAction are looking to highlight your experience.

Being aware of the experiences of women working in the RAC sector and the opportunities available can encourage and inspire other women to consider careers in the sector and support girls to seek to follow a career path in this fast growing and important sector.

OzonAction, therefore is launching a global initiative to raise awareness of the opportunities available to women and to highlight the particular experiences and examples of women working in the sector, explaining their motivations, training and education, the challenges they may have faced, their experience and day to day details of their working lives and to recognise their successes.

Background

Refrigeration and air-conditioning is crucial for our health, nutrition, comfort and well-being. From prevention of food wastage to preservation of vaccines, from air-conditioning in hospitals to our homes we increasingly rely on the advances that refrigeration has brought us.

Appropriate implementation of refrigeration and air-conditioning technologies can assist countries in contributing to achieving the 2015 United Nations Sustainable Development Goals. In particular, this can contribute to achieving food security and improved nutrition (Goal 2), in ensuring healthy lives and promoting well-being (Goal 3), and promoting sustained, inclusive and sustainable economic growth (Goal 8). The transition away from ozone depleting substances and chemicals with high global warming potentials has already made a significant impact on combatting climate change (Goal 13). By encouraging and facilitating women to pursue careers in the refrigeration and air-conditioning sector can also contribute to achieving gender equality and empowering women and girls (Goal 5).

The refrigeration and air-conditioning (RAC) sector is crucial to all countries in the successful phase-out of hydrochlorofluorocarbons (HCFCs) and forthcoming phase-down of hydrofluorocarbons (HFCs) under the Montreal Protocol on Substances that Deplete the Ozone Layer. The fast-growing RAC sector can offer a wide variety of interesting and fulfilling careers for women as well as men. However, all around the world the sector has always been a largely male-dominated work environment.

Seeing the RAC sector from a different gender perspective and becoming aware of women's experiences and the opportunities available can encourage and inspire other women to consider careers in the sector and support girls to aspire to follow a career path in this fast growing and important sector.

OzonAction is requesting you to share your experiences and impressions of working in the RAC sector to raise awareness of the opportunities available to inspire women and girls to follow in your footsteps

How to apply

If you are a woman working in any part of the RAC sector, we encourage you to submit an entry. Please use the standard template provided. We very much welcome that you provide pictures showing you at work to accompany the submission.

["Women in the RAC Sector" flyer](#)

[Submission Form](#)

Nominations will be reviewed, verified and edited, as required, by an expert panel established by UN Environment. All the accepted submissions will be compiled into an official UN Environment publication, which will be outreached to a broad range of stakeholders in the Montreal Protocol and RAC community.

The authors of the two most relevant and interesting submissions (as decided by the expert panel) will be invited to attend an award ceremony and side event organised by UN Environment OzonAction at an international Montreal Protocol meeting.

Completed submissions, sent by email, based on the standard template (with photos) should be received by the UN Environment regional focal points (see flyer for details) as soon as possible but at the latest by 31st July 2018.

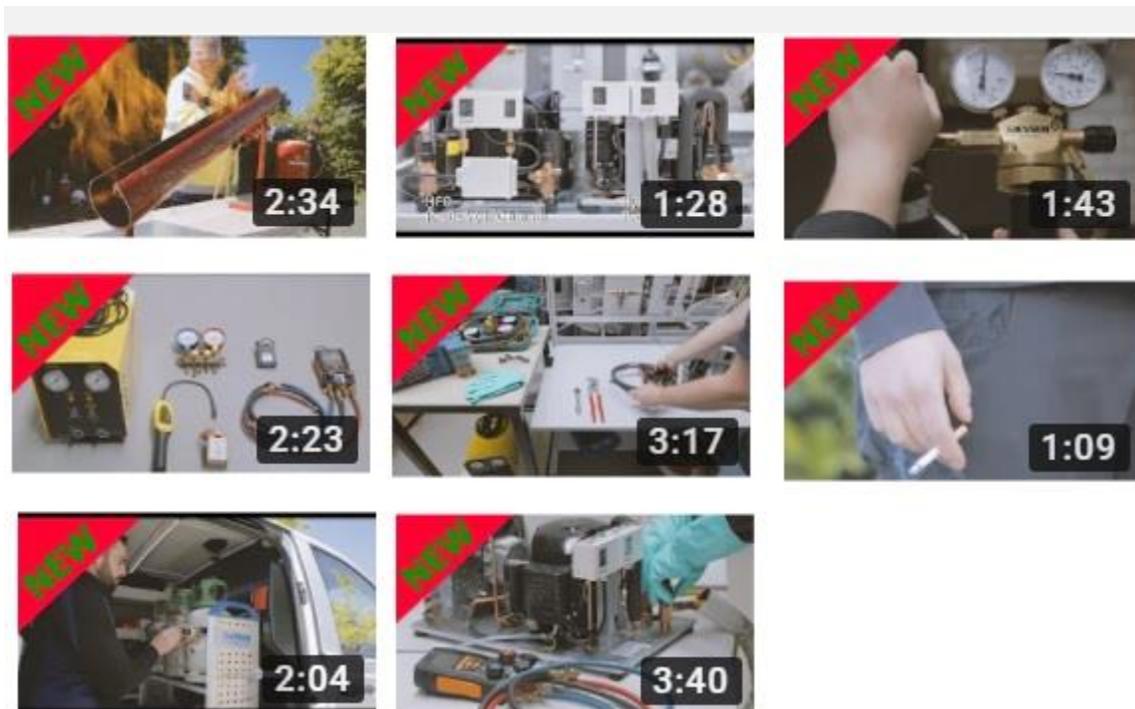
Nominations should preferably be submitted in English but other UN languages will be accepted (Arabic, Chinese, French, Russian, Spanish).

[UN Environment, OzonAction, March 2018](#)

3. 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...



The Refrigeration and Air-conditioning Technician Video Series is a mobile application consisting of a series of short instructional videos on techniques, safety and best practice for refrigeration and air conditioning (RAC) technicians. This serves as a complementary training tool for technicians to help them revise and retain the skills they have acquired during hands-on training. The app is part of OzonAction's portfolio of activities and tools to help enhance the knowledge and skills of technicians in the servicing and maintenance of RAC systems. The videos were produced in collaboration with Bundesfachschule Kälte Klima Technik. Additional videos will be released soon.

The videos cover the following topics:

New:

- Flammable Refrigerant Safety
- Specialist Equipment and Tools
- Handling, Transport, and Storage
- Safety features of hydrocarbon refrigeration system
- Preparation for working with flammable refrigerants
- Flammable Refrigerant recovery
- Preparing for repair and charging
- Preventing accidents

Original Videos:

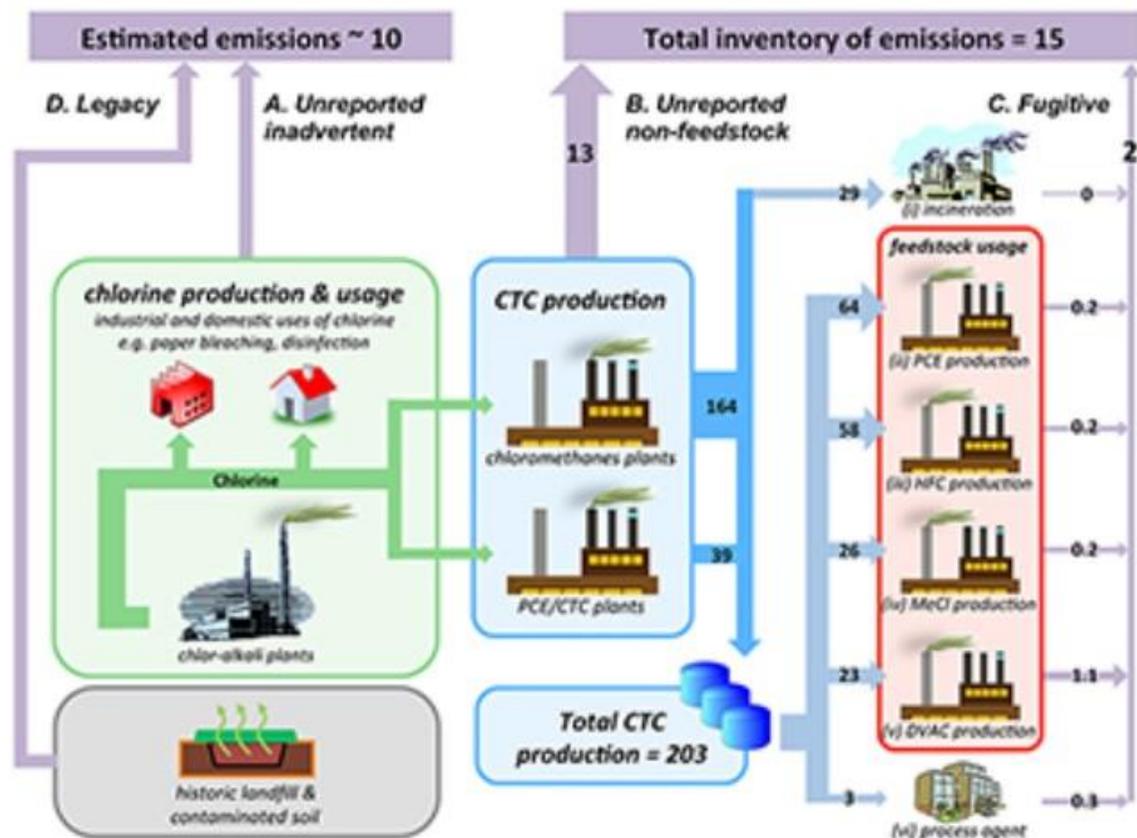
- Basic Tools
- Copper Tube Handling
- Bending
- Copper-Copper Connections
- Copper-Brass Connections
- Flaring
- Press-Fit Connections
- Leak Detection (soap solution)
- Evacuation
- Refrigerant Charging
- Connecting RAC Unit to Manifold
- Electronic Leak Detection
- Refrigerant Recovery
- Thermal Insulation
- Preparing the Cables

Available in: English, Chinese, French, Russian, Spanish, German & Armenian (Arabic coming soon).

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



4. What's going on with carbon tetrachloride?



Carbon tetrachloride emissions

The Montreal Protocol is a spectacular environmental success story. Since 2010 – 21 years after the agreement was signed by 197 parties – levels of stratospheric ozone have stabilized, and there are signs of recovery for the Antarctic ozone hole. But there is still work to be done. One ozone-depleting substance – carbon tetrachloride – has measured emissions far outweighing reported emissions. A new study reveals the likely sources.

As well as depleting ozone, carbon tetrachloride (CCl₄ or CTC) is a greenhouse gas and carcinogenic in high concentrations. It plays a major role in destroying ozone, and is practically banned under the Montreal Protocol. Emissions derived from industry estimates suggest that just 3Gg of carbon tetrachloride are released globally every year. But estimates based on ground observations indicate that around 35Gg of carbon tetrachloride is added to the atmosphere every year.

Qing Liang from the NASA Goddard Space Flight Center, US, and colleagues tried to pin down the cause of this discrepancy by calculating the likely emissions from industrial sources and legacy emissions for the year 2014. They gathered data and calculated potential emissions from four different sources of carbon tetrachloride: the production and use of chlorine gas, the production of chloromethanes (used to make numerous industrial solvents for dry cleaning, paint stripping etc.), contained usages of carbon tetrachloride, and historic emissions from contaminated landfill and soil.

Chlorine is commonly used for paper bleaching and disinfection, and is usually produced in chlor-alkali plants. However, during the production process hydrocarbons can be chlorinated relatively easily, inadvertently releasing carbon tetrachloride. Liang and colleagues estimate that this, together with legacy emissions, could be responsible for up to 10Gg per year.

Chloromethanes are present in numerous industrial solvents and reagents, such as those for dry-cleaning and paint stripping. They are also a precursor in Teflon production. This process produces carbon tetrachloride that is supposed to be disposed of, usually via incineration, so its emissions of the compound should be negligible.

However, Liang and colleagues estimate that carbon tetrachloride emissions during production of the substance itself could be as high as 15Gg per year. "Because CTC evaporates easily emissions can easily occur during CTC production, unless tightly contained," said Liang. "While deliberate production, usage, and destruction of CTC are accurately monitored and reported, unintentional CTC leakage to the atmosphere occurs."

Finally, those carbon tetrachloride emissions from historic industrial sites and landfill. Liang and colleagues estimate that this contributes a few Gg per year. In total the new estimates suggest that these industrial and legacy sources release around 25Gg of carbon tetrachloride to the atmosphere each year; a figure considerably larger than the reported 3Gg, but still 10Gg short of the 35Gg per year estimated by satellite observations.

"If the current CTC emissions continue into the future, it will lead to an extra 5% increase in atmospheric chlorine and bromine abundance between 2050–2100 and a corresponding ~3% decrease in Antarctic total column ozone," said Liang, whose findings are published in Environmental Research Letters (ERL). The scientists intend to try and gather more detailed data from under-reported industrial regions.

[Environmental Research Web, 5 April 2018](#)

5. Polar Ozone and Polar Stratospheric Clouds



The European Geosciences Union (EGU), General Assembly session [Tuesday, 10 April 2018] covered all aspects of polar stratospheric ozone, other species in the polar regions as well as all aspects of polar stratospheric clouds.

Special emphasis was given to results from recent polar campaigns, including observational and model studies:

[Temporal evolution of chlorine and related species observed with Aura/MLS, Envisat/MIPAS, and ground-based FTIR at Syowa Station, Antarctica during late winter and spring in 2007 and 2011](#)

Hideaki Nakajima, Isao Murata, Yoshihiro Nagahama, Hideharu Akiyoshi, Masanori Takeda, Yoshihiro Tomikawa, and Nicholas B. Jones

[Can Brewer Umkehr measurements capture ozone variability near the edge of the Southern polar vortex?](#)

Klara Cizkova, Harald Rieder, Martin Stanek, Irina Petropavlovskikh, Ladislav Metelka, and Kamil Laska

[Symptoms of total ozone recovery inside the Antarctic vortex during Austral spring](#)

Andrea Pazmino, Sophie Godin-Beekmann, Alain Hauchecorne, Chantal Claud, Sergey Khaykin, Florence Goutail, Elian Wolfram, Jacobo Salvador, and Eduardo Quel

[Spatio-temporal variations of HNO₃ total column from 9 years of IASI measurements - A driver study](#)

Gaétane Ronsmans, Catherine Wespes, Daniel Hurtmans, Cathy Clerbaux, and Pierre-François Coheur

[Diurnal variations of BrONO₂ observed by MIPAS-B and estimation of lower stratospheric Br](#)

Gerald Wetzel, Hermann Oelhaf, Michael Höpfner, Felix Friedl-Vallon, Andreas Ebersoldt, Thomas Gulde, Sebastian Kazarski, Oliver Kirner, Anne Kleinert, Guido Maucher, Hans Nordmeyer, Johannes Orphal, Roland Ruhnke, and Björn-Martin Sinnhuber

[Chlorine de-/activation during the Arctic winter 2015/16 POLSTRACC campaign observed with GLORIA](#)

Sören Johansson, Wolfgang Woiwode, Michael Höpfner, Felix Friedl-Vallon, Jörn Ungermann, Jens-Uwe Grooß, Michelle L. Santee, Tina Jurkat, and Kaley A. Walker and the GLORIA team

[European Geosciences Union \(EGU\), April 2018](#)

— Latin America and Caribbean —

6. Brazil issues Normative Instructions pertaining to the Montreal Protocol

Brazilian Institute of the Environment & Renewable Natural Resources (IBAMA), [Normative Instruction No. 5/2018](#), Regulating the environmental control of potentially polluting activities related to substances subject to control and elimination according to the Montreal Protocol.

Brazilian Institute of the Environment & Renewable Natural Resources (IBAMA), [Normative Instruction No. 4/2018](#), Regulating the control of imports of Hydrochlorofluorocarbons (HCFCs) and mixtures containing HCFCs in accordance with Decision XIX / 6 of the Montreal Protocol.

[Latin American Environmental Regulatory Tracker, 6 April 2018](#)



West Asia



7. The Ministry of Municipality and Environment Orientation Forum on Kigali Amendment (Qatar)

Qatar Ministry of Municipality and Environment recently organized an Orientation Forum on Kigali Amendment to the Montreal Protocol on the hydrofluorocarbons (HFCs) in collaboration with the United Nations Environment Program.

The Forum has been inaugurated by Mrs. Aishah Ahmad Al-Baker, Manager of the Department of Radiation and Chemical Protection. In her speech, she has welcome the participants from the competent governmental and private sectors as well as the United Nations Environment Expert, Engineer Ayman El-Talouny.

She drew attention to the efforts exerted by the Ministry of Municipality and Environment in its respective field in order to realize a set of objectives such as the protection and development of the environment through all-comprehensive and sustainable development which guarantees harmonization and consistency between socio-economic development and the protection of the environment for the benefit of the future generations commensurate with Qatar Vision 2030.

She also pointed out that the State of Qatar paid attention to acceding to all international treaties and agreements on the protection of the environment such as the Convention on the Protection of the Ozone Layer. The State of Qatar acceded to the 1985 Vienna Convention on the Protection of the Ozone Layer, the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer and London and Copenhagen Amendments on January 22, 1996. The State of Qatar ratified the Montreal and Beijing Amendments to Montreal Protocol on January 29, 2009.

Engineer Ayman El-Talouny, the United Nations Environment Expert, pointed out that Kigali Amendment adopted at the Twenty-Eighth Meeting of the Parties to the Montreal Protocol constitutes the cornerstone for reducing the use of the hydrofluorocarbons (HFCs) at a percentage up to 15% of the world average consumption by the advent of the mid-century.

On his part, Engineer Hussein Saad Al-Kibisi, the National Liaison Point of Ozone and the Manager of the Department of Environmental Observation, indicated that the State of Qatar, as of 2011 and in cooperation with the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Program (UNEP), has been implementing the national strategy for the phase-out of HCFCs in the State of Qatar in accordance with the obligations of the Montreal Protocol through a number of interim projects covering refrigeration, air-conditioning, and insulation materials industries (Foam).

During the first phase of the project, the conversion of the insulating materials industries in the State of Qatar has been completed so that their use of HCFCs has been eliminated. A long-term operational plan for cooperation with the refrigeration and air conditioning service sector is under way.

Currently, the Ministry assessed the current obligations to the Montreal Protocol and the projects being implemented in the light of the changes arising from Kigali Amendment on the legal and technical spheres.

[Qatar Ministry of Municipality and Environment, 4 April 2018](#)

Asia Pacific

8. Erik Solheim: Message at the China Refrigeration Exposition



Erik Solheim: Message at the China Refrigeration Exposition

The 29th China Refrigeration Expo

Jointly organized by the China Council for the Promotion of International Trade, Beijing Sub-council, Chinese Association of Refrigeration, China Refrigeration and Air-conditioning Industry Association, and managed by

Beijing International Exhibition Center, the 29th International Exhibition for Refrigeration, Air-conditioning, Heating and Ventilation, Frozen Food Processing, Packaging and Storage (China Refrigeration Expo) was held from 9-11 April 2018 at New China International Exhibition Center in Beijing.

With the rapid growth of China's HVAC&R industry as well as the support from relevant government departments and companies in this industry, China Refrigeration Expo has been reputed as one of the leading exhibitions in HVAC&R industry in the world. Currently, gathering with world famous brands, China Refrigeration Exhibition has served as a gigantic and diversified exhibiting and marketing platform based on exhibits-demonstration and exhibitors brand promotion, with high-end forums and conferences as a carrier, supplemented in electronic communications through network.

China Refrigeration Expo 2018 has more than 1,500 registered exhibitors with an area of 106,800 square meters and a net area of over 46,000 square meters. 2018 Expo attracts companies and organizations from over 30 countries and regions including international pavilions of the United States, Europe, South Korea and India, gathering almost all the famous brands in the refrigeration, air-conditioning, heating and ventilation industry in the world. It's estimated that nearly 60,000 professional visitors and customers representing over 100 countries and regions around the world will attend this exhibition for business and seek for cooperation.

[UN Environment, OzonAction, April 2018](#)

9. China targets NatRefs for 'brighter future'

The Chinese government is accelerating its efforts to implement the Kigali Amendment to the Montreal Protocol on phasing down HFCs and is promoting natural refrigerant alternatives by developing new standards, heard participants at today's ATMOsphere China conference in Beijing.

"All the controlled substances under the Kigali Amendment will be phased out by 2045," Zhong Zhifeng, vice-chief of Division III in the Chinese Ministry of Environmental Protection – Foreign Economic Cooperation Office (MEP-FECO), told the conference. "These HFC applications will be 100% eliminated."

"In normal industries, we will never use HFCs," said Zhifeng.

"We have a very clear direction forward: we're developing alternatives," he said, before citing "special industries" working with flammable refrigerants as exceptions where the evolution may take longer.

By 2015, China had already achieved its preliminary policy objective of reducing HCFC consumption by 10% by 2015. Going forward, Zhifeng expects to see quick progress in the room air-conditioning segment in particular, with a 45% reduction in HCFC consumption by 2020.

China to revise domestic standards

Last year was the 30th anniversary of the entry into force of the Montreal Protocol. At a ceremony marking the occasion, Chinese Environment Minister Li Ganjie said China would accelerate the approval of the Kigali Amendment and strive to develop "green and low-carbon alternatives to HFCs".

"We're exceeding our expectations," Zhifeng told the ATMOsphere conference.

China is building up production capacity for natural refrigerant technologies, and in the room air-conditioning sector, "we're improving the standards system for alternative refrigerants," he said.

Current standards restrict the use of flammable refrigerants worldwide, not just in China. Efforts are being made at domestic and international level to remove these barriers to wider uptake of hydrocarbons.

"Our current domestic standards are not helpful for promoting alternatives," Zhifeng admitted. "We're going to make new standards."

"We're revising standards to improve safety levels and promote natural refrigerants, which are the future market trend," Zhifeng explained.

Internationally, the Chinese government is calling on more countries to revise their own safety standards to promote wider rollout of hydrocarbons.

"Natural refrigerants have their own barriers. The future trend is firmly fixed, but we all need to make a joint effort to produce better standards, and to improve maintenance and installation quality," Zhifeng said.

He called on natural-refrigerant stakeholders around the world to "make joint efforts to improve things together".

"The promotion of natural refrigerants will lead us to a brighter future in China," Zhifeng said.



Zhong Zhifeng addresses ATMOsphere China in Beijing. Photo credit: Ben Deech

See also >>> ATMO China 2018: [Live coverage highlights](#). Follow the live coverage of the ATMOSphere China 2018 conference.

10. Thailand to spend €8.3 million on green cooling projects

The Electricity Generating Authority of Thailand (EGAT) will promote green cooling technologies that are energy efficient and use natural refrigerants with the 320 million Thai baht (€8.3 million) from the 'RAC NAMA Fund'.

"On behalf of the Thai government, EGAT has taken responsibility for managing the fund to promote the production and use of energy-efficient and climate-friendly cooling technologies," said Kodshayut Boriboonchatuporn, deputy governor of power plant development at EGAT. "The four main products include domestic refrigerators, commercial refrigerators, chillers and air conditioners."

The fund comes under the Thailand Refrigeration and Air Conditioning Nationally Appropriate Mitigation Actions (RAC NAMA) project – financed by Germany and the United Kingdom – and is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ for short).

"I believe that this RAC NAMA Fund is central to climate change mitigation actions because Thailand is an important regional industry hub for the cooling sector," said Camilla Fenning, head of the Southeast Asia Climate Change and Energy Network at the British Embassy in Bangkok.

Thailand is the world's second-largest exporter of air conditioners, most of which are currently using high-GWP HFCs, according to Tim Mahler, country director for Thailand and Malaysia at GIZ.

Mahler recommends using natural refrigerants instead. "Natural refrigerants are about 100-1,000 times more climate-friendly than widely used synthetic refrigerants," he explained. "Moreover, using natural refrigerants with innovative RAC appliances could help to cut 5 to 25% of energy costs."

Energy reductions from using this equipment will make a significant difference in Thailand, where 50% of the energy consumed comes from the RAC sector, according to the RAC NAMA project.

The fund will spend 120 million baht (€3.1 million) of the total 320 million baht on "production line conversion, testing equipment and training facilities" and 200 million baht (€5.2 million) on market awareness to encourage households and commercial end users "to use green cooling products," according to EGAT's Boriboonchatuporn.

[hydrocarbon21](#), 3 April 2018, By: [Charlotte McLaughlin](#)



Europe & Central Asia

11. France became the 31st state to ratify the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer



On March 29, France became the 31st state to ratify the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer.

The aim of this amendment adopted in Kigali on October 15, 2016, is to incorporate hydrofluorocarbons – powerful greenhouse gases used mainly in refrigeration and air conditioning – into the Montreal Protocol, which entered in force on January 1, 1989.

By setting a timetable for reducing the consumption and production of HFCs, the Kigali Amendment should make it possible to prevent some 72 billion tons of CO₂ equivalent of emissions by 2050 and temperature increases of nearly 0.5°C due to HFCs by 2100. It will therefore fully contribute to the implementation of the Paris Agreement.

The approval of this amendment, whose requirements are already covered by our national law, including our obligations under European law, reaffirm France's ambitious and unwavering commitment to the fight against climate change and the protection of the environment.

The Kigali Amendment will enter in force on January 1, 2019.

[France Diplomatie, 29 March 2018](#)

12. Implementation of F-gas Regulation (EU) No 517/2014

On behalf of the EU Commission (DG CLIMA), Öko-Recherche has been working on a series of analyses evaluating the implementation of the F-gas Regulation (EU) No 517/2014 since 2015.

This includes among others the following:

- **Monitoring of refrigerant prices:** As a result of the progressive reduction (“phase-down”) of HFC quantities in the EU, prices for high GWP refrigerants haven risen strongly and further price increases are expected in the coming years. In addition, prohibitions stipulated in Annex III of the F-gas Regulation (EU) No 517/2014 will contribute to price changes.

In order to identify the actual effects of price increases on investment decisions and market developments, Öko-Recherche has developed a methodology for regular price monitoring and analysis of price developments. It allows gathering and evaluating data on purchase and selling prices of commonly used refrigerants and their alternatives at all levels of the supply chain (gas producers, gas distributors, OEMs, and service companies). In future, the analysis will be extended to include questions on the regional availability and sectoral use of refrigerants, the use and prices of alternative refrigerants and authorisation prices.

Concerning the acquisition of companies, Öko-Recherche works closely with associations from Germany (VDKF, BWP) and other EU member states (CITEPA, SNEFFCA, ATF) and EU associations (EPEE, AREA). Numerous companies from all levels of the refrigerant supply chain are already participating in the quarterly price survey. Here, all information is treated confidentially and evaluated anonymously. In return, participating companies regularly receive an excerpt from the last price monitoring report.

Companies are invited to participate in the price monitoring survey. Questionnaires in German and English for the respective group can be found under the following links. Providing price data retrospectively until the end of 2015 is not required, but - if possible - very welcome.

Please send the completed questionnaire to Ms. Julia Kleinschmidt (julia.kleinschmidt@oekorecherche.de), who is also available for further questions. Deadline for price data to be considered in the next price monitoring report (Q1/2018) is April 18, 2018.

- **Analysis of the quota allocation mechanism and authorisations:** The “HFC phase-down” enshrined in F-gas Regulation (EU) No 517/2014 has been implemented through a quota system since the beginning of 2015. All companies that wish to place HFCs on market must participate in this system. In cooperation with Öko-Institut, Öko-Recherche carried out an analysis by assessing experiences with quota allocation and authorisations, looking at potential problems and developing suggestions for the improvement of the mechanism. The EU Commission's report on this topic can be found [here](#).

- **Analysis of alternatives in commercial refrigeration:** Direct expansion of refrigerants with a GWP > 150 will be banned in commercial multi-pack centralized refrigeration systems > 40 kW from 2022 onwards (Annex III of the EU F-gas Regulation). Öko-Recherche carried out a comprehensive survey, asking manufacturers and operators about the technology options used and underlying decisions. The report of the EU Commission can be found [here](#).

[Öko-Recherche, 4 April 2018](#)



13. F-gas tracking goes mobile (UK)

Refcom's refrigerant-tracking software is now accessible via a mobile app, ensuring F-gas compliance on the go.

The F-gas software, originally launched earlier this year, offers tracking of individual refrigerant bottles, automated logbook record keeping, detailed data analysis; service records and certificates storage, with the recent addition of waste transfer note generation.

"We developed the software in partnership with Joblogic to help reduce the administrative burden of regulatory compliance, improving efficiency for contractors and allowing them more time to focus on growing their business," said head of Refcom Graeme Fox. "The introduction of the mobile app helps to simplify the process even further, allowing reporting to happen on the go."

The Refcom mobile module provides engineers the ability to make additions, removals and create waste transfer sheets for refrigerant gases when operating in the field, ensuring the correct gas and weights are used at all times. A check-in/out system tracks the whereabouts of cylinders and the system warns when cylinder rental periods are coming to an end to avoid unnecessary rental charges.

Refcom, which is managed by the Building Engineering Services Association, is the UK's largest F gas register. More information [here](#).

CoolingPost, 30 march 2018



14. Webinar to look at barriers to flammable refrigerants

LIFE FRONT, an EU-funded project that aims to remove barriers to hydrocarbons and contribute to wider uptake of refrigeration, heating and air-conditioning equipment using hydrocarbon refrigerants, announced it will hold a free webinar on **25 April at 15:00 (CEST)**.

The webinar will outline the objectives and expected outcomes from the project, as well as the work completed so far, that is aimed at increasing the uptake of hydrocarbon-based technology.

Industry project partners will also be on hand to explain ongoing testing of refrigerant equipment that use hydrocarbons. This will focus on leak size and mass flow refrigerant release.

The webinar is aimed at encouraging experts from industry, academia, trade bodies and NGOs, to get involved in the LIFE FRONT project by joining the Standards Action Group (SAG).

The SAG group aims to look at the development of EU and international safety standards, which cover environmental, safety and product design criteria, and apply to hydrocarbon refrigerants.

During the webinar LIFE FRONT will further outline the scope of the SAG and explain how interested experts can join.

To find out more information about the webinar and register click [here](#).

Refrigeration Industry, 12 April 2018



15. EU Court to rule against Germany in mobile AC case

The European Court of Justice's Advocate General has agreed with the European Commission that Germany violated the mobile air-conditioning systems (MAC) Directive after it allowed Daimler to continue to use R134a in its mobile air-conditioning systems.



Yesterday (11 April 2018), the European Court of Justice's (ECJ) Advocate General Paolo Mengozzi released an opinion stating "The Federal Republic of Germany has failed to fulfil its obligations under Articles 12 and 30 of [the MAC] Directive 2007/46 / EC" that requires European Union countries to regulate the use of HFCs in vehicles.

Though the Advocate General's opinion is not binding the ECJ, based in Luxembourg, agrees with it about 67% of the time according to 2016 research by the University of Cambridge.

The mobile air-conditioning systems Directive known as the MAC Directive prohibits the use of f-gases with a global warming potential (GWP) of more than 150 times greater than CO₂ in new types of cars and vans introduced from 2011, and in all new cars and vans produced from 2017.

The judgment by Mengozzi states that by allowing Daimler to continue to place cars with R134a mobile air-conditioning systems on the market, after it was alerted by the Commission this was against the directive, Germany has failed to meet the obligations of the MAC Directive.

The Advocate General wrote in his opinion: "The Federal Republic of Germany is ordered to pay two thirds of the costs incurred by the European Commission and two thirds of its own costs. The Commission will bear one third of the costs of the Federal Republic of Germany and one third of its own costs".

On 10 December 2015, Germany was referred to the ECJ for an apparent circumvention in the application of the MAC Directive. Daimler AG, a German vehicle manufacturer, continued to use the fluorinated gas R134a in newly-built car air-conditioning systems that were type-approved for use with R1234yf after January 2011.

Daimler, who did not want to use R1234yf due to safety concerns, has since committed to CO₂ in MAC systems.

[r744](#), 12 April 2018, By: [Charlotte McLaughlin](#)

Featured



**OZONE
SECRETARIAT**

OZONE SECRETARIAT

- Vienna Convention and Montreal Protocol Meetings: A Primer - [Read/Download](#)
- [29th Meeting of the Parties to the Montreal Protocol](#)
- [28th Meeting of the Parties to the Montreal Protocol](#)
- Final text of the Kigali Amendment to the Montreal Protocol available in all the six official UN languages ([A](#) [C](#) [E](#) [F](#) [R](#) [S](#))
- OEWG 39: The 39th Session of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, preceded by the 58th meeting of the Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol, held on 9 July and a workshop on safety standards relevant to the use of low-GWP alternatives to HFCs, held on 10 July 2017.
 - [Draft report of the thirty-ninth meeting of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer - Addendum](#)
 - [Draft report of the thirty-ninth meeting of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer](#)
- Click [here](#) for further information.
- Browse through the Ozone Secretariat "[In Focus](#)" to learn about latest updates.
- Click [here](#) for Montreal Protocol Meetings Dates and Venues

The UN Environment Assessment Panels have been the pillars of the ozone protection regime since the very beginning of the implementation of the Montreal Protocol. Through provision of independent technical and

scientific assessments and information, the Panels have helped the Parties reach informed decisions that have made the Montreal Protocol a world-recognized success.

UNEP initiated the process of setting up the assessment panels in 1988, pursuant to Article 6 of the Montreal Protocol, to assess the scientific issues of ozone depletion, environmental effects of ozone depletion, and the status of alternative substances and technologies and their economic implications.

Four panels, namely the panels for Scientific, Environmental Effects, Technology, and Economic Assessments were formally established and approved at the First Meeting of the Parties to the Montreal Protocol in 1989 where their first set of Terms of Reference were adopted. Shortly after the Second Meeting of the Parties in 1990, the Panels for Technical Assessment and the Panel for Economic Assessment were merged into one Panel called the Technology and Economic Assessment Panel (TEAP), which together with the Scientific Assessment Panel (SAP) and the Environmental Effects Assessment Panel (EEAP) make up the three assessment panels active today.

In accordance with Article 6 of the Montreal Protocol and subsequent decisions of the Parties, the three panels carry out a periodic assessment at least every 4 years. The first assessment reports were published in 1989 and since then major periodic assessments have been published by all three panels in 1991, 1994, 1998, 2002, 2006 and 2010. For each periodic assessment, the key findings of the panels are synthesized into a short report. The full SAP assessment report for 2014 was published in December 2014, while the EEAP assessment report for 2014 was published in January 2015.

PROGRESS & QUADRENNIAL ASSESSMENT REPORTS

- [EEAP](#)
- [SAP](#)
- [TEAP](#)

SYNTHESIS REPORTS

- [2014 assessments](#)
- [2010 assessments](#)
- [2006 assessments](#)

[Assessment Panels List of Meetings](#)



THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL

- [Report and other Documents](#) for the 80th meeting of the Executive Committee
- [Agenda](#) for the 80th meeting of the Executive Committee
- [Report](#) of the 79th meeting of the Executive Committee

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OzonAction Scoop- A tri-annual newsletter by UN Environment, OzonAction under the Multilateral Fund for the Implementation of the Montreal Protocol.
Issue#1 | Issue#2



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

- 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 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



Click [here](#) to access **OzonAction Series of Fact Sheets relevant to the Kigali Amendment.**

HS Nomenclature (HS Codes) for HCFCs and Certain Other Ozone Depleting Substances
Post-Kigali Update

INTRODUCTION

In recent years, trade patterns in ozone depleting substances (ODS) have changed with the completion of phase-out of production of HCFCs as of 1 January 2010 (except for a few exempt uses), the hydrofluorocarbon (HFCs) phase-out in progress and the increased trade hydrofluorocarbons (HFCs) and other alternatives as replacement to HCFCs.

To better facilitate monitoring of trade in ODS, the Parties to the Montreal Protocol requested the World Customs Organization (WCO) to revise the Harmonized Commodity Description and Coding System (HS) in the Harmonized System (HS) codes for HCFCs. This resulted in providing binding notes for HCFCs. This resulted in providing binding notes for HCFCs with the objective of ensuring specific HS codes for the most commonly used HCFCs, and at the same time labelling individual HCFC codes previously assigned to CFCs. This amendment entered into force on 1 January 2012. With the 2016 Kigali Amendment to the Montreal Protocol phase-down of HFCs, it is expected that a future amendment of the HS will assign separate HS codes for the most commonly used HFCs and HFCs containing HCFC.

HS Classification for ODS (2012)

Under the HS 2012 HCFCs and certain other ODS are to be classified in the HS as follows:

Chapter 28. Organic chemicals

28.53 Halogenated derivatives of hydrocarbons.

2853.1 - Halogenated derivatives of acyclic hydrocarbons containing two or more different halogens

2853.11 - Chlorofluoromethane (=HCFC-22)

2853.12 - Dichlorodifluoromethane (=HCFC-123, covers two isomers)

2853.13 - Dichlorotrifluoromethane (=HCFC-113, covers two isomers)

2853.14 - Chlorodifluoromethane (=HCFC-141, covers 3 isomers, including the most popular HCFC-141b)

2853.15 - Dichlorodifluoroethanes (=HCFC-125, covers 3 isomers, including the most popular HCFC-125a and HCFC-125b)

2853.16 - Bromochlorodifluoromethane, bromochloroethanes and dibromochloroethanes

2853.17 - Other (= all remaining HCFCs and a number of other halogenated derivatives of acyclic hydrocarbons containing two or more different halogens, including other than the following ozone depleting substances controlled by the Montreal Protocol: hydrochlorofluoromethane (HCFC) and bromochloromethane (BCMC))

Download & present a comparison table showing the previous HS classification of ODS until 31 December 2011 (HS 2007) and the revised classification, which were applicable from 1 January 2012 (HS 2012). Information is also provided on the current HS codes for ODS-containing mixtures (see back page).

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

The Kigali Amendment to the Montreal Protocol: HFC Phase-down

INTRODUCTION

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 hydrofluoro-carbons (HFCs).

HFCs are commonly used alternatives to ozone depleting substances (ODS). While not ozone depleting substances themselves, HFCs are greenhouse gases which can have high or very high global warming potentials (GWPs), ranging from about 12 to 14,800.

The phase-down of HFCs under the Montreal Protocol has been under negotiation by the Parties since 2009 and the successful agreement on the Kigali Amendment (Decision XXXVI) and accompanying Decision XXXVII continues the historic legacy of the Montreal Protocol.

This fact sheet summarises and highlights the main elements of the Amendment of particular interest to countries operating under Article 5 of the Protocol (Article 5 Parties).

OVERVIEW OF AMENDMENT

The Kigali Amendment adds to the Montreal Protocol the phase-down of the production and consumption of HFCs. The main features of the amendment are the following:

- The Kigali Amendment will enter into force on 1 January 2019, provided that it is ratified by at least 20 Parties to the Montreal Protocol (90 per cent ratification) by the COP Party.
- There are five groups of Article 5 Parties with different control dates and phase-down schedules (see chart and graph on page 2).
- Some non-Article 5 Parties have already submitted calculations and different initial phase-down dates from the main group (non-Article 5 Parties) (see chart and graph on page 2).
- A new Annex F has been added to the Protocol. This lists the HFCs separated into:
 - Annex F, Group 1: all HFCs (except HFC-125 and HFC-134a)
 - Annex F, Group 2: HFC-23.
- Global warming potential values have been added to the Protocol for HFCs and selected HCFCs and CFCs (see page 6).
- Production, consumption, import, export and stocks as well as consumption balances of HFCs and its equivalent in carbon dioxide (CO₂) equivalent.
- Businesses are to be calculated from both HFC and HCFC production/consumption.
- There is an exemption for high ambient temperature countries (see page 6).
- Trade and export licensing systems for HFCs must be in place by 1 January 2019.
- Trade and Parties that have not ratified the Amendment ('non-Parties') will be banned from 1 January 2023.
- The Executive Committee is required to develop, within two years, guidelines for licensing of trade in phase-down HFCs.
- A timeline of the HFC phase-down is provided on page 4.

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

INTRODUCTION

The number of single component refrigerants with different thermodynamic properties suitable for different types of equipment is limited. Growing demand for refrigerant and air conditioning with diversified applications has led to a continued search for suitable refrigerant blends. A number of such blends have been developed by mixing two or more single component refrigerants in different proportions. The resulting blends have entirely different properties from that of its components.

While it is common to use the term 'blends' in the context of the Montreal Protocol, it is important to note that the term 'mixtures' is also used to describe refrigerants which are composed of more than one component. This terminology makes it specifically important in the context of the Montreal Protocol, which also includes the Harmonized Commodity Description and Coding System, also known as the Harmonized System (HS) codes.

TYPES OF REFRIGERANT BLENDS

A refrigerant blend or mixture of refrigerants is made up of two or more single component refrigerants. These blends can be of two types: Azeotropic and Zeotropic.

Azeotropic blends

These blends behave like a single component refrigerant, in that they boil and condense at a constant temperature or at a constant pressure. In the azeotropic refrigerant blends, there is no change in composition during phase change. These blends are assigned numbers for ASHRAE codes in the 500 series, e.g. R502A.

Zeotropic blends

These blends boil and condense through a range of temperatures at a given pressure. This range of temperatures is called the 'temperature glide'. Zeotropic blends are assigned ASHRAE codes in the 400 series, e.g. R404A, R407C, etc.

Global warming potential (GWP)

Global warming potential (GWP) is a measure which enables comparison of the global warming effects of different gases. It compares the amount of heat trapped by a certain mass of a gas to the amount of heat trapped by a similar mass of carbon dioxide over a specific period of time. Carbon dioxide was chosen by the Intergovernmental Panel on Climate Change (IPCC) as the reference gas and its GWP is taken as 1.

Following the 2016 Kigali Amendment, the Montreal Protocol has adopted flexible licensing system for ODS in HFCs. All the individual HFCs and blends which have been incorporated into the list of the Protocol in Annexes A, C and F.

GWP values for some common refrigerants

Substance	GWP value
CFC-12	10,900
HCFC-22	1810
HFC-134a	1430
HFC-143b	2130
HFC-143a	4470
HFC-152a	124
HFC-23	14,800
HFC-32	675
HFC-125	3000
HFC-134a	1430
HFC-143b	2130
HFC-152a	124
R-290 (Propane)	3

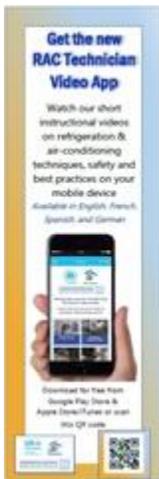
Refrigerant Blends: Calculating Global Warming Potentials (post-Kigali update)



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 - 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)



OzonApp eDocs+ launched in Android Play Store and Apple Store.

This new application launched by OzonAction on February 12, includes publications, videos, fact sheets and other awareness materials to help National Ozone Units (NOUs) and other stakeholders to build their capacity to implement the Montreal Protocol in a sustainable manner and at the same time to derive climate benefits.

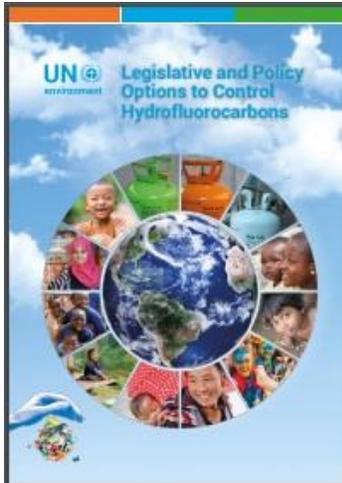
OzonApp eDocs+ available in the [Android Play Store](#) and [Apple Store/iTunes](#).
(Just search for "OzonAction", or scan this QR code)



Publications



Twinning of National Ozone Officers and Energy Policymakers - Under the Kigali Cooling Efficiency Program (K-CEP), UN Environment is implementing a two-year "twinning" project to build the capacity of National Ozone Officers and national energy policymakers for linking energy efficiency and Montreal Protocol objectives in support of the Kigali Amendment.



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.

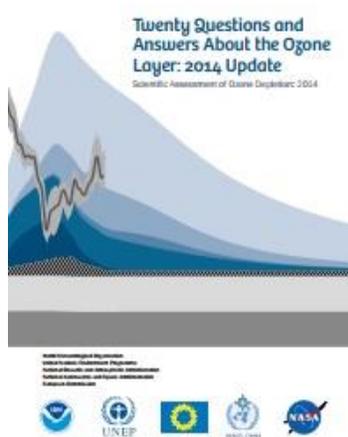
This booklet contains a recommended set of legislative and policy options which the developing (Article 5) countries may wish to consider for implementation. It is intended to be a guide/tool for countries.

Events

2018

- [A Cool World: 1st International Congress on Clean Cooling](#), 18 -19 April 2018, University of Birmingham, United Kingdom
 - [12th Conference on Phase-change Materials & Slurries for Refrigeration & Air Conditioning](#), 21-23 May 2018, Orford, Quebec, Canada
 - [13th IIR-Gustav Lorentzen Conference on Natural Refrigerants](#), 18-20 June 2018, Valencia, Spain
 - [Solar Heating and Cooling Forum](#), 9 August 2018, Brisbane, Qld, Australia
 - [1st IIR International Conference on the Application of HFO Refrigerants](#). 2-5 September 2018, Austin Court Conference Centre, Birmingham, United Kingdom.
- See other [IIR upcoming events](#)
- [The Future of HVAC Conference 2018](#), 12–13 September, Melbourne, Australia.

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.

The dictionary in numbers:

- more than 4,300 terms in English and French, including 800 synonyms,
- around 3,500 definitions in English and French,
- approximately 7,800 terms, synonyms and definitions
- content in 11 languages.

This international tool is the result of the work of nearly 200 experts, members of the IIR network, from around 30 countries throughout the world.

The dictionary's content covers all areas of refrigeration such as:

- basic principles (thermodynamics, transfer of heat and mass ...)
- production of refrigeration (refrigerated systems, refrigerants...)

- refrigerated installations
- methods of chilling, refrigeration and freezing
- storage, transport and distribution
- refrigeration applications for perishable products and the agro-food industry
- air conditioning
- heat pumps
- cryogenics
- environment

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](#)



University of Birmingham. "[Draining peatlands gives global rise to greenhouse laughing-gas emissions.](#)" ScienceDaily, 28 March 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 - As of January 2017, not only will IIR members continue to receive the hard copy of the journal but IIR membership will now also give members access to 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
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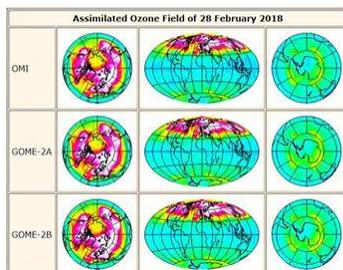
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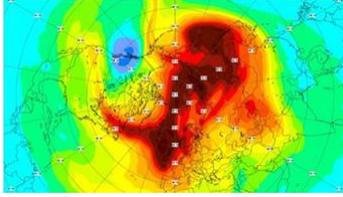
To access this new service, click "[activate my e-IJR subscription now](#)" and follow the instructions.



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



TEMIS -- Near-real time global ozone field. The in near-real time delivered total ozone columns, derived from satellite observations, are input to a data assimilation program which provides global ozone fields for today and a forecast for the coming days.



Copernicus Atmosphere Monitoring Service. Since 7 February, CAMS has predicted the appearance of an ozone mini-hole over western Canada around 12-13 February. The 5-day forecast from the ECMWF Copernicus Atmosphere Monitoring Service (CAMS) showed the location of this ozone mini-hole and predicted its shape and size. This prediction was broadly consistent with other leading global atmospheric composition forecasting centres. Satellite observations acquired on 12 and 13 February data

assimilation actually confirmed these predictions. "It is a nice way for us to show that our models really work and can accurately predict these kinds of events," says Mark Parrington, senior scientist for CAMS...



Survey: "Hydrocarbons availability & impact of standards"

You are invited to participate in this survey as part of the work conducted within the EU-funded project "LIFE FRONT" (<http://lifefront.eu/>).

The project aims to remove barriers posed by standards for flammable refrigerants in refrigeration, air conditioning and heat pump (RACHP) applications.

The aim of the survey is to map the available technology and product groups using hydrocarbon (HC) refrigerants, their expected future availability, and the impact of standards on such market development. The findings will contribute to the market research investigating the impact of current (restrictive) standards on the European HVAC&R industry, and their end users.

The results of the survey will be available for free to the public as one of the outcomes of the project. The expected publication date is early September.

The respondents can help advance the objectives of the project that seeks to eliminate the existing barriers for hydrocarbons.

Who should answer?

Interested participants to the survey could be:

- system manufacturers
- end-users
- trade bodies
- the research community
- national authorities
- NPOs

The questionnaire takes around 15 minutes to complete, depending on the level of detail you provide.

All results will remain anonymous and only aggregated data will be used to outline the current and future situation for this market segment.

Deadline for contributions: 02 April 2018

For any questions, do not hesitate to contact us at info@lifefront.eu .

Take the survey



The 2018 Climate & Clean Air Awards are now open for nominations! For the 2nd consecutive year, we are calling on the SLCP community to recognise the projects and policies making an impact on climate change and air pollution.



AIRAH Awards 2018 nominations now open! The AIRAH Awards recognise the individuals, companies, research projects and products across the diverse specialist fields that make up the HVAC&R industry. Open to individuals, companies, corporate bodies, institutions and government authorities, the 2018 Awards will recognise work carried out during 2016/2017.



Improving kids awareness on being sun safe and protecting the ozone layer! Sun safety is a critical factor in health and science education. [Slip, Slap, Slop! an awareness activity book](#), makes the topic fun, practical, and easy.

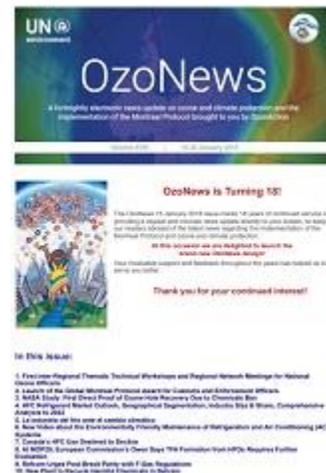
The National Ozone Unit - Lebanon launched this workbook for children aged 8-10, designed for flexible use in both homes and schools.

The objective of this new awareness activity book, in English and Arabic - is to help educate children about the Ozone Layer and the health risks due to the overexposure to the sun.

Read/download [English](#) | [Arabic](#)

Contact: [Mazen Hussein](#) and/or [Joumana Samaha Atiyeh](#), National Ozone Unit, Ministry of Environment

Current and previous OzoNews Issues, are available from [OzonAction website](#)



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