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OzoNews

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

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| 15 June 2019

In this issue:

1. World Refrigeration Day: 26 June 2019 - Refrigerants for Life
2. Nicaragua asume compromiso ambiental y cumple protocolo de Montreal
3. Study identifies chemical blends as possible alternative refrigerants
4. Sri Lanka: 'ahead of the curve' in clean cooling
5. Japan tightening HFC recovery regulations
6. Rising demand for air conditioning could make climate change even worse. But a new \$1 million prize could boost climate-friendly AC technology
7. Phosphine is a safe and effective fumigant, claims study
8. The European Fluorocarbons Technical Committee looks to stem carriage of illegal refrigerants
9. Increasing energy efficiency while phasing-down HFCs: showcasing the EU example
10. Belarusian polar explorers considering spending first winter in Antarctica in 2020-2021

Global

1. World Refrigeration Day: 26 June 2019 - Refrigerants for Life

UN Environment OzonAction, American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE), and the World Refrigeration Day Secretariat are in partnership in campaigning for the first World Refrigeration Day (WRD), on 26 June 2019 with the theme:

REFRIGERANTS FOR LIFE

During the first half of the 20th Century, mankind invented fluorinated refrigerants, based on the advancement of chemistry and mechanical engineering.

However, refrigerants were known much earlier but were mostly using ice or other non-fluorinated refrigerants, such as Carbon Dioxide or Ammonia or Hydrocarbons, but with very limited use in terms of residential or industry applications.

Over the last three decades, the world realized that the safest and efficient refrigerants, that were used for decades, are now contributing negatively to global warming and ozone depletion and threatening life on the planet in the long term.

Due to this, industry and governments engaged in legal and research processes to find alternatives to control the emissions of refrigerants while maintaining the pace of human development and lifestyle.

The Montreal Protocol is a living example of international success in combatting the depletion of the ozone layer through phasing out ozone depleting substances (ODSs) including ozone depleting refrigerants as well as phasing down the higher-GWP refrigerants as per the Kigali Amendment.

Whether you are an individual, government, private sector, institution, NGO, etc., you may use any of the following material to join the campaign for WRD:

2019 World Refrigeration Day

- Stickers: [English](#) | [French](#) | [Spanish](#)
- Posters: [English](#) | [French](#) | [Spanish](#)
- Leaflets: [English](#) | [French](#) | [Spanish](#)

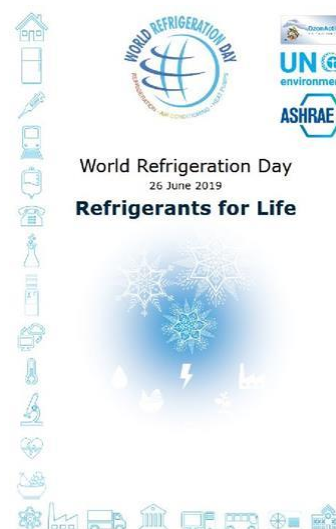
WEBINAR on Wednesday 26 JUNE 2019 - 9:00 - 10:30 EDT

Description: [Refrigerants for Life and how they affect modern life](#), intends to capture the overall global picture of policies, research, and trends of using refrigerants in different applications while presenting the role of industry, governments, and individuals in ensuring the Responsible Use of Refrigerants.

Join the International Webinar on 26 June 2019, "Refrigerants for Life: How Refrigerants affect Modern Life", [Click here to register](#)

Contact: [Ayman El-Talouny](#), Montreal Protocol Programme Officer

UN Environment, OzonAction, June 2019



— Latin America and Caribbean —

2. Nicaragua asume compromiso ambiental y cumple protocolo de Montreal



El país centroamericano cumple a cabalidad el convenio de Viena para la protección de la capa de ozono al reducir la producción y el consumo de sustancias que son responsables de la destrucción de la misma, con medidas determinantes como el cambio de refrigerante para el uso de los aires acondicionados.

Según cálculos, 1 libra de refrigerante, equivale a 3,500 kilogramos de dióxido de carbono, un gas incoloro compuesto de químicos que afectan el medio ambiente.

“La implementación técnica de este proyecto incorpora capacitación de técnicos en refrigeración para que se actualicen y aprendan el manejo correcto de estos nuevos refrigerantes, que es la nueva tendencia a nivel mundial, es importante que manejemos que a partir del primero de enero de este año 2019 entró en vigencia una nueva enmienda del protocolo de Montreal, que establece compromisos para que los países disminuyan los tipos de refrigerante”, sostuvo Pastora Sandino.

“Entonces a través de este proyecto vamos a desarrollar capacidades locales e instituciones en técnico en refrigeración y en distintas organizaciones para que conozcan estos nuevos refrigerantes y contribuyamos, son cumplimiento de estas metas globales, en pro de la protección por la capa de ozono, ha sido muy importante, muy interesante”, indicó.

“Disminuir esos gases que afectan nuestra otra capa de ozono, que contribuyen al tema del calentamiento global, entonces efectivamente el día de hoy una vez más estamos demostrando a nivel nacional y por supuesto ahí a nivel internacional nuestro compromiso, este proceso que hoy vamos a iniciar, es un plan de acción un plan de actividades, es una estrategia de país que se suma al tema de bajar cada vez más y disminuir cada vez más los gases que afectan, que contribuyen al calentamiento global y cómo podemos ver estamos demostrando, como de la mano de las empresas, con la instituciones, hemos venido desarrollando todo este proceso, una realidad, no es un discurso”, explicó Sumaya Castillo, titular del Ministerio del Ambiente y de los Recursos Naturales, MARENA.

Watch related [video](#)

tn8, 7 de Junio de 2019, Por: Oscar Morales

North America

3. Study identifies chemical blends as possible alternative refrigerants

More than a dozen chemical blends could serve as alternative refrigerants that won't heat the atmosphere as much as today's refrigerants do, or catch fire, according to a new computational study by the National Institute of Standards and Technology (NIST).

The NIST study identified the 22 "best" nonflammable or marginally flammable blends with lower global warming potential (GWP)--a measure of how much heat a gas will trap if released into the atmosphere--than the current standard refrigerant for vehicle air conditioning (AC), called R-134a (tetrafluoroethane).

Most of the identified blends combine R-134a with one or two other commercial refrigerants.

The new NIST analysis, which was conducted for the U.S. military but also applies to civilian applications such as AC systems for homes and cars, is a follow-up to a 2017 NIST study that found that all single-component, climate-friendly refrigerants were at least marginally flammable. That study suggested blends might offer the optimal solutions.

"The military is insistent about wanting non-flammable blends, but the civilian applications are moving more and more toward at least marginally flammable mixtures," NIST mechanical engineer and study lead author Ian Bell said.

To help reduce global warming, nearly 200 nations, including the United States, agreed in 2016 to amend the Montreal Protocol to phase down by mid-century the refrigerants used in most AC systems. The partial phasedown, rather than a complete phaseout, recognized the complicated choices that will need to be made to select replacements.

For the new study, NIST researchers selected 13 fluids within a range of pressure, flammability, and GWP values that might produce a blend with the desired characteristics. All fluids were low in toxicity and commercially available. The researchers conducted an extensive evaluation of all possible combinations of two or three of the 13 fluids.

The fluids included hydrofluoroolefins, which have very low GWP but are mildly flammable; nonflammable hydrofluorocarbons (HFCs) with moderate-to-high GWP; mildly flammable HFCs; and carbon dioxide, which is nonflammable and also has a very low GWP of 1, but would raise the operating pressure of a blend, which is undesirable.

NIST researchers did not find any blends that met all desired constraints--nonflammability, low GWP, high efficiency (cooling per unit of work), and overall cooling capacity similar to that of the R-134a baseline system.

The study identified 14 nonflammable blends that offered a reduction in GWP of, at most, 51 percent compared to R-134a's GWP of 1300. An additional eight blends that were marginally flammable were identified with GWP reductions of as much as 99 percent. Researchers simulated the performance of these 22 blends in a detailed refrigeration cycle model. The study was performed using computational tools; researchers plan to carry out laboratory experiments to verify the results.

The study revealed several trends. The most promising nonflammable blends have slightly lower efficiency compared to R-134a. These nonflammable blends have a lower GWP limit of 640; this is due to the need for a lot of R-134a in the mixture to suppress the flammability of low-GWP fluids. Other blends containing a significant amount of carbon dioxide were also nonflammable, but these had very low efficiencies compared to R-134a and were not considered viable alternatives.

There is also a general trend of efficiency increasing in tandem with GWP and flammability. This is because lower-GWP fluids tend to be more complex molecules and this complexity can hinder refrigeration performance.

"The 'good' blends that we found are very borderline nonflammable," Bell cautioned. "That doesn't mean that they won't still burn given the right environment. We need to be cautious, because this is sort of a dark art. There is a fundamental trade-off: If you really want nonflammability and efficiency, you won't get both. You will get one or the other."

The National Institute of Standards and Technology (NIST), 29 May 2019



IMAGE: A HEATING, VENTILATION AND AIR-CONDITIONING (HVAC) UNIT GETS A CLEANING AT AN AIR FORCE BASE IN NIGERIA. [View more >](#)
CREDIT: JIMMIE PIKE/US AIR FORCE

Asia Pacific

4. Sri Lanka: 'ahead of the curve' in clean cooling

"The Government of Sri Lanka was one of the first in the world to ratify the Kigali Amendment, showing our commitment to addressing the climate crisis. We have a responsibility to minimize global warming."

- M.P.D.U.K Mapa Pathirana

Secretary State Ministry of Mahaweli Development and Environment, Sri Lanka



Colombo, 29 May 2019 - The National Ozone Unit (NOU), Ministry of Mahaweli Development and Environment, Sri Lanka in partnership with UN Environment OzonAction Branch and UNDP, conducted a workshop on 27-30 May 2019 in Colombo, Sri Lanka, to discuss HCFC (hydrochlorofluorocarbon) phase-out and HFC (hydrofluorocarbon) phase-down imperatives with key stakeholders from the country.

The workshop was attended by over 70 participants including a wide range of representatives from Sri Lankan Government Ministries (with expertise in areas of urban development, finance, education, agriculture and customs); as well as sector technicians and engineers; and representatives from the building/construction, railways and fishing industries (major end-users of refrigeration and cooling technologies).

In the opening remarks from UNDP Sri Lanka's representative, Ms Tharuka Dissanaiké, it was noted that Sri Lanka is ahead of the curve in the region in Montreal Protocol implementation, but the challenges aren't over yet - further country-wide cooperation between private sector, government and others is needed.

Also in the opening remarks, UN Environment OzonAction Montreal Protocol Officer for South Asia, Ms Liazzat Rabbiosi, stressed that the world is now in a climate crisis (not just 'climate change'). It was unanimously acknowledged by presenters and participants that Sri Lanka is entering a challenging phase: whilst still in the middle of phase-out of HCFCs, they now have to look at phase-down of HFCs, meaning they are faced with a very complicated market to manage, with multiple refrigerants in use.

In a very special occurrence, three generations of National Ozone Officers were all present at the workshop to see the progress that Sri Lanka has made, as well as Mr S.P.K Amarasinghe - the former Principal of Ceylon German Technical Training Institute (Sri Lanka's foremost technical institute in the sector).

Some particularly interesting points raised by the participants were: the need to mainstream Montreal Protocol into other policy areas including climate change; the need for an increased general knowledge of environment and climate change; and mainstreaming these issues into Technical and Vocational Education and Training (TVET) curriculum, ensuring the right competence of refrigeration servicing technicians to handle alternatives to HFCs.

There was a general consensus that awareness of Recovery, Recycling, Reclamation (RRR) technologies is still minimal among stakeholders. Participants also discussed the recently enforced government regulation requiring all servicing workshop to have a recovery machine to be able to renew their trade licenses, yet most of the Refrigeration and Air-Conditioning (RAC) workshops across the country do not have these machines. Many participants also raised queries around Energy Efficiency standards for domestic refrigerators and room air-conditioning being developed by the Sustainable Energy Authority of Sri Lanka.

On 30 May 2019, the NOU with the assistance of the OzonAction Branch, organized a productive roundtable with end-users – major supermarket chain, railway, cold chain, dairy and engineering companies - of refrigeration and air-conditioning equipment to discuss issues around the phasing-down of HFCs and the implication to them. The feedback received from this workshop was that it was very helpful: practical workshops providing technology overview and policy directions for the sector are valued by these end-users.

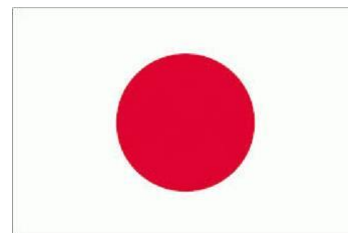
Interestingly, the roundtable participants echoed some of the thoughts raised by the workshop participants in the days prior, expressing the need for general information and general awareness around the Kigali Amendment and Climate Change, as well as concerns around RRR – especially access and availability.

The Sri Lankan Government is making progress towards achieving its 35% reduction obligation in the use of HCFCs and preparing for Stage II from 2020 onward. Some discussions are taking place whether the country is ready to go for a full phase out by 2025 instead of 2030. Concurrently, having ratified the Kigali Amendment in September last year, the Government is putting in place measures to meet its initial obligations through the Enabling Activities Project funded by the Multilateral Fund.

UN Environment, OzonAction, 29 May 2019



5. Japan tightening HFC recovery regulations



The bill will fine violations and require HFC recovery certificates.

The Japanese government on May 29 approved and passed a draft bill outlining measures to tighten regulations on f-gas recovery in Japan, according to Japanese publication Fukui Shimbun.

The bill was first proposed at an advisory council of experts hosted jointly by Japan's Ministry of Environment (MOE) and Ministry of Economy, Trade and Industry (METI), in January 2019.

Implementation will begin in 2020 "after discussions with each prefecture," Fukui Shimbun said.

The measures in the draft bill include "imposing a fine on every violation of the law and banning waste disposal firms from dealing with products without HFC recovery certificates," according to an editorial published by The Asahi Shimbun, another Japanese publication, in January.

"They would also empower prefectural governments to make on-the-spot inspections at building demolition work sites," it added.

The editorial, entitled, 'Japan needs to heat up efforts to slash harmful emissions', referenced the January meeting and discussed the challenges with f-gas recovery in the country.

The total f-gas recovery rate per year has never exceeded 40% since 2002.

With the new bill, Japan aims to achieve an f-gas recovery rate of 50% by 2020 and 70% by 2030.

The Asahi Shimbun also highlighted the fact that refrigerant recovery and disposal can only partially contribute to Japan achieving its HFC phase-down targets — with natural refrigerants also playing a key role.

"Achieving the target of an 85% cut by 2036 requires replacing HFCs with climate-friendly alternatives," the article stated.

"There are various natural refrigerants that are drawing growing attention as possible substitutes for HFCs, including ammonia, CO₂, hydrocarbons, air and water."

Ammonia21, 4 June 2019, By: Devin Yoshimoto, Rena Okabe

6. Rising demand for air conditioning could make climate change even worse. But a new \$1 million prize could boost climate-friendly AC technology



Between 1992 and 2016, more than 22,000 people in India died as a result of heat exposure. In 2015 alone, the death toll reached 2,300.

Authoritative projections indicate that under a high-emissions scenario, 75 percent of the country's population will face dangerous levels of heat and humidity by 2100. Cities that now house millions would become uninhabitable.

One reason that India's heat waves are particularly deadly is the scarcity of air conditioning. The nation has one of the lowest penetrations of AC technology in the world – today, fewer than 10 percent of all its households have it.

This situation is changing. The country's expanding middle class, increasing urbanization, and rising temperatures are leading to more sales of room air conditioners for residential use. Within the next few decades, India is expected to become a world leader as measured by the number of AC units in operation.

But while this important transition will save lives in the short term, it could make the country – and the planet – even hotter.

The cold crunch

The rise of air conditioning in India plays a major role in what the International Energy Agency, in its “Future of Cooling” report, calls the “cold crunch” – a phenomenon it describes as one of the most critical energy issues of our time. This “crunch” refers to a projected dramatic rise in the use of AC – most of it residential – in emerging economies. India is expected to lead the pack in terms of numbers of room units coming online, but Indonesia, Brazil, and other nations will also experience significant growth.

If current trends continue, the amount of energy required to power the world’s air conditioners will triple by 2050, making it roughly equal to China’s current electricity demand.

The impact? “If this massive adoption happens under a business-as-usual scenario – which means if we just take the ACs that we have today and deploy them in the market moving forward with incremental improvements in efficiency – you could look at almost half a degree [Celsius] increase through just room air conditioners by 2100,” said Radhika Lalit, a manager at the Rocky Mountain Institute New York City office.

This scenario would also wreak havoc on electricity grids in the developing world, where rising AC use is already stressing power systems and driving up energy costs. In India, new air conditioning units could result in a 1,500 percent increase in energy demand by 2050, according to the IEA report.

Lalit, who is originally from Delhi, India, is leading an effort that aims to avoid these outcomes. Called the Global Cooling Prize, it posits that the only way to bring the benefits of mechanical cooling to hot countries while preventing the downsides is to radically improve AC technology.

Direct and indirect emissions

Since Willis Carrier designed the first mechanical air conditioner in 1902, AC systems have relied overwhelmingly on a technology called vapor compression. This technology impacts the climate both directly (through GHGs emitted by refrigerants) and indirectly (through the use of electricity).

The cooling industry has taken significant steps over time to reduce its environmental impact. The most obvious example has come about in the wake of the 1987 Montreal Protocol, an international agreement that mandated the phasing out of chlorofluorocarbons, or CFCs, which are ozone-depleting refrigerants.

However, the refrigerants that replaced CFCs, hydrofluorocarbons (HFCs), are extremely potent greenhouse gases. In 2016, the international community committed to drastically reduce the use of HFCs over the next three decades. The AC industry is again having to transition to different refrigerants. (In Europe and parts of Asia, regulations have already reduced the use of HFCs.)

But according to the Global Cooling Prize team, indirect emissions are a still-bigger problem: Refrigerants are responsible for only a fifth of AC-related emissions in developing countries.

Lalit and her colleagues say the best way to slash emissions is to dramatically reduce the amount of energy AC units consume. “The best-in-class room air conditioners that are available in the market today are no more than 14 percent of the theoretical maximum efficiency,” she said. Cheaper models, which are preferred by consumers because of what Lalit calls “first-cost myopia,” are even less efficient.

Despite real gains in efficiency over the past few decades, the industry isn’t moving fast enough to address indirect emissions, she insists.

Encouraging innovation

To jumpstart innovation, the Global Cooling Prize is offering money for the development of an affordable room AC unit that has five times less climate impact than current models.

More than 1,600 engineering teams from around the world have registered for the prize. After the August 31 deadline for technical proposals, industry experts are to select 10 finalists to receive \$200,000 to develop a prototype room cooling unit. The prototypes will be lab- and field-tested and the top performer will win \$1 million.

According to Eli Goldstein, the cofounder of a startup whose technology cools buildings by sending heat into outer space, the prize is already having a positive impact on the AC industry. “It’s calling attention to the current system and the current way things are made, and it’s getting people excited,” he said. The initiative also is encouraging healthy competition and cooperation between different industry players, according to Goldstein.

The idea for the competition grew out of investigations into high-impact climate mitigation opportunities that the Rocky Mountain Institute undertook in 2017. After developing the contest framework, Lalit and her colleagues assembled a high-profile support network including the Indian government and Mission Innovation, a global clean energy initiative.

Prize entries fall into one of three categories: improved vapor compression, niche cooling, and futuristic technologies.

The first category involves designs that significantly advance vapor compression technology. The second includes non-vapor compression systems shown to perform well in certain environmental conditions, but not others, limiting the ability to scale them across all geographies where AC is needed. For example, “solar thermal requires solar, and maybe a battery. And evaporative cooling is best when it’s not humid,” Lalit said. “There are ways in which you can obviously correct for that, but that would imply increases in cost or in the size of the system.” The prize is designed to encourage clever engineering that could address these limitations.

The third category consists of innovative non-vapor compression technologies that are in earlier stages of development and commercialization – for instance, systems that use sound waves or electrical junctions to provide cooling.

Priming the market

In addition to supporting the development of short-listed technologies, the prize organizers are working to ensure that the winner will be able to compete in the marketplace, starting with India and moving to other emerging economies.

To this end, the Indian government is exploring options to set an example and create demand for the new products, using bulk procurement for its own buildings. Lalit and her colleagues are also working to line up advance commitments from private-sector organizations.

The organizers are also considering ways to help consumers make informed purchases, rather than simply picking the cheapest model off the shelf.

They acknowledge that this component will require creative thinking to overcome one fundamental obstacle: “Air conditioners are boring,” as Lalit put it.

Yale Climate Connections, 3 June 2019, By: Sarah Wessler

7. Phosphine is a safe and effective fumigant, claims study



Phosphine may be as effective as the ozone-depleting methyl bromide (MB) in killing insect pests and can be used as quarantine fumigant at ports, according to a study by the Indian Council of Agricultural Research (ICAR) scientists.

According to Sumitra Arora, Director of the New Delhi-based National Centre for Integrated Pest Management, a lab affiliated to the ICAR, who led the two-year-long study, the results have already been submitted to the Ministry of Agriculture, which sponsored the study.

Thorough study

Scientists from NCIPM and other ICAR institutes conducted experiments in four different agro-climatic locations using grains such as wheat and rice as well as pulses. “We found that phosphine is 100 per cent effective against the pests,” she told a conference here last week. Phosphine, a fumigant in a gaseous form, is normally produced using aluminium phosphate as substrate. [...]

The Hindu, BusinessLine, 11 June 2019

8. The European Fluorocarbons Technical Committee looks to stem carriage of illegal refrigerants

Refrigerant manufacturers have stepped in to try and stem the flow of illegal refrigerant in Europe by demanding that the carriage of dangerous goods act is correctly applied.

With the F-gas phase down in force, Europe has been swamped by illegally imported refrigerant, disrupting the market and threatening the integrity of the phase-down process. Most of this illegal product is being traded in non-refillable (disposable) cylinders, a container which has been banned in Europe since 2007. These cylinders typically have a capacity of 5 to 10 litres and are transported in 20ft sea containers.

European refrigerant manufacturers group the EFCTC has written to competent authorities, institutions and transportation related associations, pointing out that these cylinders do not meet the ADR transportation agreement and asking for these regulations to be enforced.

The ADR (Accord européen relatif au transport international des marchandises Dangereuses par Route) covers the carriage of hazardous materials.

In the letter setting out the EFCTC's concerns, chairman Dr Nick Campbell points out that the refillable cylinders meet the US DOT requirements, but not the ADR 1.1.4.2. requirements.

He writes: "Under Multilateral Agreement M239, certain gases and liquids in refillable pressure receptacles approved by the US Department of Transportation may be carried from the location of the temporary storage to the end users under strict conditions. Since the cylinders concerned are non-refillable, they clearly do not qualify under the exemption of M299."

The EFCTC has launched a multi-level programme to fight against the illegal refrigerant trade and raise awareness of the problem. In March, the EFCTC launched a [hotline](#) to enable the confidential reporting of illegal refrigerant imports and sales activity.

CoolingPost, 12 June 2019



EFCTC looks to stem carriage of illegal refrigerants

12 JUN 2019

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Related stories:

EFCTC introduces illegal refrigerant reporting "hotline" - 29 March 2019

EUROPE: Illegal refrigerant imports and sales activity in Europe can now be easily reported, and in confidence, through a new website established by the refrigerant producers group EFCTC. Read more...

9. Increasing energy efficiency while phasing-down HFCs: showcasing the EU example

INVITATION TO WEBINAR
on 26 June 2019, 11:00 CEST
World Refrigeration Day (@WorldRefDay)

Agenda:

- **Update on the implementation of the EU HFC phase-down**
Mr Niccolo Costantini
Policy Officer, EU Commission (DG Climate Action)
- **Energy efficiency policies in the RAC&HP sector**
Ms Julia Kleinschmidt
Policy Advisor, Öko-Recherche GmbH

Welcome at Öko-Recherche

Öko-Recherche is an independent environmental research institution and consultancy located in Frankfurt/Main, Germany. Since its foundation in 1993, Öko-Recherche has been working on issues related to environmental protection, chemical safety and climate protection at national as well as international level.

LATEST PUBLICATIONS

25 years Greenpeace - A ridge that changed the world
July 2018: Barbara Gächter, Nicole Möller (ÖZ), Franziska Hornig (ÖZ)
2018

NEEM nach dem Kigali-Beschluss - welche Reduktion erfordert Alternativen
April 2018: Dr. Felix Heydel, Julia Kleinschmidt
2018

All publications

- **ESyCool green – R290-based energy system for commercial cooling applications**

Mr Benedikt Geitz
System Developer, Viessmann K hlsysteme GmbH

- **eChiller – using water as refrigerant for various cooling applications**

Mr J rgen S uf
Managing Director, Efficient Energy GmbH

Q&As

The Kigali Amendment to the Montreal Protocol does not only focus on the large-scale reduction of hydrofluorocarbons (HFCs) but also highlights the importance of energy efficiency measures. The latter are crucial to diminish indirect GHG emissions from energy use, which are generally higher than the direct GHG emissions from refrigerant leakages. Therefore, the transition to low GWP alternatives in refrigeration, air conditioning and heat pump (RAC&HP) sectors needs to go hand in hand with increases in the energy efficiency of new and existing products and equipment.

In the light of the above and on the occasion of the World Refrigeration Day,  ko-Recherche, in close cooperation with the EU Commission, will be hosting a one-hour webinar presenting the EU approach to reducing HFCs through the F-gas legislation and introducing more energy efficient products through eco-label and energy labelling policies.

This will be complemented by best practice examples from two companies illustrating their innovative solutions to achieving both emission reduction goals.

To register, please confirm your participation by Tuesday, 18 June 2019, by sending a short e-mail to [Mr Nicolai Bannwitz](#). You will then receive the log-in details for the webinar session (Spreed) in due time prior to the webinar.

Contact: [Ms Julia Kleinschmidt](#)

10. Belarusian polar explorers considering spending first winter in Antarctica in 2020-2021

Belarusian polar explorers may spend their first winter in Antarctica in 2020-2021, BelTA learned from Aleksei Gaidashov, head of the 11th Belarusian Antarctic expedition, on 13 June.

According to the source, the construction of the first stage of the Belarusian Antarctic station is nearing completion. [...]

Participants of the 11th expedition worked in Antarctica for several months. In this period they performed dozens of scientific researches and experiments, took thousands of measurements of natural parameters in line with the subprogram "Monitoring of polar areas of Earth, creation of the Belarusian Antarctic station, and enabling the work of polar expeditions" of the government program "Science-intensive technologies and equipment" for the 2016-2020 period.

The scientific projects in Antarctica were performed in such areas as comprehensive ground-based and satellite monitoring of the atmosphere and the underlying terrain in Antarctica, the organization of radiation calibration of satellite spectrum apparatus for the sake of the national space program; hydrochemical, biological, environmental studies of terrestrial, marine and freshwater ecosystems of Antarctica; monitoring of the ozone layer of the atmosphere and ultraviolet radiation in Antarctica; research into changes in the natural environment and climate. [...]

Belarusian Telegraph Agency (BelTA), 13 June 2019

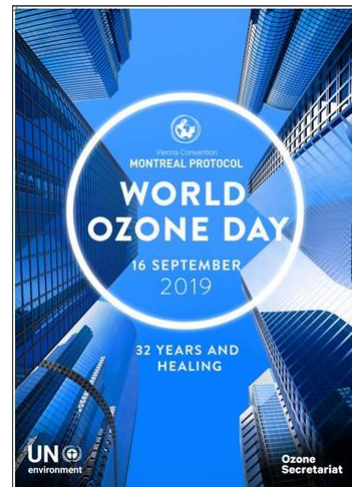


Featured



OZONE SECRETARIAT

32 Years and Healing - Theme for World Ozone Day 2019



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

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

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

[The UN Environment Assessment Panels](#)

The Assessment Panels have been vital components of ozone protection since the Montreal Protocol was first established. They support parties with scientific, technological and financial information in order to reach decisions about ozone layer protection and they play a critical role in ensuring the Protocol achieves its mandate.

The Assessment Panels were first agreed in 1988 to assess various direct and indirect impacts on the ozone layer. The original three panels are:

[The Technology and Economic Assessment Panel](#)

[The Scientific Assessment Panel](#)

[The Environmental Effects Assessment Panel](#)

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

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



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

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

- [83rd meeting of the Executive Committee](#)

- [82nd meeting of the Executive Committee](#)

[Learn more](#)



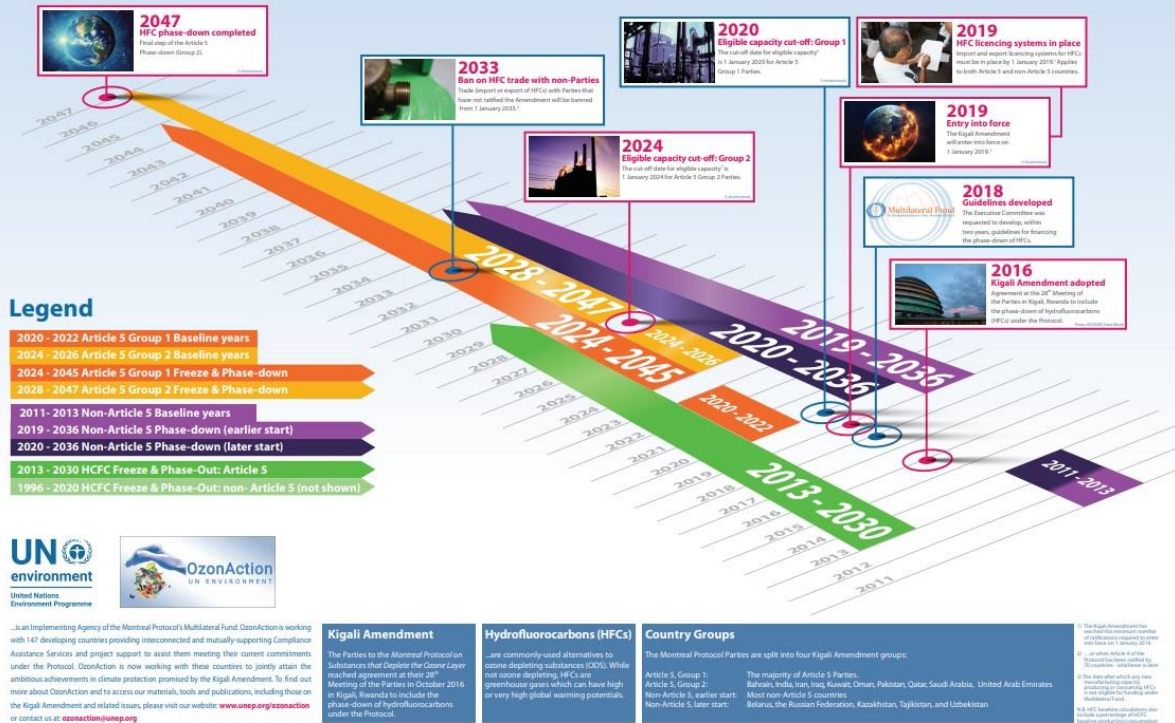
OZONACTION

Post-Meeting Feedback Survey - OzonAction Second Global Inter-Regional and Parallel Network Meetings for National Ozone Officers, 17-20 February 2019.

Read/Download: [Meeting report](#) | [Full survey report](#)

Question	Response	Percentage
1. How satisfied are you with the quality of the meeting?	Very satisfied	92%
2. How satisfied are you with the quality of the meeting?	Satisfied	8%
3. How satisfied are you with the quality of the meeting?	Not satisfied	0%
4. How satisfied are you with the quality of the meeting?	Very dissatisfied	0%
5. How satisfied are you with the quality of the meeting?	Dissatisfied	0%
6. How satisfied are you with the quality of the meeting?	Very dissatisfied	0%
7. How satisfied are you with the quality of the meeting?	Dissatisfied	0%
8. How satisfied are you with the quality of the meeting?	Very dissatisfied	0%
9. How satisfied are you with the quality of the meeting?	Dissatisfied	0%
10. How satisfied are you with the quality of the meeting?	Very dissatisfied	0%

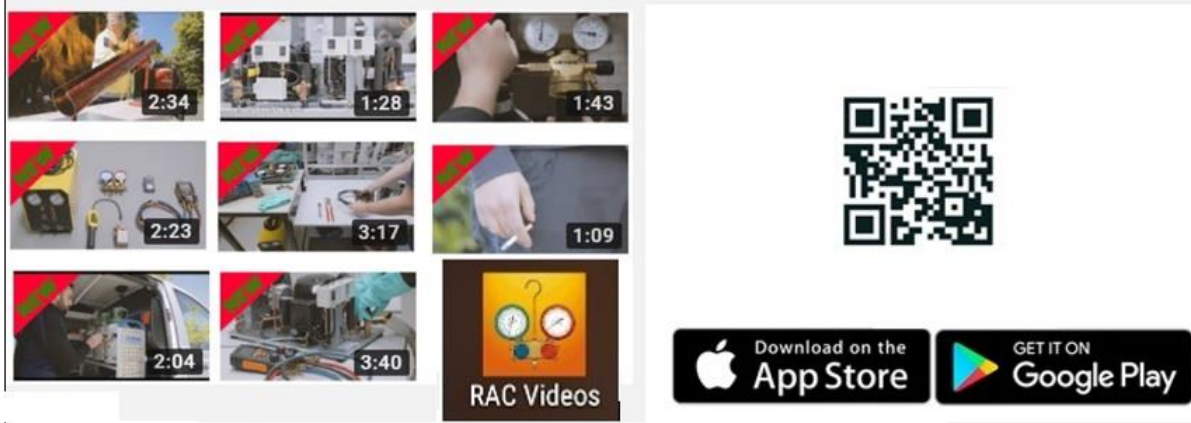
The Path from Kigali: HFC Phase-Down Timeline



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

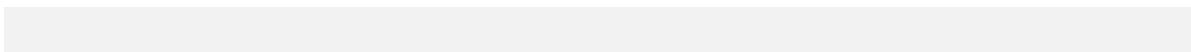


New videos available on the OzonAction RAC video application

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.

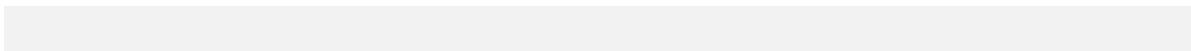
- Helps in understanding and reporting under the Montreal Protocol (and future commitments under the Kigali Amendment)
- The calculator will automatically perform the conversion between metric

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

- 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



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 hydrofluorocarbons (HFCs) continues the historic legacy of the Montreal Protocol. This factsheet summarises and highlights the main elements of the Amendment of particular interest to countries operating under Article 5 of the Protocol (Article 5 Parties).

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

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

Tools Commonly used by Refrigeration and Air-Conditioning Technicians.



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

OzonAction has launched an exciting new application which hosts series of short instructional videos on techniques, safety and best practice for refrigeration and air-conditioning technicians.

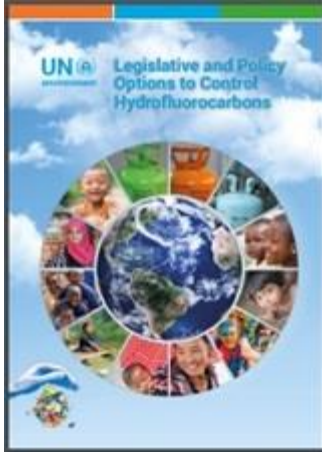
This application, consisting of short instructional videos on techniques, safety and best practice, serves as a complementary training tool for refrigeration and air-conditioning (RAC) sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training.

New videos on flammable refrigerants just added!

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

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

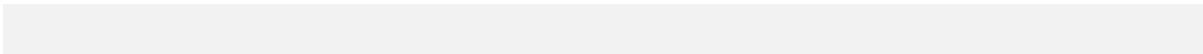
Publications



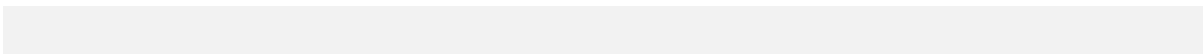
Legislative and Policy Options to Control Hydrofluorocarbons

In order to follow and facilitate the HFC phase-down schedules contained in the Kigali Amendment, the Parties, including both developed and developing countries, will have to implement certain measures.

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



Latest issue of the Centro Studi Galileo - [Industria & Formazione](#). La rivista per il tecnico della refrigerazione e della climatizzazione, N. 4, 2019



Events

2019

- [World Refrigeration Day](#), 26 June 2019. Join in events globally that will celebrate World Refrigeration Day

• [25th IIR International Congress of Refrigeration](#) - 24-30 August 2019, Montreal, Canada

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

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

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](#)



[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.



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”.

We are pleased to invite you to submit your nomination*, and/or nominate Ozone Layer Champion(s). **The short profile should reflect the nominee's**

valuable work related to the Montreal Protocol and ozone layer protection.

Please notify and nominate worthy candidates through the [on-line form](#)

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

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

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

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



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

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

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

With increasing global stakes at hand, over the past years refrigeration has come to take a leading role at the heart of international affairs.

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



New International Journal of Refrigeration service for IIR members -

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

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

Volume 1, Issue 1.

- Unlimited access to seminal contributions to the field of refrigeration dating back to 1978.
 - Keep up-to-date with subscriptions to customized e-alerts on New Volumes, Topics and saved Searches. Enhanced content and functions
 - Easily export references, citations and abstracts.
 - Print, download or share articles with colleagues or peers.
 - See which papers, published in Elsevier or elsewhere, have cited any selected article.
 - Consult the research highlights overview of articles in volumes from 2012 onwards.
- To access this new service, click "[activate my e-IJR subscription now](#)" and follow the instructions.



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

within Europe through access to AREA. Contact: info@area-eur.be



Ozone Hole: How We Saved the Planet
Premieres Wednesday, April 10, 2019
10:00-11:00 p.m. ET on PBS
New Documentary Tells the Remarkable Story of how Scientists Discovered the Deadly Hole in the Ozone – and the Even More Remarkable Story of how the World's Leaders Came Together to Fix It.

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

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



Ozone Depletion Explained --- The ozone layer's status today

- Recognition of the harmful effects of CFCs and other ozone-depleting substances led to the Montreal Protocol on Substances That Deplete the Ozone Layer in 1987, a landmark agreement to phase out those substances that has been ratified by all 197 UN member countries. Without the pact, the U.S. would have seen an additional 280 million cases of skin cancer, 1.5 million skin cancer deaths, and 45 million cataracts—and the world would be at least 25 percent hotter...



The IIR launches a **Call to Action for World Refrigeration Day** - Send your proposals to the IIR, *preferably by May 20*, at iif-iir@iifiir.org with the subject **“Call to Action: World Refrigeration Day”**.



Accelerating energy efficiency in HFC-free supermarkets

Webinar on Wednesday, 26 June 2019, 4 pm CEST / 10 am EDT

[Register Now](#)

Making refrigeration sustainable demands a holistic approach that not only addresses hydrofluorocarbons (HFCs) but also considers energy, which can contribute to three times more carbon dioxide equivalent (CO₂e) emissions than the HFCs or hydrochlorofluorocarbons (HCFCs) used as refrigerants. Under the 2016 Refrigeration Resolution, CGF members committed to develop individual targets and action plans to measure and achieve progress in installing HFC-free or ultra low-GWP new refrigeration equipment and improving energy efficiency of existing and new equipment.

The webinar will outline some key recommendations for end users to improve energy efficiency in HFC-free refrigeration equipment. Retailers will also share their best practice, lessons learnt and discuss challenges and barriers.

The webinar is part of a project funded by the Kigali Cooling Efficiency Program (K-CEP) that seeks to help retailers accelerate adoption of energy efficient HFC-free cooling and create favourable policy measures.

Contact: [Klara Skacanova](#), Manager Market Development, shecco



Webinar: Accelerating energy efficiency in HFC-free supermarkets

26 June @ 4 pm CEST / 10 am EDT



[REGISTER NOW](#)

Skin cancer rates are rising. On this 'Don't Fry Day,' UV expert offers tips to stay safe in the sun.

EPA's Nancy Akerman: **"You only have one skin, so take care of it!"**

Summer unofficially kicks off each Memorial Day weekend, as our first real chance to head outdoors and enjoy the warmth and sunshine. **"Don't Fry Day"** is an annual reminder, led by the National Council on Skin Cancer Prevention, to practice sun safety and be mindful of how the sun's ultraviolet (UV) radiation affects us.

The effects of exposure to UV rays accumulate over your lifetime. Overexposure to this radiation is linked to skin cancer, which remains the most common form of cancer in the United States, and the rates are rising ...





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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: Dr. Ezra Clark, OzonAction

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samira.degobert@un.org



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