
Volume XXI | 30 November 2021

## In this issue:



# GLOBAL

### 1. Kigali Amendment latest ratifications

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

Turkey, 10 November 2021
St. Lucia, 2 November 2021
Serbia, 8 October 2021

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

Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Status of Ratification 15 October 2016 to **date**.

**United Nations Treaty Collection**
*Image: UN Treaty Collection website*

**2. Operation DEMETER VII clamps down on illegal transboundary shipments of waste and ozone depleting substances**


Operation DEMETER VII clamps down on illegal transboundary shipments of waste and ozone depleting substances

Conducted from 1 to 31 October 2021, Operation DEMETER VII demonstrated Customs' commitment to helping to protect the health of both people and the planet, by enforcing Multilateral Environmental Agreements (MEAs) which regulate cross-border movements of environmentally sensitive commodities. Strategically placed at borders, Customs is the primary line of defence against illicit cross-border trafficking and is mandated to monitor and control commodities.

Operation Demeter VII tackled the illicit trafficking of waste, ozone depleting substances (ODS) and hydrofluorocarbons (HFCs), which are very potent greenhouse gases that contribute to global warming and climate change. These commodities are regulated under, respectively, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention), and the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol).

"By controlling the compliance of goods that cross borders, Customs is a crucial actor in the fight against climate change and environmental impoverishment", said the Secretary General of the World Customs Organization (WCO), Dr. Kunio Mikuriya. "The success of Operation DEMETER VII once again demonstrates the importance of joint actions to stop and prevent illicit trade in waste and substances controlled under the Montreal Protocol, and the WCO is committed to continuing to work closely with its partners in these endeavours", he added.

With 87 Customs administrations participating – the largest DEMETER Operation yet – Operation DEMETER VII achieved great success in its objective of thwarting illicit trafficking. The lead actors in this Operation were the WCO Secretariat, the Regional

Intelligence Liaison Offices (RILO) for Asia/Pacific and Western Europe, and China Customs.

The Operational Coordination Unit was set up at the Asia/Pacific RILO based in Seoul, Korea. In addition, the Operation was supported by the Basel Convention, the United Nations Environment Programme (UNEP), the European Anti-Fraud Office (OLAF), the WCO-United Nations Office on Drugs and Crime (UNODC) Container Control Programme, INTERPOL, Europol, the EU Network for Implementation and Enforcement of Environmental Law (IMPEL), and the WCO RILO network.

Using risk indicators and focusing on pre-identified routings and hotspots, Customs officers controlled suspicious shipments and seized illegal waste and ODS. The Operation resulted in a total of 107 seizures, including:

- 3,851 tons of waste and additional 6,108 pieces
- 101 kg and additional 493 pieces of substances controlled under the Montreal Protocol.

The DEMETER Operations, with the first edition dating back to 2009, have become synonymous with global Customs enforcement efforts aimed at intercepting and disrupting illegal shipments of hazardous waste, especially plastic waste, as well as substances controlled by the Montreal Protocol, namely ODS and HFCs.

Under the Kigali Amendment, Parties to the Montreal Protocol are now required to gradually phase down HFC production and use.

The WCO and its partners will continue to intensify their efforts to address environmental risks, with more enforcement initiatives planned for the future.

**The World Customs Organization (WCO), 26 November 2021**

*Image: WCO website*

### 3. Controlling Chemical Feedstocks under the Montreal Protocol Will Protect Oceans and Atmosphere


*Washington DC, 29 November 2021*— Tightening feedstock controls under the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol) will provide substantial environmental benefits to the ozone layer and climate while reducing plastic pollution and persistent organic pollutants, concludes a provocative new paper published today in the *Proceedings of the National Academy of Sciences* (PNAS).

***Narrowing Feedstock Exemptions Under the Montreal Protocol Has Multiple Environmental Benefits***, authored by a team of international climate and ozone technical experts, lawyers, and scientists, explains how the Montreal Protocol can be further strengthened to narrow exemptions for ozone-depleting greenhouse gas (GHG) feedstocks used in the manufacture of plastics. These plastics pollute the land, rivers, and oceans with toxic and hazardous waste that threatens current and future generations.

“Plastic pollution is a growing threat impacting the well-being of every living creature on this planet. This paper starts the conversation on how the Montreal Protocol can be helpful in reducing plastic waste under other treaties, national and regional regulations, and voluntary programs,” said Dr. Stephen O. Andersen, Director of Research at the Institute for Governance & Sustainable Development (IGSD) and co-lead author of the paper. “We must commit to aggressively reducing plastic using all the strategies at our disposal.”

The authors explain that Montreal Protocol Parties have existing authority through its adjustment and amendment procedures to vote to narrow the scope of existing feedstock exemptions to reduce inadvertent and unauthorized ozone-depleting GHG emissions while continuing to exempt production of feedstocks for time-limited and essential uses. This upstream approach can be an effective and efficient complement to other efforts to reduce plastic pollution.

Existing mechanisms in the Montreal Protocol, such as the Assessment Panels and national implementation strategies, can guide the choice of environmentally superior substitutes for feedstock-derived plastics.

“Complex chemical pathways are involved in using ozone-depleting substances and hydrofluorocarbons as feedstocks to produce plastics. As a starting point, we estimate that up to 6% of plastics can be potentially avoided if relevant feedstocks were curtailed,” said Dr. Song Gao, Professor of Environmental Science and Chemistry at Duke Kunshan University and Professor of the Practice of Global Studies at Duke University, and co-lead author of the paper.

"The Montreal Protocol has not only put the stratospheric ozone layer on a path to recovery, but it has also done more than any other agreement to slow catastrophic global warming. With time running out to avert the worst of climate impacts, we must do all we can to reduce warming fast," said Durwood Zaelke, President of the Institute for Governance & Sustainable Development and co-author of the paper. "This paper challenges policymakers, industries, and civil society to take fast action under the Montreal Protocol to further protect stratospheric ozone and climate while reducing hazardous and toxic feedstock and plastic pollution. This is a winning strategy for the climate, the planet, and all peoples."

Download *Narrowing Feedstock Exemptions Under the Montreal Protocol Has Multiple Environmental Benefits* **here**

*For media inquiries and additional information, please contact:* **Dr. Stephen O. Andersen**
*Image: IGSD website*

**4. The Cold Truth About HFC Phasedowns**


The HVACR industry understands the importance of regulations in driving technology innovation and improvements in safety and environmental sustainability. Specific to refrigerants, while regulations that have driven the eventual elimination or "phaseout" of ozone depleting substances (CFCs and HCFCs) have been in place for several decades and are familiar to most in the industry, newer regulations implemented or taking shape in recent years to address climate change with an HFC "phase-down" are frequently misunderstood or sometimes intentionally misrepresented.

Since HFC phasedown regulations are already in place in some parts of the world — such as the European Union, Japan, Canada, and the United States — and they are starting to take shape in other developing countries, it is important to take a closer look at the distinctions that our industry needs to understand.

**What an HFC phasedown is NOT**

An HFC "phasedown" is not the same as the "phaseout" that our industry experienced for CFCs and HCFCs as countries implemented regulations to comply with one of the world's most successful international treaties — the Montreal Protocol, signed in 1987. In the case of a phaseout, there is a mandated complete elimination of the production and import of any single CFC or HCFC substance.

The phasedown of HFCs will not be managed in this way, based on regulations currently in place and proposed. Contrary to misinformation circulating in the industry and among other interested stakeholders, there are no HFC production bans mandated in an HFC phasedown.

**So, then what exactly is an HFC phasedown?**

The Kigali Amendment to the Montreal Protocol, agreed to in October 2016 by more than 170 countries around the world and currently ratified by over 100 countries, aims to reduce the total carbon emissions from the entire class of HFC compounds down to approximately 15% of each country's baseline.

This phasedown approach enables each country or regulating entity to determine the best method to achieve these emission reductions across all applications that use HFCs. Application-specific targets can be set based on the needs of that market sector, as there is no prescribed requirement in the Kigali Amendment on how to get to 15% of the baseline.

Countries that have implemented or proposed HFC regulations to date are not setting them based on the volume of product placed on the market. Instead, they are based on the GWP-weighted size of the market. This GWP-weighting of volume is often described as "Carbon Equivalent Tons" or "$Co_2$eqT". In an HFC phasedown, countries can reduce their $Co_2$eqT use in a variety of ways to achieve the target step-downs, including: setting quotas that can be reduced overtime to limit the amount of $Co_2$eqT that enters the market each year; establishing GWP limits on certain end use applications; and applying service bans or restrictions to encourage transition to lower GWP solutions in existing installed equipment when and where lower GWP solutions exist with comparable performance, pressure rating, and safety classification.

**But why aren't HFC phasedowns applied uniformly across all sectors and applications?**

In all countries where HFC phasedown regulations are in place, there is a keen recognition that different substances are needed to meet the specific application, and that the limits that can be achieved in new equipment and new buildings might be different than what can be achieved in existing infrastructure or existing systems. In some sectors outside of the stationary HVACR industry, such as foam blowing agents and automotive, solutions are being implemented today that eliminate a significant amount of carbon emissions by transitioning to alternatives with negligible global warming potential (GWP). These transitions make a significant contribution towards a country's HFC phase-down goals, enabling other segments using HFCs — like commercial refrigeration or air conditioning — greater flexibility in fluid choice given the demands and complexity of equipment and need to balance factors such as cost, performance, energy efficiency, and safety.

The bottom line is that HFC phasedown regulations are not the same as the previous CFC and HCFC phaseout. The industry has choices for new and existing infrastructure and across applications. Any suggestion that a product will be eliminated, regardless of GWP, just because it has an HFC component in it, or the suggestion that all applications and industries can or should achieve the same GWP target is simply a scare tactic not based in regulatory realities of an HFC phasedown. It's critical to stay informed of regulations to avoid being influenced by those who use misinformation and fear to limit technology options.

**ACHR news, 23 November 2021, By Jordan Smith**

*Image: ACHR website*

## 5. More Countries Include HFC Emissions Reduction in Climate Accounting


More countries are including HFC emissions-reduction measures in their Nationally Determined Contributions (NDCs), which outline their efforts to reduce national greenhouse gas emissions in response to climate change, as per the Paris climate accord.

This message was shared during a GIZ Proklima side event at MOP33 called "How to Integrate the RAC Sector into the NDCs?" held online on October 27.

In the first round of NDCs in 2015, less than half of the 192 NDCs included HFC emissions reduction, said Daniela Lassmann, Consultant at Perspectives Climate Group, a German environmental consultancy. As of October 13, 120 updated NDCs have been submitted as part of the latest round. Half of those, including the NDCs from all 27 EU member states, feature HFC emission mitigation measures such as bans on high-GWP refrigerants and taxes, Lassman added.

Moreover, two thirds of the updated NDCs include the RAC (refrigeration and air-conditioning) sector without specifying mitigation measures, Lassmann said.

The RAC sector is regarded as having high mitigation potential at low cost. "The biggest mitigation potential lies within the refrigerants by introducing low-GWP natural refrigerants, and that is why they should be part of the NDCs," said Philipp Denzinger, Project Manager at GIZ. There is potential for mitigation potential not only in natural refrigerants, but also in energy efficiency, and it is therefore recommended to include both refrigerants and energy efficiency in NDCs to achieve maximum mitigation.

"Through an integrated technology approach, coordinated policymaking and comprehensive financial planning, a sustainable transformation of the RAC sector is possible," added Denzinger. "We need to bring the Paris Agreement, the Kigali Amendment and the SDGs together to achieve the maximum mitigation and make the world a better place."

The German Climate Initiative has been funding a series of projects addressing NDC topics and providing technical assistance.

**NDCs of Namibia and Seychelles**

The southwestern African nation of Namibia is an example of a country that has included HFC emissions reduction in its NDC, according to Amalia Nangolo, Namibia Ozone Officer. Namibia, she said, aims to introduce climate-friendly and energy-efficient appliances by including a ban on high-GWP equipment and implementing minimum energy performance standards (MEPSs). Namibia is focused on switching from inefficient HFCs to energy efficient natural refrigerants, she noted.

Seychelles, an island nation in the Indian Ocean, also designated air conditioning and refrigeration as crucial sectors in its updated 2021 NDC. It agreed to adopt concrete

mitigation measures, including MEPSs and a levy on HFCs, said Elisabeth Munzert, a representative of the German Ministry for the Environment.

[Accelerate, 25 November 2021, By Shirshah Amerkhail]

*Image: Accelerate website*

# ASIA AND THE PACIFIC

### 6. Iran: Natural foam blowing agents on the rise

HFC-free technologies are increasingly being used as blowing agents for insulating foam. A group of experts discussed the topic at a workshop.

On 23 November 2021, the online workshop "Development of foam activities and training update" was held in Iran. It was organized by GIZ Proklima and included nearly 50 participants from the National Ozone Unit, beneficiaries, commercial and domestic refrigeration technicians, UNDP and UNIDO representatives. The focus was on the implementation of activities and trainings on foam in the context of the COVID-19 pandemic.

The workshop started with a short welcome by the GIZ Proklima Programme Manager Bernhard Siegele, followed by Dr Ebrahim Hajizadeh (Director of the National Ozone Unit), UNDP and UNIDO representatives. The following topics were discussed:

- the development of all-water-blown integral skin foam,
- the development of environmentally friendly pre-blended polyol and pentane for the commercial sector,
- the selection of injection holes for foaming in refrigeration cabinets and the flow path of the foam.

Later, two well-known Iranian system house companies, Kaboodan chimie and Mokarrar, gave a comprehensive presentation with a video clip on physical and chemical foam tests.

**Background: Global foam production**

Global foam production is constantly growing as demand for insulation foams for buildings and appliances rises. Proper insulation of buildings is one of the most effective ways to reduce $CO_2$ emissions and is considered an important means to achieving more energy-efficient design for commercial and domestic buildings in the future. In the past, HFCs have been widely used as insulation foam blowing agents. The problem: they are highly damaging to the environment.

For many foam applications, HFC-free technologies have already been successfully implemented and are now widely recognised as suitable, cost-efficient blowing agents in industrialised and many developing countries. Beside water-blown blowing agents, hydrocarbons are now preferred in the manufacturing of refrigeration appliances in many regions and are entering other applications.

**Green Cooling Initiative, 29 November 2021**

*Images: Shutterstock/Canetti*

**7. India cooling action plan and state of implementation**

With heat waves sweeping across India, India's cooling demand is expected to grow five to eight times by 2037-38, as compared to 2017-18 levels

In March 2019, the environment ministry launched the ICAP to address cooling requirements by prioritising energy-efficient and climate-friendly cooling technologies. The plan sought to reduce cooling demand across sectors by 20-25% by 2037-38, reducing refrigerant demand by 25-30%, through strategies such as the adoption of non-refrigerant cooling technologies.

The plan also recognises "cooling and related areas" as a thrust area of research under the national Skill and Training Programme, and thereby training over 100,000 service technicians by 2022-23 to meet the cooling demands.

India's nearly 200,000 AC service technicians in India, most of whom function in the informal sector, would have to be trained to transition to energy efficient cooling technologies, the cooling plan said. The number of people employed in this sector would also increase.

"The plan has short- and long-term interventions to reduce HFC usage," said Bhasin, who was one of the authors of the plan. "The implementation of ICAP was thwarted by the pandemic, but the intent is still there."

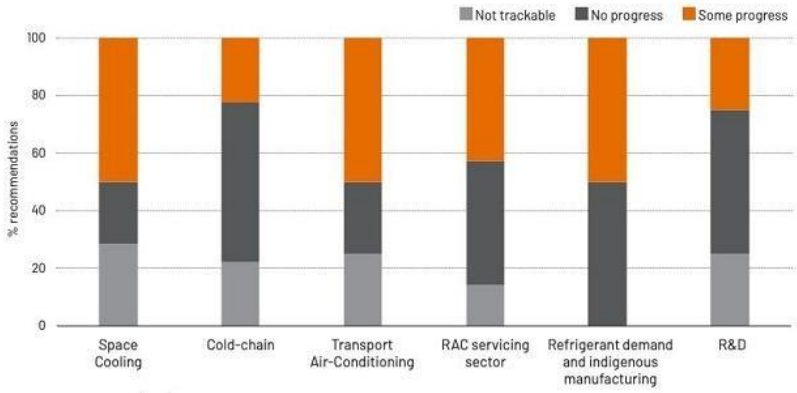
We reached out to the Ministry of Environment, Forest and Climate Change for their comments on the implementation of ICAP. We will update this story when we receive a response.

In short-term recommendations for the transition, the report suggested development of alternatives to HFCs with low global warming potential, building application laboratories to evaluate these alternatives and coming up with new solar energy-based cooling solutions, etc. These would need to be implemented between 2019 and 2024.

In recommendations for the medium term, the ICAP suggested setting up production facilities and undertaking toxicity tests for new-generation refrigerants, and in the long term, initiating commercial production of alternative refrigerants and building a review mechanism with incentives for corporates to undertake research on more such

alternatives. This would have to take place between 2024 and 2029 and 2029-2038, respectively.

However, there has only been incremental progress on the ICAP and none of the recommendations have been fully realised, according to a 2021 report published by the Shakti Sustainable Energy Foundation, evaluating progress on the ICAP.




But "India's ratification will help advance the ICAP implementation", said Dey, referring to the ratification of the Kigali Amendment in August 2021. India has said it would develop a national strategy for phasing down HFCs in 2023, in consultation with industry. The government also plans to update its existing legal framework to phase out ozone-depleting substances by mid-2024, through the Ozone Depleting Substances (Regulation and Control) Rules. This will allow the government greater control on the production and consumption of HFCs to comply with the Kigali Amendment.

Excerpt from the article "**How air cooling technologies are making rising global temperature worse Air conditioners and refrigerators use hydrofluorocarbons, which heat up the earth**", in Business Standard, 23 November 2021.

*Images: Business Standard website*

**8. Asia-Pacific launch a year-long Ozone2Climate Art Contest**

"How can our daily life contribute to the ozone layer protection?" Mr. Siwakorn Maneethein, a third-year student of Geological Sciences at the Faculty of Science, Chiang Mai University, Thailand, enthusiastic about sustainable natural resources and environmental preservation shared his understanding of this significant question at a press conference of the launch of the **Asia Pacific Ozone2Climate Art Contest** on World Ozone Day, 16 September 2021.

In 2015, Maneethein, then a junior high school student aged 14, won the national contest essay on the topic ‘How does our daily life protect the ozone layer?” organized by the National Ozone Unit of Thailand. Beforehand, Maneethein and two fellow students had thoroughly researched ozone layer protection and consulted with teachers on the subject. Maneethein then presented his views and saw the value of everyone in participating towards reducing the destruction of the ozone layer and global warming. He particularly appealed to his generation to contribute by choosing products not containing ozone depleting substances (ODS) but environmentally friendly ones. Satisfied that Thailand had successfully phased out CFCs in 2010 and switched to less damaging substances, Maneethein emphasized that the ozone layer and climate protection cannot be achieved individually, but requires cooperation among all, especially youth like himself who are the future generation.

Due to restrictions caused by the ongoing COVID-19 pandemic, the public awareness raising Ozone2Climate Art Contest was launched online by United Nations Environment Programme (UNEP) OzonAction, the United Nations Educational, Scientific and Cultural Organization (UNESCO), and more than 30 countries in the Asia Pacific region. A key factor of the Art Contest is to engage the general public especially the youth like Mr. Siwakorn Maneethein to link daily life activities and choices with the common environmental challenges faced globally, and consider how to be engaged to identify solutions, and most importantly, how everyone can contribute to addressing the challenges.

Officially opened on World Ozone Day, 16 September 2021, **the Art Contest will run its course and close on 31 March 2022**, followed by the regional contest of nominated winners. The final winners in the three categories of artworks - photography, drawing, and graphic design, will be evaluated and announced on World Ozone Day in 2022.


As highlighted by Mr. James S. Curlin, Head of UNEP OzonAction, the role of industry and the public in the promotion of Ozone2Climate safe alternative technologies to replace ODS and high-global warming potential refrigerants is critical for the success of achieving ozone layer protection and climate-friendly targets. He further called on “everybody in the Asia-Pacific region and world at large to take action and play their role” noting especially that "the procurement power of the public will guide the market to favour Ozone2Climate products.”

Mr. Alex Rendell, UNEP’s National Goodwill Ambassador for Thailand, whose video message was pre-recorded, invited everyone to join this art contest to learn more about the issue that is critical to our lives and our well-being by sharing their ideas through the contest to show how ozone layer depletion and climate change can be solved. He further shared his idea on how everyone can contribute to protecting the ozone layer and climate by making conscientious and more environmentally friendly choices such as buying refrigerators and air-conditioners that are energy efficient and use climate-friendly refrigerants and maintaining that equipment in good condition to minimize refrigerant leakage and enhance energy performance.

Other high-level participants who addressed the press and public, and responded to questions were, Ms. Megumi Seki, Executive Secretary of UNEP's Ozone Secretariat, Ms. Isabelle Louis, Deputy Regional Director at UNEP's Asia Pacific Office, Ms. Rika Yorozu, Head, Executive Office and Regional Programme Coordinator for UNESCO Bangkok, and Mr. Jackrit Suthakorn, Dean of the Faculty of Engineering, Mahidol University, a supporting partner of the regional contest.

As of today, 33 developing countries in the region – Bangladesh, Bhutan, Cambodia, China, Cook Islands, Fiji, India, Indonesia, Iran, Kiribati, Republic of Korea, Lao PDR, Malaysia, Maldives, Marshall Islands, Micronesia, Mongolia, Myanmar, Nauru, Niue, Palau, Pakistan, Papua New Guinea, Philippines, Samoa, Solomon Islands, Sri Lanka, Thailand, Timor-Leste, Tonga, Tuvalu, Vanuatu, and Viet Nam, have joined the regional initiative.

The art contest was organized as part of the Asia-Pacific Regional Networks of Ozone Officers, as part of UNEP's workplan under the Montreal Protocol's Multilateral Fund.

For more information about the contest, please visit: **www.ozone2climate.org**

**Contact**: **Shaofeng Hu**, Senior Montreal Protocol Regional Coordinator, UNEP, **OzonAction** Compliance Assistance Programme (CAP) Asia-Pacific.

*Images: OzonAction*

# LATIN AMERICA AND CARIBBEAN

### 9. Results of ozone layer preservation project – Cuba


acn CUBAN NEWS AGENCY

Results of ozone layer preservation project to be presented today

HAVANA, Cuba, Nov 25 (ACN) Cuban professionals will present today in Havana their experiences in the implementation of a project to eliminate the production of rigid polyurethane foams, ozone-depleting substances.

The experts will take part in a workshop focused on the evaluation of technologies to replace the gases known as hydrochlorofluorocarbons (HCFCs) with the use of techniques and elements with low global warming potential, an initiative launched seven years ago as part of the National Plan for the Elimination of HCFCs in the rigid foam sector, as reported to ACN by the Ozone Technical Office (OTOZ).

OTOZ director Nelson Espinosa Pena delivered the opening speech of the meeting, whereas engineer Reynaldo Alemán Záldivar provided details of the project in question, which was also applied to refrigeration, drug packaging and other fields. Further works will address the production of continuous and discontinuous panels, including one dedicated to the

Kigali Amendment, committed to the protection of the Ozone Layer and to which Cuba offered unconditional support. [...]

**CUBANEWS/ACN, 25 November 2021**

*Image: ACN website*

# NORTH AMERICA

### 10. Biden Sends Kigali Amendment to U.S. Senate, Recommending Ratification


U.S. President Joseph Biden this week sent the Kigali Amendment to the Montreal Protocol, which calls for a 85% phase down of HFC production and consumption in developed countries by 2036, to the U.S. Senate for ratification.

In calling for the Senate to ratify the Kigali Amendment, Biden noted that the treaty has "strong support from the U.S. business community and nongovernmental organizations," according to a statement by the White House. "Ratification by the United States would advance U.S. interests in remaining a leader in the development and deployment of HFC alternatives, ensuring access to rapidly growing refrigeration and cooling markets overseas and stimulating U.S. investment, exports, and job growth in this sector," he continued.

"Ratification will also ensure the United States continues to have a full voice to represent U.S. economic and environmental interests as implementation of the Kigali Amendment moves forward in coming years," Biden said.

Biden announced in January, shortly after taking office, that he had directed the State Department to prepare a "transmittal package" for the Kigali Amendment to the U.S. Senate.

Biden's transmission of the Kigali Amendment to the Senate follows ratification of the treaty by China and India, the world's two most populous countries, in June and October, respectively. The U.S. is the third most populous country.

**AIM Act aligns with Kigali**

The U.S. Environmental Protection Agency, part of the Biden Administration, recently approved an HFC allowance rule that aligns the U.S. with the phase-down schedule of the

Kigali Amendment. The rule is the first of three regulations that will carry out the AIM (American Innovation and Manufacturing Act) enacted in December 2020.

The AIM Act received bipartisan support in the Senate, indicating that the Kigali Amendment stands a reasonable chance of being ratified by at least 67 out of 100 senators, despite entrenched party differences on most issues. The Senate has ratified all four previous amendments to the Montreal Protocol, with bipartisan support.

The U.S. was one of the chief architects of the Kigali Amendment during the Obama administration, paving the way for its global adoption in October 2016. The treaty went into effect in January 2019, having been ratified by at least 20 countries. It was ignored by the Trump Administration, making the U.S. one of the major ratification holdouts among developed countries.

The number of parties (in effect countries plus the EU) that have ratified Kigali so far is 129 out of 198, with Turkey the most recent ratifier.

Other developed countries that have yet to ratify the Kigali Amendment include Italy, Spain, South Korea and Israel. Major developing countries that have not yet ratified include Indonesia, Pakistan and Brazil.

**r744, 19 November 2021, By Michael Garry**

*Image: r744 website*

**See also >>>** **A Message to the Senate on the Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer**, The White House, 16 November 2021

# EUROPE & CENTRAL ASIA

### 11. Polluting greenhouse gases being sold online and smuggled to UK

Watch: The BBC met a trader who says he can get at least 100 canisters of highly polluting HFCs

A BBC investigation has uncovered a black market in highly polluting greenhouse gases being smuggled into the UK from Eastern Europe.

The gases - hydrofluorocarbons (HFCs) - are advertised and sold illegally via social media and the BBC found a trader suggesting smuggling them on coaches.

HFCs are widely used in fridges, air conditioning and aerosol sprays.

The EU and UK are limiting their use and want to eventually phase them out in favour of cleaner alternatives.

But older machinery still runs on the most polluting HFCs - which has led to a black-market worth millions.

UK law states only registered companies can import, sell, or use HFCs; and buyers must show an F-Gas (fluorinated gas) certificate, otherwise no sale would be allowed.

The BBC's investigation began at the Romania-Ukraine border, where HFCs made in China have been smuggled through in the boots of cars or in lorries.

We found scores of online adverts posted by local traders offering the gases for sale and met one trader, called "George", who said he could get large quantities of HFCs.

After directing us to a quiet country road near the border crossing, he opened the boot of his car to reveal two canisters containing HFCs.

He offered them for roughly £100 each. They sell on the UK's illicit market for up to £240.

To get the gases into the UK, he suggested smuggling them in the luggage compartments of passenger coaches that leave from the local bus station.

He said he previously sent 70 or 80 at a time to Germany using this method - it was just a question of finding the right driver and paying them.

Hydrofluorocarbons (HFCs) were developed as alternatives to ozone-depleting chemicals, which were banned under a global 1987 agreement known as the Montreal Protocol.

The deal banned the use of chlorofluorocarbons (CFCs), which were gradually replaced by HFCs.

HFCs are man-made, colourless and odourless.

They are mainly used in air conditioning, industrial chillers and fridges and can also be found in some aerosol propellants and fire protection fluids.

But they are powerful greenhouse gases, with some HFC blends thousands of times more potent than carbon dioxide.

Scientists previously discovered HFCs contribute to global warming by trapping heat radiating off the Earth.

The UK aims to reduce the use of HFCs by 69% by 2024.

Fin Walravens, a senior campaigner for the Environmental Investigation Agency, which investigates and campaigns against environmental crime, said the illegal HFCs trade was one most people knew nothing about - but the "huge profits" on offer made it "very attractive" to criminals.

Bottles made and filled with the gases for under £30 in China can sell in the UK for more than £200.

Ms Walravens urged customs and enforcement agencies to recognise that while HFCs might be invisible gases, they had "a huge impact on global warming".

Mihai Stoica, executive director of Romanian environmental campaign group 2Celsius, called for the authorities to work together to urgently stop the trade.

"I think this should have happened yesterday; we need to do as much as we can as quickly as possible."

Despite the efforts of the authorities, the illegal HFC bottles are distributed across the EU and into the UK.

The BBC found them openly advertised for sale on Facebook marketplace across the country.

We contacted one seller in North London. He was not registered to handle the gases and offered them for sale in disposable canisters - which have been outlawed since 2006.

The illegal HFCs trade was estimated to make up between 20% and 30% of the whole European market, according to a July report by the EIA.

Rob Parker, European operations director for established supplier A-Gas, said the illegal HFCs trade was sometimes viewed as a "victimless crime because it looks like nobody gets hurt".

"But the profits from this will almost certainly be going back into organised crime where they'll be used for much darker activities," he added.

"Ultimately, more global warming can take place because the regulation hasn't been upheld."

A spokeswoman for the UK's Environment Agency (EA) said: "We are firmly committed to ensuring that businesses comply with regulations to reduce emissions from HFCs, and will take strict enforcement action where necessary."

In September, the EA fined a company more than £1m for breaching F-gas regulations - exceeding the quotas of what it was allowed to put on the market.

It was only the second time the EA had ever imposed fines on a UK company for breaking the regulations.

**BBC News, 23 November 2021, By Angus Crawford and Tony Smith**

*Image: BBC website*

**See also >>> Fighting Against Black Market HFCs**, Energy Industry Review, 26 November 2021

## 12. Midea sets benchmark for more climate protection with first R290 model on the German-European market

Split air conditioners with a capacity of up to 5 kW are responsible for the largest share of greenhouse gas emissions (GHG) from the refrigeration and air conditioning sector. While around 80 million units were sold globally in 2018, this figure is expected to rise to around 115 million units in 2026.[1] Even the COVID-19 pandemic hasn't affected the market growth of the most widely used type of air conditioner in the world. In large parts of the global market, split air conditioners are characterised by only moderate energy efficiency and are powered by coal-fired electricity. Moreover, they almost exclusively use HCFC (R22) or HFC (R410A and R32) refrigerants, which are highly damaging to the climate. Without a timely shift towards more efficient systems, low-carbon power supply and climate-friendly refrigerants, the split air conditioning segment will continue to have a significant climate impact.

Split-type ACs have long since been sold and installed in huge quantities not only in countries with constantly high ambient temperatures in arid and tropical regions. In many European countries, too, split air conditioners dominate the market among direct-evaporation systems. In Germany alone, over 70% of the 157,000 room air conditioners sold were split ACs. In Europe, the HFC R410A is the refrigerant which is still used in most air conditioners.[2] However, R32 is well on its way to becoming the dominant refrigerant in the European sales and equipment inventory. Despite increasing regulation through the extension of the Montreal Protocol and the EU F-Gas Regulation agreed in Kigali in 2016, R32 is defended by many actors in the refrigerant and appliance industry as a medium to long-term intermediate in the HFC phase-down over the next two decades. However, due to their extremely high climate impact over the next 20 years (R410A has a 20 years global warming potential of 4,400; R32 of 2,530[3]), there is a particularly urgent need for climate-friendly alternatives to HFC substitutes.

Energy-efficient split air conditioners with the natural refrigerant propane (R290, GWP = 1) have been produced and sold in China and India since 2013. Despite good consumer response according to manufacturers, however, the green air conditioners have not yet made a national or international breakthrough. In an article by GIZ Proklima in the KKA issue 05/2020, the necessary preconditions and favourable factors for a broad market introduction were already examined in more detail.[4] In line with the conclusion of the article, the European Commission concluded in a study published in September 2020[5] that propane in split air conditioners up to 7 kW can be classified as a technically valid alternative to HFC-driven split air conditioners. A rapidly growing market share of R290 split air conditioners would be welcome in the context of the implementation of the EU F-Gas Regulation and its influence on policy making in other countries.

Increasing confidence among dealers and installers as well as high environmental awareness among consumers mean favourable conditions for the natural refrigerant propane in split air conditioning systems. Philipp Munzinger and Julia Schabel from GIZ Proklima provide insights into the latest European market developments.

Midea is also positive about the potential of R290 split air conditioners. In the past, the Chinese manufacturer mainly relied on portable propane air conditioners and has been able

to sell around 1 million of the devices so far. Climate-friendly split AC models were not in the product range - but that is now changing.

In autumn 2021, 220 propane split air-conditioning units reached the warehouse in Philippsburg, with further larger imports to follow in early 2022: "Thanks to the R290 split model (3.5 kW) certified with the "Blue Angel" eco-label, we now offer a comprehensive product range. The list price of the model is around EUR 1,500, which is very competitive," explains Mick Xiaowei Ma, Managing Director at Midea Europe GmbH. "We want to explicitly promote this climate-friendly model and are therefore deliberately reducing our margins in order to make the climate-friendly products more affordable for consumers."

The product does indeed appear to be well positioned in the market, as confirmed by the market analysis carried out by GIZ Proklima. Prices and energy efficiency of 52 3.5 kW split air conditioners available in German retail (online) with stepless and automatic adjustment of the compressor speed (inverter) and heat pump function were compared with the Midea R290 model (SEER of 8.5 A+++ in cooling mode, SCOP of 4.6 A++ in heating mode). The results are impressive: The climate-friendly newcomer ranks in the premium segment in terms of performance and is one of the most affordable models therein. Unlike the HFC-based models in the same segment, the GWP of R290 comes with a negligible GWP, ranking the Midea model at the top in terms of climate benefits. [...]

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[1] JRAIA (2019). World Air Conditioner Demand by Region. Available at: www.jraia.or.jp/english/World_AC_Demand.pdf(opens in a new window), businesswire (2021).

[2] JRAIA (2019). World Air Conditioner Demand by Region. Available at: www.jraia.or.jp/english/World_AC_Demand.pdf

[3]ATMOsphere (2021). Real GWP: 20 years vs.100 years. Available at: https://r744.com/wp-content/uploads/sites/3/2021/06/ATMO_future_green_V.1.1_final.pdf

[4] Refrigeration Air Conditioning Current (2020). Propane split air conditioners. What stands in the way of a market launch in Germany? Available at: www.kka-online.info/artikel/kka_Propan-Split-Klimaanlagen_3574234.html(opens in a new window)

[5] European Commission (2020). The availability of refrigerants for new split air conditioning systems that can replace fluorinated greenhouse gases or result in a lower climate impact. Available at: https://eurovent.eu/sites/default/files/field/file/GEN%20%201160.03%20%20EU%20report%20refrigerants%20split%20air%20conditioners.pdf


[Green Cooling Initiative, 15 November 2021]

*Image: GCI website*

### 13. Heating & Cooling in Italy, Heat Pumps Towards 2030

On November 11, in conjunction with the Executive Committee meeting of Technology Collaboration Programme on Heat Pumping Technologies (HPT TCP) by International Energy Agency (IEA), the Italian National Team hosted an exciting online workshop

Report from Italian National Workshop - Heating & Cooling in Italy with Heat Pumps towards 2030

focusing on the most recent developments in market, policy, and research.

Heat pumps, heating and cooling have an important role in the decarbonization plan of Italy and Europe. The sector uses 20-25% of the total electricity and several legislations has been issued to increase the energy efficiency, improving the maintenance and the installation, preventing the refrigerant leakages.

The sector response has been excellent creating innovation and competition and bringing Italian and European industries to lead globally.

The role of the servicing sector is to install, maintain and repair the systems to keep them at the high standard of quality they have been designed for.

During the pandemic this role has been under the spotlight, and it has increased visibility.

**You can find all presentations including a complete summary here >**

**TCP by IEA, November 2021**

*Image: TCP by IEA* website

# FEATURED

## OZONE SECRETARIAT

Overview for the meetings of the ozone treaties in 2022

**68th IMPCOM, Venue – to be determined, | 09 July 2022**
**44th OEWG, Venue – to be determined, | 11 - 15 July 2022**
**69th IMPCOM, Venue – to be determined, | 29 October 2022**
**33rd MOP Bureau, Venue – to be determined, | 30 October 2022**
**34th MOP, Venue – to be determined, | 31 October - 04 November 2022**


**Click here for past and upcoming Montreal Protocol Meetings Dates and Venue.**

Summary of the Combined Twelfth Meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer (part II) and the Thirty-Third Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer: 23-29 October 2021.
The Earth Negotiations Bulletin, 1 November 2021, Vol. 19 No. 157
**See also** >>> IISD Daily coverage and photos

## The UN Environment Assessment Panels

The Assessment Panels have been vital components of ozone protection since the Montreal Protocol was first established. They support parties with scientific, technological and financial information in order to reach decisions about ozone layer protection and they play a critical role in ensuring the Protocol achieves its mandate. The Assessment Panels were first agreed in 1988 to assess various direct and indirect impacts on the ozone layer. The original three panels are:

- The Technology and Economic Assessment Panel
- The Scientific Assessment Panel
- The Environmental Effects Assessment Panel

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

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


THE MULTILATERAL FUND
FOR THE IMPLEMENTATION OF THE
MONTREAL PROTOCOL

The Executive Committee Eighty-seventh Meeting, Montreal, 28 June-2 July 2021

## REPORT OF THE INTERSESSIONAL APPROVAL PROCESS AND ONLINE MEETINGS FOR THE 87TH MEETING

The present document consists of the following two parts:

- Process for the 87th meeting, describing the agreed process followed by the Executive Committee for conducting the 87th meeting, which included consideration of several items of the agenda through an intersessional approval process (IAP) and several other items through online meetings.
- II. Comments, discussions and decisions by the Executive Committee, containing a compilation of comments and discussions where applicable, and decisions on each of the documents considered during the 87th meeting, presented in the order of the agenda of the meeting.

Click **here** for the Executive Committee upcoming and past Meetings and related documents..


# OzonAction

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

**The section below features several of our most recent products.**
**Visit OzonAction website for more information, discover the entire range of products.**

*Images in this section are by OzonAction*

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

Currently, the first two available knowledge maps are described below:


**Refrigeration, Air-Conditioning, and Heat Pumps (RACHP) Associations & Organizations**: This Knowledge Map provides a global directory of RACHP associations, societies, and organisations around the world. These are key stakeholders for ensuring safe and efficient refrigerant transitions, for the training of technicians and supporting the national policies related to the Montreal Protocol.

**Local Technical & Vocational Education and Training (TVET)**: This Knowledge Map provides a global directory of TVET entities and centres around the world. These are the strategic partners for conducting and promoting training and certification programmes related to the refrigeration servicing sector.

To develop this tool, UNEP OzonAction collected and reviewed different datasets from multiple sources, and then presented the collected datasets into a common platform and format (mainly in the form of a global map so that data can be geographically displayed). Kindly note that the data and information provided will be updated regularly through the feedback that will be received from NOUs and partners to update and/or add new records. Other maps are currently under development which will include access to other key data and information of importance to the implementation of Montreal Protocol programmes.

Click **HERE** to access the OzonAction Knowledge Maps tool

Click **HERE** to download the OzonAction Knowledge Maps tool flyer

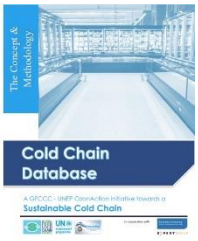

**Gas Card Tool: Web-based Visual Printable Cards of Refrigerant Gases** developed by the UN Environment Programme (UNEP) OzonAction, to provide engineers, workers, and technicians with easily accessible information on substances/ gases that they are working with or handling in the workplace on visual printable cards. **Content of Gas Cards -** Each Gas Card is printable (in PDF or image format) and includes the following information about each substance/gas: a) General Characteristics (Chemical name, formula and type, ASHRAE designation, Trade names, Harmonized System (HS) codes, Chemical Abstract Service (CAS), United Nations (UN) numbers, Blend/ mixture components, Montreal Protocol Annex and Control measures, main usage, etc.) b) Gas Performance—Radar Chart (in terms of: Ozone depleting potential-ODP, Global warming potential- GWP, Toxicity Class & Flammability

Class) c) Environmental and Safety Impact, and Safety Impact (with visualization of Toxicity & Flammability Class, Hazardous Symbols).
**More Information -** The Gas Card web based tool is part of UNEP OzonAction's portfolio of activities and tools to assist various stakeholders in developing countries, including customs officers and technicians, to achieve and maintain compliance with the Montreal Protocol on Substances the Deplete the Ozone Layer. In the left navigation bar of the Gas Card tool web page, you will find a list of commonly used HFCs and HFC Blends in different sectors.*

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

- The Gas Gard tool is available online on the **OzonAction website**
- Read the full **2021 annual iPIC report**
- See the **flyer** introducing the new iPIC platform

** Based on the Overall Analysis of the Results of the Survey of ODS Alternatives Report (conducted in 119 countries from 2012 to 2015)*




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

With the support provided by the Montreal Protocol's Multilateral Fund, the Cold Chain Database initiative is currently being piloted in six countries – Bahrain, Bosnia and Herzegovina, Maldives, North Macedonia, Paraguay, and Senegal. From the pilot data gathering initiatives, a model is being developed that will allow the projection of benefits of cold chain expansion.

GFCCC is an independent not-for-profit industry organisation that seeks to simultaneously reduce food waste, and related greenhouse gas emissions in the processing, transportation, storage, and retail display of cold food by expanding and improving access to energy efficient low-global warming potential technology. The Cold Chain Database concept, methodology and data collection questionnaires are offered to interested countries and partners to help in assessing local cold chain capacities and designing respective action plans and policies.

> ***GFCCC-UNEP OzonAction Cold Chain Modelling Press Release***

> ***GFCCC-UNEP Cold Chain Database Methodology Final***

> *For countries or partners interested to use the model data collection detailed questionnaires, please fill in the* ***Expression of Interest and NDA of Cold Chain Database*** *form and return to* ***Ayman Eltalouny***

**Contact**: Ayman Eltalouny, Coordinator International Partnerships, UNEP, OzonAction

***United Nations Environment Programme (UNEP), OzonAction***

*Image: OzonAction*

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

**Access the:**

- HCFC Quota tracker app
- Flyer for more information on the tracker
- Short video tutorial on the OzonAction YouTube Channel

**GWP-ODP Calculator Application – Updated**

**"Quickly, efficiently and accurately convert between values in metric tonnes, ODP tonnes and $CO_2$-equivalent tonnes"**

Data are extremely important for the Montreal Protocol community, and the data reporting formats for both A7 and CP have changed recently, to a large degree triggered by the Kigali Amendment. HFCs, blends, $CO_2$-equivalent values, etc, now have to be addressed much more frequently by Ozone Officers during their daily work. Sometimes the terminology and values are complex and can be confusing, and it helps to have it all the official facts and figures in one place. Conversion formulas need to be applied to calculate $CO_2$-eq values from both GWP and metric tonne values. This free app from OzonAction is a practical tool for Ozone Officers to help demystify some of this process and put frequently-needed information at their fingertips.

**What's new in the app:**

- An updated more user-friendly interface
- Multilingual interface: English, French and Spanish
- A new **Kigali Amendment mode** - in this mode the GWP values used to calculate the refrigerant blends/mixtures only include GWP contributions from components that are controlled HFCs
- Latest updated ODP and GWP values from the recent reports from the Montreal Protocol technology and scientific expert panels as well as the Intergovernmental Panel on Climate Change (IPCC) reports
- References added for sources of all values
- New refrigerant mixtures (with ASHRAE -approved refrigerant designations)

The new and updated UNEP OzonAction ***GWP-ODP Calculator*** application will help you to convert between values in metric tonnes, ozone depleting potential (ODP) tonnes and $CO_2$-equivalent tonnes of substances controlled by the Montreal Protocol and their alternatives.

This application, available at no cost, is particularly useful for National Ozone Officers to assist with understanding and calculating quantities of controlled substances, both pure substances and mixtures, for quota assignment, reporting requirements, etc. Other stakeholders interested in ODP and global warming potential (GWP) values of controlled substances and their alternatives will also find this tool useful.

Operation of the application is very simple — just select a substance from the dropdown list and enter the known value in the appropriate field; the calculator will automatically perform the conversion between metric tonnes, ODP tonnes and/or $CO_2$-equivalent tonnes and display the corresponding converted values. The ODP, GWP and information about the substance is provided. For mixtures, the components of the mixture and their relative proportions (metric, ODP, $CO_2$- equivalent tonnes) are also calculated.

The updated ***GWP-ODP Calculator*** application now includes a new Kigali Amendment mode. The app can now be used in two different modes: the regular "Actual Values" mode and the "Kigali Amendment" mode. In the Kigali Amendment mode, the GWP values provided are those specified in the Kigali Amendment to the Montreal Protocol, i.e. GWP

values are only assigned to controlled HFCs. In this mode the GWP values used to calculate the refrigerant blends/mixtures only include GWP contributions from components that are controlled HFCs. The user can effortlessly switch between modes.

The OzonAction GWP-ODP Calculator uses standard ODP values and GWP values as specified in the text of the Montreal Protocol to make the conversions. Other ODP and GWP values from the recent reports of the Montreal Protocol Technology and Economic Assessment Panel and Scientific Assessment Panel as well as the Intergovernmental Panel on Climate Change (IPCC) are used when appropriate, with references to sources of all values used. The app includes new refrigerant mixtures (with ASHRAE- approved refrigerant designations).

This application is designed primarily for use by Montreal Protocol National Ozone Units and other related stakeholders. The application was produced by UN Environment Programme (UNEP) OzonAction as a tool principally for developing countries to assist them in meeting their reporting and other commitments under the Protocol and is part of the OzonAction work programme under the Multilateral Fund for the Implementation of the Montreal Protocol.

If you already have the application installed on your device, be sure to update to benefit from the new features. The app can be viewed in English, French or Spanish.

Smartphone Application: Just search for "*GWP-ODP Calculator*" or UNEP in the Google Play store or use the QR code – free to download! If you already have the application installed on your device, be sure to update to benefit from the new features.

Desktop Application: *GWP-ODP Calculator* is also available online on the OzonAction **website**

Watch the new short introductory tutorial **video** on the *GWP-ODP Calculator* - available now on **YouTube**

>>> Read/download the **flyer** for more information

**OzonAction WhatGas? Updated**


**New features:**
- An updated more user-friendly interface
- Multilingual interface: English, French and Spanish
- HFCs and HFC containing mixtures
- Latest updated ozone depleting potential and global warming potential values from the recent reports from the Montreal Protocol technology and scientific expert panels as well as the Intergovernmental Panel on Climate Change; as well as the standard ODP and GWP values as specified in the text of the Montreal Protocol

- References to sources of all values used
- New refrigerant mixtures (with ASHRAE approved refrigerant designations)
- Values for 'actual GWP' and 'Kigali Amendment context' GWP for pure substances and mixtures (i.e. only including GWP values/components assigned to controlled hydrofluorocarbons - HFCs).

**The WhatGas?** application is an information and identification tool for refrigerant gases: ozone depleting substances (ODS), HFCs and other alternatives. It is intended to provide a number of stakeholders, including Montreal Protocol National Ozone Officers, customs officers, and refrigeration and air-conditioning technicians with a modern, easy-to-use tool that can be accessed via mobile devices or the OzonAction website to facilitate work in the field, when dealing with or inspecting ODS and alternatives, and as a useful reference tool. If the user requires additional information or assistance in identifying a refrigerant gas they are inspecting or that is described in the relevant paperwork, this can be easily obtained by consulting the application.

**Using the application:**

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

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

**Desktop Application**: WhatGas? is also available online on the OzonAction **website**

**For more information:** Watch the new short introductory tutorial **video** on WhatGas? available on **YouTube**

See/download the **WhatGas? flyer**

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

**RAC Technician Videos - Full length films!**


Two 'full length' videos for refrigeration and air-conditioning (RAC) sector servicing technicians: on 1) Techniques, Safety and Best Practice and 2) Flammable Refrigerant Safety.

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

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

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

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

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

You can watch these videos on the OzonAction YouTube Channel:

- **Techniques, Safety and Best Practice**
- **Flammable Refrigerant Safety**

The videos are also available for download by request from UNEP OzonAction: **unep-ozonaction@un.org**

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

## Refrigerant Cylinder Colours: What has Changed

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

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

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

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

Read/download the **factsheet**

**Update on new refrigerants designations and safety classifications**


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

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

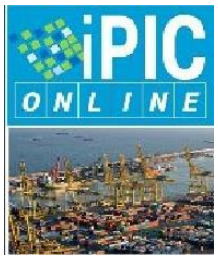
The purpose is to provide an update on ASHRAE standards for refrigerants and to introduce the new refrigerants that have been awarded an “R” number (or ASHRAE designation) over the last few years and which have been introduced into the international market.

Read/download the **factsheet**

The factsheet, as well as more information on ASHRAE-UNEP joint activities and tools, is also available on the **ASHRAE UNEP Portal**.

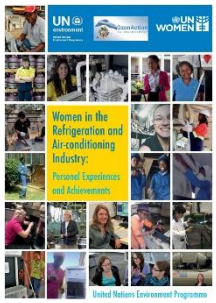
**Contact**: **Ayman Eltalouny**, OzonAction, UN Environment Programme

**OzonAction's iPIC platform - Updated**




Collaboration between China and Thailand using OzonAction's informal Prior Informed Consent (iPIC) system has resulted in the prevention of a huge consignment of ozone-depleting and climate damaging hydrochlorofluoro-carbons (HCFCs).
Those chemicals, which are primarily used as refrigerants for air conditioners and fridges, are controlled under the Montreal Protocol on Substances that Deplete the Ozone Layer and are being phased out by all countries according to a specific timeline.

**Women in the refrigeration and air-conditioning industry: Personal experiences and achievements**



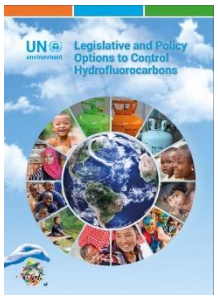

The United Nations Environment Programme's (UNEP), OzonAction, in cooperation with UN Women, has compiled this booklet to raise awareness of the opportunities available to women and to highlight the particular experiences and examples of women working in the sector and to recognise their successes.
All of the professionals presented in the booklet are pioneers. They are role models whose stories should inspire a new generation of young women to enter the weld and follow in their footsteps.
Read/download the **publication**


As part of IIR and UNEP OzonAction's partnership, a set of Cold Chain Technology Briefs was released over the past few years, which includes in-depth summaries about the cold chain in different key sectors. They include descriptions of technology, refrigerant options and trends and conclude with prospects and challenges. They cover the main cold chain sub-sectors, i.e., **Production & Processing**, **Cold Storage**, **Transport Refrigeration**, **Commercial & Domestic**, and **Fishing Vessels**.

**Download the Cold Chain Technology brief in**
**English** | **French** | **Russian** | **Spanish**

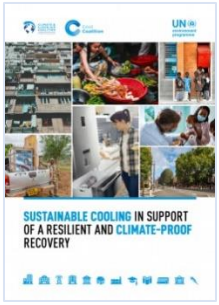
## PUBLICATIONS

**Legislative and Policy Options to Control Hydrofluorocarbons**
In order to follow and facilitate the HFC phase-down schedules contained in the Kigali Amendment, the Parties, including both developed and developing countries, will have to implement certain measures.
This booklet contains a recommended set of legislative and policy options which the developing (Article 5) countries may wish to consider for implementation. It is intended to be a guide/tool for countries.
**Read/download**




Latest issue of Centro Studi Galileo magazine,
**Industria & Formazione,** n. **9-2021**
*(in Italian).*


**Sustainable Cooling in support of a Resilient and Climate Proof Recovery**, Report by the Climate and Clean Air Coalition (CCAC), 2021




**Status of the Global Food Cold-Chain: Summary Briefing-Food Cold Chain Food saved is as important as food produced**. The UNEP-led Cool Coalition in collaboration with the Climate & Clean Air Coalition (CCAC), United Nations Environment Programme (UNEP), United Nations Food and Agriculture Organization (FAO), OzonAction and the Ozone Secretariat, with the support of the Italian Government, are producing a status report on the global food cold-chain, which will include case studies to show the current state and development across areas such as technologies, design approaches, finance and business models, policy, and planning. This brief is a short summary of the full report that will be published in December 2021. The aim is to help better identify and accelerate solutions to simultaneously feed the world, support smallholder and marginal farmers, and protect our environment.

**Cool Coalition Secretariat, September 2021**

*Image: Cool Coalition*

**Solar Cooling (2020), 40th Informatory Note on Refrigeration Technologies**. **Summary** - Solar cooling is a promising and environmentally friendly technology that can help meet the growing global demand for space cooling. Solar cooling can be achieved by various technologies. The two main commercial options are photovoltaic (PV)-driven vapour compression chillers and heat-driven cooling machines powered by solar collectors. Thermal cooling equipment can be coupled with various types of solar collectors with different efficiencies and costs. Overall system efficiencies of PV-driven and solar thermal-driven plants may not have such different values. Economic analysis indicates that the investment cost for the PV solution is at least half that of other systems. Solar cooling may have a very positive environmental impact by reducing the use of fossil fuels, and the technology may be considered mature to compete with conventional cooling equipment.

** This Informatory Note is an update of a previous version published in April 2017. It was prepared by Renato Lazzarin (President of IIR Section E).*

**A Summary for policy makers - Solar Cooling 2020 is available in English and French languages.**

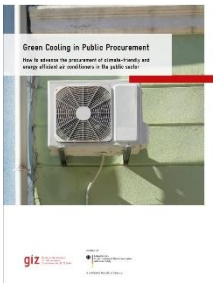
**International Institute of Refrigeration, March 2021**

**Leaks, maintenance and emissions: Refrigeration and air conditioning equipment report** details common faults identified in both residential and commercial refrigeration and air conditioning equipment. The report also lists the impacts of these faults and how routine maintenance of the equipment has the potential to significantly reduce electricity use, refrigerant leaks and emissions.

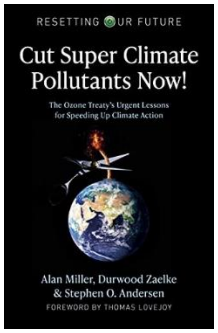

*The research was supported by an extensive survey of international and domestic literature included as Appendix B to the report.*

**Australian Government, Department of Agriculture, Water and the Environment, Expert Group, 2021**

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




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




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

## MISCELLANEOUS


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

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

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

Please notify and nominate worthy candidates through the **on-line form**.

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

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

- View the «Montreal Protocol Who's Who» **Introductory video**
- Contact : **Samira Korban-de Gobert,** UN Environment Programme, OzonAction

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