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1. Parties to the Montreal Protocol meet in Bangkok

BANGKOK, 5 JULY 2019 – Delegates of the parties and representatives of the institutions of the Montreal Protocol, as well as other stakeholders including civil society groups and industry, gathered here this week for the 41st meeting of the Open-ended Working Group (OWEG) of the parties to the Montreal Protocol. This annual meeting is critical for multilateral deliberations to prepare and refine discussion points on key issues for decisions to be taken at the 31st Meeting of the Parties due to be held in Rome from 4-8 November 2019.

Delegations convened to continue with the work of addressing the challenges of reducing ozone-depleting substances affecting global well health, including the unexpected global emissions of CFC-11, a study on replenishment of the Multilateral Fund, energy-efficient technologies on the refrigeration and air-conditioning sector, and the terms of reference for the 2022 quadrennial assessment by the scientific and expert panels of the Protocol, increasing emissions of carbon tetrachloride, among others.

On the unexpected emissions of CFC-11, the parties discussed a long list of issues that they will consider further while waiting for additional technical and scientific information from the expert panels. They also dived into the issues of monitoring, reporting and verification, compliance, licensing and illegal trade under the institutions of the Montreal Protocol.

The Executive Secretary of Ozone Secretariat, United Nations Environment Programme, Tina Birmpili, opened the meeting noting “The success of the Protocol will not be assessed solely on its past and present achievements but also on our ability to adapt to new information and decide on appropriate and commensurate response. We should respect the structures we have in place but should not be complacent when faced with new evidence and challenges.”

In closure, the parties look forward to their meeting in Rome, where they will address the above issues, and where they will participate at a high-level round table discussion on the contribution of the Montreal Protocol to the sustainable cold-chain to reduce food losses.

UN Environment, Ozone Secretariat 5 July 2019

Parties to the Montreal Protocol meet in Bangkok



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UN Environment, Ozone Secretariat 5 July 2019

2. Summary of the Forty-first Meeting of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer 1-5 July 2019 | Bangkok, Thailand



A Brief Analysis of OEWG 41

A new era for the Montreal Protocol began on 1 January 2019 with the entry into force of the Kigali Amendment and with it the phase-down of hydrofluorocarbons (HFCs). Thus, as the 41st meeting of the Montreal Protocol's Open-ended Working Group (OEWG 41) convened in Bangkok, delegates were pleased with the fruit of their years-long labor, but were also reminded that new challenges have already arisen.

The OEWG faced an agenda replete with such challenges including ongoing reported emissions of carbon tetrachloride (CTC); terms of reference (ToR) for the 2021-2023 study of the Multilateral Fund replenishment; and ToR for the 2022 Quadrennial Assessment. Perhaps the most critical issue parties had to address, however, was a holdover from MOP 30, that of unexpected emissions of trichlorofluoromethane (CFC-11).

The admission of new challenges, emerging gaps, and incremental scientific evidence regarding unexpected emissions of CFC-11 arguably does not sit comfortably with the otherwise robust image of the Montreal Protocol; ongoing reported emissions of CTC has also raised similar concerns with a number of parties. CFC-11 was one of the substances written into the original Montreal Protocol text in 1987. Similarly, CTC was listed as a controlled substance at the second Meeting of the Parties (MOP) to the Montreal Protocol in London in June 1990. Both substances were supposed to be phased-out by 2010.

However, just as former UK Prime Minister Margaret Thatcher noted in her speech to MOP 2, "New fields of knowledge and discovery should not be disparaged." In fact many of Prime Minister Thatcher's comments nearly 30 years ago serve as a reminder that each challenge represents an opportunity for the Protocol not to rest on its laurels but to redefine its strengths and showcase its ability to overcome obstacles.

This brief analysis looks at how the Montreal Protocol's more than 30-year history of surmounting challenges, including on an "old" or "settled" subject such as CFC-11, by channeling the very guiding principles and practices of the Montreal Protocol: trust in science, trust among parties, and trust in the Protocol itself.

The Science Moves On

"Science has advanced because the scientists were not satisfied with conventional answers." ~ Margaret Thatcher, Speech to Montreal Protocol MOP 2, 1990

While science has undeniably advanced over the Montreal Protocol's lifespan, the basic science of the impacts of CFCs remains unchallenged. This firm grounding in the science led to the sounding of alarms in 2018 about the unexpected emissions of CFC-11 and the need to address how and why this happened and to ensure it never happens again.

So, like OEWG 40 and MOP 30 before it, OEWG 41 participants tried to identify the appropriate actions that need to be taken to address these CFC emissions. While OEWG 40 and MOP 30 dealt with confirming the emissions and possible source(s), OEWG 41 focused on how to stop any illegal trading of banned substances. Nevertheless, this is not the first time the Protocol has had to address illegal trade in ODS; this has been a recurring issue since the 1990s.

During the weeklong OEWG, the Scientific Advisory Panel (SAP) provided updates on what has been discovered about the CFC-11 emissions and what the potential consequences are. The SAP gathered the existing scientific studies, developed its own analysis, and laid the ground for action by parties.

On the margins of the meeting halls, one party observed that not enough attention has been given by parties to the very fact that it was not mechanisms under the Protocol that uncovered the CFC-11 emissions, but rather the US National Oceanic and Atmospheric Administration (NOAA), followed by an in-depth investigation by the Environmental Investigation Agency (EIA), a non-governmental organization (NGO). He reasoned that in light of the SAP's confirmation that 40-60% of the source of CFC-11 emissions remains undetermined, the startling fact that there are currently no monitoring satellites in much of Asia, Africa, and Latin America, and only one new monitoring station is currently being planned—a monitoring station is being erected in Africa— parties should work more closely with NGOs and other non-governmental stakeholder groups to strengthen, among others, on-the-ground monitoring ability to detect unreported emissions. As he pointed out, "We don't always have the ability to connect all the dots."

The Power of Popular Choice

"The Montreal Protocol was a historic achievement. It provided the first real evidence that the world had the will to cooperate, in order to tackle the major environmental issues. And that was a great international step forward." ~ Margaret Thatcher, Speech to Montreal Protocol MOP 2, 1990

When the Montreal Protocol entered into force, people used their purchasing power to opt for "ozone friendly" technologies despite its higher costs. However, the Technology and Economic Assessment Panel noted that one

of the reasons for the recent re-usage of CFC-11 could be because of its lower costs in comparison to the alternatives. One delegate questioned, “Why have we regressed 30 years later in our commitment to avoid ODS? Where did the public buy-in for ozone layer protection go if users are knowingly purchasing and using a banned substance?” This thought prompted the notion that perhaps trust amongst the parties can be extended to trust between parties and the public so that the power of popular choice is once again harnessed.

These observations inevitably led to wider discussions on the gaps in information and perhaps “weak” reporting requirements of the Protocol. Toward the end of the week, parties began to recognize that the focus should not be on apportioning blame but rather working together to find a way forward. They were asked by the contact group co-facilitators to work on suggestions for how to achieve this and report to MOP 30.

Similarly, the ongoing reported emissions of CTC—an issue of concern since MOP 28 in 2016—was raised by parties as an issue to further study, gather information on, and understand. Parties differed on this. As one observer said, gathering further information may identify loopholes and gaps currently being used, but posited that some parties are weary of this straying outside the Protocol’s current mandate. Discussions on a draft decision to investigate the CTC matter further were unable to make progress at OEWG 41. Parties, however, could agree that the matter needs further consideration and will continue discussions at MOP 31.

Sink or Swim Together

“We are all affected by the damage that CFCs do, both to the ozone layer and as greenhouse gases. And it is only when all of us come together to take action that we can get on top of the problem.” ~ Margaret Thatcher, Speech to Montreal Protocol MOP 2, 1990

There were times when discussions in plenary, as well as on the sidelines, oscillated between the responsibilities of Article 5 parties versus non-Article 5 parties, but as one party interjected on the last day of the meeting with his final reflection, “It’s not about non-Article 5 parties and it’s not about Article 5 parties. We are all in this together.”

And with that, parties were quickly reminded of the wide gulf that existed between parties leading up to Kigali, but how the enormous amount of effort and time dedicated to making the Kigali Amendment come into force allowed Article 5 parties to bolster unity to work alongside non-Article 5 parties to find solutions that are amenable to all.

This meant that parties endeavored to meet each other’s demands for the greater purpose of moving forward and resolving complex issues surrounding the Protocol. So while certain non-Article 5 parties stressed the need to streamline more effective licensing systems to achieve compliance, Article 5 parties maintained this could be done so as long as non-Article 5 parties begin to enhance their reporting on banned substances in the same detailed way Article 5 parties are expected to do.

It also ignited a productive discussion on how monitoring systems are not meant to be a substitute for national-level obligations and countries should exercise their own vigilance in assuring that illegal chemical usage is not taking place. These points on the responsibility and subsequent treatment of countries where the unreported emissions are coming from were not resolved at OEWG 41. Instead, parties were asked to provide a substantive plan for addressing this issue to be presented at MOP 31.

Where We Go From Here

Many observed that OEWG 41 ran remarkably smoothly with little delays or prolonged disagreements. It was either a display of general consensus on most matters or a daunting forewarning that MOP 31 will have to tackle the tougher issues overshadowing this process; namely, how to propose firm solutions to the illegal usage of banned substances under the Protocol.

A number of parties lamented that an inordinate amount of time has been occupied at OEWG 41 and will be required at MOP 31 to continue to address the illegal usage of CFC-11. They further stated that if parties reported on the mere suspicion of the illegal usage of CFC-11 sooner, many of the complexities being faced now could have been avoided. One delegate countered that when a family member has committed a transgression, the temptation is to cover it up from the outside world. He went on to say, “What we needs to shift now is the thinking that other parties are not part of the family. We will support each other through the mistakes and triumphs of this Protocol.”

This commitment to support other parties exemplifies the trust that parties have historically had in each other and the continued desire to preserve this trust. Moreover, the intended steps to formulate a concrete plan for MOP 31 on how to address the illegal usage may not be a sign that trust is wavering in the robustness of the Protocol, but rather an acknowledgment that this multilateral environmental agreement cannot rest on its laurels; it must continue to evolve and grow for the trust to be maintained and demonstrably evident for governments, industry, and the public at large. This is further underscored by parties agreeing to discuss CTC issues further, even though they differ on how or why it needs to be addressed.

As has often been repeated over the past 30 years, the Protocol must continue to use what the science is telling us about the ozone layer as the foundation for action. Science provided irrefutable evidence of the hole in the

ozone layer prompting the first agreement in the history of the United Nations to be ratified by 197 countries. And it was scientific recommendations that enabled parties to take action to eradicate almost 99% of the gases responsible for the depletion of the ozone layer. Indeed, this trust in science has been the bedrock of the Montreal Protocol and should continue to carry this Protocol forward.

IISD, OEWG 41 Summary

OEWG 41, IISD Daily Reporting Services

Ozone Secretariat OEWG 41

International Institute for Sustainable Development (IISD), July 2019

3. Even as climate emissions push planet toward 1.5°C limit, we can still avoid up to 1°C of future warming from our air conditioners

Time is running out to reduce climate emissions enough to keep the planet from breaching the 1.5°C guardrail for relative safety, according to the IPCC's special 1.5°C report published in October. Under current trends, we will push the planet past the 1.5°C guardrail in as little as 12 years, and add 50% more warming than we are experiencing today.

The IPCC's 1.5°C report warned of dire consequences from passing this fast approaching limit, and is a major advance over previous efforts to alert world leaders and citizens to climate risks. Even so, it failed to alert the world to the risk that the warming we are about to experience will set off self-reinforcing feedback loops.

The report outlines an ambitious path to relative safety that relies on three strategies: (1) reducing CO₂ with clean energy and energy efficiency; (2) reducing HFC refrigerants and other short-lived climate pollutants, including black carbon and methane; and (3), scaling up strategies to remove CO₂ from the atmosphere.

A strategy that combines both energy efficiency to reduce CO₂ and reductions of HFCs has the potential to avoid up to 1°C of further warming. Half of this can come from a fast phase down of HFCs under the Kigali Amendment to the Montreal Protocol, while the other half can come from improvements in energy efficiency of cooling equipment.

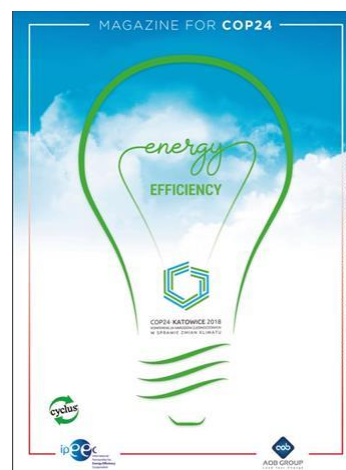
This heroic goal was confirmed by the quadrennial assessment of the Scientific Assessment Panel (SAP) of the Montreal Protocol released in November. The SAP calculated that the initial HFC phase down schedule of the Kigali Amendment will capture most—but not all—of the 0.5°C available from switching refrigerants. Leapfrogging over HFCs during the ongoing phase down of HCFC refrigerants could capture the rest, and add up to another 53 billion tons of avoided CO₂-eq.

In addition to stunning climate benefits, improving the energy efficiency of cooling equipment can save \$2.9 trillion from 2017 to 2050 (as less need for capacity translates into lower investment, fuel and operating costs) according to the International Energy Agency's report on the "Future of Cooling."

There are several strategies that can help capture the full climate prize of up to 1°C of avoided warming. The first is to ensure that all Parties ratify the Kigali Amendment as soon as possible, and then implement the HFC phase down as a matter of urgency, including pursuing leapfrogging strategies.

Other strategies include improving and deploying strict energy performance standards worldwide, ensuring that public procurements insist on super-efficient cooling equipment, based on a life cycle performance analysis of products; developing private "buyers clubs" to do the same for private sector purchasing; deploy import restrictions to ban inefficient cooling equipment; and challenging the industry to make the most efficient equipment through prizes and other incentives.

In the immediate future, all countries can sign on to the Climate and Clean Air Coalition's submission to the



Talanoa Dialogue. This submission sets out a path, through fast cuts in short lived climate pollutants emissions and deployment of energy efficient cooling equipment, to quickly reduce the rate of near-term warming.

Is keeping the planet under the 1.5°C guardrail impossible? “Impossible isn’t a fact; it’s an attitude,” Christiana Figueres reminded us. So let’s adjust our attitude, and aggressively pursue this 1°C of avoided warming.

Authors: Maxime BeauGrand & Durwood Zaelke, Institute for Governance and Sustainable Development (IGSD)

The Energy Efficiency Magazine for COP24

4. K-CEP Newsblast Guides launched: Government and business action on efficient, climate-friendly cooling for the UN Secretary General's Climate Action Summit

In support of the Cool Coalition, K-CEP, UNEP and partners have launched guides for government and business action on efficient, climate-friendly cooling for the [UN Secretary General's Climate Action Summit](#). The guides outline the opportunities for governments and businesses to join a ‘100 actors’ list and announce action to advance efficient, clean climate-friendly cooling at the Summit and related events in New York in September 2019. Read the guide for governments [here](#) and guide for businesses [here](#). Look out for the guide on cities and the guide for finance coming soon.

Following the recent Abu Dhabi Preparatory Meeting, momentum is building for the Cool Coalition ahead of the Climate Action Summit. The Secretary General’s Summit is the biggest opportunity in 2019 to affirm and enhance climate action and to show the world that together we can safeguard the planet for the benefit of people everywhere. Efficient, climate-friendly cooling can make a significant contribution to this goal, so we encourage all our partners to identify what they can announce for this surge of climate action.

K-CEP, UNEP and Cool Coalition partners will be hosting an event to support the Summit and Climate Week NYC 2019 more generally. Invitations to follow soon. We look forward to seeing you there!

K-CEP, July 2019



5. High Stakes: Implementing and strengthening climate and ozone commitments under the Montreal Protocol



Introduction

After more than three decades of undeniable success, earning it the title of the world's most successful multilateral environmental agreement, the Montreal Protocol is now being tested.

Following revelations of unexplained CFC-11 emissions in 2018, legitimate questions have been raised as to whether the Montreal Protocol's institutions and controls are fit for purpose, not only to ensure the sustained phase-out of ozone depleting substances (ODS) but also to address new challenges unique to the HFC phase-down under the Kigali Amendment.

The failure to detect ongoing production and use of CFC-11 prior to its scientific discovery necessitates a very serious look at the current monitoring, reporting, verification (MRV) requirements and procedures of the Montreal Protocol. The ability of Parties to effectively enforce Montreal Protocol commitments must also be reviewed.

Some very specific issues have surfaced due to the illegal CFC-11 production and use, including: the inadequacy of the verification procedures used in projects funded by the Multilateral Fund (MLF) to ensure sustained reductions of phased-out controlled substances; the lack of full geographic coverage of atmospheric monitoring of controlled substances; and the difficulties in monitoring the trade in ODS-containing pre-blended polyols and, in future, HFC-containing polyols.

While some MLF-funded project management issues should be tackled directly by the Executive Committee (ExCom) of the MLF, EIA believes many other issues can only be addressed at the Montreal Protocol level. The Parties to the Montreal Protocol must take primary responsibility for setting a clear path to review, assess and make recommendations on actions to strengthen the current MRV regime in order to ensure effective implementation of Montreal Protocol decisions.

These actions must take into account the additional complexities and challenges that the Montreal Protocol faces with the ongoing HCFC phase-out in parallel with the Kigali Amendment. For example, the HCFC phase-out is just under way in Article 5 Parties, with the first significant reduction of 35 per cent set for 2020 followed by reductions of 67.5 per cent in 2025, 97.5 per cent in 2030 and 100 per cent in 2040.

To achieve the HCFC phase-out schedule will require A5 Parties to reduce their HCFC production and consumption to close to zero within the next decade, in particular the pervasive HCFC-22. Unlike CFC-11, HCFC-22 is also widely used as a feedstock to manufacture other fluorochemicals, such as HFC-32, and to produce synthetic polymers, such as polyvinyl chloride (PVC) and polytetrafluoroethylene (PTFE), also known as Teflon.¹ The Montreal Protocol places no controls on the production and consumption of feedstocks, subjecting them only to basic reporting.² This creates a loophole that could lead to significant illegal use and trade, exacerbated by the fact that HCFC-22 is a less expensive drop-in for many HFC applications. Moreover, it is difficult to imagine how atmospheric monitoring and modelling would be similarly effective in overseeing compliance with the HCFC phase-out as it was with the CFC phaseout, given that the emissions from illegal use of HCFC-22 would be dispersed and time-delayed, compared to emissions from the use of CFC-11 in foams.

The HFC phase-down presents more unique challenges. In particular, the HFC phase-down is a phase-down, not a phase-out, meaning there will be a tail of allowable consumption and emissions into the future. Unlike most CFCs and HCFCs, HFCs are used as both a pure substance and in countless HFC blends. Since the HFC phase-down is based on carbon-dioxide equivalence (CO₂e), an unknown mix of HFC blends will be emitted to the atmosphere as the phase-down progresses, with reporting only indicating the constituent HFCs in Annex F. It will therefore be difficult if not impossible to identify illegal HFC production or the use of specific HFC blends through atmospheric monitoring and modelling alone.

The CFC-11 experience has been informative and still requires significant additional efforts to ensure this specific issue is fully understood and addressed. However, it has also triggered overviews of some of the Montreal Protocol's institutions and controls, highlighting a broad set of shortcomings that must be addressed as well as foreshadowing several new issues that will arise.³ These insights provide a solid foundation to build upon but much more is required. A broader examination of the institutions and processes of the Montreal Protocol as a whole is warranted, in order to ensure it is ready to take on the growing challenges of the ongoing HCFC phase-out and the new controls under the Kigali Amendment.

It is time to reinvest in the Montreal Protocol. Parties should use the 41st meeting of the OpenEnded Working Group (OEWG) to prepare to initiate a comprehensive fitness check at the 31st Meeting of the Parties (MoP31) in Rome, one with clear timetables for consideration and adoption of needed improvements, whether via decisions, adjustments or future amendments.

Environmental Investigation Agency, Briefing to the 41st OpenEnded Working Group of the Montreal Protocol

6. Sulfuric acid decomposition chemistry above Junge layer in Earth's atmosphere concerning ozone depletion and healing

Abstract

Sulfuric acid (H_2SO_4) is the seed molecule for formation of stratospheric sulfate aerosol layer that assists ozone depletion by activation of halogen species.

The impact of increased stratospheric sulfate aerosols due to large volcanic eruptions and possible side effect claimed in the geoengineering scheme of global climate using man-made injected stratospheric sulfate aerosols is ozone depletion.

Given that both volcanic eruptions and geoengineering scheme are ultimately connected with increased upper stratospheric concentrations of (H_2SO_4), here we show by theoretical approach that the pressure-independent ($\text{H}_2\text{SO}_4 + \text{O}(^1\text{D})$) insertion/addition reactions via barrierless formation of peroxyulfuric acid (H_2SO_5) or $\text{HSO}_4 + \text{OH}$ radicals or sulfur trioxide (SO_3) + hydrogen peroxide (H_2O_2) molecules are the potential routes towards (H_2SO_4) loss above the stratospheric sulfate aerosol layer, and for the regeneration or transportation of consumed lower-middle stratospheric OH radical in the upper stratosphere at the cost of $\text{O}(^1\text{D})$ /ozone.

Authors: Montu K. Hazra, Sourav Ghoshal, Prabhash Mahata & Biswajit Maiti

Nature, Communications Chemistry, volume 2, Article number: 75 (2019), 1 July 2019



Abstract

Sulfuric acid (H_2SO_4) is the seed molecule for formation of stratospheric sulfate aerosol layer that assists ozone depletion by activation of halogen species. The impact of increased stratospheric sulfate aerosols due to large volcanic eruptions and possible side effect claimed in the geoengineering scheme of global climate using man-made injected stratospheric sulfate aerosols is ozone depletion. Given that both volcanic eruptions and geoengineering scheme are ultimately connected with increased upper stratospheric concentrations of H_2SO_4 , here we show by theoretical approach that the pressure-independent $\text{H}_2\text{SO}_4 + \text{O}(^1\text{D})$ insertion/addition reactions via barrierless formation of peroxyulfuric acid (H_2SO_5) or $\text{HSO}_4 + \text{OH}$ radicals or sulfur trioxide (SO_3) + hydrogen peroxide (H_2O_2) molecules are the potential routes towards H_2SO_4 loss above the stratospheric sulfate aerosol layer, and for the regeneration or transportation of consumed lower-middle stratospheric OH radical in the upper stratosphere at the cost of $\text{O}(^1\text{D})$ /ozone.

— Latin America and Caribbean —

7. Cuba deposita instrumento de ratificación de la Enmienda de Kigali al Protocolo de Montreal relativo a las Sustancias que Agotan la Capa de Ozono



NUEVA YORK, 21 de junio de 2019.- Cuba depositó este jueves el instrumento de ratificación de la Enmienda de Kigali al Protocolo de Montreal relativo a las Sustancias que agotan la Capa de Ozono.

Con este paso, Cuba reafirma su compromiso hacia la eliminación de sustancias agotadoras de la capa de ozono, meta fundamental del Protocolo de Montreal y de la Enmienda de Kigali. El gobierno cubano es firmante del Protocolo de Montreal desde el año 1992 y ha pasado por la eliminación de un grupo de sustancias importantes, desde entonces.

La Enmienda de Kigali al Protocolo de Montreal relativo a las sustancias que agotan la capa de ozono entró en vigor el 1 de enero de 2019. Contempla que durante los próximos 30 años se reduzca en más de 80% la producción y el consumo proyectados de hidrofluorocarbonos (HFC), compuestos orgánicos utilizados frecuentemente en acondicionadores de aire y otros dispositivos. Con su plena implementación, la Enmienda puede evitar hasta 0,4 °C de calentamiento global a fines de este siglo, mientras se continúa protegiendo la capa de ozono. En ese sentido, contribuirá sustancialmente a los objetivos del Acuerdo de París.

La Enmienda de Kigali contribuye también al logro de los Objetivos de Desarrollo Sostenible en particular al cumplimiento de metas del ODS 7 (vinculados a la energía asequible y no contaminante), el ODS 13 que llama a la acción por el clima y al ODS 9 que promueve el desarrollo sostenible de la industria, innovación e infraestructura.

Actualmente, la nación caribeña ya ha reducido los clorofluorocarbonos, muy utilizados en la refrigeración, las espumas y los aerosoles empleados en diferentes sectores de la economía nacional. Asimismo, ha logrado la eliminación total del bromuro de metilo y el tetracloruro de carbono, al tiempo que se encuentra en proceso de suprimir también los hidrofluoruros de carbono. (Cubaminrex-Misión Permanente de Cuba ante Naciones Unidas)

Ministerio de Relaciones Exteriores, Misión Permanente de Cuba ante Naciones Unidas, Junio 2019

North America

8. Delaware governor directs environmental department to restrict HFCs

Delaware Governor John Carney (D) has directed the state's Department of Natural Resources and Environmental Control to propose regulations to eliminate hydrofluorocarbons (HFCs) by March 2020.

He cited the state's vulnerability to climate change-induced sea level rise as among his reasons, saying "as Delaware continues our fight against climate

ChemicalWatch GLOBAL RISK & REGULATION NEWS

Delaware governor directs environmental department to restrict HFCs

1 July 2019 - [Both environment, US news](#)

Delaware Governor John Carney (D) has directed the state's Department of Natural Resources and Environmental Control to propose regulations to eliminate hydrofluorocarbons (HFCs) by March 2020.

He cited the state's vulnerability to climate change-induced sea level rise as among his reasons, saying "as Delaware continues our fight against climate change, my administration is moving towards eliminating hydrofluorocarbons (HFCs) as an increasingly harmful element to our state and our environment."

According to Governor Carney, HFCs are still a growing presence in the atmosphere, increasing at a rate of 8% each year, and they "can be hundreds of times more potent than carbon dioxide in contributing to climate change".

Three other Democratic lawmakers - Representative Debra Heffernan, Senator Nicole Poore and Senator Stephanie Haines - introduced a concurrent resolution in the state's General Assembly on 10 June. The bill of support passed both houses on the same day.

HFCs are a manmade class of industrial chemicals largely used for cooling and refrigeration. They have replaced certain ozone-depleting substances that are being phased out internationally under the Montreal Protocol, but are themselves considered greenhouse gases.

They are now subject to their own phase-out in many countries under the protocol's Kigali amendment. The US has yet to ratify this and, in the absence of federal action, several states have taken steps to phase out the chemicals from their own markets.

Both Vermont and Washington state have taken action this year.

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ChemicalWatch, 3 July 2019

9. US EPA GreenChill Webinar: Effective Refrigerant Architecture



Topic: [Making the Transition to an Effective Refrigerant Architecture](#)

Date: Tuesday, July 30, 2019

Time: 2:00 pm to 3:00pm (Eastern time)

Description:

Andre Patenaude and John Wallace (Emerson) will present on the market pressures, sustainability objectives and the uncertain regulatory climate that are driving more supermarket retailers to consider using natural refrigerants. Backed by innovations from leading equipment manufacturers, regional governance incentives and federal sustainability programs, making the transition to natural refrigerants is more viable today than ever before.

This webinar will explore the latest natural refrigerant architectures in commercial refrigeration.

To join the webinar:

1. Visit the webinar access page: [Making the Transition to an Effective Refrigerant Architecture](#)
2. Select "Enter as a Guest". It is important that you select the option to enter as a guest.
3. Enter your name.
4. Click "Enter Room".
5. Click "OK".

For audio:

1. Call the toll free call-in number: 1-866-299-3188 (706-758-1822 from outside the U.S.)
2. Use Conference Code: 202 343 9185#

United States Environmental Protection Agency, July 2019

Asia Pacific

10. South and South-East Asia Use Technical and Vocational Education in Cooling Sector for Montreal Protocol Compliance and Workforce Development

Bangkok, 1 July 2019 – National technical and vocational training holds one of the keys that can unlock the potential of one of the world’s most effective multilateral environmental agreements for even greater environmental achievements and labour force development. This was the theme behind a landmark workshop organised by UN Environment in Bangkok last week in which over 60 representatives from 21 countries across Asia gathered ahead of the 41st Meeting of Open-Ended Working Group of Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer. Representatives of National Ozone Units (NOUs) and their counterparts in technical vocational education and training (TVET) authorities considered how to collaborate to support the refrigeration and air-conditioning servicing sector (RSS) to support national action plans to comply with this treaty while at the same time increasing employment opportunities and strengthening the skills of their workforces.

The skill level and actions of RSS technicians, who form the backbone of this sector, directly affect the environment through their handling of refrigerants and the air conditioning and refrigeration equipment that uses them. Their work to stop leaks and ensure energy-efficient operation of the appliances contributes significantly to ozone and climate protection. They require specialised and regular training in the new technologies and techniques being introduced as a result of the Montreal Protocol. NOUs and TVET authorities thus have a great opportunity to work more closely together to serve this common stakeholder. UN Environment OzonAction brought these two partner groups together in the “Thematic Workshop on the Integration of Good Servicing Practices for Refrigeration and Air-Conditioning Servicing Technicians into National Qualification and Technical and Vocational Education and Training Systems,” organised from 29-30 June 2019 with support from the Montreal Protocol’s Multilateral Fund.

The most effective approach is to upgrade the national qualification certification system for RSS technicians that ensures the safe use and handling of gases and equipment, maintaining/enhancing energy efficiency and reducing refrigerant emissions during servicing. Ms Yoojeong Seo, a UNESCO expert in Educational Innovation and Skills Development, explained that the objective of technical training/educational sector is to be industry- and market-driven. As the needs of the refrigeration and air conditioning (RAC) market changes in accordance with the evolving Montreal Protocol requirements, the education of those who work in these markets must respond or adapt accordingly.



Almost unanimously, presenters and participants agreed that TVET is the critical link between industry and the national qualification system. Participants made it clear that each country has some structure in place related to certification of RSS occupations, which could be used to integrate the good servicing practices promoted by the Montreal Protocol. The usual chain leading to the integration includes: occupational and competence standards, curriculum for training, adequate facilities as well as capable educators and assessors. Certification can be also mandatory, i.e. requiring a license to practice and service certain cooling systems.

The integration is a challenge in countries as diverse as the ones represented in the workshop, and there is no 'one size fits all' approach. During the workshop, participants developed a clear situation analysis of where their national qualification system stands and where the possible entry points are for such integration of the good servicing practices. This helped to develop an initial action plan for the post-workshop activities.

As an example, Mr. Sri Hardono, from the Bekasi Vocational Training Center, explained how Indonesia's National Occupational Standards for RSS recognise informal experience by conducting competency-based assessments run by the Ministry of Manpower. From a different perspective, China's Ministry of Ecology and Environment representative Zhao Zikang described the country's efforts to strengthen the links of the good servicing practices training to their TVET institutions. Their reform mechanisms are leaning towards innovation in vocational education, establishing school-enterprise cooperation, and promoting more work-based learning. Mongolia's National Ozone Unit in close collaboration with their national TVET authorities is guiding the process of establishing the RSS certification based on good servicing practices by developing the relevant occupational standards and a Recognition of Prior Learning assessment mechanism.

Another issue raised by many countries throughout the workshop was how to incorporate recognition for informal 'on-the-job' learning. This stimulated vibrant discussion about the need for practical or prior experience to be recognised in formal qualifications, given that in many Article 5 countries it is difficult for people to obtain such qualifications, and cost remains a barrier.

Mr. Eduardo Ganem, Chief Officer of the Multilateral Fund for the Implementation of the Montreal Protocol, joined the second day proceedings and praised the workshop participants for their timely contribution "While next week [41st OEWG] is about policy; this precursor meeting is about practice and you are critical stakeholders." James Curlin, Acting Head, OzonAction said "For many countries, close collaboration between NOUs and TVET authorities has been a missing piece of the puzzle in relation to the Montreal Protocol. This partnership can secure multiple environmental benefits, contribute to employment growth, and create well-paying jobs. It also ultimately supports the UN Sustainable Development Goals including Climate Action, Decent Work and Economic Growth, and Sustainable Cities and Communities."

Overall, the workshop gave deep insight into how countries in South Asia and South East Asia might adopt or adapt national standards to incorporate key competencies of good servicing practices for their RAC technicians and enable smooth and safe transition to ozone- and climate-friendly refrigerants and energy-efficient cooling equipment in their respective domestic market. At the conclusion of the workshop, it was agreed that countries will set up regular integrative mechanisms between the NOUs and TVET institutions and that UN Environment OzonAction's Compliance Assistance Programme team, together with UNESCO, intend to continue to provide support to NOUs in this regard.

Contact: [Hu Shaofeng](#), Montreal Protocol Coordinator, OzonAction, Office of Asia and the Pacific, UNEP

11. Safety4Sea: Phasing out ozone depleting substances



As the Indian Register of Shipping informs, the regulation 12 of MARPOL Annex VI bans the installation of equipment containing ODS, including hydrochlorofluorocarbons (HCFCs) on ships constructed on or after 1st January 2020. This aligns with the requirements of an international agreement on substances that damage the ozone Layer, called the Montreal Protocol 1987.

The Montreal Protocol was established to stop the production and import of ozone depleting substances that harm the ozone. It aims to reduce their concentration in the atmosphere in order to help protect the earth's ozone layer.

The Montreal Protocol has set phase out timetable for all the major ozone depleting substances, including chlorofluorocarbons (CFCs), halons, HCFCs and other ODS. The global phase out timetable across the sectors for HCFCs is the following:

Ozone depleting substances	Developed countries	Developing countries
HCFCs	35% reduction by 2004 75% reduction by 2010 90% reduction by 2015 Total phase out by 2020	10% reduction by 2015 35% reduction by 2020 67.5% reduction by 2025 Total phase out by 2030

Credit: Indian Register of Shipping

The phase out target date for maritime sector is set as 1st January 2020.

More specifically, the application of HCFCs is mainly found in:

- Refrigeration and air conditioning equipment;
- Heat pumps;
- Foam applications e.g. extruded polystyrene foams, as a blowing agent in rigid polyurethane foams (used largely for insulation purposes);
- Solvent applications for purposes such as lubricants, coatings and cleaning fluids for electrical, electronic or photographic equipment (e.g. precision inertial guidance systems, and oxygen components and piping systems in aircraft carriers and hospital ships);
- Portable fire extinguishers in applications such as used in telecommunication facilities, computer rooms, commercial shipping, pleasure craft etc.

What is more, new installations that include HCFCs are not allowed on vessels built on or after 1st January 2020. However, systems and equipment with HCFCs on current vessels are allowed to continue operating and may be recharged as necessary with prohibition of the deliberate discharge of ODS to the atmosphere.

The phasing out of HCFCs will impact existing systems and equipment servicing and maintenance after 1st January 2020. Procurement of any small quantity of HCFCs for replenishment purposes may become a big challenge. Some of the challenges may include:

- Inflated prices;
- Global sourcing efforts;
- Increased breakdown time;
- Legal and logistic issues;
- Longer port stay.

Another important fact is that few countries may enforce complete ban on servicing and maintenance of existing systems and equipment that include HCFCs within their jurisdiction.

Ships with onboard installations of existing systems and equipment containing HCFCs are possible to have detailed inspections by the port state control (PSC) authorities. The records regarding usage, servicing, maintenance, HCFCs consumption will be verified strictly towards compliance.

In order to prevent future troubles due to this kind of situations, owners and operators of the ships are suggested to take stock of current systems and equipment with HCFCs installed on their ships.

A suitable evaluation of these systems and equipment with potential alternative solutions may be also conducted and a conscious decision of continuation with the current systems and equipment or appropriate modification using non-ODS substances shall be taken.

What is more, the Indian Register of Shipping recommends that ship owners and operators who would like to continue with the existing systems and equipment must make sure that at the time of servicing or decommissioning the systems or equipment containing HCFCs, the HCFC is collected in a controlled manner and should not be reused onboard, be landed to appropriate reception facilities for banking or destruction.

Finally, any redundant equipment or material that has HCFC is landed ashore for appropriate decommissioning or disposal. This also applies during ship recycling.

Safety4Sea, 28 June 2019

12. Opportunities for natural refrigerants in cold chain sector



India, the fastest growing economy in the world with the second-largest consumer market, is a huge market for the growth of cold chain sector. As per reports from Ministry of Food Processing Industries (MoFPI), our country produces more than 400 MT of perishables every year. Figures show that the wastage levels in perishables in India are significantly high- 4.6-15.9% in fruits, 5.2% in inland fish, 10.5% in marine fish, 2.7% in meat and 6.7% in poultry.

Estimated annual value of losses of agri-produce currently stands at Rs 92,651 crore. Annual value of losses in fruits and vegetables, meat, fish and milk is estimated at Rs 50,473 crore. In order to put an end to the losses in the supply chain, adequate and efficient cold chain system providing fresh produce to the end-consumer is the need of the hour. Against the total capacity of 31.8 million MT, the capacity utilisation is only 75%.

Owing to the rising need of the infrastructure, according to a market research report, the cold chain industry in India is forecast to grow at a CAGR of 19 per cent during the period of 2017-2022. The drivers for growth of the industry include changing demographics, lifestyle patterns and food consumption patterns in urban areas with nuclear family set up leading to increasing demand for processed, chilled, frozen food and beverages, rising need for the cold chain facilities to reduce the cold chain infrastructure gap.

Major deterrents

Research indicates that there are some major deterrents in the growth and sustainability of cold chain sector in

India:

1. Out of the 7,000 cold storage units in the country, almost 5,000 are based on outdated technologies.
2. More than 90% cold chain storage businesses in India are owned by private sector in India.
3. The business is concentrated in 5-6 key states like Uttar Pradesh, West Bengal, Punjab, Andhra Pradesh, Gujarat and so on while it needs to spread across all states.
4. The single largest commodity (75%) stored is potato and only 25% is multi-commodity cold storages.

Still the cold chain business is growing at a 28% CAGR. There are some emerging trends providing opportunities in this sector. Like providing end-to-end storage solutions of multi-commodity and participation of corporate sector to make it more organised.

Cold chain intrinsically requires energy source for maintaining compliance to product-specific environmental parameters. Availability of energy is random or minimal at farm-gate or cold chain initiation level. Back-up systems are generally diesel fuel driven with associated costs.

While rising energy cost impacts all aspects of modern living, for cold-chain development specific policy focus on R&D and promoting use of alternate technology is required. Not to forget the massive ill-effects of climatic change is looming large over all of us.

Energy-efficient refrigeration

There is a growing need for energy-efficient refrigeration systems to make it a viable proposition in our country.

So, what are natural refrigerants & why are they better alternatives to synthetic one's? To name a few, hydrocarbons, ammonia, carbon dioxide, water, ether, and even air are new emerging refrigerants and they are making a significant change in the industrial refrigeration industry in our country. Not only in terms of cost efficiency but these energy-efficient refrigerants cause significantly less or zero damage to the environment.

Systems that use magnetic levitation, salt-based cooling, solar thermal energy banks as well as intelligent energy monitors need investigation and promotion. Moreover, developed economies across North America and Europe are undertaking R&D activities for developing CO₂ refrigerants.

In a recent newspaper report, IIT Madras students have developed a prototype of a refrigeration system that uses natural refrigerant CO₂. Since synthetic refrigerants are man-made and detrimental to the environment, natural refrigerants are time-tested & better alternatives contributing to reduce the global warming levels by saving 20% less power.

Unlike ammonia, CO₂ which is generally a waste in industrial context, is harmless in natural conditions. At the same time, the use of ammonia being the cheapest refrigerant is predominant in various industrial refrigeration applications such as ice, meat, poultry, dairy, ice cream, breweries, beverages, seafood or aqua culture processing, cold storage, vegetable freezing and so on.

Research indicates that about 77 per cent of the RAC sector, can be successfully converted to natural refrigerants by using currently available technologies. Prioritising natural refrigerants will result in direct emissions saving in India of 50 million tonne of CO₂e per year by 2030. This accounts for more than 50 per cent of the current emissions from HCFC and HFC use. The use of natural refrigerants with currently available technologies can make a significant reduction in emissions of high-GWP HFCs in India.

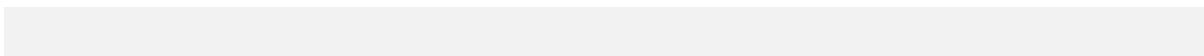
Manmade refrigerants

Efforts at the global level like Montreal Protocol and Kigali Agreement are making us look for more sustainable products, making us realise the impacts of manmade refrigerants on the environment. The time has come to adopt to natural or green refrigerants.

The cold storage business is changing and the industry is moving towards safer & sustainable options keeping in view the long-term environment concerns. In a country where agriculture provides livelihood to two-thirds of the country, the cold chain industry is still evolving and is still inadequate to control the food wastage.

India is one of the largest producers of milk and the second-largest producer of fruits and vegetables in the world. Ironically, India is also one of the biggest food wasting countries in the world. The cold sector is growing and need of the hour is to be more food-efficient both in terms of economics and environment.

FnB News, 3 July 2019, By: Rupa Sahay Das



13. China plans CFC-monitoring network to investigate rogue emissions

The move follows a recent study that attributed a spike in an ozone-depleting chemical to two Chinese provinces.

When atmospheric models traced a mysterious spike of an ozone-destroying gas to two provinces in China earlier this year, scientists waited to see how the Chinese government — and other nations — would respond to this possible violation of international law.

Now the government is under pressure to act — and has presented a plan to help it track and reduce emissions of the chemical, known as trichlorofluoromethane or CFC-11. Measures include establishing a national monitoring network to track ozone-depleting chemicals, along with heftier penalties for companies caught illegally producing the chemical.

Details of the plan emerged in notes released last month from a May meeting of the Multilateral Fund for the Implementation of the Montreal Protocol, held in Montreal, Canada.

The “document sets the stage for real progress on this important issue”, says David Fahey, director of the Chemical Sciences Division at the US National Oceanic and Atmospheric Administration (NOAA) Earth System Research Laboratory in Boulder, Colorado.

The Chinese environment ministry disputes that there is enough evidence to pin the recently discovered spike in emissions on China, but agrees that more data are needed to understand the problem. The ministry was “shocked and perplexed” when it heard of rising levels of the chemicals, a spokesperson told Nature’s news team. [...]

China has released few details about its plan for a national monitoring network. But the documents from the Montreal meeting say it plans to select several key cities where routine monitoring will begin within three years.

Scientists say that if the network uses stations close to Hebei and Shandong, it could pinpoint the source of the mysterious CFC-11 spike much more exactly.

That would aid ongoing Chinese and international efforts to eliminate the spike, says Stephen Montzka, an atmospheric chemist at the NOAA Earth System Research Laboratory. He was part of the research team that used atmospheric models to identify the spike, tracing it first to east Asia, in a study published in Nature in May 2018, and then to northeast China, in a Nature paper published in May 2019. Montzka hopes that any data gathered by the national network will be open to the global scientific community. [...]

Nature, 12 July 2019, By: David Cyranoski



14. Press Statement on Climate Change following the Meeting between the State Councilor and Foreign Minister of China, Foreign Minister of France and the United Nations Secretary General, Osaka, 29 June 2019



Climate - Press Statement on Climate Change following the Meeting between the State Councilor and Foreign Minister of China, Foreign Minister of France and the United Nations Secretary General (Osaka, 29 June 2019)

State Councilor and Foreign Minister of China Wang Yi, Foreign Minister of France Jean-Yves Le Drian, and Secretary General of the United Nations António Guterres, met on the margins of the G20 Summit in Osaka. Envisaging the UN Climate Action Summit and the 25th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP25) to be held this year, they reaffirmed their strong commitment to enhancing international cooperation on climate change to ensure full and effective implementation of the Paris Agreement. Taking note of the recent IPBES Global Assessment Report on Biodiversity and Ecosystem Services and IPCC Special Report, they stressed the urgency on addressing both climate change and biodiversity loss.

[...] Both countries recalled their determination to ratify and implement the Kigali Amendment to the Montreal Protocol and support improved energy efficiency standards in the cooling sector, recognizing that the fast phasedown of HFCs and parallel energy efficiency efforts can have very significant climate and economic benefits by 2050. They welcomed the release of China's national Green and High Efficiency Cooling Action Plan. They agree to encourage countries to undertake immediate action to improve energy efficiency in the cooling sector globally. [...]

China and France welcomed the recommendations adopted on 22 May 2019 in Nairobi by the Ad Hoc Open Ended Working Group as established in the UN General Assembly resolution "Towards a Global Pact for the Environment". They will maintain a dialogue throughout the follow-up of the UNGA's consideration of the above recommendations.

France Diplomatie, 29 June 2019

15. 1,200 illegal refrigerant cylinders seized in Lithuania

Customs officers in Lithuania are said to have seized nearly 1,200 cylinders of illegal refrigerant since the beginning of June.

While the European Commission continues to insist that the level of illegal trade is insignificant, Lithuanian customs officials have recorded at least 12 attempts to illegally import smaller or larger quantities of gas from Belarus or Russia in June alone.

In total, nearly 1,200 tanks have been detained, worth about €50,000. Officials call it "seasonal" smuggling, which, they say, is increasing every year during the summer.

The biggest seizure was in Vilnius, where customs officers seized 1,150 cylinders, valued at €49,207. Most of the cylinders, however, are coming in small quantities of one or two cylinders in trucks. On June 14, for instance, two 11.3kg cylinders of illegal R410A were discovered in two separate trucks at the customs post in Medininkai on the Belarusian border. This week, a Russian Scania truck was stopped in Kybartai and found to be carrying two disposable cylinders of R404A.

Last year it was estimated that the illegal trade had cost the Lithuanian exchequer up to €5m.

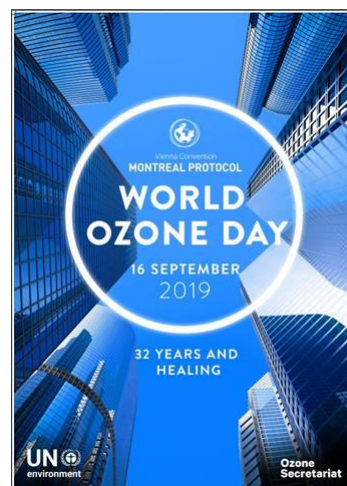


Featured



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

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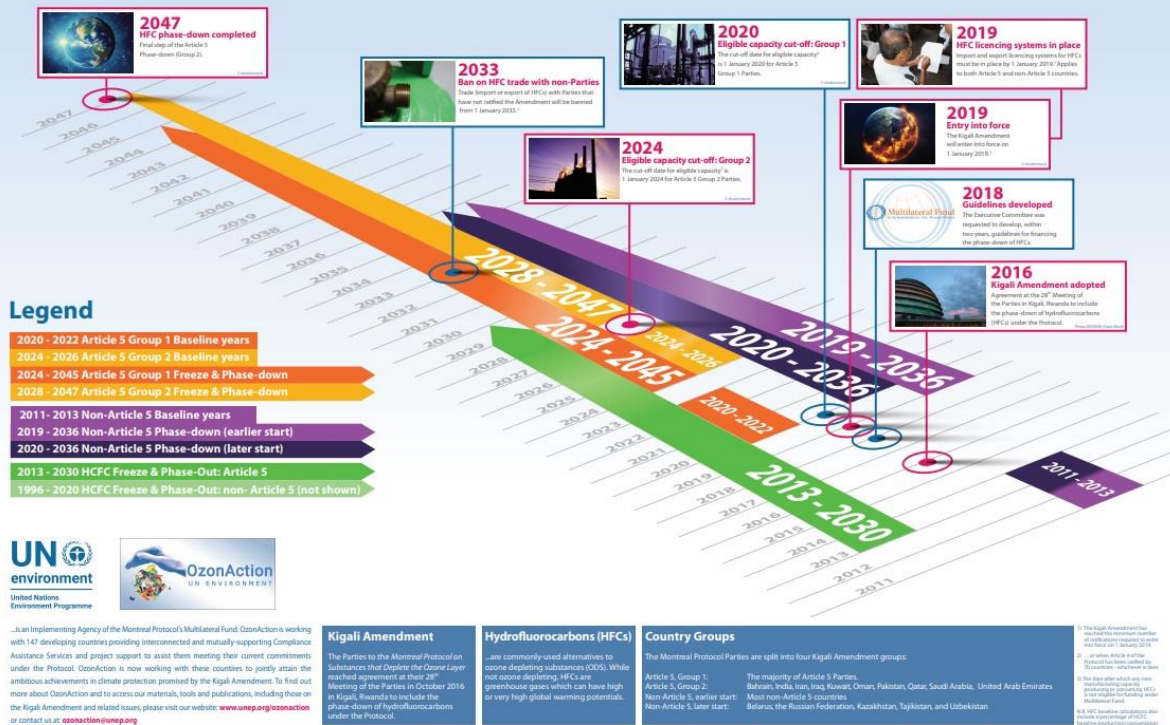
OZONACTION

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 / Description	Response Rate (%)
1. How satisfied are you with the quality of the meeting content?	95
2. How satisfied are you with the quality of the meeting format?	93
3. How satisfied are you with the quality of the meeting organization?	93
4. How satisfied are you with the quality of the meeting location?	93
5. How satisfied are you with the quality of the meeting facilities?	93
6. How satisfied are you with the quality of the meeting staff?	93
7. How satisfied are you with the quality of the meeting services?	93

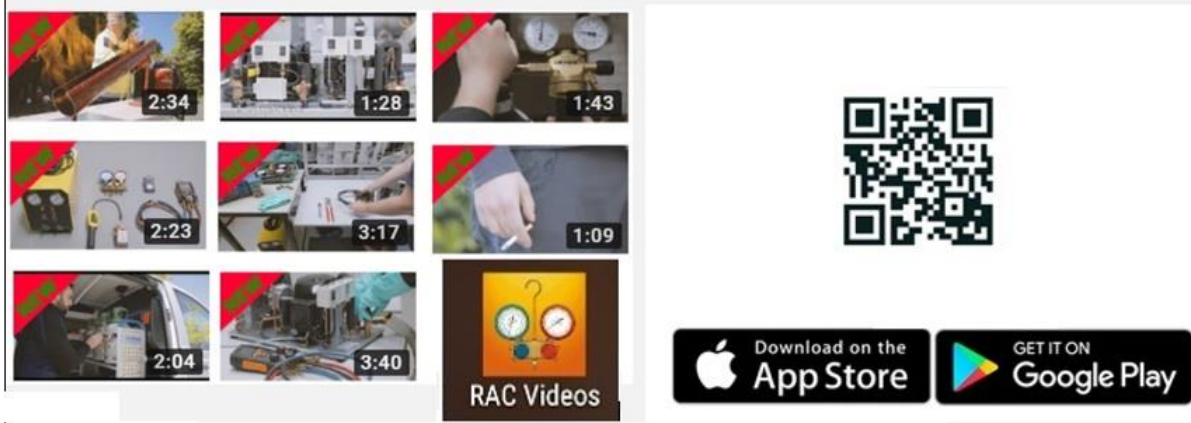
The Path from Kigali: HFC Phase-Down Timeline



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

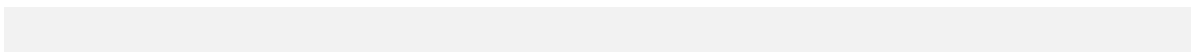


New videos available on the OzonAction RAC video application

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.

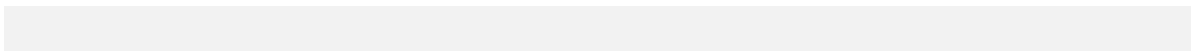
- Helps in understanding and reporting under the Montreal Protocol (and future commitments under the Kigali Amendment)
- The calculator will automatically perform the conversion between metric

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

OzoneAction 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.

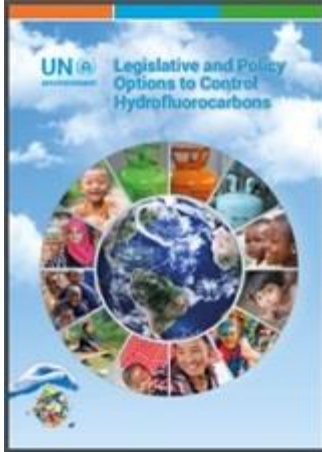
This application, consisting of short instructional videos on techniques, safety and best practice, serves as a complementary training tool for refrigeration and air-conditioning (RAC) sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training.

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)

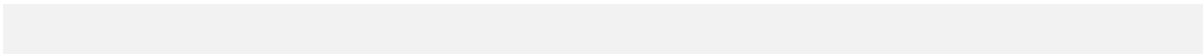
Publications



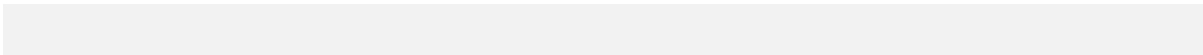
Legislative and Policy Options to Control Hydrofluorocarbons

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. 5, 2019



Events

2019

- [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.
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 - 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.



[SURVEY: GLOBAL TRENDS FOR LOW-CHARGE AMMONIA](#)

Shecco survey on global market, technology and policy trends for low-charge ammonia technology! The findings of the survey will be part of the World Guide to Low-Charge Ammonia (*freely available*) - a worldwide study focusing on the developing market. The Guide will be released in three parts, between summer and autumn 2019, presenting a global overview of the market, including:

- Market analysis
- Technology trends
- Case studies
- Code & standards updates
- New applications for ammonia

The findings from this poll will be compared to a similar survey conducted last year to identify key developments. By participating in this survey, you will contribute to a better understanding of the market for low-charge ammonia - and it will only take less than 10 minutes!

The survey closes on 28 July 2019
[TAKE SURVEY NOW](#)



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Prepared by: Samira Korban-de Gobert, OzonAction

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