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Multilateral Fund
for the Implementation of the Montreal Protocol

A fortnightly electronic news update on ozone and climate protection and the implementation of the Montreal Protocol



GLOBAL



1. Resumed OEWG 37, OEWG 38 and ExMOP 3 to the Montreal Protocol

The resumed 37th Meeting of the Open-Ended Working Group (OEWG 37) of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer held from 15-16 July 2016, followed by OEWG 38 from 18-21 July 2016, followed by the Third Extraordinary Meeting of the Parties (ExMOP 3) from 22-23 July 2016, in Vienna, Austria

These meetings are expected to focus on efforts to conclude a hydrofluorocarbon (HFC) Amendment to the Protocol in 2016.

- ▶ Website: <http://ozone.unep.org/en/meetings>
- ▶ IISD/ENB coverage: <http://www.iisd.ca/ozone/oewg38/>

2. The thirty-eighth session of the Open-Ended Working Group of the Montreal Protocol (OEWG 38) opened in Vienna, Austria on 18 July 2016



In the morning, delegates heard opening remarks and addressed the agenda and the organization of work. Discussion then turned to the Technical and Economic Assessment Panel (TEAP) report on updated and new information on alternatives for ozone depleting substances (ODS).

In the afternoon, parties addressed the Dubai Pathway on HFCs, the TEAP 2016 report, and issues related to exemptions under Articles 2A–2I of the Montreal Protocol, including nominations for essential-use exemptions for 2017 and nominations for critical-use exemptions for 2017 and 2018. They also addressed issues related to the phase-out of HCFCs, the availability of recovered, recycled or reclaimed halons, terms of reference for the study on the 2018-2020 replenishment of the multilateral fund, a report by the TEAP and the Scientific Assessment Panel on carbon tetrachloride discrepancies, and the destruction of ODS banks.

The HFC Management Contact Group met in the evening.

- ▶ IISD/ENB coverage: <http://www.iisd.ca/ozone/oewg38/>

3. Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer Resumed Thirty-seventh Meeting Vienna, Austria, 15 and 16 July 2016

The resumed OEWG 37 met for its final day on Saturday, 16 July 2016, in Vienna, Austria. Informal discussions were held throughout the day and night. Topics addressed included funding, HCFCs-HFCs linkages and exemptions not related to HAT [high ambient temperatures].

The HFC Management Contact Group reconvened in the evening to assess whether solutions had been generated for the identified challenges. As more time was required, informal discussions resumed. Following protracted negotiations, the contact group reconvened to conclude its work in the early hours of Sunday, 17 July 2016. Participants then convened in plenary, which heard an update on the status of discussions on each of the identified challenges. OEWG 37 was gavelled to a close at 3:12 am.



CONTINUATION OF THE DISCUSSION UNDER ITEM 4 OF THE OEWG 37 AGENDA: “DUBAI PATHWAY ON HFCs”

On Saturday evening, at 5:20 pm, Contact Group Co-Chair Patrick McInerney reconvened the HFC Management Contact Group, requesting the facilitators of the informal discussion groups to report on progress made throughout the day.

On exemptions not related to HAT, Facilitator Martin Sirois reported that a text had been agreed allowing

exemptions, for example those for critical or essential uses, and that the date for deciding on the exemption mechanism would be set during the amendment negotiations.

On the linkages between HCFCs and HFCs, Facilitator Mazen Hussein said that progress had been made, but the group needed additional time to finish its work.

On funding, Facilitator Annie Gabrielle said the group had made considerable progress and generated some solutions, but more work was needed on, *inter alia*, overarching principles and timelines, energy efficiency, and other activities.

Co-Chair McInerney then conducted a stocktaking of the remaining challenges, asking for reports from delegations on any issue not already addressed in Geneva or in the informal groups of the resumed session. CHINA said it had conducted consultations on flammability, but would need more time to conclude. The EU reported that discussions on the availability of technologies had resulted in general agreement that periodic technology reviews should be conducted, advised by the TEAP, and that these would include energy efficiency. CHINA reported that consultations on non-party trade provisions had resulted in a compromise text saying such provisions for all countries would enter into force five years after the freeze date for Article 5 parties. Regarding synergies with the UN Framework Convention on Climate Change (UNFCCC), Co-Chair McInerney suggested, and the contact group agreed, that this challenge should be revisited once amendment negotiations are underway and it becomes clearer what approach will be taken.

The contact group was suspended for informal groups to meet.

Co-Chair Xia reconvened the contact group on Sunday, 17 July at 2:06 am, inviting the facilitators of the informal groups to provide reports on progress.

On funding, Facilitator Gabriel said the informal group reached consensus on a number of solutions related to the funding challenges for consideration by the contact group. She highlighted agreement on: three overarching principles and timelines; guidance provided to the ExCom on incremental costs, including on the consumption manufacturing sector and the production and servicing sectors; and the cut-off date for eligible capacity, which will be determined by the MOP.

On the consumption manufacturing sector, she noted that the group agreed to negotiate incremental operating costs and the duration of those costs in the context of an amendment, explaining that discussion focused on the cost of process and application patents, and designs and incremental costs of royalties.

On the servicing sector, she noted there was agreement on categories of costs that would be eligible for inclusion in cost calculations, and on two points to be considered during amendment negotiations regarding additional import costs and incremental costs of refrigerants for motor vehicle servicing and re-charging. She observed that the group also discussed several other issues, including energy efficiency.

On other issues, CHINA shared text on the safety of substitutes: “Parties recognize the importance of timely updating international standards for flammable low-GWP refrigerants including IEC60335-2-40 and support promoting actions that allow safe market introduction, as well as manufacturing, operation, maintenance and handling of zero-GWP or low-GWP refrigerant alternatives to HCFCs and HFCs.” Parties agreed.

The EU reminded delegates of its text on periodic technology reviews, which states: “Conduct periodic technology reviews to identify alternatives that will include information on energy efficiency.” SAUDI ARABIA expressed concern about combining energy efficiency and availability of technologies, saying that availability also includes cost concerns. He requested time to develop and discuss draft text. Following a short consultation, the EU reported that the text now stated “Conduct periodic reviews of alternatives using criteria set out in paragraph 1(i) of decision XXVI/9 (Response to the report by the TEAP on information on alternatives to ODS),” noting that parties will discuss this issue further at the OEWG 38.

PAKISTAN requested the Co-Chairs to provide an update on the status of challenges not mentioned.

Xia clarified that some outstanding issues will be taken forward to OEWG 38 and, as such, issues will be subject to further consultation and negotiation before adoption of any amendment. The contact group was then adjourned.

On Sunday morning, when the OEWG 37 plenary reconvened at 2:50 am, OEWG 37 Co-Chair Leslie Smith asked the contact group to report on its outcome. Contact Group Co-Chair McInerney reported a “concrete and positive outcome” and reviewed the solutions developed for each category of challenges identified in the Dubai Pathway, noting that solutions for some challenges would require further discussion during the course of the amendment negotiations.

OEWG 37 Co-Chair Smith welcomed the report and asked if there were any objections or clarifications from the floor. INDIA noted that the funding challenge deliberations agreed that both process and application patents

will be covered. In response to a request from PAKISTAN, Contact Group Co-Chair McInerney read the agreed language regarding funding for the cost of importing alternatives, which calls for a proposal on this point to be discussed while negotiating an amendment and resolved prior to the adoption of an amendment to the Montreal Protocol.

OEWG 37 Co-Chair Smith said the set of agreed solutions will be reported to OEWG 38, permitting advancement to the next stage of the Dubai Pathway, negotiations of an HFC amendment.

INFORMAL DISCUSSIONS ON HFCs-HCFCs LINKAGES: This informal group met in the afternoon and evening, facilitated by Hussein, to consider draft text developed by a small group of interested parties. The text was presented by one party, who noted that the text acknowledges: the linkages between HFC and HCFC schedules; the preference to avoid transitions from HCFCs to high-GWP HFCs; the willingness to provide flexibility if no alternatives are available; and, *inter alia*, allow for a direct transition to low-GWP alternatives at a later date, with the text applying to “certain sectors, in particular industrial process refrigeration.”

One party questioned what “later date” meant. Another, supported by several others, called for adding “zero-GWP,” in addition to referencing low-GWP alternatives. Several questioned why the text was limited to the industrial process refrigeration sector, with some requesting inclusion of air conditioning, which was strongly opposed by another. Several parties noted that the text was not necessarily limiting, by using the term “certain sectors,” and that industrial process refrigeration had been singled out because they were complex, individually-designed systems entailing very high cost and were difficult to replace.

In the evening, parties reconvened to address the remaining bracket in the text around air conditioning. Several parties said they could agree to the original text. One party proposed replacing text on industrial process refrigeration with text on the preference to avoid transitions from HCFCs to high-GWP HFCs and the willingness to provide flexibility if no other technically proven and economically viable alternatives are available. This suggestion was strongly opposed by one party. After considerable bilateral consultations, parties agreed to include the newly proposed text as the first paragraph in addition to the paragraphs proposed in the morning, retaining specific reference to industrial process refrigeration, removing the bracketed reference to air conditioning from the text and deleting minor duplications in the text.

INFORMAL DISCUSSIONS ON EXEMPTIONS NOT RELATED TO HIGH AMBIENT TEMPERATURES:

This informal group, facilitated by Sirois, met in the afternoon to consider compromise text developed by Australia and Canada. After extensive discussion, the group: deleted a chapeau of “Parties agreed,” since the group was to generate solutions, not negotiate text; changed a bracketed reference to 2030 as the date to consider exemption mechanisms to “in 20xx,” as a placeholder for the date to be determined after amendment negotiations set phase-down schedules; and clarified that when exemption mechanisms are considered, the option of multi-year exemptions would be taken into account. The agreed text says that: exemptions would be allowed, such as for essential uses and critical uses, in any HFC amendment; the exemption mechanism, including the possibility of multi-year exemptions, will be considered at a date to be set during amendment negotiations; and TEAP would be provided with information and guidance for its periodic review of sectors where exemptions may be required.

CLOSURE OF OEWG 37

On Sunday morning, Co-Chair Paul Krajnik presented the draft report of the meeting (UNEP/OzL.Pro.WG.1/resumed.37/L.1). Delegates adopted the report without amendments. Co-Chair Krajnik declared the meeting closed at 3:12 am.

IN THE CORRIDORS

“We have a solution to this challenge!” This refrain rang in some delegates’ ears when trying to find compromises to other exemptions not related to HAT, leading to optimism early in the day on Saturday that the informal groups would reach consensus and allow participants to have some rest between OEWG 37 and OEWG 38. As the reconvening of the contact group shifted from 9:30 pm to 10:30 pm and beyond with no end in sight, earlier optimism started fading away, with several seasoned participants commenting, “whatever time you give them, they will use.”

Many worried that the discussions on funding were taking too long, with others lamenting the growing range of issues that had crept into the “funding” discussions. As the informal group on funding got down to its last few issues, repeated promises of “soon” filtered out into the corridors, with many delegates assuring observers that they would reach consensus. Others expressed frustration over the “relentless” negotiation tactics of some delegations, saying that agreements that took hours to reach could likely have been achieved in ten minutes. Others voiced concern over the fact that delegates have not even begun discussing the amendment proposals. In

the end, the group reached consensus on many of the funding challenges and deferred a few decisions to discussion during the negotiations on the amendment proposal.

Looking ahead to OEWG 38, some participants stressed the progress made in Dubai, Geneva and Vienna on solutions, arguing that these agreements represented real progress and would make the negotiations on the amendment proposal move more quickly. Others were more cautious, observing that delegates have not even begun to address the details of the amendment proposals, a time-consuming task in and of itself. With ExMOP 3 less than a week away and MOP 28 in Kigali, Rwanda, just under three months away, delegates ended OEWG 37 relieved that they had reached agreement on solutions to many challenges, but aware of the many daunting tasks ahead of them for the upcoming weeks and months.

- ▶ Languages: EN ([HTML/PDF](#)) FR ([HTML/PDF](#))
- ▶ Earth Negotiations Bulletin (ENB), [Volume 19 Number 119, 18 July 2016](#)
- ▶ Access the meeting [amendments/related documents](#)
- ▶ Follow the [daily updates](#) at IISDs portal



Executive Session of the CCAC High Level Assembly
July 21, 2016 - Vienna, Austria



4. Executive Session of the Climate and Clean Air Coalition's High Level Assembly

Organizer: Climate and Clean Air Coalition, 21 July 2016

- Event by invitation only -

The Climate and Clean Air Coalition to Reduce Short-lived Climate Pollutants (CCAC) is organizing a special executive session of its High Level Assembly (HLA) to take place on 21

July, 2016, in Vienna, Austria on the margins of 38th Meeting of the Open-ended Working Group of the Parties to the Montreal Protocol (OEWG-38) and Third Extraordinary Meeting of the Parties to the Montreal Protocol (ExMOP3).

This special executive session of the CCAC's HLA will focus on immediate actions that its members can take to raise awareness and take a strong leadership role to facilitate the adoption of an HFC phase down amendment in 2016. An ambitious HFC phase down amendment under the Montreal Protocol this year could avoid up to half a degree of warming by the end of this century according to recent studies. This effort is part of a broader approach to reducing SLCPs [Short-lived Climate Pollutants] to meet both the Paris Agreement obligations and contribute to the Sustainable Development Goals (SDGs). Adopting an HFC amendment would also infuse the Marrakesh CoP-22 with continued momentum.

Actions to reduce short-lived climate pollutants (SLCPs), including methane, black carbon and HFCs, need to be an integral part of our approach to tackle climate change, particularly if we are to succeed at staying below the 2 degree Celsius goal.

- ▶ [The Climate and Clean Air Coalition](#), July 2016

5. Countries to Continue Efforts to Control Greenhouse Gases under the Montreal Protocol



Photo Credit: Bill Dickinson CC

The 197 parties to the Montreal Protocol on Substances that Deplete the Ozone Layer will meet in Vienna, Austria, from 15 to 23 July 2016 to continue working to an amendment to the Protocol in 2016 to phase down the production and consumption of global-warming-inducing hydrofluorocarbons (HFCs), by first resolving challenges identified under the "Dubai Pathway on

HFCs" adopted last year.

HFCs are used in air conditioning, refrigeration, foams and aerosols as replacement for many ozone depleting substances. An agreement to phase down HFCs under the Montreal Protocol would avoid an estimated 105 gigatonnes of carbon dioxide equivalent by 2050, and up to 0.4°C of global warming by the end of the century, while continuing to protect the ozone layer.

Montreal Protocol parties will hold the Third Extraordinary Meeting of the Parties, to be specifically convened to address the HFC issue, on 22 and 23 July. The Extraordinary Meeting will include a ministerial roundtable discussion on the morning of Friday, 22 July. The discussion will focus on how Montreal Protocol parties can move forward in 2016 to deliver on the mandate of the "Dubai Pathway on HFCs". The discussants will include ministers and high-level participants from Bahrain, Canada, Indonesia, Nigeria, Sri Lanka, United States of America, United Nations and others.

In addition, the parties will discuss issues related to alternatives to ozone-depleting substances, terms of reference for a study on the funding needed for the replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol for the 2018 - 2020 period, among others, during the 38th meeting of the Open-ended Working Group (18 - 21 July). They will also continue generating solutions to challenges identified under the "Dubai Pathway" and consider HFC management issues, including the four proposed amendments to the Montreal Protocol to phase down HFCs, during the resumed 37th meeting of the Open-ended Working Group (15 - 16 July).

This year, Montreal Protocol parties have achieved the final phase-out of ozone-depleting chlorofluorocarbons (CFCs) with the phase-out of CFCs used in metered-dose inhalers, a significant milestone following 30 years of concerted global action to protect the ozone layer.

▶ UNEP [Ozone Secretariat](#), July 2016

6. Sources, Fates, Toxicity, and Risks of Trifluoroacetic Acid and its Salts: Relevance to Substances Regulated Under the Montreal and Kyoto Protocols

Abstract

This assessment report provides background information on trifluoroacetic acid (TFA) together with its potential relevance as a risk factor to the environment and human health. In addition, the report draws attention to some of the current concerns of substances controlled by and relevant to the Montreal Protocol. Based on current projections of uses, the amount of TFA formed from hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs), and hydrofluoroolifines (HFOs) in the troposphere is too small to be a risk to the health of humans and the environment. However, the formation of TFA from the degradation of HCFCs, HFCs, and HFOs warrants continued attention, in part because of its very long environmental lifetime. TFA is produced naturally and synthetically and is widely used in the chemical industry, and is a potential environmental breakdown product of a large number (>one million) of chemicals. These chemicals include pharmaceuticals, pesticides, and polymers.

The contribution of these chemicals to global amounts of TFA is very uncertain, in contrast to that from HCFCs, HFCs, and HFOs. TFA-salts are stable in the environment and accumulate in terminal sinks such as playas, salt-lakes, and oceans where the only process for loss of water is evaporation. Total contribution to existing amounts of TFA in the oceans as a result of the continued use of HCFCs, HFCs, and HFOs up to 2050 is estimated to be a small fraction (<7.5%) of the $\approx 0.2 \mu\text{g/L}$ acid equivalents/L estimated to be present at the start of the millennium. TFA, as an acid or as a salt is low to moderately toxic to a range of organisms. Based on worst-case exposure scenarios for salts of TFA, risks to mammals, to plants growing in soil and to aquatic organisms is currently considered de minimis. Risks are potentially greater for plants exposed directly to TFA-acid but the short times of exposure in most natural terrestrial environments likely mitigate any adverse effects.

This report is prepared by the UNEP Environmental Effects Assessment Panel and published in the Journal of Toxicology and Environmental Health B, 2016: DOI. Authors: Solomon K, Velders G, Wilson S, Madronich S, Longstreth J, Aucamp P, Bornman J. 2016.

This report is an Accepted Manuscript of an article published by Taylor & Francis in J Toxicol Environ Hlth B on June 27, 2016, available [online](#)

▶ UNEP [Ozone Secretariat](#), July 2016

7. OzonAction at the 38th OEWG, Vienna, Austria

- **Side event: Refrigerant Management - Special Course for Future Engineers, Monday 18 July 2016 from 6:00 pm, Press Room**

This special course is first of its kind that offers comprehensive scientific information and knowledge suitable for the academic levels. It offers thorough scientific background as well as applied knowledge that would help build the capacity of future engineers about management of refrigerants. View/download [Course programme](#)



- **Side event: Alternatives for Air-conditioning in High Ambient Temperature Countries: Key Findings and Future Work of 'PRAHA' and the US-DOE Testing Projects, Monday 18 July 2016 from 13:00 - 15:00, Board Room A**

Over the last 2 years, two key projects were conducted to assess the technical feasibility of low-GWP alternatives for air conditioners in high-ambient-temperature countries, the MLF-supported project called "PRAHA," and the US-DOE-supported project on mini-split air conditioners evaluation at Oak Ridge National Laboratory. The results of both projects were released between the end of 2015 and the beginning of 2016. They were well received and acknowledged as good starting points for addressing the concern for feasible alternatives for high-ambient-temperature operating conditions in cooperation with respective industries.

This side event provided detailed summaries of the key findings of both projects and how they complement each other in addition to presenting ongoing work that builds on the outcomes from both PRAHA and the US-DOE project. View/download [Side event programme](#)

- ▶ **Side event: Standards for Low-GWP Refrigerants - Prospects and Challenges, Friday 15 July 2016 from 13:00 - 15:00, Press Room, Vienna Conference Centre**

This side event discussed ongoing efforts to address the update of relevant standards specifying the use of alternative refrigerants in refrigeration and air-conditioning applications with examples from different regions. View/download [Side event programme](#) | Presentations:

- [Research to Assist in the Development of Safety Standards and Building Codes for the Use of Flammable Refrigerants](#) - Karim Amrane, Ph.D., Senior vice President, AHRI
- [The Role of Safety Standard for Phasing down HFCs in RAC Sector](#) - Wang Lei –Dou Yanwei, China Household Electrical Appliances Association (CHEAA)
- [ASHRAE Update: Standard 15 and 34 for Refrigerants](#) - Prof. Bjarne W. Olesen, ASHRAE President Elect 2016-17, Technical University of Denmark
- [Changes in standards in view of lower GWP refrigerants](#) - UNEP OzonAction

- ▶ **New Publication Launched at OEWG 38:**

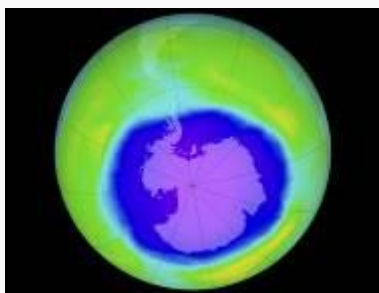


[Lower-GWP Alternatives in Commercial and Transport Refrigeration: An expanded compilation of propane, CO₂, ammonia and HFO case studies](#)

This booklet presents an expanded compilation of case studies on lower-GWP alternatives in commercial and transport refrigeration and provides an update to the first set of case studies which was published in 2014 by UNEP DTIE OzonAction/CCAC (Low GWP Alternatives in Commercial Refrigeration: Propane, CO₂ and HFO Case Studies).

- ▶ UNEP [OzonAction](#), July 2016

8. 'Healing' Detected in Antarctic Ozone Hole



The researchers believe that healing of the ozone hole has begun in the stratosphere above Antarctica

Researchers say they have found the first clear evidence that the thinning in the ozone layer above Antarctica is starting to heal.

The scientists said that in September 2015 the hole was around 4 million sq km smaller than it was in the year 2000 - an area roughly the size of India.

The gains have been credited to the long term phasing out of ozone-destroying chemicals. The study also sheds new light on the role of volcanoes in making the problem worse.

British scientists first noticed a dramatic thinning of ozone in the stratosphere some 10 kilometres above Antarctica in the mid-1980s.

Ozone is important because it blocks out harmful ultraviolet radiation from the Sun.

Its absence increases the chances of skin cancer, cataract damage, and harm to animals and plants.

In 1986, US researcher Susan Solomon showed that ozone was being destroyed by the presence of molecules containing chlorine and bromine that came from chlorofluorocarbons (CFCs). These gases were found in everything from hairsprays to refrigerators to air conditioning units.

The reason the thinning was occurring mainly over Antarctica was because of the extreme cold and large

amounts of light. These helped produce what are termed Polar Stratospheric Clouds.

In these chilled-out clouds, the chlorine chemistry occurs that destroys the ozone.

Thanks to the global ban on the use of CFCs in the Montreal Protocol in 1987, the situation in Antarctica has been slowly improving.

Several studies have shown the declining influence of CFCs, but according to the authors this new study shows the "first fingerprints of healing" and the ozone layer is actively growing again.

Prof Solomon and colleagues carried out detailed measurements of the amount of ozone in the stratosphere between 2000 and 2015.

Using data from weather balloons, satellites and model simulations, they were able to show that the thinning of the layer had declined by 4 million sq km over the period. They found that more than half the shrinkage was due solely to the reduction in atmospheric chlorine.

Normally measurements are taken in October when the ozone hole is at its largest. But this team believed they would get a better picture by looking at readings taken in September, when temperatures are still low but other factors that can influence the amount of ozone, such as the weather, are less prevalent.

"Even though we phased out the production of CFCs in all countries including India and China around the year 2000, there's still a lot of chlorine left in the atmosphere," Prof Solomon told the BBC World Service Science in Action programme.

"It has a lifetime of about 50-100 years, so it is starting to slowly decay and the ozone will slowly recover.

"We don't expect to see a complete recovery until about 2050 or 2060 but we are starting to see that in September the ozone hole is not as bad as it used to be."



Image caption Refrigerators were once a major source of CFC gases that damaged the ozone layer

One finding that puzzled researchers was the October 2015 reading that showed the biggest ozone hole on record over Antarctica.

The scientists believe that a key contributor to the record hole was volcanic activity.

"After an eruption, volcanic sulphur forms tiny particles and those are the seeds for Polar Stratospheric Clouds," Prof Solomon told

Science in Action.

"You get even more of these clouds when you have a recent major volcanic eruption and that leads to additional ozone loss."

"Until we did our recent work no-one realised that the Calbuco eruption in Chile, actually had significantly affected the ozone loss in October of last year."

The study has been hailed as "historically significant" by some other researchers in the field.

"This is the first convincing evidence that the healing of the Antarctic ozone hole has now started," said Dr Markus Rex from the Alfred Wegener Institute for Polar and Marine Research in Germany.

"Right now the state of the ozone layer is still really bad, but I find it very important that we know the Montreal Protocol is working and has an effect on the size of the hole and that is a big step forward."

Differing views

However others are not entirely convinced that the decline shown in the new study is down to a reduction in the amount of chlorine in the stratosphere.

"The data clearly show significant year to year variations that are much greater than the inferred trends shown in the paper," said Dr. Paul Newman from Nasa.

"If the paper included this past year, which had a much more significant ozone hole due to lower wave driven forcing, the overall trend would be less."

Regardless of these questions, the scientists involved in the study believe the ozone story is a great role model for how to tackle global environmental problems.

"It's just been remarkable," said Prof Solomon.

"This was an era in which international co-operation went rather well on some issues. I was inspired by the way

the developed and developing countries were able to work together on dealing with the ozone hole," said Prof Solomon.

- ▶ Read/download the [Study](#), Journal Science, Research articles, Solomon et al., Science 10.1126/science.aae0061 (2016).
- ▶ [BBC](#), 30 June 2016, [Matt McGrath](#) Environment correspondent
- ▶ Article en français, [Le Monde](#), 1 July 2016
- ▶ Related [video](#)



ASIA PACIFIC

9. AIRAH Gives a Thumbs-up to Announcement of HFC Phase-down

The Australian Institute of Refrigeration Air Conditioning and Heating (AIRAH) applauds Monday's announcement from Federal Environment Minister Greg Hunt of the impending phase-down of HFC refrigerants, which are known for their high global warming potential (GWP).

The government announced a domestic phase-down schedule of an 85 per cent reduction of HFC emissions by 2036 via a statutory phase-down of HFC imports over a 20-year timeline.

"AIRAH applauds the announcement of an HFC phase-down," says AIRAH CEO Tony Gleeson, Affil. AIRAH. "Not only is such a measure pivotal to national and international efforts to reduce CO₂-equivalent emissions in the face of climate change, it provides some certainty to those in the HVAC&R industry, who can now plan for and invest in new technology that will be required.

"In taking this path Australia will be a world leader in reducing HFC emissions, joining the US, the European Union and Japan in adopting early action to reduce HFC emissions. And AIRAH has been a key part of this process. Indeed, we have been a major supporter of the phase-down and its environmental benefits.

"We see the HFC phase-down as completely congruent with our strategic themes of HVAC&R sustainability, compliance, innovation and research, and the need to transition to next-generation refrigerants."

Enabling provisions for future bans on the import of new equipment containing high-GWP HFCs will be included as part of new legislation. Equipment such as domestic and automotive air conditioners containing high-GWP refrigerants will be considered in the future. The government says this decision will be based on an assessment of the Australian market, and particularly on the availability of alternative equipment.

During Mr Hunt's announcement, which was made at the Box Hill Institute's Integrated Technology Hub in Melbourne's eastern suburbs, he praised the collaborative nature of Australia's HVAC&R industry, and its critical role in leading the world to a low-emissions future.

"Those engaged in heating, ventilation, air conditioning and refrigeration – this is the stuff of life," Hunt says. "Yours is an industry that has been proactive in helping to reduce emissions and global warming potential. It's truly a case of local actions having global implications."

The government will introduce legislative amendments to implement new measures as soon as possible, with all initiatives to begin by January 2018.

Some measures can be implemented more quickly through regulation amendments, such as changes to the low-volume import exemptions, and business and technician licences.

AIRAH's Phil Wilkinson, F. AIRAH, says the government announcement aligns with the Institute's championing of PRIME, an initiative from a coalition of stakeholders in the Australian HVAC&R industry to deliver pathways to a low-emissions future.

Wilkinson says it is also encouraging to see a focus on energy efficiency – a focus area for AIRAH – in the announcement.

- ▶ AIRAH, [Press Release](#), 29 June 29, 2016

10. R290 Units in Vietnam's Cold Stores Delivering 20-25% Efficiency Gains vs. R22

As part of a UNIDO project implemented in Vietnam, R290 [propane] units were installed in four companies to replace previous R22 [HCFC-22]-based systems. With its innovative financing scheme and effective mixture of policy support, technology transfer and awareness-raising, the project is paving the way for wider uptake of small hydrocarbon refrigeration systems in the fishery and cold storage sectors worldwide.

In 2014, the United Nations Industrial Development Organisation (UNIDO) initiated a project entitled 'Reducing greenhouse gas and ozone-depleting substance emissions through technology transfer in industrial refrigeration'. In collaboration with Vietnamese government and industry partners for technology and communication (Zanotti, shecco) the project's three components – policy and regulatory support, technology transfer, and awareness-raising and capacity-building – were designed to reinforce each other in providing the necessary tools for successful use of hydrocarbons in industrial refrigeration systems.

As a potential model to emulate for future effective Public-Private Partnerships, the two-year project was only partly funded by the UN's Global Environmental Facility (GEF). Using co-financing contributions from the two industry partners, the Vietnamese government and UNIDO, the project was conducted in a cost-effective manner while delivering high-quality results.

Pilot projects showcase propane applications for Vietnam

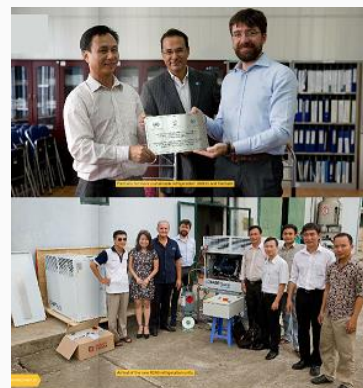
Following field trips to cold stores throughout the country in 2014, R290 (propane) demonstration units were installed in four Vietnamese companies. A full conversion at the Phu Minh Hung Seafood Joint Stock Company, with a total of nine R290 refrigeration units, was complemented by partial conversions in three other cold storage sites featuring another 16 hydrocarbon units.

The equipment, containing just 1.6 kg of hydrocarbon refrigerant per unit, reduces the risk of fire to a minimum, while providing the necessary cooling capacity for keeping small cold room temperatures to -20 degrees Celsius at ambient temperatures of 35 degrees Celsius. Compared to larger ammonia-based systems, the hydrocarbon units were expected to reduce installation costs to a fraction of those of NH3 systems.

Average energy efficiency gains of 20-25%

After 11 months in operation, expectations have not just been met, but exceeded by far. With average energy efficiency gains of 20-25%, the four pilot projects – one of which has even achieved energy savings of up to 42% compared to the previous R22-based system – are serving as a model to follow for the conversion of more cold stores across the country.

Gaining in confidence, Vietnam's government is now envisaging the use of natural refrigerants in other sectors, according to Nguyen Thi My Hoang, national project coordinator on behalf of the Vietnamese government. To facilitate this, the country has issued new regulations on controlling and phasing out HCFCs and introduced a law on the efficient use of energy, while planning additional funding to support the uptake of natural refrigerants elsewhere.



▶ [To read the full article in The Natural Voice Magazine, please click here.](#)

▶ [HydroCarbons21](#), 14 July 2016



11. UK, Germany Support Energy-efficient and Climate-friendly Technologies (Thailand)

Guests attending the project launch ceremony./German Embassy

Thailand's refrigeration and air-conditioning industry is prepared for the next development phase, thanks to a joint effort by Germany and the United Kingdom together with GIZ (a German company that specializes in international development) supporting climate-friendly and energy-efficient cooling technologies.

▶ [The Nation](#), 14 July 2016



LATIN AMERICA AND CARIBBEAN

12. Local Refrigeration and Air-Conditioning Technician Off to Germany



Local refrigeration and Air-Conditioning Technician, Mr. Henry Frederick left Grenada on Saturday June 25th, 2016 to participate in a two week training Program in Germany.

The ‘Cool Training’ – for Refrigeration and Air-conditioning (RAC) trainers and experts is organised and funded by GIZ Proklima on behalf of BMZ in co-operation with the BFS Vocational Training Centre in Maintal, Germany.

The two week training program from June 27th to July 8th, 2016, focuses on the Application of Natural Refrigerants in Commercial Refrigeration Systems and is specific to the use of Propane, Carbon dioxide and Ammonia use as refrigerants.

As part of Grenada’s Hydrochlorofluorocarbon (HCFC) Phase out Management Plan (HPMP) for the phase out of Ozone Depleting Substances (ODS), Natural Refrigerant Technology is one of the alternative options pursued.

This training therefore, would further strengthen Grenada’s capacity to introduce and implement this environmentally friendly technology.

Mr. Frederick, who is a senior RAC technician at the Maurice Bishop International Airport, a part time lecturer at the T A Marryshow Community College and a Level 4 Assessor for the Caribbean Vocational Qualification (CVQ), has over twenty-four (24) years experience in the field.

He is also a certified trainer for the National Ozone Unit, Energy Division, Ministry of Finance and Energy, and regularly conducts training for technicians in Grenada and the sub-region.

Mr. Frederick who is the first RAC technician from the Caribbean region to attend this training is expected to impart the knowledge and experience gained to other local technicians on his return.

Mr. Frederick’s attendance at the training is facilitated by the National Ozone Unit, Energy Division, Ministry of Finance and Energy and is funded by GIZ Proklima.

► [Real FM, Grenada](#), 1 July 2016, By: Vaughndell Joseph



NORTH AMERICA

13. Destruction of Ozone Depleting Methyl Bromide Used for Imports and Exports

Value Recovery, Inc. (VR), a company supplying emission controls to the fumigation industry, announced today that it achieved an unprecedented milestone for controlling methyl bromide used to kill invasive insects hitchhiking on imported and exported goods.

VR's systems installed in commercial facilities in Florida and California have destroyed over 70,000 lbs [32,000 kg] of methyl bromide emissions used in over 1,000 fumigations. The two-stage system uses a thiosulfate scrubber that chemically destroys over 94% of the methyl bromide collected. This destruction efficiency was validated independently via a California state sanctioned source test. VR's patented process converts this hazardous pollutant into non-hazardous byproducts for easy disposal.

VR has given presentations to Atlantic states where fumigations using large volumes of methyl bromide are vented directly to the atmosphere. The most glaring example that could benefit from emissions controls is the 160,000 lbs/yr [73,000 kg/yr] being vented at a New Jersey port. Detailed information given to the New Jersey Department of Environmental Protection (NJDEP) on April 4 showed that VR's systems are technically

and economically feasible. From the NJDEPs own requirements, "technical and economic feasibility" is the major criteria needed to require emissions controls. The State of New Jersey and the fumigator are in active discussion on permitting issues.

The Clean Air Act does not list methyl bromide emissions from fumigations as a major source of hazardous air pollutants, even though millions of pounds of it are vented every year. If fumigation were listed as a major source category by the US EPA as required by the Clean Air Act, then there would be Federal enforcement requiring evaluating emissions controls as fumigation permits come up for renewal and most of this direct venting of hazardous air pollution would end.

The National Association of Clean Air Agencies, a consortium of over 40 state air pollution agencies, has declared in their recent letter to the US EPA, that leaving this issue to the states results in an uneven playing field where fumigators can move to more pollution-friendly states thus avoiding emissions controls.

The Montreal Protocol was set up to eliminate ozone destroying chemicals like methyl bromide from reaching the atmosphere. The resultant "ozone hole" is a major concern because of its ability to let UV light from the sun reach us resulting in increased incidences of skin cancer. However, the Montreal Protocol does not require methyl bromide to be phased out for imports and exports [QPS]. Total worldwide emissions in 2014 for imports and exports was 24 million lbs of methyl bromide of which over 10 million lbs came from the United States (*Source: United Nations Ozone Secretariat website*).

Says Peter Joyce, President of Value Recovery, "The hole in the Clean Air Act is contributing to the hole in the ozone layer. There is no logical reason that this direct venting of methyl bromide should be allowed to continue."

▶ [PRNewswire](#), 13 July 2016

14. Bright Future for Natural Refrigerants Foreseen at ATMOsphere America

The consensus was that the competition between CO₂, hydrocarbons and ammonia is creating exciting new opportunities and driving increased uptake of natural refrigerant-based technologies in the United States. It was predicted that in future the boundaries between technologies designed for the commercial and industrial refrigeration sectors will dissipate.

Dustan Atkinson of Hillphoenix expressed confidence that the market share of CO₂ transcritical in the US would continue to grow. Marc-André Lesmerises of Carnot Refrigeration sees potential for CO₂ applications "everywhere". In addition to putting CO₂ transcritical systems into supermarkets in Canada, New York, New Jersey and California, "we're installing systems in data centres, ice rinks, and for chillers in wineries," said Lesmerises. YourCleanTechnology's Andy Baker has even masterminded the installation of CO₂ heat pumps in an Alaskan SeaLife Centre.

Meanwhile ammonia is also experiencing a period of growth in the United States. Carnot has seen great success with CO₂-ammonia systems for industrial refrigeration, and their latest project is a large-scale installation in a food production and distribution centre. Michael Lehtinen from Heatcraft Worldwide Refrigeration singled out low-charge ammonia and CO₂ transcritical as the "big trends", predicting that uptake of natural refrigerant technologies will only increase as more technicians are trained in how to install, operate and maintain them. Bitzer's Joe Sanchez echoes that sentiment, reporting that the company had recorded a 60% increase in the number of ammonia compressors sold in the United States in the last two years.

New legislative developments are creating exciting new opportunities for collaboration between companies, reported SPX Cooling Technologies' Randy Powell. "The way we do business is changing as much as the product," said Powell, pointing out that new regulatory requirements governing energy reduction and water usage had pushed SPX to work with different companies to develop compliant solutions.

Furthermore, propane may also be on the brink of large-scale US expansion. Marek Zgliczynski of Embraco expects the impressive efficiency of hydrocarbon systems to trigger their wider rollout, with the company predicting a 20% increase in hydrocarbon technology sales this year. However, barriers to increased uptake of hydrocarbons in the US include an excessively low charge limit and a lack of trained technicians, Zgliczynski warned. [...]

▶ [Shecco](#), 24 June 2016



EUROPE & CENTRAL ASIA



15. Belarus Seized 20 MT of Ozone-depleting HCFC-141b and CFC-113

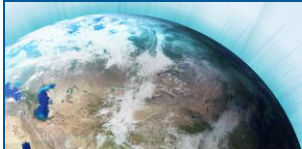
The Belorussian Customs informed about the seizure of 20 MT of ozone-depleting substances. The shipment documents indicated that the chemicals were not ozone depleting but the analysis showed HCFC-141b and CFC-113.

Both chemicals are controlled under the Montreal Protocol. Import of CFC-113 into the Eurasian Economic Union is banned and import of HCFC-141b restricted and subject to licensing.

The Minsk regional customs office initiated a criminal case on the grounds of an offense under Part. 1, Art. 228 of the Criminal Code of the Republic of Belarus (*moving in a large amount through customs border of goods prohibited or restricted for such movement*).

Congratulations to the staff of Minsk Regional Customs and many thanks to the National Ozone Unit Belarus for sharing this information.

▶ The Belorussian Customs [website](#), 1 July 2016



FEATURED

OZONE SECRETARIAT

The theme for the 2016 International Day for the Preservation of the Ozone Layer to be marked on 16 September is: ***Ozone and climate: Restored by a world united***

The theme is complemented by the tagline: ***Working towards reducing global-warming HFCs under the Montreal Protocol***

[Download the theme and tagline in the six official UN languages](#)

The theme for this year's International Ozone Day recognizes the collective efforts of the parties to the Vienna Convention and the Montreal Protocol towards the restoration of the ozone layer over the past three decades and the global commitment to combat climate change.

As a result of concerted international efforts, the ozone layer is healing itself and is expected to recover by the middle of this century. In addition, the Montreal Protocol has significantly contributed to the mitigation of climate change by averting the emission of more than 135 billion tonnes of carbon dioxide equivalent into the atmosphere by simply phasing out ozone-depleting substances... [More](#)



– Browse through the Ozone Secretariat “[In Focus](#)” to learn about latest updates.



[The Mobile app](#) for the Resumed OEWG37, OEWG38 and ExMOP3 meetings under the Montreal Protocol, held in Vienna, Austria, from 15 to 23 July 2016 is now available for use.

The app contains pre-session and background documents for the meetings, details on planned side events, maps and information on the venue. The app will be updated continuously before and during the meetings.

You are invited to kindly download the app to receive notifications on any updates or changes throughout the meetings.

You can download the app directly through this [link](#)

Contact: [Dan Teng'o](#), UNEP, Ozone Secretariat's Communications Officer

- [Resumed 37th Meeting of the Open-ended Working Group of the Parties to the Montreal Protocol](#), Vienna, Austria, 15-16 July 2016
- [38th Meeting of the Open-ended Working Group of the Parties to the Montreal Protocol](#), Vienna, Austria, 18 - 21 July 2016
- [Third Extraordinary Meeting of the Parties to the Montreal Protocol](#), Vienna, Austria, 22 – 23 July 2016
- [56th Meeting of the Implementation Committee Under the Non-Compliance Procedure of the Montreal Protocol](#), Vienna, Austria, 24 July 2016
- Click [here](#) for more Montreal Protocol Meetings Dates and Venues

- [Methyl Bromide Technical Options Committee 2014 Assessment Report](#)
- [Medical Technical Options Committee 2014 Assessment Report](#)

Progress & Quadrennial Assessment Reports:

- Environmental Effect Assessment Panel ([EEAP](#))
- Scientific Assessment Panel ([SAP](#))
- Technology and Economic Assessment Panel ([TEAP](#))

Halon Technical Options Committee Reports:

- [Halons Technical Options Committee 2014 Assessment Report \(Volume 1\)](#)
- [Halons Technical Options Committee 2014 Supplementary Report #1 - Civil Aviation \(Volume 2\)](#)
- [Halons Technical Options Committee 2014 Supplementary Report #2 - Global Halon 1211, 1301, and 2402 Banking \(Volume 3\)](#)
- [Technical Note #1- Revision 4 - Fire Protection Alternatives to Halon - 2014](#)
- [Technical Note #2 - Revision 2 - Halon Emission Reduction Strategies - 2014](#)
- [Technical Note #3 - Revision 2 - Explosion Protection - Halon Use and Alternatives - 2014](#)
- [Technical Note #4 - Recommend Practices for Recycling Halon and Halocarbon Alternatives - 2014](#)
- [Technical Note #5 - Halon Destruction - 2014](#)

THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL



[Report of the 76th Meeting of the Executive Committee](#), 9 - 13 May 2016 in Montreal.

The Executive Committee decided to continue convening two meetings per year from 2015 onwards with the possibility of holding an additional brief meeting, if required, between those meetings to consider project proposals. On this basis the second meeting in 2016 could be scheduled to take place in November/December 2016 taking into account decision XXVII/1 of the Parties (MOP) to the Montreal Protocol, in which it was decided inter alia to hold a series of Open-ended Working Group (OEWG) and other meetings, including an Extraordinary Meeting of Parties in 2016.

[▶ Learn more](#)

OZONACTION

UNEP, [OzonAction](#) highlights



New OzonApp eDocs+ launched in Android Play Store and Apple Store - This new application launched by OzonAction on February 12, includes publications, videos, fact sheets and other awareness materials to help National Ozone Units (NOUs) and other stakeholders to build their capacity to implement the Montreal Protocol in a sustainable manner and at the same time to derive climate benefits. Now available in the [Android Play Store](#) and Apple Store/iTunes.



(Just search for “UNEP OzonAction” and install the application, or scan the QR code)



[OzonAction News Drops](#) - UNEP OzonAction is presenting a series of short video “**News Drops**” which focus on ozone layer protection, climate change and the importance of continuing ozone observations.

Click [here](#) to access the News Drops



New Publication Launched at OEWG 38:



[Lower-GWP Alternatives in Commercial and Transport Refrigeration: An expanded compilation of propane, CO₂, ammonia and HFO case studies](#) - This booklet presents an expanded compilation of case studies on lower-GWP alternatives in commercial and transport refrigeration and provides an update to the first set of case studies which was published in 2014 by UNEP DTIE OzonAction/CCAC (Low GWP Alternatives in Commercial Refrigeration: Propane, CO₂ and HFO Case Studies).

OzonAction Recent Publications



[NATIONAL CERTIFICATION SCHEMES FOR RAC SERVICING TECHNICIANS](#) - This publication aims to provide introductory information for institutions in developing countries to better understand the issue of certification in the field of refrigeration and air conditioning, to assist in the creation of such certification and training schemes and to demonstrate to service technicians and enterprises why it is in their interest to participate. [Read/Download](#)



OZONACTION SPECIAL ISSUE 2015 - [30 Years of Healing Ozone Together: BEYOND HCFCs](#)

[Read/Download](#)



[THE MONTREAL PROTOCOL AND HUMAN HEALTH](#) - This booklet summarizes how the successful implementation of the Montreal Protocol has protected human health. It describes how ozone depletion would have led to increases in UV radiation and, based on current understanding of the mechanisms by which UV affects biological processes, how that would have led to a dramatic increase in skin cancers, cataracts and affected human health in other ways. It also covers recent progress in understanding the ‘World Avoided’ – that is the world we would have lived in without a successful Montreal Protocol. [Read/Download](#)



FINANCING THE CLIMATE CO-BENEFITS OF THE HCFC PHASE-OUT - A guide for Low Volume Consuming Countries - Hydrochlorofluorocarbons (HCFCs) are being phased out worldwide under the Montreal Protocol on Substances that Deplete the Ozone Layer. The Parties to this treaty encouraged countries to promote the selection of alternatives to HCFCs that minimise environmental impacts, in particular impacts on climate. The Protocol's Multilateral Fund encourages developing countries to explore potential financial incentives and opportunities for additional resources to maximise the environmental benefits from HCFC Phase out Management Plans (HPMPs). This booklet explains how Ozone Officers in low volume consuming countries can explore such opportunities for climate co-benefits. Read/Download in [English](#) | [French](#) | [Spanish](#)



SAFE USE OF HCFC ALTERNATIVES IN REFRIGERATION AND AIR CONDITIONING - An Overview for Developing Countries - Many of the alternative refrigerants to hydrochlorofluorocarbons (HCFCs) have particular characteristics in terms of toxicity, flammability and high pressure which are different from those used previously. It is therefore important that the refrigeration and air-conditioning industry adapts to both the technical and safety issues concerning these refrigerants. This publication provides an overview of the alternatives, their general characteristics and their application in the context of the safety issues. It provides guidance for National Ozone Units (NOUs) and other interested parties in developing countries on how they can advise and assist their national stakeholders in the selection and implementation of alternative refrigerants. [Read/Download](#)



PHASING-OUT HCFCs IN SMALL AND MEDIUM-SIZED ENTERPRISES - This booklet aims to assist foam enterprises, especially SMEs, to better understand policies on HCFC phase-out, access to assistance from the Multilateral Fund for the Implementation of the Montreal Protocol and access alternative technologies in different foam applications taking into account challenges in converting to alternative technology. It also discusses some tips on how to identify enterprises that may use HCFCs and verify the HCFCs consumption of enterprises. [Read/Download](#)



INTERNATIONAL STANDARDS IN REFRIGERATION AND AIR-CONDITIONING - This guide provides an introduction and simple overview of the issues related to international standards in the refrigeration and air-conditioning sector and how they can be useful in the context of the phase-out of hydrochlorofluorocarbons (HCFCs) in developing countries as required by the Montreal Protocol on Substances that Deplete the Ozone Layer. Read/Download in [English](#) | [French](#) | [Spanish](#)



[Guide on Good Practices: Phasing out HCFCs in the Refrigeration and Air-conditioning Servicing Sector](#)



[Phasing out HCFCs in Small and Medium-sized Foam Enterprises](#)



[Demonstrating the feasibility of R-290 based AC manufacturing: China's Midea and Meizhi case](#)



[Low-GWP Alternative for Small Rigid PU Foam Enterprises](#)

► [Learn more](#) about OzonAction publications



EVENTS

2016



12th IIR Gustav Lorentzen Natural Working Fluids Conference, 21-24 August 2016, Edinburgh, Scotland. World experts gather in Edinburgh to discuss the future of natural working fluid... Learn more/See other [Upcoming IIR events](#)



AIRAH's Future of HVAC 2016 Conference 7-8 September 2016 at the Queensland University of Technology's Gardens Point campus in Brisbane, Australia



Thermag VII 7th International Conference on Magnetic Refrigeration at Room Temperature (Thermag VII), 11 - 14 September 2016, Turin, Italy



Quadrennial Ozone Symposium 2016, 4-9 September 2016, Edinburgh, Scotland, UK



Salon Interprofessionnel du Froid et de ses Applications / Interprofessionnal Refrigeration and its Application Trade Show, 14 - 15 septembre 2016, Nantes, France



Twelfth Meeting of the Chemical Review Committee (CRC-12), 14-16 September 2016, FAO Headquarters, Rome, Lazio, Italy

2017



Sustainable Management of Refrigeration Technologies in Mobile Marine and Fisheries Sectors, co-organized by UNEP, ASHRAE, IIR and UNIDO with the kind support of the Government of the Kingdom of Thailand and the Department of Industrial Works, 11-13 January 2017, Bangkok, Thailand



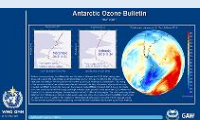
READING



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.



UNEP and USEPA: Promoting ozone and climate-friendly technologies in public procurement - a scoping study of Asia Pacific



WMO Antarctic Ozone 2016 Bulletins - Containing information on the state of the ozone layer in the Antarctic at roughly two week intervals from August to November. The bulletins are based on data provided by WMO Members which operate ozone monitoring stations in the southern hemisphere and satellites to observe ozone globally.



The [EU F-Gas Regulation Handbook](#), Keeping Ahead of the Curve as Europe Phases Down HFCs - a free online resource for climate media and other concerned parties, published by the London-based Environmental Investigation Agency (EIA).



[Alternative Refrigerant Evaluation for High-Ambient-Temperature Environments: R-22 and R-410A Alternatives for Mini-Split Air Conditioners](#)



[AREA Guidance on minimum requirements for contractors' training & certification on low GWP Refrigerants](#) - AREA has updated its Guidance on minimum requirements for contractors' training & certification on low GWP Refrigerants.



[Free guide to F-gas changes](#) The European contractors association AREA has produced a timely guide to the F-gas regulations which clarifies the new rules, their impact and their practical application...[Read more](#)



The recent [Alternatives to HCFCs/HFCs in developing countries](#) with a focus on high ambient temperatures" study carried out by Öko-Recherche for the European Commission stresses that the refrigerant and blowing agent demand is expected to triple by 2030 in developing countries as a result of economic growth. A sector by sector analysis shows that a climate-friendly replacement for current and future of HCFCs and high GWP HFCs is possible in most applications ...



[Primer on Hydrofluorocarbons](#), Fast action under the Montreal Protocol can limit growth of HFCs, prevent up to 100 billion tonnes of CO₂-eq emissions by 2050, and avoid up to 0.5°C of warming by 2100. IGSD, January 2014, Lead authors: Durwood Zaelke, Nathan Borgford-Parnell, and Danielle Fest Grabel. Contributing authors: Stephen O. Andersen, Xiaopu Sun, Dennis Clare, Yuzhe Peng Ling, and Alex Milgroom.



[Flammable Refrigerants Safety Guide](#), AIRAH - Many of the refrigerants traditionally used in refrigeration and air conditioning systems in Australia have been non-flammable, non-toxic, synthetic greenhouse gases (SGGs) that have a high global warming potential (GWP). These were typically synthetic refrigerants including CFCs, HCFCs and HFCs. Due to the growing national and international concern regarding the resulting atmospheric effects of SGGs, the use of alternative low GWP refrigerants is increasing. ...



[Recent Trends in Global Emissions of Hydrochlorofluorocarbons and Hydrofluorocarbons: Reflecting on the 2007 Adjustments to the Montreal Protocol](#). S. A. Montzka *†, M. McFarland ‡, S. O. Andersen §, B. R. Miller †||, D. W. Fahey †, B. D. Hall †, L. Hu †||, C. Siso †||, and J. W. Elkins †

† Earth System Research Laboratory, National Oceanic and Atmospheric Administration, Boulder, Colorado 80305, United States ‡ DuPont Chemicals & Fluoroproducts, Wilmington, Delaware 19805, United States § Institute for Governance & Sustainable Development, Washington, D.C. 20007, United States || Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, Colorado 80309, United States



[Geothermal Heating and Cooling: Design of Ground-Source Heat Pump Systems-ASHRAE](#)

[Principles of Heating, Ventilating and Air-Conditioning, 7th Ed.](#) ASHRAE

A first edition, the IIR guide “[CO₂ as a Refrigerant](#)” highlights the application of carbon dioxide in supermarkets, industrial freezers, refrigerated transport, and cold stores as well as ice rinks, chillers, air conditioning systems, data centers and heat pumps. This guide is for design and development engineers needing instruction and inspiration as well as non-technical experts seeking background information on a specific topic. Publication, IIR Technical Guide, 2014.

FREE [HVAC Optimisation Guide](#) released by AIRAH and the NSW Office of Environment & Heritage outlines 20 HVAC optimisation strategies and how they can be applied to the vast majority of commercial systems, both in older and modern buildings...

[Organic Bromine Compounds—another threat to the ozone layer](#)

[Latin America Industrial Refrigeration Equipment Market Benefits from Region Flourishing Food and Beverage Production and Processing Market](#) – Trends and forecast 2013-2019.

[Solvents & Bio Solvents Market Outlook - Global Trends, Forecast, and Opportunity Assessment \(2014-2022\)](#)

[GUIDE+ Directory of Natural Refrigerant Businesses in China 2015](#), shecco publications, October 2015

[R444B tops high ambient R22 drop-in test](#)

[Chlorofluorocarbon Market: Global Industry Analysis and Forecast 2015 to 2021](#)

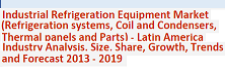
[Getting The World Off the Chemical Treadmill: A per capita convergence framework for an ambitious phase-down of HFCs under the Montreal Protocol](#), By: Umang Jalan, Research Associate, Climate Change Programme, Centre for Science and Environment

[Refrigeration on Fishing Vessels](#)

[Global Market for Natural Refrigerants to Reach 1,408.20 Million by 2020, Growing at CAGR of 11.0% by 2020](#)

ASHRAE [2016 Handbook](#) Focuses on HVAC Systems and Equipment...

MOPIA New [2016 Regulatory Compliance Guide](#) summarizes regulatory controls (*Manitoba and Canada*) and provides some other useful links and references...





The Importance of Ambition in the 2016 HFC Phase-Down Agreement - Following the adoption of the Dubai Pathway on HFCs, Parties to the Montreal Protocol are set to negotiate and adopt an HFC amendment in 2016, the first major test of the Paris Climate Agreement and global commitment to "pursue efforts to limit the [average global] temperature increase to 1.5 degrees Celsius." The level of climate ambition in the agreed HFC phase-down will be crucial in determining whether or not Montreal Protocol passes the test. In preparation for the next installment of Montreal Protocol meetings, known as the Open Ended Working Group, set for July 2016 in Vienna, the Environmental Investigation Agency (EIA) has produced a briefing, [The Importance of Ambition in the 2016 HFC Phase-Down Agreement](#). Download the full report [here](#).



Update on the Illegal Trade in Ozone-Depleting Substances - The Environmental Investigation Agency (EIA) briefing to the 38th meeting of the Open-Ended Working Group of Parties to the Montreal Protocol, in Vienna, Austria, from July 18-21, 2016.



The global beverage giant (The Coca Cola Company) is putting natural refrigerants at the heart of its sustainability strategy – and is keen to share its experience with partners around the world...

[The Natural Voice Magazine](#), #1, July 2016, p. 21



MISCELLANEOUS



Upcoming Webinar- shecco's "GUIDE to Natural Refrigerants in Japan - State of the Industry 2016" 27 July 2016 - 10 AM CEST / 3 PM ICT / 4 PM CST / 5 PM JST / 6 PM AEST

[Register Now](#)

The GUIDE is shecco's latest regional report to zoom in on current and future use of natural refrigerants. It analyses key market, technology and policy trends for natural refrigerants in Japan, focusing on key sectors like commercial and industrial refrigeration. The report identifies best-practice technology case studies across the country and successful business cases in export markets, as well as presents market forecasts per application and refrigerant. It delivers a unique perspective to a targeted audience of Japanese and foreign policy makers, industry leaders and end-users worldwide. The webinar will introduce the GUIDE Japan and highlight major market, technology & policy trends for one of the key driving markets for natural refrigerants.

To receive your personal invitation link to join the shecco session and add the event to your calendar, please register [here](#)

[New pesticide guidelines seek faster phase-out of risky toxins - FAO and WHO offer road map to deal with Highly Hazardous Pesticides](#), 10 May 2016, Rome - FAO and WHO have released new guidelines aimed at reducing the damage done by pesticides that pose especially high toxic risks to human health and the environment...



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 ... [Learn more](#) | Contact: info@area-eur.be



MONTREAL PROTOCOL
WHO'S WHO

The Montreal Protocol Who's who

See the latest nominations /

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From Your Country /Region >>

<http://www.unep.fr/ozonaction/montrealprotocolwhoswho>

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Since its inception in January 2000, the goal of OzoNews is to provide current news relating to ozone depletion and the implementation of the Montreal Protocol, to stimulate discussion and promote cooperation in support of compliance with the Montreal Protocol. With the exception of items written by UNEP and occasional contributions solicited from other organizations, the news is sourced from on-line newspapers, journals and websites.

The views expressed in articles written by external authors are solely the viewpoints of those authors and do not represent the policy or viewpoint of UNEP. While UNEP strives to avoid inclusion of misleading or inaccurate information, it is ultimately the responsibility of the reader to evaluate the accuracy of any news article in OzoNews. The citing of commercial technologies, products or services does not constitute endorsement of those items by UNEP.

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