OzonAction

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UN environment

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In this issue

UN environment

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

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GLOBAL

1. Summary of the 39th Meeting of the Open-Ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer

10-14 July 2017 | UN Conference Centre (UNCC), Bangkok, Thailand

The thirty-ninth meeting of the Open-Ended Working Group to the Montreal Protocol on Substances that Deplete the Ozone Layer (OEWG 39) convened at the United Nations Conference Centre in Bangkok, Thailand from 11-14 July 2017.

It was preceded by a Workshop on Safety Standards Relevant to the Safe Use of Low Global Warming Potential (GWP) Alternatives to Hydrofluorocarbons (HFCs) held on 10 July 2017. The Workshop was mandated by the Twenty-Eighth Meeting of the Parties (MOP 28) to the Montreal Protocol, held in Kigali, Rwanda in October 2016. Its conclusions were presented to OEWG 39 for further consideration.

OEWG 39 considered, among others, nominations for essential-use exemptions (EUEs) and critical-use exemptions (CUEs). Delegates also addressed several issues linked to the implementation of the Kigali Amendment to the Montreal Protocol to phase down HFCs (Kigali Amendment), such as data reporting issues and consideration of approved destruction technologies for HFCs. OEWG 39 also considered follow-up to MOP decision XXVIII/3 (Kigali Decision on Energy Efficiency) on identifying energy efficiency opportunities in refrigeration, air conditioning and heat pump sectors related to a transition to climate-friendly alternatives. OEWG 39 examined a report by the Technology and Economic Assessment Panel (TEAP) on funding requirements for the 2018-2020 replenishment of the Multilateral Fund (MLF), and requested supplementary information from the TEAP to inform the MOP 29 negotiations on the replenishment.

[…]

A BRIEF ANALYSIS OF OEWG 39

After years of division and debate on whether or not HFCs should be addressed under the Montreal Protocol on Substances that Deplete the Ozone Layer, delegates arrived in Bangkok buoyed by their success in adopting the Kigali Amendment at MOP 28 in 2016. Delegates spoke of carrying the "spirit of Kigali" of open dialogue and pragmatic compromise to OEWG 39, and forward to MOP 29. Seasoned delegates observed that Kigali renewed the sense of trust and cooperation in "the ozone family," so cherished in the Protocol's early years.

Their elation, however, was tempered, remembering the many outstanding issues that will impact the Amendment's implementation, including urgent "housekeeping" tasks, such as data reporting, and external policy areas, which may influence this implementation, namely standard setting and energy efficiency.

This brief analysis examines progress made at the OEWG on the road toward the MOP, and explores efforts in Bangkok to lay the groundwork for the Kigali Amendment's implementation, while judging tricky issues such as the next MLF replenishment, the interaction between the Montreal Protocol and other international processes, and follow-up to Kigali decisions on safety standards and energy efficiency.

MATCHING AMBITION WITH COMMITMENT

A key task facing MOP 29 is a series of decisions and commitments that must be in place if the Amendment's implementation is to proceed as scheduled. These matters include data reporting, setting global warming potential figures for controlled substances so that baselines can be calculated, and approved destruction technologies for HFCs, all of which are items that must be decided so they can be included in national laws or regulations for implementing the Amendment. While positive discussions were held on most items at OEWG 39, few issues were resolved; decisions on most outcomes and action items will need to be further negotiated in Montreal.

As requested by MOP 28, the Technology and Economic Assessment Panel (TEAP) drafted a comprehensive estimate of funding requirements for the 2018-2020 replenishment of the Multilateral Fund, which was presented at OEWG 39. This replenishment, which includes enabling activities and initial control measures for HFC phase-down, was higher than previous requests. TEAP estimates often serve as the starting point for MOP negotiations on donor replenishment commitments.

Many delegations felt the TEAP estimate needed further refinement and clarification, so a contact group spent three days developing a proposed list of 20 factors for TEAP to take into account in a supplementary report to be submitted to MOP 29. One proposal for the list, energy efficiency requirements to be taken into account in the 2021-2023 and 2024-2026 MLF replenishments, was particularly contentious in the contact group and had to be brought to plenary for resolution. However, before the meeting's close, the Kigali spirit prevailed with delegates reaching a pragmatic compromise: since the item in question concerned indicative figures for a later replenishment, delegates would return to this issue at a later date.

This is perhaps a cautionary sign for the difficult replenishment talks expected at MOP 29. As the Kuwaiti delegate stated in opening plenary, "it's time to see if our ambitions in Kigali will be matched by our commitments." Indeed, several Article 5 delegates present at OEWG 39 cautioned that without the necessary financial and technological resources, their enthusiasm for tackling the challenges the Kigali Amendment presents will wane. In other words, without the funding to support the transition, several Article 5 parties emphasized that they will not have the capacity to implement the required changes.

The elephant in the room, spoken of only privately, was whether the US will provide its full share in the next replenishment. A longtime advocate for regulating HFCs under the Montreal Protocol, the US position is currently unclear given the new Administration's posture on climate change. A member of the US delegation tried to calm woes in the margins of the meeting, asserting "this president is a strong proponent of American business, and American businesses have been advocates for the Protocol for 30 years." Nonetheless, unease remains.

TREADING CAREFULLY INTO NEW TERRITORY

For years, parties have debated whether addressing HFCs under the Protocol ventured too far into the territory of the UN Framework Convention on Climate Change, which governs climate change. With the Kigali Amendment now adopted, this was hardly mentioned at OEWG 39. Still, several delegates publicly and privately declared this to be an exception and not a precedent, urging that the Protocol not muddle into the governing space of other international processes. At OEWG 39, worry about possible overreach largely focused on the relationship between the Montreal Protocol and the independence of standard setting bodies, such as the ISO and IEC, as well as how to explore the relationship between the HFC phase-down and energy efficiency.

Preceding the OEWG, the Secretariat organized a workshop on safety standards for low-GWP alternatives which received praise for its explanation of work on safety standards relevant to the Kigali Amendment. However, it also unearthed apprehensions, primarily about timing and pace. Setting international standards is an independent, sometimes slow process, and one that does not necessarily align with technological advancements in the RAC and heat pump sectors, legislation or building codes, nor the fast-approaching deadlines for adopting safe low-GWP alternatives to HCFCs and HFCs. Several delegates worried aloud about "putting the cart before the horse," rushing the safety standard-setting process just to meet Kigali Amendment deadlines instead of ensuring safety levels comparable to existing systems.

As discussed at previous Montreal Protocol sessions, and reemphasized in the workshop, until now many of the less expensive low-GWP alternatives have been classified as either "moderately" or "highly flammable" and their application might be hampered by safety standards not keeping pace with technology and safety innovations. This long-standing issue remains unresolved and one that will likely continue to resurface at the MOP.

Similarly, some Article 5 parties, especially those with high ambient temperatures or large informal sectors, cautioned against rushing through the standard setting process, especially if safe low-GWP alternatives do not yet exist. Underscoring their allegiance foremost to end users, namely households as well as informal sector mechanics, Article 5 delegates suggested a need for capacity-building workshops or programmes to "train the trainers," conducted by or in partnership with the TEAP, on the safe handling of low-GWP alternatives. These calls were countered by some non-Article 5 countries, querying whether conducting such training does fall within

the TEAP's mandate, which serves largely as an advisory body, and if so, what the "price tag" for such workshops might be.

The OEWG also began what promises to be a long debate about follow-up on the Kigali decision on energy efficiency. This decision, built from the assumption that if the Kigali Amendment was adopted for its climate benefits, the adoption of low-GWP alternatives should then emphasize energy efficiency or any climate gains might be negated. The two CRPs proposed on the issue were received with near universal support from Article 5 parties. Conversely, many non-Article 5 parties were at first silent on the suggestion, then some wondering aloud whether energy efficiency, which focuses on climate benefits, falls within the purview of the Montreal Protocol when many other fora already address this issue. While differences remained, both sides expressed "a willingness to consider" the issue, delaying further discussion to the MOP, after the release of an upcoming TEAP report.

CONTINUING TO BUILD UPON THE STRENGTHS OF THE MONTREAL PROTOCOL

Despite hiccups encountered at OEWG 39, there was general consensus that parties know where they want to go; it's just a matter of how to get there.

This consensus should help maintain forward momentum at the upcoming MOP, aided by the foundational strengths of the world's "most successful multilateral environmental agreement," namely its: flexible implementation, allowing for temporary exemptions as parties solve the issues at hand; self-checking mechanisms for making practical adjustments with advice from its scientific and technical bodies; and sense of community, which employs the diplomatic tools of pragmatism and a "willingness to consider" issues that not all parties may initially agree on. Its cornerstone attribute, flexible implementation, offered the diplomatic space to allow parties to progress on key concerns brought up at OEWG 39 on safety standards and energy efficiency discussions as they relate to HFC phase-down, and how they will eventually align within the Amendment's purview.

Building on the momentum from Kigali, combined with the planned return to the city of the Protocol's birth for its thirtieth anniversary, delegates appear confident that this mature agreement will work out the kinks and challenges of the HFC phase-down through the "slow and steady" approach. OEWG 39 achieved greater clarity on how safety standards and energy efficiency might affect the implementation of the Kigali Amendment, while revealing that it will take time to understand and agree on how these fundamental concerns can be addressed. As one delegate put it, "the best meals are cooked over a slow flame," alluding to perhaps the greatest strength of the Protocol: its openness to parties challenging each other, combined with time for proper reflection, toward determining the best path forward, together

- For daily digital coverage and a summary and analysis report, visit the IISD/ENB: Meeting Coverage from UN Conference Centre (UNCC), Bangkok, Thailand
- Draft report of the thirty-ninth meeting of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer
- Draft report of the thirty-ninth meeting of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer - Addendum

2. New Initiative Announced to Address Growing Challenge of Providing Cooling Solutions for All

As global temperatures reach record highs, Sustainable Energy for All today announced a new initiative to identify the challenges and opportunities of providing access to affordable, sustainable cooling solutions for all.

The new Cooling for All initiative will focus on how we embed growing cooling demands that can reach everyone within a clean energy transition, and in turn, support faster progress to achieve the goals of the Montreal Protocol's Kigali Amendment agreed last year in Rwanda.

Cooling solutions are an essential need for everyday life – from cold supply chains for fresh produce, safe storage of life saving vaccines and medicines, to safe work and educational environments that increase productivity – cooling needs are not just an air conditioner, but a necessity that puts the focus on superefficient technologies and innovation to meet our needs.

With populations rising, growing cooling needs risk creating a significant increase in energy demand that if not managed through super-efficient technologies or clean sources, will cause further climate change impacts and a rise in emissions.

The work of the initiative will therefore create a direct intersect between three internationally agreed goals for the

first time: the Paris Climate Agreement; the Sustainable Development Goals; and the Montreal Protocol's Kigali Amendment* – with one of the key goals of the amendment to limit consumption and production of hydrofluorocarbons (HFCs), a potent greenhouse gas used widely in air conditioners and refrigerators.

An important part of the initiative that will support greater, more informed action, will be the Cooling for All Global Panel. The panel will bring together a group of high-level leaders from government, academia, civil society, business and finance leaders who will together better understand the challenges and opportunities of providing access to cooling solutions for all across the world.

The panel will be co-chaired by two governments who are dealing with issues of cooling access in their own countries. The co-chairs will lead the groups work in developing a comprehensive report that offers the evidence, suggested solutions and understanding of how we accelerate the uptake of cooling solutions to create sustainable cooling access for all, including the poorest countries and their citizens who are often disproportionality affected.

Rachel Kyte, Chief Executive Officer of Sustainable Energy for All and Special Representative of the UN Secretary-General for Sustainable Energy for All (SEforALL), who will act as secretariat for the global panel, said: "As the world grows dangerously warm, access to cooling will become the difference between life and death in some parts of the world that suffer from extreme heat. A clean energy transition is already underway globally that can provide affordable, safe and sustainable energy for all.

We must now incorporate cooling for all needs within this transition, while keeping us on track to reach our global climate and energy goals."

Investing in more efficient cooling solutions provides a great business opportunity for the private sector, and mobilizing them to meet the goals of the Kigali Amendment and reduction in HFCs is a priority. However, estimated costs show investments in super-efficient technologies would be offset by gains in energy efficiency, and could in the long-term create potential savings across business operations.

The Cooling for All work is being funded by the Kigali Cooling Efficiency Program. Dan Hamza-Goodacre, Executive Director, Kigali Cooling Efficiency Program, commented: "We need cooling to work, rest, play and worship. In short, life depends on cooling, especially in a warming world. Yet not everyone has access to cooling. That has to change. Which is why the new SEforAll initiative on Cooling for All is so important. It's time to reap the benefits of cooling for people across the world, whilst limiting the impact on the climate. We can't keep cooling down by warming the planet up."

The initiative will convene its first panel meeting this September in New York on the sidelines of the UN General Assembly and Climate Week NYC, where co-chairs and panel members will be announced. The panel's report will be launched in 2018.

- Sustainable Energy for All (SEforALL), 19 July 2017

3. OzonAction at OEWG 39 - Side Event on Sustainable RAC Technologies for Marine and Offshore Fisheries Sector

Bangkok, 12 July 2017 - UN Environment OzonAction and ASHRAE hosted a side-event during the 39th Open-ended Working Group (OEWG) on key outcomes of the International Conference on Sustainable RAC technologies for Marine and Off-shore Fisheries sector held in Bangkok last April 2017. The National Ozone Units of Samoa and Maldives presented on national challenges for management of refrigerants in the fishery sectors. From a private sector perspective, Thai Union (Seafood Industry) presented on the refrigerants used in cold chain management from catch to plate.

Taking into context the cross-cutting nature and multiple stakeholdership of this industry, the event discussed the

specific challenges in addressing HCFC phase-down for this sector and of the need to have targeted sectoral attention. Focused attention on marine refrigeration management is required to sustain Montreal Protocol obligations and transition into longer term alternatives.

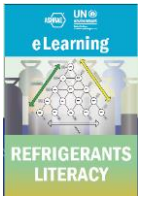
- Contact:
  Artie Dubrie, Regional Network Coordinator, UN Environment, OzonAction, Compliance Assistance Programme, Regional Office Asia-Pacific

4. OzonAction-ASHRAE Launch the Refrigerant Literacy e-Learning Course – OEWG 39

Bangkok, 12 July 2017 – In the margins of the 39th Open-Ended Working Group (OEWG) of the Montreal Protocol, held in Bangkok, Thailand, UN Environment OzonAction in partnership with ASHRAE presented and launched a new jointly produced web-based e-learning course entitled "Refrigerants Literacy." More than 130 delegates and meeting participants took part in the side event.

Mrs. Shamila Nair-Bedouelle, Head, UN Environment OzonAction, welcomed all the participants and presented an overview of the OzonAction-ASHRAE partnership and the excellent technical cooperation which gave rise to this joint e-learning initiative. Mrs. Nair-Bedouelle challenged all National Ozone Units (NOUs) to take the course, which is offered for free, and to share it widely in their countries. She highlighted the importance of the Refrigerants Literacy course for all National Ozone Officers (NOOs), policy makers and technicians on the different refrigerants and their uses, especially useful for the national HCFC phase down.

The keynote speaker, Mr. Bjarne Olsen, ASHRAE President, explained that the course is ideal for NOUs and all those involved in the Montreal Protocol. It is mainly designed for non-specialist in HVAC&R operation and servicing such as policy makers, procurement officers, buildings owners and facility managers, as well as HVAC&R engineers, consultants and technical people who wish to get an overall and holistic overview about refrigerants and its progression. Mr. Olsen continued to explain the course and its operation, describing how it includes important background information and updates about refrigerant definitions, use and management – all of which is an essential part of the daily work of an NOU.



- Contact: UN Environment, OzonAction Compliance Assistance Programme, Regional Office West Asia,
  Ayman Eltalouny, Programme Officer | Manal Aabed, Programme Assistant
- View: Agenda | e-Learning Flyer | "Refrigerants Literacy" e- course
- Login course access and enquiries: eLearning@ashrae.org

5. Advancing Technology & Cooperation to Reduce Short-lived Climate Pollutants

We seek to catalyze ambitious action to quickly and substantially reduce short-lived climate pollutants, which will achieve multiple benefits for health, agriculture yields and climate protection. This includes demonstrating new technologies and promoting peer-to-peer engagement and cooperation.

Examples during the last month include collaboration between public and private actors, and bilateral and international cooperation to advance climate-friendly solutions in the transport, agriculture and municipal solid waste sectors. Tata Motors and MAHLE, with support from the Coalition, showed the first results of a collaborative project to create a mobile air conditioning system using HFC alternatives. Our partners Canada and Chile announced a bilateral initiative to reduce methane emissions from landfills, and the International Cryosphere Climate Initiative shared insight into the use of open source satellite data to monitor black carbon

emissions from open burning.

The Climate and Clean Air Coalition (CCAC) looks forward to increased collaboration among partners!

- Visit CCAC Solution Centre and BreatheLife campaign.

6. International Photo Contest Dedicated to Climate Change and Protection of the Ozone Layer

The photo contest is held in two categories: "**Climate change in my eyes**" and "**Ozone layer and I**".

To participate, it is necessary to fill out the application form and send it together with a photo to info@envcontest.uz by 15 August 2017. Participation in both categories of the contest (one photo for each category) is allowed.

Organizers: The State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection; Center of Hydrometeorological Service under the Ministry of Emergency Situations of the Republic of Uzbekistan; United Nations Development Programme in Uzbekistan; Joint Project of UNDP in Uzbekistan, Center for Hydrometeorological Service under the Ministry of Emergency Situations of the Republic of Uzbekistan and UN Environment "Green Climate Fund Readiness Programme in Uzbekistan"; Joint Project of UNDP in Uzbekistan, State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection and the Global Environment Facility "Initial Implementation of Accelerated Hydrochlorofluorocarbons (HCFC) Phase Out in the Countries with Economies in Transition (CEIT) – Uzbekistan".

Partners: United Nations Development Programme Istanbul Regional Hub; and the United Nations Environment, OzonAction Branch.

The International Photo Contest is open for all professional and amateur photographers around the world. Participation of women and youth is encouraged.

The application form can be downloaded from the website of International Photo Contest www.envcontest.uz

The photos and application forms in English language should be sent to info@envcontest.uz by **18:00 (Tashkent time, GMT+5), 15 August 2017.**

- Related information available from the Contest website in the following languages:
AR CN DE EN ES FR HI HY PT RU TR UR UZ

WEST ASIA

7. GCC more Open to Adopting Natural Refrigerants, Experts Say

Levent Taşkın, president of Danfoss Turkey, Middle East and Africa, told *MEP Middle East* that the GCC is becoming increasingly forward-thinking in its approach to construction.

He said: "In the UAE, the government's investment and participation in construction projects, stringent regulations, tendency towards usage of natural refrigerant solutions and phase out of ozone depleting refrigerants (ODS), are paving the way for greater superior operational standards for those operating within the sphere, not excluding HVAC industry, which is the single largest energy-consumer in buildings by accounting for nearly 60% of the total energy cost."

He continued: "From a global perspective, the tendency of the industry is to move increasingly toward natural refrigerant solutions when it is technologically safe & economically feasible.

Synthetic refrigerants are still likely to play an important role in both the refrigeration and air conditioning industries, where the trend is also moving toward new low-GWP substances that cause a minimal environmental impact." […]

- Construction Week Online, 19 July 2017, By Rajiv Ravindran Pillai

LATIN AMERICA AND CARIBBEAN

8. Brazil Decreases Use of Substances that Affect Ozone Layer

As part of its commitments to the Montreal Protocol, the country has already eliminated 34% of its consumption of hydrochlorofluorocarbons, used in the production of refrigerators and air conditioners.

The Brazilian Programme for the Elimination of Hydrochlorofluorocarbons (PBH) has already allowed for the removal of 34% of the Brazilian consumption of these substances, responsible for adversely affecting the Earth's ozone layer. The first-phase target is for a 35% reduction by 2020, as established by the Montreal Protocol.

HCFCs are imported for the manufacturing of refrigerators, air conditioners and foam for furniture pieces like sofas and mattresses.

The second stage of the PBH aims to withdraw 51.6% of these substances from the productive chains, and begins on January 2021. The substance is expected to be fully banned from the productive chain by 2040.

A Working Group coordinated by the Ministry of the Environment (MMA) met last week and has already begun drafting a Normative Instruction to regulate the matter. It is expected to be completed in a few days. The document was well received by the associations that represent the productive sectors involved, and should be submitted to public consultation by the end of the year.

Magna Luduvice, general coordinator for Ozone Layer Protection at the MMA, explains that technological developments already ensure a smooth transition for industry. "There are several replacement options that can be adapted to each sector," she says.

- BrazilGovNews, Presidency of the Republic of Brazil, 27 July 2017

NORTH AMERICA

9. US EPA Significant New Alternatives Policy (SNAP)

The U.S. Environmental Protection Agency's (EPA) Significant New Alternatives Policy (SNAP) program implements section 612 of the amended Clean Air Act of 1990, which requires EPA to evaluate substitutes for the ozone-depleting substances to reduce overall risk to human health and the environment.

Through these evaluations, SNAP generates lists of acceptable and unacceptable substitutes for each of the major industrial use sectors. The intended effect of the SNAP program is to promote a smooth transition to safer alternatives.

On 21 July the EPA published in the Federal Register a Determination of Acceptability (Notice 33) to list as acceptable several substitutes in the refrigeration and air conditioning, and cleaning solvents sectors. This determination of acceptability expands the list of acceptable substitutes under the Significant New Alternatives Policy (SNAP) program.

New substitutes are:

- HFC-134a in residential and light commercial air conditioning and heat pumps (retrofit equipment);
- HFE-7300 in non-mechanical heat transfer systems (new and retrofit equipment), electronics cleaning, metals cleaning, and precision cleaning end-uses;
- R-407H and R-442A in retail food refrigeration—remote condensing units (new and retrofit equipment);

- R-448A, R-449A, R-449B, R-452A, R-452C, R-453A, and R-458A in multiple refrigeration and air conditioning end-uses (new and retrofit equipment); and
- R-513A in residential dehumidifiers (new and retrofit equipment).

The notice is available at *https://www.epa.gov/snap/snap-regulations*. To view the public docket in the *Federal Register*, visit www.regulations.gov and search for docket number EPA-HQ-OAR-2003-0118.

The US EPA- SNAP, 21 July 2017

10. U.S. Commercial Refrigeration Systems Market to Expand at a Value CAGR of 3.2% through 2015 - 2025

Future Market Insights (FMI) delivers key insights on the commercial refrigeration systems market in its latest report titled, "Commercial Refrigeration System Market: U.S. Industry Analysis and Opportunity Assessment, 2015-2025". According to the report, the U.S. commercial refrigeration systems market is projected to expand at a healthy CAGR (compound annual growth rate) of 3.2% in terms of value over the forecast period. Commercial refrigeration systems are refrigerators with remote or self-contained condensing units. These refrigerators are designed especially for commercial use with a wide range of temperature control (typically from -18°C to +10°C) options. Commercial refrigeration systems are mainly used in hypermarkets, supermarkets, convenience stores, warehouses and distribution centres, foodservice industry and food & beverage production units. Commercial refrigeration systems include products such as ice machines, vending machines, beverage refrigeration equipment, refrigerated display cases, trailers, trucks, containers and walk-in and reach-in refrigerators. Commercial refrigeration systems also include various components such as compressors and refrigerants. Refrigerants mainly used in commercial refrigeration systems include R507A, R417A and R422A. The selection of a refrigerant depends on various properties such as non-corrosiveness, global warming and ozone depletion potential, inflammability, toxicity, cost, erosional properties, leak-detection capability and thermodynamic properties.

Growing demand for frozen and chilled products, expansion of cold chain capacity, technological advancements in commercial refrigeration systems and rebates for energy-efficient products and practices are some of the major underlying factors anticipated to fuel growth of the U.S. commercial refrigeration systems market between 2016 and 2025. This is forecast to create unprecedented opportunities for commercial refrigeration systems manufacturers, distributors and HVAC contractors. The U.S. commercial refrigeration systems market is segmented on the basis of application and product type. By application, the market is segmented into foodservice, food & beverage distribution, food & beverage retail and food & beverage production. On the basis of product type, the market is classified into transportation & refrigeration systems, refrigerator & freezers, beverage refrigeration equipment, refrigerated display cases, ice machines and refrigerated vending machines.

By application, foodservice segment accounted for the highest share of 30% in terms of value in the U.S. commercial refrigeration systems market in 2014. This segment is expected to remain dominant in the market over the forecast period. Ice machines segment and beer dispensing equipment sub-segment are projected to play an important role in the foodservice industry due to various factors such as increasing per capita food consumption and rising number of foodservice restaurants in the country. By product type, transportation refrigeration systems segment is projected to expand at the highest CAGR of 5.5% during the forecast period due to expansion of cold chain capacity in the U.S. By region, Southeast region represents the largest market potential, followed by the Middle-east and Far West regions. California, Texas and Florida represent a huge potential for refrigerated systems due to high density of restaurants and convenience stores in these states. Other high-growth markets include Arizona, Georgia and Utah due to rapid growth in the restaurant industry in these states.

Key trends identified in the U.S. commercial refrigeration systems market include rapid adoption of Internet of Things (IoT), compatible commercial refrigeration systems for enhancing system output, government initiatives to support utilisation of eco-friendly refrigerants and continued advancements in energy-efficient products. However, declining replacement rate of commercial refrigeration equipment and stringent government regulations could pose major challenge for tier II & III players.

The report analyses the U.S. commercial refrigeration systems market in terms of value (US$ Mn) and volume ('000 units) by product type and end-use application, and provides insightful information regarding market dynamics, value chain, competitive landscape, current trends, market estimations and forecast.

It is observed that customisation holds the key for tier 2 and tier 3 players in order to further penetrate into the market, thus creating a competitive threat for tier 1 suppliers in the market. Meanwhile, key players are strengthening their market positions through both organic and inorganic growth. Also, acquisition of HVAC contractors is leading to the addition of a new customer base for commercial refrigeration systems manufacturers.

Key market participants covered in the report include Daikin Industries, Ltd., Standex International Corporation, Whirlpool Corporation, United Technologies, Dover Corporation, Ingersoll-Rand Plc, Hussmann Corporation, Lennox International Inc., Manitowoc Company, Inc., Emerson Electric Co. and Illinois Tool Works Inc.

- Future Market Insights, 28 July 2017

EUROPE & CENTRAL ASIA

11. The European Commission Set to Review ODS Regulations

The European Commission has initiated an evaluation of the European ODS regulations to establish whether they are still fit for purpose.

The evaluation will check if the ODS Regulation (1005/2009), which exceeds the provisions of the Montreal Protocol, is still relevant by analysing its provisions, particularly the ones permitting exemptions.

It will look at whether the objectives of the ODS Regulation have been achieved, assess whether it could be made simpler and less costly and whether any regulatory and administrative burdens could be reduced. In addition, it will seek to identify any gaps in the regulation and overlaps with other European interventions, as well as identify measures where the added value of having an EU intervention was evident or was unnecessary as compared to having national interventions.

The regulation was introduced in 2010 to implement the Montreal Protocol, which has been in force since 1989, and seeks to phase out substances such as CFCs, HCFCs, halons, carbon tetrachloride and methyl bromide.

The EU has already achieved its phase-out goals under the Montreal Protocol and is currently mostly reporting exempted, essential and critical uses of ODS. The latest recorded figures for 2015 show the consumption of controlled substances at its lowest negative level since 2006.

In 2015, 9,320 tonnes of controlled substances were exported with imports amounting to 6,046 tonnes, a 12% decrease compared with 2014.

The latest evaluation will be supported by an external study and will include a 12 week public consultation.

- CoolingPost, 31 July 2017
- The EU Evaluation of the Ozone Regulation - Roadmap

12. The European Parliament Ratified the Kigali Amendment to the Montreal Protocol on Phasing Down HFCs Used in HVAC&R Applications

The entry into force of the Kigali Amendment to the Montreal Protocol on phasing down HFCs – agreed in the Rwandan capital last October – today came one step closer after the ratification of the agreement by the European Parliament.

The final adoption of the text by the European Union (EU) as a whole is still pending as it must also be adopted by the 28 EU member states that are parties to the Montreal Protocol.

The Kigali Amendment will enter into force on 1 January 2019 provided that it has been ratified by at least 20 parties to the Montreal Protocol, or 90 days after ratification by the 20th party, whichever is later.

Ratification by a number of EU countries, therefore, will be sufficient to trigger the entry into force of the Kigali Amendment.

So far, two countries have ratified the amendment: the Marshall Islands on 2 March and Mali on 31 March.

The Kigali deal, agreed on 15 October 2016, is legally binding for all 197 Parties to the Montreal Protocol. Developed countries take the lead on phasing down these potent greenhouse gases, starting with a 10% reduction

in 2019 and delivering an 85% cut in 2036 (compared to the 2011-2013 baseline).

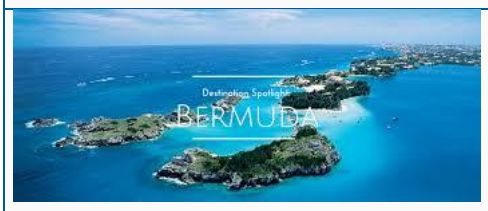
Developing countries are split into two groups. The first one – including China and African nations – will freeze consumption of HFCs by 2024, with their first reduction steps starting in 2029. A second group, which includes India, Iran, Iraq, Pakistan, and the Gulf countries, will meet a later deadline, freezing their use of these gases in 2028 and reducing consumption from 2032.

The HFCs specifically targeted by the Kigali amendment include the following: R134, R134a, R143, R245fa, R365mfc, R227ea, R236cb, R236ea, R236fa, R245ca, R43-10mee, R32, R125, R143a, R41, R152, R152a, R161 and R23. Some of HFCs are also the components of commonly used HFC blends like R404A and R410a, which are also covered under the amendment.

HVAC&R industry players broadly welcomed the Kigali Amendment as a concrete follow-up to the Paris accord addressing climate change.

Natural refrigerants are widely accepted as a market-ready, energy-efficient replacement for HFCs in many applications.

- Ammonia21, 5 July 20017, By Marie Battesti



13. Phase Out of Specific Refrigerant Gas (Bermuda)

The Department of Environment and Natural Resources is informing the public that the "phase out of a specific refrigerant gas that is used to cool some of Bermuda's industrial spaces, commercial spaces and homes is likely to affect supplies of this gas on the island."

A Government spokesperson said, "The phasing out of certain gasses is in line with the Montreal Protocol of 1987, designed to reduce ozone depletion.

"Those with heating, ventilation and air-conditioning [HVAC] systems which use R-22 [HCFC-22] may be best served by changing to a non-ozone-depleting gas in the near future.

"Industry stakeholders and those with permits to handle refrigerant gases have been aware for some time that hydrochlorofluocarbons [HCFCs] would be phased out internationally, including a refrigerant gas commonly used in older HVAC systems in Bermuda, called R-22.

"The international phase out of HCFCs also affects the manufacturing of these gases. Recent changes associated with phasing out the manufacturing of HCFCs has meant a tightening of requirements necessary before the gases can be exported.

"In addition, an amendment to the original protocol has not been extended from the UK to Bermuda and other Overseas Territories [OTs]. The OTs are required to ratify the amendments before this extension from the UK can be provided. As a result, the original manufacturers of HCFCs cannot send gases to Bermuda until this extension process has been completed.

"HCFCs can still be procured from other suppliers [for example, from the US] once the necessary import permit has been approved by the Environmental Authority. However, purchasing from suppliers rather than the original manufacturer is expected to incur a greater cost for replacement HCFC gases.

"The Department is currently working to complete this ratification of the amendment to the original protocol so it can be extended from the UK. In the interim, the Department advises that consumers installing new HVAC systems ask for non-ozone-depleting refrigerant gases and encourage existing customers who have R-22 based systems to consider changing them to non-ozone-depleting refrigerant gases.

"It is also important to note that there are some compliant refrigerant gases that can be substituted in existing R-22 systems without the need to replace blowers, condensers and associated pipework. An HVAC supplier's service personnel should be able to advise on any compatibility issues."

- BerNews, 24 July 2017

FEATURED

OZONE SECRETARIAT

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

«Caring for All Life under the Sun" Theme and Logo for 30th Anniversary of the Montreal Protocol and International Ozone Day 2017

The 30th anniversary of the Montreal Protocol, which we are commemorating this year, and the International Day for the Preservation of the Ozone Layer to be marked on 16 September, will be celebrated under the theme:

Caring for All Life Under the Sun

The theme is complemented by a logo that illustrates the Montreal Protocol's focused and singular goal to protect all life on Earth.

The logo and theme celebrate the Montreal Protocol's critical role in caring for life on the planet over the past 30 years by preventing massive damage to human health and the environment from excessive ultraviolet radiation from the sun by phasing out nearly 99 per cent of close to 100 substances that deplete the ozone layer.

As a result of the unwavering commitment of the parties to the Montreal Protocol during the past three decades, the ozone layer is on track to recovery by mid-century. In addition, up to 2 million cases of skin cancer may be prevented each year by 2030.

The Montreal Protocol is also one of the prime contributors to the fight against climate change, as it averted more than 135 billion tonnes of carbon dioxide equivalent emissions from 1990 to 2010.

The Kigali Amendment to the Montreal Protocol, which was adopted in 2016, is expected to avoid up to 0.5° Celsius warming by the end of the century, while continuing to protect the ozone layer.

The logo and theme in all the six official UN languages are posted on the Ozone Secretariat website for wider dissemination, together with brand guidelines on their usage. Parties are also encouraged to download and use the email signature image of the logo and theme.

In the coming months, the Ozone Secretariat will conduct a communication campaign to celebrate the 30th anniversary and will provide the parties with more information about the campaign and related products to support commemorative activities. We would also be pleased to receive any information products for your planned commemorative activities for wide dissemination through our website.

As in previous years, we expect that the United Nations Secretary-General's message for International Ozone Day to be shared prior to the day for further dissemination.

Once again, the Ozone Secretariat will provide limited financial assistance to four developing countries

to contribute towards organizing their national commemorative activities. The Secretariat invites the parties to submit their plans of celebration activities and requests for assistance by 31 May 2017. Kindly send them to the Secretariat at dan.tengo@unep.org and ozone.info@unep.org

- Browse through the Ozone Secretariat "In Focus" to learn about latest updates.
- Click here for Montreal Protocol Meetings Dates and Venues

The UN Environment Assessment Panels have been the pillars of the ozone protection regime since the very beginning of the implementation of the Montreal Protocol. Through provision of independent technical and scientific assessments and information, the Panels have helped the Parties reach informed decisions that have made the Montreal Protocol a world-recognized success.

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

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

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

PROGRESS & QUADRENNIAL ASSESSMENT REPORTS

- EEAP
- SAP
- TEAP

Assessment Panels List of Meetings

SYNTHESIS REPORTS

- 2014 assessments
- 2010 assessments
- 2006 assessments

THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL

79th meeting of the Executive Committee, Bangkok, 3-7 July 2017

Report of the 78th meeting of the Executive Committee

Adjusted business plan of the Multilateral Fund for 2017-2019 after the 77th meeting of the Executive Committee

Learn more

OZONACTION

UN Environment, OzonAction highlights

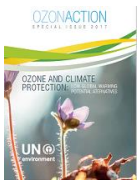
The Kigali Amendment to the Montreal Protocol - Opportunities and Next Steps - OzonAction Video

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



Ozone and Climate Protection: Low-Global Warming Potential Alternatives - OzonAction Special Issue 2017

OzonAction Factsheets:

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).

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

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

OzonAction Factsheet: Tools Commonly used by Refrigeration and Air-Conditioning Technicians

OzonAction Multimedia Video Application: **Refrigeration and Air-conditioning Technician Video Series** - 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. Additional videos will be added regularly.

Please share with your RAC associations, technicians and other interested stakeholders… **Over 11, 200 installations to date!**

Now available in the Android Play Store and Apple Store/iTunes.

Available on the App Store | ANDROID APP ON Google play

(*Just search for 'OzonAction' or scan this QR Code*)

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

(*Just search for "OzonAction", or scan this 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.

Regional News Drops

The Regional Networks of National Ozone Units (NOUs) under the Multilateral Fund are a path-breaking mechanism for North-South and South-South cooperation. Networking provides a platform for NOUs from Article 5 countries to exchange experiences, develop their skills and tap the expertise of their peers in both developing and developed countries. Conducted at the regional level, the Networking activity builds the Ozone Officers' skills for implementing and managing their national ODS phase-out activities. During 2016 these videos were filmed at the regional network meetings around the world.

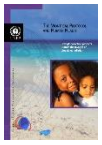
The NOUs were asked about their success stories, alternative refrigerants selected and their personal messages for national ozone celebrations…

Click here to access the News Drops

OzonAction Recent Publications:

Lower-GWP Alternatives in Commercial and Transport Refrigeration: An expanded compilation of propane, CO_2, 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, CO_2 and HFO Case Studies.

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.



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.

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. 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.

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.

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.

EVENTS

2017

9th International Conference on Compressors and Coolants, 6-8 September 2017, Bratislava, Slovakia

ATMOsphere Asia 2017 taking place a day before the **Bangkok RHVAC trade show**, 7-9 September, which ranks among the world's best HVAC&R exhibitions and is the second largest in the Asia Pacific region.

FEBRAVA 2017 - 20th International Refrigeration, Airconditioning ,Ventilation, Heating and Air Treatment Fair , 12 - 15 September 2017, Sao Paulo, Brazil

Future of HVAC 2017 – 13–14 September 2017, Sydney, NSW, Australia

EUREKA Italy, the first stop of the EUREKA roadshow, on 15 September 2017 in Mestre (Venice), Italy. EPEE and EVIA, the organisers of the annual EUREKA conference, are launching the "EUREKA roadshow", a series of national events to discuss the challenges the HVAC-R industry faces across EU Member States. Register here!

Symposium for the celebration of the Montreal Protocol 30th Anniversary - From the safeguard of the ozone layer to the protection of the earth climate, 19 - 20 September 2017, Paris, France

Le salon SIFA (salon interprofessionnel du froid et ses applications), organisé par La Rpf et le groupe LSA / Usine Nouvelle, aura lieu du 3 au 5 octobre 2017 au Dock Pullman de Paris, France. Le SIFA est un salon-congrès portant sur les enjeux réglementaires, économiques, techniques et environnementaux relatifs au **FROID** dans les domaines du tertiaire, de la grande distribution, l'agroalimentaire et de l'industrie.

EUREKA 2017: Heating, Cooling & Ventilation: Sustainable technologies for a better life, 11-12 December 2017, Berlin, Germany

2018

1st IIR International Conference on the Application of HFO Refrigerants. 2-5 September 2018, Austin Court Conference Centre, Birmingham, United Kingdom

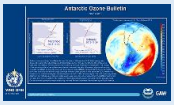
The HVAC & Refrigeration Show, 23 - 25 January 2018, London, United Kingdom

AIRAH Refrigeration 2018, 26 – 27 March 2018, Sydney, Australia

READING

Twenty Questions and Answers About the Ozone Layer, presents complex science in a straightforward manner. It complements the 2014 Scientific Assessment Report of Ozone Depletion by WMO and the U.N. Environment Programme.

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 CO_2-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 Grabiel. Contributing authors: Stephen O. Andersen, Xiaopu Sun, Dennis Clare, Yuzhe Peng Ling, and Alex Milgroom.

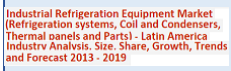
Flammable Refrigerants Safety Guide, AIRAH - Many of the refrigerants traditionally used in refrigeration and air conditioning systems in Australia have been non-flammable, non-toxic, synthetic greenhouse gases (SGGs) that have a high global warming potential (GWP). These were typically synthetic refrigerants 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

A first edition, the IIR guide "CO_2 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…



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)

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

The Importance of Ambition in the 2016 HFC Phase-Down Agreement. Download the full report from EIA, 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.

F-Gas Regulation shaking up the HVAC&R industry. Commissioned by the Greens in the European Parliament, the study provides qualitative and quantitative analysis of the early impacts of the EU F-Gas Regulation on the European industry and evaluates its influences on other countries and regions in designing their own policies to curb HFCs.

"The Road to Competence in Future Green Technologies", the International Special Issue 2016-2017 of Centro Studi Galileo. Read/Download pdf version | E-book

The 2016 editions of ASHRAE's major refrigerants-related standards have been published as a package with 30 new refrigerants and refrigerant blends added.

Quest for climate-friendly refrigerants finds complicated choices, National Institute of Standards and Technology (NIST), 17 February 2017, Summary: Researchers have just completed a multiyear study to identify the 'best' candidates for future use as air conditioning refrigerants that will have the lowest impact on the climate.

The second issue of The Natural Voice magazine, entitled 'Mainstreaming Natural Refrigerants' showcases examples of installations using natural refrigerants around the world, including in the Gambia, Jordan, South Africa, China, Thailand, Tanzania and Saudi Arabia.

Industria & Formazione, no. 2/17, Preview of the journal Industry & Training in refrigeration and air conditioning, technical refrigeration and air-conditioning, Centro Studi di Galileo # 406 Technological innovations in cooling and air conditioning with special focus on the F-Gas new regulations, new refrigerants, components and systems, food storage and cold sector. Vol. XLI - No. 2-2017.

Refrigeration: An increasingly strategic issue for data centres - Cooling data centres: A major economic challenge Today, data centres play a key role in many businesses as information technology is becoming an increasingly strategic factor. Cooling can present a major economic challenge for data centres. If cooling is implemented incorrectly or is inadequate, the amount of energy required to cool a data centre can equal or exceed that used to operate the equipment. Larger data centres can use a staggering amount of energy just to ensure the day-to-day running of electronic equipment. As a result, these data centres can produce a great deal of heat, which require large-scale cooling systems in order to maintain efficient and continual operation… Browse through a selection of articles and papers, by iifiir

shecco GUIDE to Natural Refrigerants Training in Europe shows that training is readily available. Read on r744

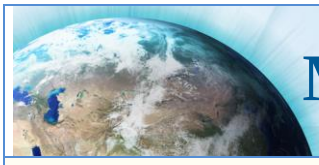
40 Years of Global Environmental Assessments: A Retrospective Analysis, J. Jabbour and C. Flachsland. Environmental Science & Policy

FactSheet - Hazards during the Repair and Maintenance of Refrigeration Systems on Vessels.

[High-performance insulation materials market], June 2017

EIA Applauds Bipartisan Effort to Tackle Super Pollutants, Including HFCs. Environmental Investigation Agency, 8 June 2017

The Environmental Investigation Agency (EIA), recently launched report: *Chilling Facts VII* , *Chilling Facts I-VI* reports available here



MISCELLANEOUS

Announcement!

The UN Environment, OzonAction, in collaboration with Marco Gonzalez and Stephen O. Andersen are updating and expanding the Montreal Protocol Who's Who" as part of the celebration of the 30th Anniversary of the Montreal Protocol - which was agreed as 16 September 1987.

The new website will be launched during the upcoming Meeting of the Parties to the Montreal Protocol, Montreal, Canada, 20-24 November 2017.

We are pleased to invite you to submit your nomination*, and/or nominate an 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

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

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

Contact : Samira Korban-de Gobert, UN Environnement, OzonAction

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

How will the heat pump market move towards natural refrigerants? Eric Delforge talks about the energy-efficient properties of natural refrigerants when used in heat pump applications.

Watch on r774's YouTube channel

UN knowledge platform launches live-tracking tools to review progress towards SDGs, UN Environment's dynamic online platform designed for sharing contextualized data...

New ***International Journal of Refrigeration*** service for IIR members - As of January 2017, not only will IIR members continue to receive the hard copy of the journal but IIR membership will now also give members access to the complete archives of the *International Journal of Refrigeration (IJR)* online. Designed with IIR members in mind, this new and practical electronic subscription gives members substantial advantages:

- Immediate and permanent access to the latest research and to IJR archive
- Access the latest articles as soon as they become available online.
- Browse, search and read each one of the nearly 4,500 papers since Volume 1, Issue 1.
- Unlimited access to seminal contributions to the field of refrigeration dating back to 1978.
- Keep up-to-date with subscriptions to customized e-alerts on New Volumes, Topics and saved Searches.

Enhanced content and functions

- Easily export references, citations and abstracts.
- Print, download or share articles with colleagues or peers.
- See which papers, published in Elsevier or elsewhere, have cited any selected article.
- Consult the research highlights overview of articles in volumes from 2012 onwards.

To access this new service, click "activate my e-IJR subscription now" and follow the instructions.

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

The Mobile Air Conditioning Society (MACS) Worldwide has released the **MACS Mobile A/C Diagnostics app** powered by Shiftmobility© for use on all mobile devices. The MACS app includes comprehensive mobile A/C and engine cooling system specifications for cars and light duty trucks from 1960-present; A library of heavy duty vehicle specifications donated by MACS member companies; access to MACS training calendar and website, archived MACS ***ACTION™*** magazines and ***Service Reports***, MACS mobile A/C diagnostic checklists and a MACS member supplier directory. The MACS app is available only to MACS members in good standing. Each membership will receive one free download; and additional member downloads are $60 each annually. The MACS app can be downloaded from the Google play or iTunes store

New IIR Working Group: whole-body cryotherapy or cryostimulation - New challenges in Cold Applications in Life Sciences - Whole-body cryotherapy is one mode of cold therapy, during which a subject is exposed to very low temperatures (so-called "extreme cold") for a short time (2 to 4 minutes) in a specialised cold chamber. This method is used to induce physiological and psychological benefits. Learn more

The Montreal Protocol Who's who

See the latest nominations /

Nominate Ozone Layer Protection Champion

From Your Country /Region >>

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

Disclaimer: The United Nations Environment (UNEP), Economy Division, OzonAction provides OzoNews as a free service for internal, non-commercial use by members of the Montreal Protocol community.

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