Volume XX | 15 June 2020

In this issue:

GLOBAL

1. Join the UNEP-UNIDO-ASHRAE webinar on 'Alternative Refrigerants for High Ambient Temperature Countries'

Over the last years, the Montreal Protocol (MP) witnessed major development by encompassing the hydrofluorocarbons (HFCs) within its mandate through the historical Kigali Amendment adopted in 2016 for the phase-down of HFCs. With this dynamic, several other elements are being identified for considerations during the forthcoming overlapped period of commitments that all developing countries will pass through i.e. phasing out the remaining consumption of hydrochlorofluorocarbons (HCFCs) while starting the phase-down of HFCs.

The High Ambient Temperature (HAT) countries' concerns continue to be addressed by UNEP and UNIDO, in cooperation with international partners through different assessment projects that offered opportunities for regional industry and governments to examine the feasibility of lower-GWP alternative refrigerants for air-conditioning industry and markets. The recent version of those projects i.e. PRAHA-II included a risk assessment study for the use of lower-GWP refrigerants with focus on the non-design elements i.e. installation, servicing and related handling practices.

UNEP and UNIDO in cooperation with ASHRAE are organizing an International Webinar on "**Alternative Refrigerants for High Ambient Temperature Countries**" The Webinar will be conducted twice in two different languages as follows:

- **Wed 10th June @ 2 pm CET/Paris time** – International version in English *(this session has ended)*
- **Wed 17th June @ 2 pm CET/Paris time** – French version

This Webinar intends to share the knowledge acquired from all relevant HAT assessment and research projects with emphasis on the research projects conducted by UNEP/UNIDO in relation to the technical feasibility of alternatives and building risk assessment models to ensure safe deployment of alternatives.

A pre-registration to the Webinar is needed through:
Register for the 17th June Webinar (French)
https://attendee.gotowebinar.com/register/8319743210651056396

2. Join the International webinar under the theme of 'Cold Chain 4 Life' on 26 June 2020

As part of 2020 celebrations of the World Refrigeration Day; the **WRD Secretariat**, **ASHRAE**, European Partnership for Energy and Environment (**EPEE**), International Institute of Refrigeration (**IIR**), **UNEP OzonAction,** and in cooperation with Global Food Cold Chain Council **(GFCCC);** are campaigning to address the importance of **Cold Chain** sector and its vital role to food safety and sectary as well as public health of human being. The joint Campaign is entitled: "**COLD CHAIN 4 LIFE**".

As part of these activities we are holding an International Webinar aiming at bringing the attention of public, policy-makers and end-users about technology, food waste/loss, health, environment and energy considerations associated with the Cold Chain sectors and advocating for best practices in relation to technology selection decision making, minimising food waste/loss in the supply chain process, stimulate wise selection of technology, minimise leakage of refrigerants and maximising energy efficiency. A detailed program for the event is attached.

We encourage you all to use the opportunity of WRD to raise awareness and understanding of the significant role that the refrigeration and air-conditioning industry, and the associated science and technology play in modern life and society in a safe and responsible manner that is fully compliant with local regulations and aligned to all safety measures. We welcome creative thinking and look forward to learning about the many ways you can promote our industry, its applications and careers.

Register for the webinar

Please share the details with relevant stakeholders in your country, such as:

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

3. Kigali Amendment latest ratification

Congratulations to the latest country which has ratified the Kigali Amendment this month:

Bangladesh, 8 June 2020

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

United Nations Treaty Collection

4. Overview for the meetings of the ozone treaties in 2020-2021

As the global COVID-19 pandemic continues to impact how we work for the foreseeable future, the Ozone Secretariat has reviewed the feasibility of the physical meetings of the ozone treaties scheduled for 2021-2021. After consulting the bureaux of the eleventh meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer and the Thirty-First Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, the co-chairs of the forty-second meeting of the Open-ended Working Group (OEWG42), as well as after extensive informal consultations with parties, a contingency plan for the ozone treaties meetings to be held in 2020 and 2021 has been developed.

Forty-second meeting of the Open-Ended Working Group (OEWG42)
The OEWG42 will not be convened as planned in Montreal from 13 to 17 July 2020. However, all the related meeting documents are being posted on the meeting portal as if the meeting were going to take place as scheduled. Instead, a technical online meeting on the presentation of the replenishment report by the Technology and Economic Assessment Panel (TEAP) task force will take place. This will comprise three identical sessions to accommodate the different time zones, from **14 to 16 July 2020**, with simultaneous interpretation in the six official UN languages.
Parties can choose to participate in any or all of the above sessions. A report will be provided for all three sessions, and the sessions will be recorded. Observers will be invited to attend and may choose to join any one of the three sessions.

An online forum will be established to allow the registered representatives of the parties to review the report by the Technology and Economic Assessment Panel on the replenishment of the Multilateral Fund and to submit questions and comments. At the online forum, parties

will also have the opportunity to review the report for the critical use nominations for methyl bromide prepared by the Methyl Bromide Technical Options Committee and submit their comments and questions online.

For more details on the OEWG42, click **here**

The joint twelfth meeting of the Conference of the Parties to the Vienna Convention and Thirty-Second Meeting of the Parties to the Montreal Protocol (COP12/MOP32)

Depending on the evolution of the COVID-19 pandemic, the Secretariat is preparing for the three following options:

- A face-to-face joint twelfth meeting of the Conference of the Parties to the Vienna Convention and Thirty-Second Meeting of the Parties to the Montreal Protocol (COP12/MOP32) scheduled to take place in late November 2020.
- A shorter face-to-face COP12/MOP32 reduced in duration and in number of agenda items scheduled for 8 to 11 November 2020 in Montreal, Canada.
- No face-to-face COP12/MOP32 meeting in 2020 with a brief online session to address critical issues including a path forward for the replenishment of the Multilateral Fund, the critical use exemptions for methyl bromide and the budgets for the two Trust Funds for the Vienna Convention and the Montreal Protocol.

Online meetings
Three identical technical sessions of three hours each with simultaneous interpretation in all six official UN languages will be held during which the Technology and Economic Assessment Panel (TEAP) replenishment task force will present its report at all three sessions. An online forum for comments and questions will be established ahead of the online sessions (see 'Information on the online forum' below).

- The first session will begin at **6 p.m. (Nairobi time)** on **Tuesday, 14 July 2020**, a time convenient for the countries in **zone 1.**
- The second session will begin at **12 noon (Nairobi time)** on **Wednesday, 15 July**, a time convenient for the countries in **zone 2.**
- The third session will begin at **8 a.m. (Nairobi time)** on **Thursday, 16 July**, a time convenient for the countries in **zone 3**.

The three sessions will all be chaired by the co-chairs of OEWG42, and each will include a question-and-answer section. Parties can participate in any or all of the above sessions. Report-writing will be provided for all three sessions, and they will all be recorded. Recordings can be shared on request. Observers will be invited to attend and may choose to join any one of the three sessions.
Table listing the division of countries into zones 1, 2 and 3 for the online technical sessions on replenishment.

Information on registration
Invitations will be sent out in the second week of June. The Secretariat would like to encourage participants to register as soon as possible, and well before the deadline of 26 June.

Registration will allow participants:

- to be issued with their individual meeting accreditation and login information for the online forum within 48 hours after they register; and
- to participate in quality assurance sessions between 15 June to 5 July to ensure accessibility and connectivity in the online technical meeting on the replenishment which will take place on 14, 15 and 16 July.

Information on the online forum

Replenishment of the Multilateral Fund

This dedicated forum has been established (**for access click here**) and the report will be posted in the second week of June for review and comments. Any initial comments and questions from the parties should be submitted through the online forum **by 6 July**. These may be viewed by all parties and will be shared with the TEAP task force.

The task force will address these initial questions and comments in its online presentation during the three online sessions. During the online sessions, participants may ask questions either by using the microphone, with interpretation, or through the meeting chat, in English only. After the final session on 16 July, the co-chairs of OEWG42 will give the parties a further two weeks to submit any additional questions and comments. These will be collated, and the document shared with the parties.

The TEAP task force will provide additional information and clarification in the form of a note only on any outstanding questions at that point in time. TEAP will not provide a supplementary report based on input raised by the parties. The consolidated document will serve as the basis for the discussions once the parties meet physically.

Critical-use nominations

A similar process will be established for submitting comments and questions on the report of the Methyl Bromide Technical Options Committee (MBTOC) on the critical-use nominations for methyl bromide. Interested parties may wish to review the report and submit comments and questions online through the dedicated forum **by 6 July**. MBTOC will be requested to provide written responses online to each comment and question through the Secretariat. The comments and responses will all be accessible by the parties. Based on the comments and questions received and following bilateral consultations with nominating parties to be held between 7 and 31 July 2020, MBTOC will prepare its final evaluation by the end of September. Information on further work will be communicated to all the parties in September.

Budgets of the two trust funds

A dedicated online forum will also be created for the documents to be prepared by the Secretariat regarding the budgets of the two trust funds. The respective documents will be posted on the forum **by 18 August**. Parties may wish to review the documents and submit comments and questions online. The Secretariat will provide written responses online to each comment and question. Information on further work will be communicated to all the parties in September.

Regional meetings and side events

To ensure equal participation and to make the online sessions as consultative and productive as possible, the Secretariat will be in a position to assist parties in organizing

regional consultation meetings online before the technical sessions. Should a regional group wish to organize such an online consultation, an email should be sent to Ms. Stephanie Haysmith (**stephanie.haysmith@un.org**). The Secretariat will be glad to set up a dedicated session for the group.

The Secretariat is planning to hold up to four side events in a limited capacity and format (max 50 people) on any of the three days 14, 15 and 16 July in hours that are not coinciding with the online technical sessions. Enquiries should be sent to Ms. Stephanie Haysmith (**stephanie.haysmith@un.org**). The Secretariat has already received requests for events whose details will be shared in the meeting portal.

5. 'Forever chemicals' are building up in the Arctic—and likely worldwide

Sea ice (*right*) is seen from NASA's Operation IceBridge research aircraft on March 29, 2017, above Ellesmere Island in Canada. Credit: Mario Tama *Getty Images*

An ice-core analysis reveals the chemicals that replaced ozone-depleting substances are leading to an increase of non-degradable compounds in the environment.

The Arctic can appear to be a pristine, isolated frozen land. But human pollution has reached even this remote corner of the world—which the World Wildlife Fund has called "**the chemical sink of the globe**." Now researchers have discovered that a virtually indestructible type of chemical has been building up in the region since the 1990s. The presence of these "forever chemicals" is undoubtedly growing worldwide, scientists say. And the potential impacts on the health of humans and ecosystems are not yet fully known.

The problem paradoxically started because of an effort to fix another environmental issue: the hole in the ozone layer. Under the 1987 Montreal Protocol, countries agreed to phase out ozone-destroying chemicals called chlorofluorocarbons (CFCs). But industry needed something to replace those substances, which were used in a vast range of products ranging from refrigerators to hair spray. Manufacturers turned to chemicals such as hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs).

When these replacements rise into the atmosphere, however, they react with other chemicals to form several types of substances known as short-chain perfluoroalkyl carboxylic acids (scPFCAs). These compounds then drop down and deposit on Earth's surface. Because of this process, scientists have suspected since the early 1990s that scPFCAs would increase in the environment. But until now, researchers did not have enough data to understand what was occurring with them over time. "We knew, in theory, it was going to happen. But we didn't know to what extent it was happening in the real environment," says Cora Young, an assistant professor of chemistry at York University in Toronto.

To see whether scPFCAs had started accumulating after the Montreal Protocol, Young and her colleagues sampled ice cores from two locations in the Canadian Arctic. Such samples can act as time capsules, recording the chemicals that fall out of the atmosphere and

become encased in the ice layers that build up year by year. The depth of the cores meant they covered several decades: one contained 38 years of ice, and the other had 50 years.

Through their analysis, Young and her colleagues found that the amount of scPFCAs in the Arctic has grown significantly, starting in 1990—right around the time the Montreal Protocol took effect. For example, she says that for one of the scPFCAs they looked at, the amount deposited in the Arctic every year is now 10 times greater than it was prior to the treaty. Through computer modeling and comparing trends in chemical production, the team also concluded that the replacement chemicals for CFCs were either the exclusive cause of this increase or one of its major sources. (The researchers found that the fluoropolymer industry, which produces chemicals for products such as nonstick pans, was another source of scPFCAs.) Their results were published in April in *Geophysical Research Letters*.

Young notes that even though the study only examined Arctic ice cores, scPFCAs are inevitably present in environments all over the planet. That situation is because their precursors—the replacement chemicals—are in the atmosphere worldwide, as are the chemicals that react with them. “If we're seeing [scPFCAs’] accumulation in the Arctic, that means they’re accumulating everywhere,” Young says. This buildup is potentially problematic, because scPFCAs are extremely persistent chemicals. “They are characterized by carbon-fluorine bonds, which are the strongest single bonds that can be formed,” she explains. “The bonds are so strong that there aren’t really any environmental processes that can break them down.” Any scPFCAs that accumulate in the environment will be there for thousands of years, Young says.

There is some disagreement over the potential toxicity of the scPFCAs looked at in the study. Some experts say they are not a hazard for organisms until they reach much greater amounts than currently exist in the environment. “From what we know now, they’re not toxic at the levels observed or bioaccumulative [capable of building up] in wildlife or humans,” says Ian Cousins, a professor of environmental organic chemistry at Stockholm University in Sweden, who was not involved in Young’s paper. “So it’s unlikely that they’re going to cause any toxic effect on humans or other organisms until they accumulate to a much higher level.” He does note, though, that researchers may discover something new about their toxicity in the future. Chemical industry representatives say that at least one of the study’s identified scPFCAs, called trifluoroacetic acid (TFA), is not problematic. “Previous scientific studies have shown that TFA [presents] negligible risk to organisms higher on the food chain, including humans,” wrote the **European Fluorocarbons Technical Committee (EFCTC)**, which represents fluorocarbon manufacturers in Europe, in a statement to *Scientific American*. “They do not bio-concentrate in aquatic organisms, and do not bio-magnify in the food chain.” The EFCTC did call the study “robust in general.”

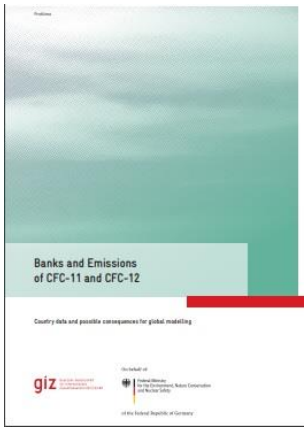
Other experts think there has not been enough research to truly understand whether scPFCAs may be toxic—in particular, at low-dose, chronic levels of exposure. “If [these chemicals] are in the environment for a long period of time, humans and organisms will be continually exposed,” says Jamie DeWitt, an associate professor of pharmacology and toxicology at the Brody School of Medicine at East Carolina University, who was not involved in the April study. “The question is: Is the low concentration in the environment, with consistent exposure, sufficient to overwhelm the body and produce toxicity? That is not known.” That lack of information is because these types of studies are very difficult to conduct. John Ferry, an environmental chemist at the University of South Carolina, who was also not involved in Young’s recent research, agrees that the potential impacts of scPFCAs are not fully known yet. “The fact that studies today don’t necessarily show

anything—it's hard to say how important that really is," he says. "Even if an effect may be unknown today, [that] doesn't mean it will be unknown tomorrow."

Ultimately most experts seem to agree that scPFCAs' extreme persistence is concerning. "I don't think it's a good idea to release these kinds of substances where they never degrade," Cousins says. "You can be sure that if you continue releasing them, there will be an effect sooner or later that's going to be problematic. And then you have to wait a long time for that effect to stop, because you can't reverse the contamination."

Scientific American, 12 June 2020, By Annie Sneed

6. Banks and emissions of CFC-11 and CFC-12



Country data and possible consequences for global modelling

Chlorofluorocarbons (CFCs) were widely used as refrigerants and foam blowing agents. During its peak consumption in the 1990s, it is estimated that up to 430 kilo tonnes of CFC (GIZ, 2018) were added to the bank annually. CFCs are ozone depleting substances (ODS) and their bank is defined as the amount of substance contained in appliances and other products that have not been released to the atmosphere yet[1].

Due to the CFC phase-out, accomplished under the Montreal Protocol within non-Article 5 (nA5) countries in 1996 and Article 5 (A5) countries in 2010, the CFC bank is not increasing any longer. However, the size of the CFC bank in foam products (and to a lesser extend in refrigeration and air conditioning equipment) is believed to be still considerable. Several models estimate the remaining CFC bank on a global scale (Ashford et al., 2004) in the Assessment Reports of the Rigid and Flexible Foams Technical Option Committee (FTOC, 2006, 2010, 2014, 2018; GIZ, 2018). Nevertheless, the assumptions of those models, although state of the art in terms of chemical behaviour, often disregard (lack of adequate) recycling practices, resulting in several uncertainties. Thus, the debate on the remaining CFCs in banks, and the resulting emissions, is still ongoing. [...]

Approach of this study
This study investigates the currently applied assumptions of global CFC banks models and compares it with data collected in specific countries. The assumptions used in the global ODS banks model presented in the paper "Global banks of ozone depleting substances – A country-level estimate"(GIZ 2018), further referred to as "our model", are reviewed in the light of the findings from country specific ODS bank inventories.

Further, assumptions made by the TEAP in its foam bank model are researched and compared. Additional research on CFC contained in discarded refrigerator and building foams are carried out in selected individual countries within this study. Based on these findings, a sensitivity analysis of identified ranges of assumptions is carried out. The results are intended to illustrate possible ranges of existing CFC banks and the related emissions. The focus of this study is CFC-11 in building foams and appliance foams. CFC-12 is studied

as blowing agent of Extruded Polystyrene (XPS) foam boards, which are also used as building foam. Refrigerators containing CFC-11 in the foam, usually contain CFC-12 as refrigerant. CFC-11 that is still used in some centrifugal chillers is not included in this study.

The banks of the refrigeration and air-conditioning (RAC) sector are defined as the refrigerant contained in RAC appliances in use, while the insulation foam used in RAC appliances is part of the foam bank. [...]

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Study, June 2020

7. Lower-GWP refrigeration & air conditioning innovation award

What is lower GWP refrigeration and air-conditioning innovation award?
The award promotes innovative design, research, and practice, recognizing individuals and teams who have developed or implemented innovative technologies or concepts. Projects must be implemented or conceived specifically for use in developing countries and be aimed at advancing lower global warming potential (GWP) refrigerants.

Who are the awarding organizations?
Award recipients will be recognized by ASHRAE and UN Environment Programme.
How often is the award issued/awarded?
Annually.

What are the award categories?
Projects can be entered into one of two categories:
• Residential Applications
• Commercial/Industrial Facilities

What is the entry criteria?
The award is open to individuals and to teams of individuals. If submission is by an individual, individuals must confirm the work was not a team effort. If a team of individuals is selected, the team itself shall determine which team members shall be entitled to be certificated (maximum 5 per team). All awards will be made in the name of individuals, not in the name of their affiliations.

ASHRAE membership is not a requirement for submission.

How do I enter for the award?
To enter, please go to the link below and fill out the online form.
www.ashrae.org/lowerGWP

The submission form requires descriptive responses to each of the following:

- Description of innovation in the field of lower-GWP refrigerants
- Project details (description must include confirmation project has been implemented
  and date of implementation)
- Extent of need
- Description and goal of the research, design, practice or project
- Environmental impact achieved including specific reference to the GWP chemicals' contribution
- Further application(s) of project in developing countries from both the technical and economic perspectives, including how the innovation can be replicated
- Photographs illustrating the project, as well as statistical data demonstrating the project's successful performance or experimental findings (tables, figures, charts, etc.) are encouraged to be provided with the application.

How are the projects selected?
Projects in each category will be selected based on innovative solutions for designs, practice, or research using lower-GWP technologies. The selection will take into account the following criteria:
• Innovative aspects in transforming conventional practices (40%);
• Extent of need (25%);
• Technical replicability in developing countries (25%); and
• Economy feasibility for developing countries (10%).

What happens to the selected projects?
Selected entries in each category will be publicized by both ASHRAE and the UN Environment Programme.
When does the entry period opens and closes?
Entries are now being accepted. **Entry period closes 1 September 2020**. Click **here** to learn more and to complete an online entry form. To receive updates about the awards, please send an **email** to request to be added to our mailing list.

8. UNEP OzonAction encourages everyone to celebrate 'World Refrigeration Day 2020'

World Refrigeration Day (WRD) is an international commemorative day that raises awareness about the refrigeration and air-conditioning industry and its contribution to modern life, as well as its connection to key societal objectives including mitigating climate change, protecting the ozone layer, and achieving the sustainable development goals (SDGs). Inaugurated in 2019, the initiative is well recognized and supported by leading industry associations and organizations around the globe, as well as governments and non-governmental organisations.

WRD is organized each year on 26 June, the birth date of Lord Kelvin after whom the Absolute temperature scale (the "Kelvin Scale") is named. UNEP OzonAction was one of the early supporters of this commemorative day where if offered platform for announcing it

to governments at the inter-regional network meeting of Ozone Officers, February 2019, and supported the celebration of the first edition of this awareness-raising event.

This year, UNEP OzonAction, the **WRD Secretariat**, **ASHRAE**, the **European Partnership for Energy and Environment** (EPEE), and the **International Institute of Refrigeration** (IIR) are partnering to promote a global campaign centered around the theme of the Cold Chain. This topic has generated great interest in recent years given its multi-dimensional contribution to key issues including Food Safety/Food Security, Health, Climate Change/Ozone Protection, Sustainable Production/Consumption, and others.

The Food Cold Chain can best be defined as the series of actions and equipment applied to maintain a product within a specified low temperature range from harvest/production to consumption, including farming/fishing, food processing, cold storage, transportation, food services, and domestic uses.

The 2020 campaign, which is being organized under the slogan "Cold Chain 4 Life", aims at building knowledge and raising awareness amongst three different groups:

- General Public: consumers and direct beneficiaries of services/products offered through the cold chain.
- Policymakers: governments and authorities responsible for drafting and implementing relevant strategies and regulations.
- Owners/Operators: decision makers in terms of technology selection and operational procedures of different technologies required for cold chain processes.

"World Refrigeration Day is a great opportunity for all of us to celebrate the tremendous contribution that refrigeration and air conditioning makes to our societies. This includes enabling our agricultural and food systems to harvest, store, transport and sell the foods that nourish us all. The food cold chain is what makes this possible," said James Curlin, Acting Head of UNEP OzonAction, *"We encourage everyone to organize your own national or local WRD celebrations on 26 June to shine light on great work of the refrigeration and air conditioning sector, which is so vital for the success of the **Montreal Protocol.**"*

National Ozone Units, national associations and industry groups, companies and professionals working in the refrigeration and air conditioning sector, schools and individuals can all join in the activities.

You are all invited to join the "Cold Chain 4 Life" campaign by organizing relevant events/functions or using the resources which the campaign will offer soon. Please follow-us on the OzonAction web site and through the WRD web site and associated social media tools.

Cold Chain 4 Life is an international campaign organized by the WRD Secretariat, UNEP OzonAction, ASHRAE, IIR and EPEE to help governments, organizations, companies and media promote World Refrigeration Day 2020. The Web-Ads (banners) available through below links may be used free of charge in websites and other media providing the they are not altered; logos and other branding are not added; that the they are not used in ways which state or imply endorsement of a brand, product or service by the WRD Secretariat or the campaign's organizers.

The United Nations Environment Programme, OzonAction, April 2020

See also article no. 2 above, and Join the International webinar under the theme of 'Cold Chain 4 Life' on 26 June 2020

As part of 2020 celebrations of the World Refrigeration Day; the **WRD Secretariat**, **ASHRAE**, European Partnership for Energy and Environment (**EPEE**), International Institute of Refrigeration (**IIR**), **UNEP OzonAction,** and in cooperation with Global Food Cold Chain Council **(GFCCC);** are campaigning to address the importance of **Cold Chain** sector and its vital role to food safety and sectary as well as public health of human being. The joint Campaign is entitled: "**COLD CHAIN 4 LIFE**".

Register for the webinar

AFRICA

9. Environmentally harmful dumping of inefficient and obsolete air conditioners in Africa

New Report Identifies Four Major Sources of Environmental Dumping of RACs in Ten African Countries Presents evidence of the environmental dumping of inefficient, high-GWP RACs into the African market; recommends steps for policymakers to mitigate problem

The demand for air conditioners that provide thermal comfort is steadily growing across the African continent as consumers seek to improve their quality of life in the face of urbanization and rising global temperatures. Since 2016, Africa's market for new split room air conditioners (RACs) has grown by approximately 5%, annually.[1]

As manufacturing and industrialized economies place increasingly stringent standards on RACs sold domestically, while allowing continued export of technology that cannot legally be sold in the country of export as a consequence of failure to meet environmental, safety, energy efficiency, or other product standards, importing countries risk becoming dumping grounds for inefficient, environmentally harmful products using obsolete refrigerants. Weak or non-existent energy performance standards and the lack of proactive anti-environmental dumping policies in many African countries have facilitated environmentally harmful dumping[2] of inefficient, high-global warming potential (GWP)[3] cooling products into African markets.

In advance of World Refrigeration Day, CLASP and the Institute for Governance & Sustainable Development (IGSD) will release[3] Environmentally Harmful Dumping of Inefficient and Obsolete Air Conditioners in Africa´ on 24 June 2020. The report is a wide-ranging review of RAC markets in Africa, the sources of environmental dumping of inefficient, high-GWP products, and the trade and policy factors that enable such practices. The report provides recommendations for policymakers looking to halt environmental dumping and set in motion a transition to highly-efficient, low-GWP RACs.

Webinar

CLASP and IGSD will host a webinar on 1 July, 10 am EDT to present the findings of "**Environmentally Harmful Dumping of Inefficient and Obsolete Air Conditioners in Africa.**"
Pre-registration is necessary for this event. **Register here**

Agenda	Speaker	Time
Introduction	Gabrielle Dreyfus, IGSD	10 minutes
Presentation of Report	Rebecca Schloemann, CLASP	30 minutes
Q&A	All Speakers	20 minutes

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1 Euromonitor 2019.
2 Environmentally harmful dumping is the practice of exporting products to another country or territory that: 1) Contain hazardous substances; 2) Have environmental performance lower than is in the interest of consumers or that is contrary to the interests of the local and global commons, or; 3) Can undermine the ability of the importing country to fulfill international environmental treaty commitments.´
See Andersen, Stephen O., Ferris, R., Picolotti, R., Zaelke, D., Carvalho, S., Gonzalez, M. (2018). Defining the legal and policy framework to stop the dumping of environmentally harmful products. Duke Environmental Law & Policy Forum: Vol. XXIX:1, at 9, available **here**
3 Throughout the report, CLASP will refer to the GWP of refrigerants. To align with Montreal Protocol tracking, CLASP uses IPCC AR4 100-year GWP values. **Link**

10. African HVAC&R associations unite in new group

The Union of Associations of African Actors in Refrigeration and Air Conditioning has 25 members in 24 countries.

A new HVAC&R industry association has seen the light of day in Africa – the Union of Associations of African Actors in Refrigeration and Air Conditioning (U-3ARC).

The new union has 25 associations as its members, from 24 African countries. Participating countries include Benin, Burkina Faso, Burundi, Cape Verde, Chad, Ivory Coast, Djibouti, Kenya, Lesotho, Mali, Morocco, Nigeria, Democratic Republic of the Congo, Rwanda,

Senegal, Togo, Tunisia, Uganda, Zambia, Zimbabwe, according to the Italian Association for refrigeration technicians (ATF).

The new union, which has chosen “the cold, the key to sustainable development” as its slogan, is modeled after AREA, the European association of refrigeration, air conditioning and heat pump contractors. Its first meeting was held on May 17, and U-3ARC’s first General Assembly will be held in Ouagadougou, Burkina Faso, on September 24-26.

AREA and ATF have both expressed support for the new organization. “We look forward to seeing how we can support the development of this Union and working together to achieve our common goal of advancing the refrigeration, air conditioning and heat pump industry,” AREA said on its website.

U-3ARC’s first president will be Madi Sakande from Burkina Faso. Sakande is the General Manager of Italian OEM New Cold System Srl, a teacher at Italian Centro Studi Galileo, Master Trainer for the UNEP Refrigeration Driving License Project, and active in the promotion of World Refrigeration Day. Sakande will serve alongside a board of nine members.

hydrocarbons21, 12 June 2020, By: Tine Stausholm

ASIA PACIFIC

11. China consults on regulation revisions as it prepares for HFCs phase-down

List of restricted or prohibited ozone-depleting substances to be published

China’s Ministry of Ecology and Environment (MEE) is consulting until 22 June on revisions to its regulation for ozone-depleting substances that will bring hydrofluorocarbons (HFCs) into its scope.

The move is part of China’s commitment to begin phasing down the production and consumption of HFCs from 2024 under the Kigali amendment to the Montreal Protocol.

HFCs are substances that have traditionally been used as replacements for ozone-depleting substances such as chlorofluorocarbons (CFCs) but are considered to contribute to global warming. China is the largest global producer of HFCs.

Chemical Watch, 4 June 2020 *[full article available for registered readers]*

12. Air conditioning company fined for HCFC importation and storage offences

A Victorian based company that imports, manufactures and supplies air conditioning equipment has been fined $12,600 by the Department of Agriculture, Water and the Environment for importing bulk hydrochlorofluorocarbon (HCFC) without a controlled substances licence.

Importing HCFC without a licence is an offence under the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 (the Act), which is in place to protect the environment by reducing emissions of ozone depleting substances and synthetic greenhouse gases.

Since 1 January 1996, importers and exporters of bulk HCFC who hold a controlled substances licence, have been required to hold to a HCFC quota.

The substance, identified as HCFC-22/R-22, was supplied by an overseas equipment manufacturer to fill uncharged equipment it had shipped to the company. The company holds an equipment licence to import equipment charged with scheduled substances. However, a controlled substances licence and HCFC quota must be held to import or export bulk quantities of HCFC.

The company was also fined for using disposable cylinders for storing R-22. This was in contravention of the company's Refrigerant Trading Authorisation conditions – an offence under the Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995.

Disposable cylinders containing scheduled substances such as R-22 are banned in Australia. These types of cylinders cannot be refilled, which means a residual 'heel' amount of gas can remain in the containers and can enter the atmosphere once disposal of the cylinder occurs.

A priority compliance focus for the department is to reduce emissions of synthetic greenhouse gases and ozone depleting substances. The company has paid the infringement notices and is now complying with licensing requirements and conditions.

Australia is a signatory to the Montreal Protocol on Substances that Deplete the Ozone Layer, as well as the United Nations' Framework Convention on Climate Change.

HCFC is a type of ozone depleting substance, has been commonly used in residential and commercial refrigeration and air conditioning systems since the 1990s, following the phase out of chlorofluorocarbons (CFCs) in 1995. R-22 is also a potent greenhouse gas and has a global warming potential 1,810 times greater than carbon dioxide.

HCFCs have been replaced with new equipment types which operate on refrigerants that do not damage the ozone layer. Since 1 January 2020, under strict phase out measures, importers can no longer import HCFC equipment, or equipment designed to operate solely on HCFCs, unless an exemption is held.

The department and the Australian Refrigeration Council work together to promote voluntary compliance with the Act and regulations by encouraging businesses and

individuals to understand and comply with their obligations. This includes holding required licences and permits, meeting relevant conditions and not importing or using disposable cylinders for the storage of scheduled substances.

For more information about the ozone protection and synthetic greenhouse gas program, visit the department's website at **www.environment.gov.au/protection/ozone**

For more information about the refrigeration and air conditioning permit scheme, visit the Australian Refrigeration Council website at **www.arctick.org**

NORTH AMERICA

13. Colorado joins other states in phasing out harmful HFCs

On May 22, Colorado joined a handful of other states that are starting to phase out hydrofluorocarbons (HFCs) in an effort to curb greenhouse gas emissions and meet the state's aggressive emission reduction goals by 2050.

Introduced in the 1980s, HFCs helped save the ozone layer as a replacement for chlorofluorocarbons (CFCs), the use of which led to stratospheric ozone depletion and the notorious ozone hole over the Antarctic. Synthetic refrigerants currently used in most air conditioning and refrigeration systems, HFCs were proven not to damage ozone, and at the time, climate change really wasn't on the radar for most of us.

"Then it's found out that these replacements, pollutants basically, are greenhouse gases. So, unfortunately, they're causing a different problem," says Cindy Copeland, air and climate policy specialist with Boulder County Public Health.

Boulder County, as a member of Colorado Communities for Climate Action and the Local Government Coalition networks, was a formal party to the rulemaking at the Air Quality Control Commission, which passed the new regulations. At the same meeting, the Commission also updated its greenhouse gas inventory process in an effort to provide a more frequent and accurate understanding of the state's emissions.

HFCs, although released in much smaller quantities, trap significantly more heat in the atmosphere compared to an equivalent amount of carbon dioxide. According to the international Climate and Clean Air Coalition, HFCs are 1,430 times more damaging than the CO_2 equivalent and remain in the atmosphere up to 29 years. What's more, HFC emissions are growing at a rate of 10-15% per year. Replacing them could help avoid 0.1 degree Celsius of warming by 2050 and phasing them out altogether could avoid 0.5 degrees of warming by 2100.

"These are really potent [short-lived] climate forcers and at small concentrations, they actually harm the climate significantly," says Christina Theodoridi, a technical analyst who specializes in chlorinated gases like HFCs and CFCs with the Natural Resources Defense Council (NRDC). "And that is one of the main reasons why it's important to curb their emissions early on and make sure that the alternatives are being used instead of these very potent greenhouse gases."

The Environmental Protection Agency has an approved list of alternatives for HFCs as part of its program to phase out their use in most sectors by 2024, under the Clean Air Act. However, the phase-out has been stalled by federal litigation. Additionally, although President Barack Obama signed onto an international agreement to reduce HFC consumption 80% by 2047, he didn't have time to bring it to Congress for ratification before leaving office. The Trump administration has yet to pick it back up. Recently legislation was introduced in Congress to consider federal action anyway.

"So this is still in limbo," Theodoridi says.

Which is why Colorado, coordinating with the U.S. Climate Alliance, a coalition of states committed to meeting the goals of the Paris Agreement, took matters into its own hands, and initiated the phase-out of HFCs. According to Theodoridi, it is the fifth state to do so, although several other states have proposed actions and still more are interested.

"Of course, it would be nice if the federal government stepped up and offered some leadership on issues like phasing out HFCs," says Jacob Smith, executive director of Colorado Communities for Climate Action. "But in the absence of that kind of federal leadership, then it's up to the states to make things happen. And the more states that step up individually and adopt phase-out, like Colorado just did, the sooner that momentum builds, the sooner the industry is going to want to switch anyway, the cheaper the alternatives will become."

With improved technology, substances like ammonia and CO_2, which were previously thought too toxic or harmful, are now recommended alternatives, Theodoridi says. There are also newly developed synthetic materials which, so far, have been deemed better than HFCs.

The idea is, "Let's stop using something that we know has a huge planet impact, especially when there are alternatives that have a much-reduced impact," Smith adds. "And then that buys us some time and we can figure out what might be the best long-term answers."

The regulations passed by the Air Quality Control Commission are the first the body has taken to directly address climate change, and the hope is it will lead the way for more rulemakings in the future. It goes without saying that much more drastic measures still need to take place to effectively address climate change.

"We see this as one step," Copeland says. "But it's not going to make the state meet all of the goals that were laid out by the legislature."

Boulder Weekly, 4 June 2020, By: Angela K. Evans

EUROPE & CENTRAL ASIA

15. El camino de la refrigeración hacia la sostenibilidad: nuevos gases, eficiencia y tecnologías disruptivas

El sector del frío está viviendo lo que quizá es la mayor evolución tecnológica de su historia. La introducción de nuevos gases refrigerantes, la eficiencia energética y las tecnologías disruptivas son las tres grandes áreas que marcan la diferencia entre el pasado y el futuro de la refrigeración. Ambas definen un sector prometedor que presenta muchas oportunidades de futuro para amplios perfiles profesionales, pero que puede verse lastrado si no hay un control serio del mercado negro y del intrusismo profesional.

La refrigeración va a ser, cada vez más, natural y sostenible. Por ello, los nuevos gases refrigerantes van de la mano con la evolución en las arquitecturas sobre las que se construyen las instalaciones frigoríficas. La labor de las empresas del frío es aportar soluciones a los retos del planeta y, por eso, se han adaptado a los nuevos requerimientos de reducción de emisiones y eficiencia energética. Para ello, convergen diferentes tecnologías capaces de dar respuesta a muy distintas necesidades, desde la condensación por agua en sistemas descentralizados, a los diferentes sistemas que usan CO2 con variados tipos de eyectores, pasando por el uso del propano y del amoniaco con cargas reducidas y compactas.

Este tipo de refrigerantes y de sistemas frigoríficos han sido la contundente respuesta de las industrias a la necesidad de reducir las emisiones de gases de efecto invernadero a la atmósfera, presentando niveles de Potencial de Calentamiento Atmosférico muy bajos. En paralelo, el compromiso con la eficiencia energética se manifiesta, además, a través de desarrollos relacionados con la acumulación energética, el ecodiseño, las cortinas cada vez más sofisticadas en las cámaras o con la compacidad aplicada al diseño de la refrigeración.

En este campo, el análisis de los costes del ciclo de vida de las instalaciones, incluyendo diseño, instalación, pérdidas de productos, explotación con mantenimiento y funcionamiento, va a ser muy pronto una constante en todas las memorias y fichas técnicas de los equipos y proyectos. De hecho, se trata de una información imprescindible para aplicar con garantías la economía circular y, cada vez más, va a ser un argumento de venta ya que el usuario final necesita de equipamientos que le ayuden a cumplir con sus propios objetivos energéticos.

Cinco tecnologías que definirán el futuro de la refrigeración

La ingeniería da la mano a la tecnología para alcanzar la integración de las tecnologías disruptivas en procesos de refrigeración en unos desarrollos que modelarán el desarrollo de la refrigeración a corto y medio plazo. Las cinco tecnologías esenciales con las que se está ya trabajando y que experimentarán un desarrollo fundamental en los próximos años son el block chain, el internet de las cosas (IoT), la inteligencia artificial (AI), el big data y la realidad aumentada.

Todas ellas tienen una influencia importante en el objetivo de eficiencia energética y en el ahorro de costes de las empresas. Pasar del control manual al control automático significa dotar a la instalación de la capacidad de realizar una correcta regulación de forma automática con el objetivo de mantenerla siempre próxima a los parámetros de funcionamiento, fiabilidad y eficiencia energética óptimos. Si damos un paso adelante, el funcionamiento correcto se traduce en rentabilidad económica para el cliente y para la propia empresa instaladora o mantenedora. Y, en definitiva, en un argumento de venta para el fabricante.

El gran reto consiste en la gestión de la gran multitud de datos que los sistemas informáticos pueden proporcionar: las estadísticas, el histórico de la evolución de los parámetros, las gráficas detalladas del funcionamiento de cada uno de los componentes, los índices de rendimiento energético y un largo etcétera. La inclusión de la realidad aumentada con la utilización de simuladores de forma simultánea a la adquisición de datos, permitirán nuevos niveles de aproximación a los parámetros óptimos. Por ello, aparece aquí un nuevo perfil profesional para trabajar en el sector del frío, el cual debe tener la capacidad de interpretar estos datos y convertirlos en información y conocimiento que sirva de apoyo tanto a los desarrollos técnicos del portfolio de producto de la compañía como al crecimiento del negocio.
A la vez, aunque de forma lenta, el cambio de mentalidad en todo el sector productivo de la refrigeración, como entre los consumidores de la misma se está produciendo de forma constante y segura generando un clima proclive a la introducción de todos estos cambios e inclusión de todas estas tecnologías.
Caloryfrio, 12 Junio 2020, Escrito por Félix Sanz

16. Inform the upcoming EU F-Gas revision, complete this survey

The current EU F-Gas Regulation is due for an update and the consultation process is already underway. This is a golden opportunity for the more progressive HVAC&R industry to influence the “new” regulation in favor of a more sustainable future.

shecco’s Market Development division, ATMO Intelligence, invites air-conditioning and refrigeration stakeholders to participate in a survey that assesses the previous F-Gas Regulation, sector by sector, while also looking into what should be included in the revision.

You will be asked to assess the effects of the current regulation while also giving input into how ambitious the next update should be. You can select the sectors you are active in and complete a custom survey based on your interests.

The survey should take no more than 15-20 minutes.

Take the survey

5th Edition of Europe and Central Asia (ECA) Montreal Protocol Award for Customs and Enforcement Officers for 2019-2020

The United Nations Environment Programme, OzonAction, in cooperation with the World Customs Organization and the Ozone Secretariat, has launched the fifth edition of the ECA Montreal Protocol Award for Customs and Enforcement Officers for the period 2019-2020. Nominations forms are available in English and Russian and the award ceremony is scheduled for 2021. The award is part of the work programme of OzonAction's Regional Montreal Protocol Network for Europe and Central Asia (ECA network).

The award recognizes the crucial role of customs & enforcement officers in implementing trade restrictions and bans for hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs). Both groups of chemicals, which are controlled under the Montreal Protocol on Substances that Deplete the Ozone Layer, are widely used as refrigerants and foam blowing agents in the refrigeration, air conditioning and foam blowing sectors.

The informal Prior Informed Consent (iPIC) system allows trade partners to confirm the legitimacy of an intended trade in controlled substances prior to issuing import / export licenses. More information on iPIC is available **here**

The award aims to recognize and offer encouragement to customs and enforcement officers and their respective organizations for successful prevention of illegal or unwanted trade in HCFCs / HFCs. This also includes equipment or products containing or relying on the use of HCFCs / HFCs.

Eligible nominees include customs and enforcement officers and / or their respective organizations who have been directly involved or instrumental in preventing illegal or unwanted trade in HCFCs / HFCs as well as equipment or products containing or relying on the use of HCFCs / HFCs.

Eligible enforcement actions include the detection of an illegal shipment and the subsequent seizure, detention or sending back of the disallowed goods, as well as successful iPIC consultation preventing the issuance of export / import licenses for illegal or unwanted shipments.

Enforcement actions are eligible if they have not been submitted to any other award schemes.

Geographical scope and time period

Eligible countries include those in the Europe and Central Asia (ECA) region including countries with economies in transition (CEIT countries) and Western European countries as well as their trading partners.

Eligible enforcement actions must have taken place during the period: 1 January 2019 – 31 December 2020.

Completed nomination forms with detailed and comprehensive case descriptions and supporting photos and documents should be received by the United Nations Environment Programme as soon as possible but **at the latest by: 31 January 2021**.

Learn more >>>

FEATURED

OZONE SECRETARIAT

Ozone for life: 35 years of ozone layer protection

World Ozone Day, held on September 16, the world celebrates 35 years of the Vienna Convention and 35 years of global ozone layer protection.

Learn more

Overview for the meetings of the ozone treaties in 2020-2021

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

- **31st Meeting of the Parties to the Montreal Protocol,** 4 - 8 November 2019, Rome, Italy
- **Bureau Meeting of the 30th Meeting of the Parties to the Montreal Protocol,** 3 November 2019, Rome, Italy
- **63rd Meeting of the Implementation Committee under the Non-Compliance Procedure of the Montreal Protocol,**, 2 November 2019, Rome, Italy

United Nations Treaty Collection

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

The UN Environment Assessment Panels

The Assessment Panels have been vital components of ozone protection since the Montreal Protocol was first established. They support parties with scientific, technological

and financial information in order to reach decisions about ozone layer protection and they play a critical role in ensuring the Protocol achieves its mandate. The Assessment Panels were first agreed in 1988 to assess various direct and indirect impacts on the ozone layer. The original three panels are:

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

In the past there were 4 main panels. The Panels for Technology and Economic Assessments were merged in 1990 into one Panel, now called the Technology and Economic Assessment Panel.
Why are the three current panels important to ozone layer protection? Each carries out assessment in its respective field. Every four years, the key findings of all panels are consolidated in a synthesis report.

THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL

Provisional agenda of the 85th meeting of the Executive Committee


UNITED NATIONS

EP

United Nations Environment Programme

The Eighty-fifth Meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, has been postponed due to the coronavirus disease (COVID-19).

The 85th meeting has been postponed until immediately after the 42nd meeting of the Open-ended Working Group (OEWG), and will be held in Montreal for a duration of four days, from 19 to 22 July 2020, on the understanding that the meeting might be further postponed or cancelled in light of the evolution of the COVID-19 pandemic.

Provisional Agenda

The Multilateral Fund for the Implementation of the Montreal Protocol, April 2020

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

Recent meetings:

- **84th meeting of the Executive Committee**
- **83rd meeting of the Executive Committee**
- **82nd meeting of the Executive Committee**
- **Executive Committee Primer – 2019** - An introduction to the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol

OZONACTION

COVID-19 pandemic: Letter from James S. Curlin, Acting Head, OzonAction, to the National Ozone Officers - On behalf of the United Nations Environment Programme (UNEP) OzonAction, I would like to express our deep appreciation to your country for its continued high-level commitment to implement the Montreal Protocol on Substances that Deplete the Ozone Layer, including during very challenging times such as what the world is now facing with the COVID-19 pandemic. I would like to re-assure you that during this very difficult period, OzonAction's Compliance Assistance Programme (CAP) – like the rest of UNEP – remains open for business. Our CAP teams in Bangkok, Manama, Nairobi, Panama City, and Paris continue to work with great dedication and diligence to support Article 5 countries with meeting their compliance, reporting and project-related needs. Our internal processes are all functioning well, including those related to finance and administration. Our CAP teams continue to provide technical and policy support. Our information clearinghouse, capacity building services, and refrigeration and air conditioning partnerships are still developing and distributing tools and information to support your work. [...] **Read/download**

IIR and UNEP OzonAction release the French and Spanish versions of the 'Cold Chain Technology Briefs' - As part of their cooperation to support the needs of different stakeholders in developing countries to fulfil their commitments under the Montreal Protocol, the International Institute of Refrigeration (IIR) and UNEP OzonAction today released the French and Spanish versions of their popular Technology Briefs on the Cold Chain. The original English versions are also available for download from the OzonAction website.

Download:

- **Cold Storage and Refrigerated Warehouse**
- **Commercial, Professional and Domestic**
- **Fishing Vessel Application**
- **Refrigeration in Food Production and Processing**
- **Transport Refrigeration**

The new updated OzonAction GWP-ODP Calculator Application "Quickly, efficiently and accurately convert between values in metric tonnes, ODP tonnes and CO_2-equivalent tonnes"

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

What's new in the app:

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

- New refrigerant mixtures (with ASHRAE -approved refrigerant designations)

The new and updated UNEP OzonAction ***GWP-ODP Calculator*** application will help you to convert between values in metric tonnes, ozone depleting potential (ODP) tonnes and CO_2-equivalent tonnes of substances controlled by the Montreal Protocol and their alternatives.
This application, available at no cost, is particularly useful for National Ozone Officers to assist with understanding and calculating quantities of controlled substances, both pure substances and mixtures, for quota assignment, reporting requirements, etc. Other stakeholders interested in ODP and global warming potential (GWP) values of controlled substances and their alternatives will also find this tool useful.
Operation of the application is very simple — just select a substance from the dropdown list and enter the known value in the appropriate field; the calculator will automatically perform the conversion between metric tonnes, ODP tonnes and/or CO_2-equivalent tonnes and display the corresponding converted values. The ODP, GWP and information about the substance is provided. For mixtures, the components of the mixture and their relative proportions (metric, ODP, CO_2- equivalent tonnes) are also calculated.
The updated ***GWP-ODP Calculator*** application now includes a new Kigali Amendment mode. The app can now be used in two different modes: the regular "Actual Values" mode and the "Kigali Amendment" mode. In the Kigali Amendment mode, the GWP values provided are those specified in the Kigali Amendment to the Montreal Protocol, i.e. GWP values are only assigned to controlled HFCs. In this mode the GWP values used to calculate the refrigerant blends/mixtures only include GWP contributions from components that are controlled HFCs. The user can effortlessly switch between modes.
The OzonAction GWP-ODP Calculator uses standard ODP values and GWP values as specified in the text of the Montreal Protocol to make the conversions. Other ODP and GWP values from the recent reports of the Montreal Protocol Technology and Economic Assessment Panel and Scientific Assessment Panel as well as the Intergovernmental Panel on Climate Change (IPCC) are used when appropriate, with references to sources of all values used. The app includes new refrigerant mixtures (with ASHRAE- approved refrigerant designations).
This application is designed primarily for use by Montreal Protocol National Ozone Units and other related stakeholders. The application was produced by UN Environment Programme (UNEP) OzonAction as a tool principally for developing countries to assist them in meeting their reporting and other commitments under the Protocol and is part of the OzonAction work programme under the Multilateral Fund for the Implementation of the Montreal Protocol.
If you already have the application installed on your device, be sure to update to benefit from the new features. The app can be viewed in English, French or Spanish.

Using the application:

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

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

Watch the new short introductory tutorial **video** on the *GWP-ODP Calculator* - available now on **YouTube**
Read/download the **flyer** for more information

The UNEP OzonAction WhatGas? application has been updated and improved

New features:

- An updated more user-friendly interface

- Multilingual interface: English, French and Spanish

- HFCs and HFC containing mixtures

- Latest updated ozone depleting potential and global warming potential values from the recent reports from the Montreal Protocol technology and scientific expert panels as well as the Intergovernmental Panel on Climate Change; as well as the standard ODP and GWP values as specified in the text of the Montreal Protocol

- References to sources of all values used

- New refrigerant mixtures (with ASHRAE approved refrigerant designations)

- Values for 'actual GWP' and 'Kigali Amendment context' GWP for pure substances and mixtures (i.e. only including GWP values/components assigned to controlled hydrofluorocarbons - HFCs).

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

Using the application:

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

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

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

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

See/download the **WhatGas? flyer**

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

Refrigerant Cylinder Colours: What has Changed

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

One of the ways in which refrigeration cylinders are quickly identified is by cylinder colour. Although there was never a truly globally-adopted international standard, the guideline from the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) although not required by law was used by the vast majority of industry and chemical producers around the world. This guideline was intended to support manufacturers, engineers, installers, contractors and users, and was also widely used by customs and enforcement officers and National Ozone Officers (NOOs) to help identify the contents of cylinders.

In recent years, the number of refrigerants has dramatically increased, particularly as chemical producers continue to develop numerous new refrigerant mixtures for various applications. This fast-rising number of refrigerants created some concern since as more and more colours were used, the potential for misidentification of cylinders of similar colours increased. It was therefore decided by AHRI that for the benefit of the industry the guideline should be updated. This was to ensure continuation of correct identification and safe use of refrigerants based on clear and distinct product markings and labels. The revised guideline, first published in 2015, removes paint colour assignments for refrigerant containers and specifies that all refrigerant containers should have the same paint colour from 2020 onwards. This colour is a light green/grey, called “silk grey” (RAL 7044[4]). This guideline also provides a means by which colours can be assigned to printed materials, such as printed labels on refrigerant containers; these colours generally follow the familiar AHRI colours previously used for refrigerants.

It is very important that the range of stakeholders in the refrigeration and air-conditioning industry as well as NOOs and customs and enforcement personnel are aware of this change. **Cylinder colours can no longer be relied on as a means to identify the type of refrigerant in a container**. The principal method of cylinder identification now needs to be the container labels and markings. It is important to note that **flammable refrigerants** should include a red band on the top of the cylinder. NOOs and technicians should be aware of this change and inform national stakeholders, as well as familiarising themselves with relevant container labels and markings for refrigerants. It will be important to inform and train customs officers of this change as colour codes have always been a helpful way to identify refrigerants. Given the possibility of mis-labelled or counterfeit refrigerants in cases of doubt/suspicion, it is recommended to verify the type of refrigerant using a refrigerant identifier

For more information read/download the factsheet

OzonAction's iPIC system helps prevent an illegal shipment of 72 tonnes of HCFC-22

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

The OzonAction new iPIC platform - The Informal Prior informed consent system (iPIC) has been completely overhauled and updated - *OzonAction latest updated and streamlined version of the online Informal Prior-Informed Consent (iPIC) platform. Responding to comments and feedback we have changed how the system looks and operates.* ***See the iPIC flyer for more details - Visit iPIC website to familiarise yourselves with the new features and functionalities.*** *Automatically re-set your password if required.*

Contact: iPIC Online Administrators for any further questions.

Servicing tail for HCFCs: What is it & why does it matter?

This concept of a servicing tail, while allowed under the Montreal Protocol might not always be consistent with the phase-out targets specified under the HCFC Phase out Management Plan (HPMP) funding agreements agreed by Article 5 countries with the Executive Committee when receiving funds for HCFC phase out, where countries are obliged to meet these targets as specified in the agreement.

Details and explanations are provided in this Policy Brief.

Contact: Ezra Clark, UNEP, OzonAction

OzonAction Factsheet: Proposed additional HS code sub-headings for HFCs in advance of the 2022 HS code update - 'Cheat Sheet'

This document is intended to accompany the OzonAction policy brief: "*HS CODES FOR HFCs - Advice for countries in advance of the 2022 HS code update*", available here.

Download the Factsheet

Contact: Ezra Clark, UNEP, OzonAction

OzonAction Factsheet: Dealing with seized ODS - Options for Article 5 countries

This concise factsheet summarises the five main options available to countries when dealing with seized ODS or HFCs as well as outlining the various considerations and the pros and cons of these options.

Download the Factsheet

Contact: Ezra Clark, UNEP, OzonAction

UNEP OzonAction Training Programme for National Ozone Officer

A key factor contributing to the significant success of the Montreal Protocol on Substances that Deplete the Ozone Layer is the 'country-driven approach'. This approach places National Ozone Units at the centre of the action to protect the ozone layer.

The National Ozone Unit led by the National Ozone Officer (NOO), is the single most important element in national strategies to comply with the Montreal Protocol.

The knowledge and capacity of the NOO in effectively developing projects, managing strategies, reporting data, and working with national and international institutions -directly or indirectly affects each developing (Article 5) country's ability to meet its obligations under the Montreal Protocol treaty.

For this reason, OzonAction has completely transformed and updated its NOO training programme to assist NOUs in successfully understanding all the roles and requirements and in carrying out their daily tasks in Montreal Protocol implementation.

The main objective of this training programme is to provide new National Ozone Unit (NOU) staff with essential information about the Montreal Protocol, a country's obligations under the Montreal Protocol, and the main activities carried out by NOUs. It aims to provide new NOU staff with fundamental knowledge and information tools that will enable them to support their national government in meeting the commitments agreed by all countries under the Montreal Protocol.

Download the flyer >>>

Contact: **Mikheil Tushishvili**, Montreal Protocol Programme Officer, UNEP-OzonAction.

OzonAction Factsheet: Article 7 Data Reporting on HFCs - When Countries Need to Start Reporting

One of the important commitments of the Protocol is that of reporting the consumption and production of substances controlled under the Montreal Protocol.

Following ratification of the Kigali Amendment, this commitment is now extended to HFCs.

This short factsheet provides some useful information on relevant Article 7 reporting dates and deadlines for HFCs.

Download the Factsheet

Contact: Ezra Clark, UNEP, OzonAction

HS Codes for HFCs - Advice for countries in advance of the 2022 HS code update

The Kigali Amendment requires Parties to put into place an import and export licensing system for hydrofluorocarbons (HFCs) by 1st January 2019 (or two years later if required).

To enable a licensing system to function effectively, it is important that the government is able to monitor and record imports and exports of each specific HFC individually.

Import and export statistics are normally collected by customs officers using the international product nomenclature system – the Harmonized Commodity Description and Coding System, or Harmonized System (HS).

However, until the HS is revised in 2022, all HFCs are contained in a single HS code which does not allow differentiation of the individual chemicals or of mixtures.

This document outlines a proactive interim approach, recommended by the World Customs Organization (WCO), to establish additional digits in the existing national HS codes to identify specific HFCs.

This practical document is suitable for outreach to the customs agencies, customs officers in the field, and others involved in controlling trade in HFCs.

Document prepared by the UN Environment Programme in cooperation with the World Customs Organization (WCO).

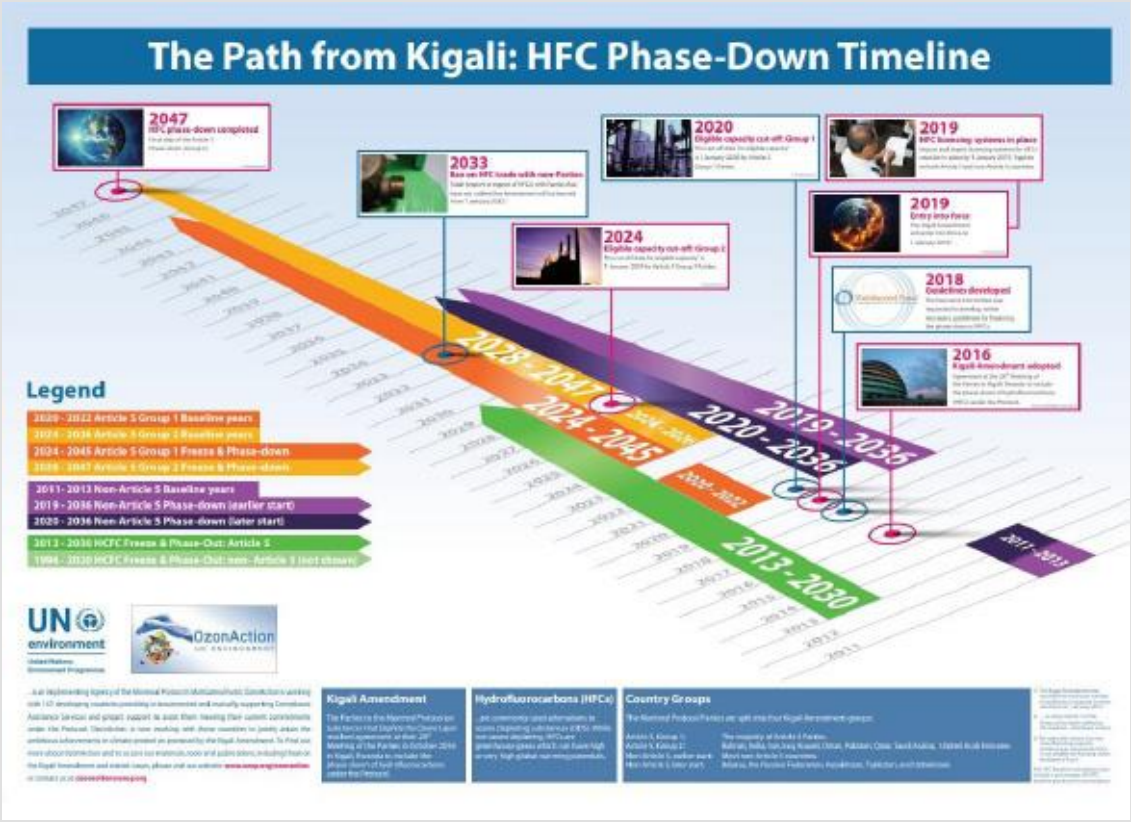
Download the publication

Contact: Ezra Clark, UNEP, OzonAction

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

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

Download the publication



The Path from Kigali: HFC Phase-Down Timeline

This timeline, produced by OzonAction, highlights key hydrofluorocarbons (HFCs) phase-down dates. Click **here** to download the timeline

Good Servicing: Flammable Refrigerants Quick Guide

This is the electronic and interactive version of the UN Environment Programme OzonAction Quick Guide on Good Servicing Practices for Flammable Refrigerants. It offers easy reference to the key safety classification and technical properties of flammable refrigerants that are available in the market.

It also provides important safety guidance for the installation and servicing of room air-conditioners designed to use flammable refrigerants.

This interactive guide allows you to scroll and browse the text, jump to specific chapters or use the comprehensive dynamic index to locate specific keywords, figures and tables. The application also includes a refrigerant charge size calculator and a room size calculator for flammable refrigerants.

Available for free on the Google play store (Apple version coming soon). Search for "UNEP Quick guide" or use the QR code

Refrigerant Identifier Video Series

Guidance on how to identify refrigerants using a refrigerant identifier.

This new OzonAction video series consists of short instructional videos showing how to use and maintain a refrigerant identifier.

The videos provide useful guidance on safety and best practice, understanding the difference between different identifier units, testing procedures and identification of results.

It is intended for use by Montreal Protocol National Ozone Officers, Customs and Enforcement Officers as well as technicians involved in the servicing and maintenance of refrigeration and air conditioning systems.

The application features 10 short instructional videos on the following topics:

- Refrigerant cylinder types
- Types of identifiers
- Getting to know your identifier
- Safety and precautions
- Testing a sample – vapour (gas)
- Testing a sample – liquid
- Results
- Faults & error messages
- Maintaining the unit
- Software updates

Available for free on the Google play store (Apple version coming soon). Search for "UNEP Refrigerant ID" or use the QR code

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

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

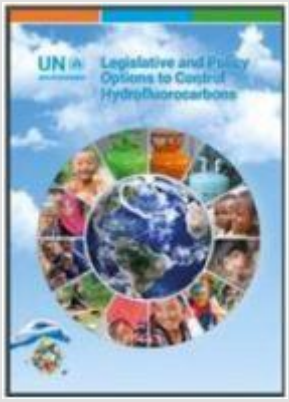
This application, consisting of short instructional videos on techniques, safety and best practice, serves as a complementary training tool for refrigeration and air-conditioning (RAC) sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training.

New videos on flammable refrigerants just added!

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

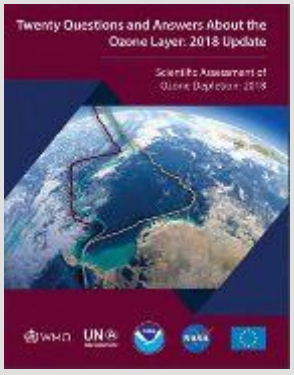
OzonAction Multimedia Video Application: Refrigeration and Air-conditioning Technician Video Series Available in the **Android Play Store** and **Apple Store/iTunes**. (Just search for "OzonAction", or scan this QR code)

PUBLICATIONS



Legislative and Policy Options to Control Hydrofluorocarbons

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



Twenty questions and answers about the ozone layer: 2018 update, is a component of the Scientific Assessment of Ozone Depletion: 2018 report. The report is prepared quadrennially by the Scientific Assessment Panel (SAP) of the Montreal Protocol on Substances that Deplete the Ozone Layer.

Lead Author: Ross J. Salawitch
Coauthors: David W. Fahey, Michaela I. Hegglin, Laura A. McBride, Walter R. Tribett, Sarah J. Doherty

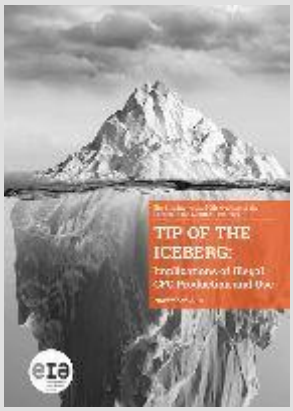
Read / Download: **20 Questions and Answers about the ozone layer-2018** | **Figures**

Primer on Hydrofluorocarbons (HFCs) - IGSD -11 January 2018
Fast action under the Montreal Protocol can limit growth of hydrofluorocarbons (HFCs), prevent 100 to 200 billion tonnes of CO_2-eq by 2050, and avoid up to 0.5°C of warming by 2100.
Lead authors:
Durwood Zaelke, Nathan Borgford-Parnell, and Stephen O. Andersen.
Contributing authors:
Kristin Campbell, Xiaopu Sun, Dennis Clare, Claire Phillips, Stela Herschmann, Yuzhe Peng Ling, Alex Milgroom, and Nancy J. Sherman.

The **IIR International Dictionary of Refrigeration**
Available in 11 languages, the complete version of the International Institute of Refrigeration (IIR) International Dictionary of Refrigeration is now freely accessible online. The IIR International Dictionary of Refrigeration offers researchers, industrialist or administrations the practical resources required to produce content related to refrigeration technologies in multiple languages.
This online tool allows you to find definitions, in English and French, of scientific and technical terms, as well as identify terms in the language of your choice and find corresponding translations in the 10 other languages.
The dictionary provides term searches in Arabic, Chinese, Dutch, English, French, German, Italian, Japanese, Norwegian, Russian and Spanish.
Access the International Dictionary of Refrigeration on the **IIR website**

Impact of Standards on Hydrocarbon Refrigerants in Europe – Market research report. The market research report was realised for the EU-funded **LIFE FRONT** project. Amongst the main result of the market research:

- Current charge limits set in standards both restrict and obstruct the development of hydrocarbon technology
- Over 50% survey respondents already work with hydrocarbons to some extent
- Most of those planning to start working with hydrocarbons in the future will do that in 2019-2020 timeframe - revision of standards could have a major impact on the scale of this shift
- Large proportion of respondents indicated they manufacture equipment using multiple refrigeration circuits - allowing higher hydrocarbon charge limits per single refrigeration circuit would have a profound impact on cost and availability of larger units.



Tip of the Iceberg: Implications of Illegal CFC Production and Use.

The Environmental Investigation Agency (EIA) recently released report urges Parties to the Montreal Protocol to address a number of remaining unanswered questions, in particular the absence of comprehensive data regarding the size of current banks of CFC-11 in PU foam and other products or equipment.

Cold Hard Facts 3 - Review of the Refrigeration and Air Conditioning Industry in Australia

[...] This study provides a broad view of the composition, size and value of the industry, and projections for its future. This will assist industry and policy makers with management of ozone depleting substances as they are phased out, and synthetic greenhouse gases, including hydrofluorocarbons (HFCs) which are being phased down from January 2018.

Ozone-depleting substances 2019 Aggregated data reported by companies on the import, export, production, destruction, feedstock and process agent use of ozone-depleting substances in the European Union, 2006-20181994-2019 - The 2019 edition of the European Environment Agency (EEA) report on ODS confirms that the EU has already achieved its goals on the phase-out of such substances under the Montreal Protocol. [...]

Benefits of Energy Efficient and Low-Global Warming Potential Refrigerant Cooling Equipment
Authors: Nihar Shah, Max Wei, Virginie Letschert, Amol Phadke.
Energy Analysis and Environmental Impacts Division
Lawrence Berkeley National Laboratory
August/2019

Lower-GWP Alternatives in Stationary Air Conditioning: A Compilation of Case Studies -The case studies in this booklet discuss several applications in the stationary air conditioning sector. The applications include chillers of natural refrigerants and hydrofluoroolefins (HFOs) as well as split-units which use hydrocarbons (HCs) as the refrigerant. The technologies presented in these case studies are only some examples of the many available options for zero and lower GWP substances. The examples take into account design criteria such as system performance, environmental impact and cost. All these refrigerants still have many challenges that should be considered in the design, for example their flammability, toxicity, lower efficiency in some cases, and cost. Balancing these challenges using a consistent and comprehensive methodology across all refrigerants and system types is essential in assessing alternatives...

Climate and Clean Air Coalition (CCAC), 2019

Latest issue of Centro Studi Galileo magazine,
Industria & Formazione, n. 4 - 2020
(in Italian language).

COVID-19: Regular and correct maintenance of ventilation systems - General Eurovent recommendations for equipment care during the coronavirus pandemic. In this GENeral Document, Eurovent presents general and basic recommendations on the operation of ventilation systems during the coronavirus pandemic. The document also provides additional sources of information on COVID-19.

Read/download

A new approach to define safe charge limits for flammable refrigerants - The LIFE FRONT project has just released its latest report entitled "**Recommendations for the revision of safety standards for RACHP equipment**".

LIFE FRONT is an EU-funded project that aims to remove barriers posed by standards for flammable refrigerants in refrigeration, air conditioning, and heat pump (RACHP) applications. With this new report, it provides project results from the laboratory testing as well as recommendations on measures to minimize concentrations of flammable refrigerants in the case of a leak; implementation of mitigation measures performance testing; and increasing charge size flammability risk focusing on smaller devices as described in the access categories 'a' and 'b' in the EN 378-1 (2016) Standard. [...]

MISCELLANEOUS

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

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

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

Please notify and nominate worthy candidates through the on-line form We look forward to receiving your nomination(s), and please feel free to contact our team for any further assistance concerning your nomination.

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

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

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

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