

# OzoNews

A fortnightly electronic news update on ozone and climate protection and the implementation of the Montreal Protocol brought to you by OzonAction

Volume XX | 30 June 2020

## In this issue:

1. Kigali Amendment latest ratification
2. Modelling the potential impacts of the recent, unexpected increase in CFC-11 emissions on total column ozone recovery
3. A new way to cool vaccines off the grid
4. Overview for the meetings of the ozone treaties in 2020-2021
5. Lower-GWP refrigeration & air conditioning innovation award
6. New Report Identifies Sources of Environmental Dumping of Air Conditioners in Ten African Countries
7. Japan Amendments as regards the classification of goods, ozone-depleting substances (ODS)
8. New national cooling strategy for Trinidad and Tobago
9. Brazil Amendments as regards Import licensing, Export processing zones, Ozone-depleting substances (ODS)
10. North American Sustainable Refrigeration Council launches innovative program to help grocers go green
11. How an international project has influenced skills for low GWP alternative refrigerants across Europe
12. European AC Market Moving Away from High-GWP Refrigerants
13. Illegal imports a third of the European F-gas quota
14. Mobile air conditioning in rail vehicles

GLOBAL



Key uncertainties related to this new CFC-11 source and their impact on the timing of the TCO return date are explored, including the duration of new CFC-11 production and emissions; the impact of any newly created CFC-11 bank; and the effects of co-production of CFC-12. Scenario-independent relationships are identified between cumulative CFC emissions and the timing of the TCO return date, which can be used to establish the impact of future CFC emissions pathways on ozone recovery in the real world. It is found that, for every 200 Gg Cl ( ~ 258 Gg CFC-11) emitted, the timing of the global TCO return to 1960–1980 averaged values is delayed by ~ 0.56 years. However, a marked hemispheric asymmetry in the latitudinal impacts of cumulative Cl emissions on the timing of the TCO return date is identified, with longer delays in the Southern Hemisphere than the Northern Hemisphere for the same emission.

Together, these results indicate that, if rapid action is taken to curb recently identified CFC-11 production, then no significant delay in the timing of the TCO return to the 1960–1980 mean is expected, highlighting the importance of ongoing, long-term measurement efforts to inform the accountability phase of the Montreal Protocol. However, if the emissions are allowed to continue into the future and are associated with the creation of large banks, then significant delays in the timing of the TCO return date may occur. [...]

**Authors:** James Keeble, N. Luke Abraham, Alexander T. Archibald, Martyn P. Chipperfield, Sandip Dhomse, Paul T. Griffiths, and John A. Pyle

[Atmospheric Chemistry and Physics, 20, 7153–7166, 2020, Published: 19 June 2020](#)

---

### 3. A new way to cool vaccines off the grid

Coolar's solar-powered refrigerator uses water and adsorption technology rather than compressors.

Two decades ago, Greenpeace and the United Nations Environment Program developed Solar Chill, a solar-powered vaccine chiller based on a compressor system using isobutane refrigerant. Since then, about 100,000 have been deployed in remote, off-the-grid locations around the world.



German startup Coolar, based in Berlin, has taken a different approach, developing a new solar-powered refrigerator that uses only water and adsorption technology to achieve stable cooling for vaccines in off-the-grid locations.

[Coolar](#) plans to ask the World Health Organization (WHO) for approval of its technology after receiving feedback from pilot tests in Kenya later this year. Given the need for an eventual COVID-19 vaccine throughout the world, its timing couldn't be better.

The idea for the Coolar technology came to Founder and CEO Julia Römer in 2014 while she was studying for a degree in industrial engineering at the Berlin Institute of Technology (Technische Universität Berlin). For her Master of Science thesis, she investigated the idea, based on the theoretical possibility of scaling down industrial-sized adsorption systems to something refrigerator-sized, suitable for vaccine storage, and other medical uses,

---

anywhere in the world where electricity is a scarce commodity. She concluded that it was feasible, and Coolar was born.

The first fully functioning prototype – a single-cycle mini-bar refrigerator demonstrator – was ready at the end of 2015. That was the year she won second prize (€10,000/US\$11,292) in the Darboven Idee Competition for women with promising business concepts.

Since then the Coolar team has worked on improving its prototypes, demonstrating compatibility with 32°C (89.6°F) ambient temperatures in 2018, and recently showing compatibility with outside temperatures of up to 43°C (109.4°F).

The company carried out a successful field test in Tenerife (in the Canary Islands) in the spring of 2019. An upgraded vaccine refrigerator prototype will be tested this summer in Berlin, and later in different locations in Kenya, once worldwide COVID-19 travel restrictions have been lifted.

Funding for the test, and for bringing it to market, comes from the European Union's Eureka Eurostars research and development funding program, with additional funders as well.

One of the important criteria for vaccine cooling is to achieve a stable temperature between 2°C and 8°C (35.6°F-46.4°F). "If [vaccines] are getting too warm, they deteriorate, but if they freeze they're dead so you cannot do anything with it," Römer explained. "Normal refrigerators have evaporator temperatures under zero degrees, like -15°C to -20°C, so you can easily freeze vaccines, or cool them way too far, whereas our system is a naturally freeze-free alternative."

[Hydrocarbons21, 25 June 2020, By Tine Stausholm](#)

---

#### **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](mailto: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](mailto:stephanie.haysmith@un.org)). The Secretariat has already received requests for events whose details will be shared in the meeting portal.

---

### **5. 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](http://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.

---



# AFRICA

## 6. New Report Identifies Sources of Environmental Dumping of Air Conditioners in Ten African Countries

Low-efficiency air conditioners comprise over one third of sales in focus countries; units contain obsolete refrigerants with high global warming potential

A new report on environmental dumping<sup>1</sup>, released in advance of World Refrigeration Day, finds that 35% of the room air conditioners (RACs) sold in many of Africa's largest countries are low efficiency units with energy efficiency ratings of less than 3.0 W/W. "Environmentally Harmful Dumping of Inefficient and Obsolete Air Conditioners in Africa" details the extent of the problem across ten countries in North, West, East, and Southern Africa, ultimately providing policymakers with a set of solutions to encourage a transition toward highly-efficient, sustainable cooling technologies. CLASP researched and wrote the report in collaboration with the Institute for Governance & Sustainable Development.

Analysis of ten countries (Algeria, Egypt, Morocco, Tunisia, Ghana, Nigeria, Ethiopia, Kenya, Tanzania, and South Africa) that account for 96% of the continent's RAC market reveals that:

- Of 650,000 new low efficiency ACs sold in Africa in 2018, 170,000 were imported products that would not meet the minimum energy efficiency standards in their countries of origin, and the remainder assembled using low-efficiency imported components and containing refrigerants that are powerful greenhouse gases.
- One-quarter of the low-efficiency RACs containing obsolete refrigerants were imported from non-African companies.
- Three-quarters were assembled in Africa by one of three company types: local subsidiaries of non-African companies, joint ventures between smaller African assemblers and large, non-African RAC, or wholly independent African RAC assemblers, not part of a joint venture, importing components for and assembling low efficiency RACs.

From 2005 to 2019, Africa's market for new split room air conditioners (RACs) grew by an estimated 14%, cumulatively.<sup>2</sup> Weak or non-existent energy efficiency policies and the lack of proactive anti-environmental dumping policies in many African countries have facilitated environmentally harmful dumping of inefficient, high-global warming potential (GWP)<sup>3</sup> air conditioner products into African markets.

The Montreal Protocol, designed to phase out numerous ozone-depleting substances, was amended in 2016 to include the phase down of substances that trap heat in the atmosphere and exacerbate global warming. As manufacturing and industrialized economies place increasingly stringent energy performance standards on RACs sold domestically and implement refrigerant transition policies, importing African countries risk becoming even greater dumping grounds for inefficient, environmentally harmful products using obsolete refrigerants that no longer have a viable domestic market in their places of origin and soon worldwide.

"With energy demand growing across the continent, addressing environmental dumping

---

issues would not only help countries achieve progress on their climate action goals, but would also help to ensure that African consumers gain access to affordable, high-quality appliances," said Rebecca Schloemann, the lead author from CLASP.

"Inefficient ACs are being dumped into Africa where they are 'energy vampires,' sucking up vital energy needed to recover from the pandemic and economic slowdown. Stopping environmental dumping and switching markets to efficient and climate-friendly cooling is essential in a warming world where heat and humidity extremes may soon exceed levels suitable for human survival," said Tad Ferris, Senior Counsel for the Institute for Governance & Sustainable Development, and a lead author of the paper defining environmentally harmful product dumping.

The prevalence of low efficiency RACs puts extra strain on governments' and consumers' budgets. Customers pay higher electricity bills and countries pay more for electricity generation facilities, imported fuel, and electricity transmission and distribution infrastructure. Further, environmental dumping of air conditioning products with obsolete refrigerants increases future demand for these damaging refrigerants at a time when they will be expensive or unavailable in some markets, creating incentive for illegal chemical manufacture and trade.

The report outlines a series of recommendations for policymakers to halt environmental dumping and encourage a transition to highly-efficiency, low-GWP RACs, modeling the potential impact of policy scenarios that could reduce 2022-2030 greenhouse gas emissions by 14-20% from current levels:

- Ratify the Kigali Amendment to the Montreal Protocol and adopt implementing policies.
- Design and implement energy efficiency policies consistent with major countries of export.
- Strengthen institutional arrangements.
- Revise tariffs on RACs to ensure compatibility with energy efficiency goals.
- Ban the import of secondhand, including refurbished, and inefficient RACs and publicize and enforce the ban.
- Implement government bulk purchasing and support for buyers' clubs.
- Properly recycle and dispose of obsolete room ACs.
- Elevate solutions to regional level.
- Engage local groups profiting under current system to trade in obsolete equipment as part of the solution.

Overall, the report addresses obstacles and paths to environmentally sustainable cooling technologies which are essential to thermal comfort, productivity, and quality of life.

### Webinar

CLASP and IGSD hosted a webinar on 1 July, 10 am EDT to present the findings of the report.

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

---

**“Environmentally Harmful Dumping of Inefficient and Obsolete Air Conditioners in Africa”** is available at [CLASP.ngo](https://clasp.ngo)

For media inquiries, please contact [Rebecca Schloemann](#), or [Gabrielle Dreyfus](#)

i Environmentally harmful product dumping (“environmental 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](#)

ii Euromonitor 2019. Euromonitor provides reported and modeled estimates for RAC market size by country. For most countries on the African continent, Euromonitor does not have reported sales from trade sources, and instead models approximate market size using national statistics (population, number of households, etc.).

iii Throughout the report, CLASP refers to the GWP of refrigerants. To align with Montreal Protocol tracking, CLASP uses IPCC AR4 100-year GWP values. [https://www.ipcc.ch/site/assets/uploads/2018/05/ar4\\_wg1\\_full\\_report-1.pdf](https://www.ipcc.ch/site/assets/uploads/2018/05/ar4_wg1_full_report-1.pdf)

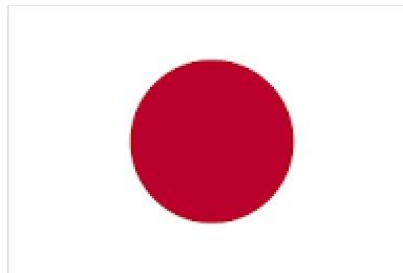
**See also >>> [The big chill: How Africa is moving to battle 'zombie' appliances](#)**, article in Thomson Reuters Foundation, 24 June 2020; By Peyton Fleming

## ASIA PACIFIC

### **7. Japan Amendments as regards the classification of goods, ozone-depleting substances (ODS)**

#### **Classification of Goods**

The classification of goods, i.e. the assignment of commodity codes to certain documents of this import report, has been verified and adjusted as appropriate in accordance with the current stipulations of the Japanese Tariff Schedule, as applicable.



#### **Ozone-Depleting Substances (ODS)**

As a member of the Montreal Protocol on Substances that Deplete the Ozone Layer, Japan has phased out the importation of chlorofluorocarbons (CFCs) and halons as well as products containing them. Japan has furthermore accepted the Kigali Amendment to the Montreal Protocol on 18 December 2018. Accordingly, the mentioned products are prohibited from importation into Japan with the exemption of CFC-based metered dose inhalers (MDIs), which are currently exempt from the control of the Montreal Protocol as essential use.

## LATIN AMERICA

### 8. New national cooling strategy for Trinidad and Tobago

Cooling is a critical element for the sustainability and development of the economy. It is required to ensure homes, offices, and cars are comfortable; industrial processes run safely and efficiently while ensuring societies have preserved foods and medicines.



MINISTRY OF  
**PLANNING AND  
DEVELOPMENT**

In commemoration of World Environment Day on June 5, 2020, the Ministry of Planning and Development is announcing for the information of the public the establishment of a National Cooling Strategy for Trinidad and Tobago (NCSTT) by Cabinet approval.

The NCSTT establishes a national strategy to address the country's needs in the refrigeration and air conditioning (RAC) sector, driving a rapid transition to high-performance cooling equipment, while undertaking phase-out activities of outdated equipment and gases under the Montreal Protocol, enhancing T&T's climate protection efforts. The implementation of the NCSTT can:

- Reduce electricity wastage;
- Reduce consumer as well as public and private sector expenditure on utility bills;
- Create thermal comfort while reducing Greenhouse Gas emissions;
- Enhance the employment of and increase the skillsets of local RAC technicians.

The ten-year time frame of the strategy from 2020 to 2030 involves financial assessments; the development of a refrigeration plan; training and capacity development; and the development of mechanisms for the recovery, recycling and disposal of spent refrigeration gases. The proposal has also been made for the development of green building codes for T&T.

Notwithstanding being identified as essential, cooling has a significant adverse environmental impact, due to its contribution to global warming. The refrigeration and air-conditioning (RAC) sector (cooling sector) contributes to global warming directly, through the emission of hydrofluorocarbons, and indirectly through the range of activities associated with the machines used in the cooling industry, electricity use and so on. Research has shown that without effective mitigating action, cooling may well account for almost 20% of global greenhouse gas emissions by 2050.

With the demand for cooling also growing in Trinidad and Tobago, there is an urgent need to cut cooling related pollution and energy wastage. The Planning Ministry worked closely with stakeholders in the A/C and refrigeration sector to not only develop the National Cooling Strategy, but to also develop National Guidelines for the cooling sector.

As part of the National Development Strategy of Trinidad and Tobago: Vision 2030, the National Cooling Strategy supports the fulfillment of Theme V, Placing the Environment at the Centre of Social and Economic Development, while helping with the achievement of global Sustainable Development Goal 13, Climate Action.

[Government of the Republic of Trinidad and Tobago, June 2020](#)

---

## **9. Brazil Amendments as regards Import licensing, Export processing zones, Ozone-depleting substances (ODS)**

### **Import Licensing**

The tariff codes assigned to the document entitled Automatic Import Licence (i.e. the classification of goods pertaining to said document) have been updated in accordance with Import Notice Siscomex (Notícia Siscomex Importação) No. 022 of 2020.



### **Export Processing Zones**

The section on Export Processing Zones further below has been amended as regards the zones currently authorised and established in Brazil. Moreover, details of the time period in which benefits are granted to companies located in export processing zones (ZPEs) have been included. [...]

### **Ozone-Depleting Substances (ODS)**

Brazil is a signatory to the Montreal Protocol on Substances that Deplete the Ozone Layer, in the scope of which the country is in the process of phasing-out the trade in and use of ozone-depleting substances (ODS) in compliance with a system of fixed quotas. Trade in chlorofluorocarbons (CFCs) is prohibited since 2010. A phase-out plan for hydrochlorofluorocarbons (HCFCs) is being enforced since 1 January 2013; the ultimate prohibition of such substances is aimed at in 2040.

Read full text on [madb.europa.eu](http://madb.europa.eu)  
[MyChemicalMonitoring, 16 June 2020](#)

---

**NORTH AMERICA**

---

## 10. North American Sustainable Refrigeration Council launches innovative program to help grocers go green

*Nonprofit Tackles Climate Change and Makes Natural Refrigerants More Affordable*



The [North American Sustainable Refrigeration Council](#) (NASRC), a 501(c)(3) environmental nonprofit working to advance climate-friendly natural refrigerants in supermarkets, is launching a new pilot program to offset the upfront costs of natural refrigerant technologies.

“High upfront cost is the primary hurdle preventing the adoption of environmentally friendly natural refrigerants” says Danielle Wright, NASRC executive director. “Funding support is key to bridging the gap and stimulating the economies of scale necessary to bring costs down.” NASRC’s new [Aggregated Incentives Program](#) (AIP) pilot is a free platform to coordinate various funding sources through a streamlined [application process](#) for food retailers.

Traditional refrigerants contain Hydrofluorocarbon (HFCs) extremely potent greenhouse gases (GHGs) that trap thousands of times more heat in the atmosphere than carbon dioxide (CO<sub>2</sub>), and have been named the fastest-growing source of GHG emissions globally. Commercial refrigeration systems, such as those in supermarkets and grocery stores, are the leading contributor to HFC emissions, releasing over 130 million pounds of CO<sub>2</sub> equivalent emissions annually in the U.S. alone. Natural refrigerants - including ammonia, carbon dioxide, and hydrocarbons - are the most climate-friendly solution, but their adoption in the U.S. has been stalled due in large part to cost barriers.

New refrigerant regulations proposed by the California Air Resources Board (CARB) are driving a growing number of food retailers to consider natural refrigerants, making California an ideal location for the pilot of NASRC’s Aggregated Incentives Program. CARB has established an F-gas Reduction Incentive Program for climate-friendly refrigerants, but the allocated budget will only support a few natural refrigerant projects. AIP is designed to bridge the funding gap with outside funding sources to maximize the number of natural refrigerant projects.

“Our goal is to secure enough funding to make these projects possible while simplifying the experience for the retailers,” comments Wright. “We also expect the pilot to generate a tremendous amount of data that will contribute to industry knowledge about naturals, further promoting their growth.”

The pilot program will be offered at no-cost to applicants thanks to the generous sponsorship of [NASRC Titanium members](#), including [BITZER US](#), [Climate Pros](#), [CoolSys](#), and [Hillphoenix](#). NASRC is accepting [preliminary AIP applications](#) through the end of June 2020. Learn more or apply at [nasrc.org/aggregated-incentives-program](https://nasrc.org/aggregated-incentives-program).

[The North American Sustainable Refrigeration Council \(NASRC\), 9 June 2020](#)

---



## EUROPE & CENTRAL ASIA

### 11. How an international project has influenced skills for low GWP alternative refrigerants across Europe.

Three years ago the European Commission announced that it would be co-funding a project to develop EU wide training on low GWP alternatives refrigerants as part of its LIFE climate action programme. REAL Alternatives 4 LIFE was the project and it would incorporate the principles of blended learning programme (booklets, e-learning and practical teaching). In addition, it would run a programme of train the trainer events and study days across Europe. All of this supported by a high profile awareness campaign to encourage recognition of this training amongst employers, wholesalers, manufacturers, end users and policy makers – increasing confidence in the application of these new refrigerants. What's more, it would offer Certification for technicians who had completed REAL Alternatives standard assessments providing a consistent and high standard for training across Europe. All of this in multiple languages.

So what did the project achieve? Three years on and a total of over 1600 working days between the eight organisations, has resulted in :

- 9 free learning modules available on line – with 5000 individual learners registered
- 7 training events and 4 study day events for teachers resulting in 200 certified trainers
- 23 national organisations now able to accredit trainers and their courses has so far resulted in 500 certificates being issued to technicians
- Our communications have reached several hundred thousand people globally through co-ordinate awareness campaign of talks delivered on line and at meetings, international exhibitions and conferences, regular web articles, press releases, social media and newsletters
- Each of the national organisations has had regular meetings with their national and international policy makers including various presentations at COP global summit meetings, the International Congress of Refrigeration and ASHRAE meetings.



As the demand for cooling services continues to grow across the globe, the need to switch to lower GWP refrigerants for environmental reasons is clear. However, in addition the higher GWP F Gases are already becoming less readily available due to international phase down in supply. As a result the market has to adapt rapidly to the use of low GWP refrigerants. But this is not always straightforward: carbon dioxide operates higher pressures, hydrocarbons, R32 and HFOs have various degrees of flammability or ammonia is toxic. A massive retraining exercise is needed for installers and service technicians. REAL Alternatives took on the challenge of developing training materials that will teach technicians how to use alternative refrigerants in a safe, efficient, and reliable manner.

These training resources have been translated and are now available in 17 languages to make them accessible throughout most of the EU and, in the future, globally. REAL Alternatives is also operating a network of licenced training providers and National Leads worldwide to monitor training take up and certification standards.

Earlier this year the project carried out a survey of the market to see how attitudes to the use of low GWP refrigerants have changed over the past 3 years. The findings support the need for the kinds of free accessible resources that the project developed and a growing demand for these refrigerants in the future. We found that the transition to low GWP refrigerant technologies is happening rapidly.

The main driver for this change is of course legislative action by policy makers but there is an increasing awareness that climate friendly alternatives are available and businesses are under more social pressure to address climate change impact of their activity. Those in the RACHP are expecting a continued growth in demand for low GWP alternatives at least for the next 3-5 years, and that these types of refrigerants will become mainstream in the future.

Employers appear to be more aware of the need to have good quality, practical training in this area in order to address their safety, reliability and efficiency concerns. Up until February 2020 when physical training ceased in most of Europe, we were seeing a trend of growth in the capacity of trainers to deliver practical courses and for technicians to achieve certification since the REAL Alternatives practical training became available in June 2019. As the number of Licenced Training Providers offering practical training across our 23 countries of National Lead countries increases, so the number of Certified Technicians who have attended such training is likely to increase rapidly in the coming years.

The team behind REAL Alternatives expect the global impact of this training material to extend rapidly both within and beyond Europe in the next few years, and are currently in negotiation with a wide range of both developing and developed countries to adapt the material for their use, and to arrange train the trainer sessions for their technical teachers.

This project has confirmed that the EU and UK are leading the way in tackling climate change for the RACHP sector.

---

[Find out more](#) about the project outputs, achievements and how you can get access the free e-learning.

---

## 12. European AC Market Moving Away from High-GWP Refrigerants

R407C and R410A are no longer the most commonly used refrigerants in stationary air conditioning and heat pump applications, says Öko-Recherche at ATMO/DTI Conference.



The air conditioning and heat pump industry in Europe may be well behind the refrigeration industry when it comes to adopting natural refrigerants, but there is a definite movement towards lower-GWP refrigerants, according to Barbara Gschrey, Managing Director and Policy Advisor at Öko-Recherche, an independent environmental research institution and consultancy, located in Frankfurt, Germany.

“R407C and R410A are no longer the most common refrigerants in stationary AC and heat pump applications,” Gschrey told the participants in the ATMO/DTI Technical Conference on the future of air conditioning, conference, which took place online on June 23/24. “Use of R410a seems no longer necessary in small split ACs in Europe,” Gschrey concluded.

As a result of the EU F-Gas Regulation, other refrigerants have been introduced for both new and retrofit systems; these include natural refrigerants like propane (R290), propylene (R1270), CO<sub>2</sub> (R744) and water (R718), she noted, though barriers exist for flammable refrigerants in France and Italy.

In addition, refrigerants like R32 (GWP of 675) are increasingly common, and HFC-HFO blends, such as R452B, R454C and R513A are also becoming more popular in AC and heat pump applications. The newfound popularity of R32 is not just for split air conditioning, but also in other applications, like VRF (variable refrigerant flow) systems and heat pumps.

But she acknowledged that R410A is still “quite relevant.”

Legislative changes remain an important factor in technological innovation. “The HFC phase down is recognized as a key driver in the development of new technical solutions in air conditioning, and a lot of research and development activities are going on for both small and large split systems, multi splits and VRF,” Gschrey said. “We expect that this will lead to market-ready alternatives in many applications in the near future.”

An additional positive development is the entry into the European market of a “major” Chinese manufacturer, who intends to introduce R290 small split AC systems in the third quarter of 2020, according to Gschrey

### Upcoming stakeholder consultation

The information on the developments in the AC industry comes from work done by Öko-Recherche for a briefing paper, which has been produced as input for the European

---

Commission's upcoming F-Gas Regulation revision. The information has also been confirmed by data collected annually by the European Environmental Agency.

Öko-Recherche will be issuing a new paper soon for the EC on whether cost-effective, technically feasible, energy-efficient and reliable f-gas alternatives exist, for new small single split air conditioning systems, Gschrey said.

Öko-Recherche will also be doing a "public stakeholder consultation" starting in September to shed light on potential changes in the next iteration of the EU F-Gas Regulation. "We welcome your input," she said to the ATMO/DTI Conference audience.

In particular, she will be seeking answers to the following questions:

- Can all stationary AC applications do without HFCs today?
- Where are HFCs still needed and for how long?
- How should policy support the technology change?

[hydrocarbons21, 25 June 2020, By Tine Stausholm](#)

### 13. Illegal imports a third of the European F-gas quota

The refrigerant manufacturers estimate that the illegal trade in HFC refrigerants in 2018 could have been as high as 34MtCO<sub>2</sub>e, or a third of the legal European quota.

New figures released by the refrigerant manufacturers group, EFCTC, blow a hole in previous European Commission claims that the illegal market was "insignificant".



Investigations by European economics consultancy Oxera Consulting revealed a substantial discrepancy of around 19MtCO<sub>2</sub>e in the data between the amounts of HFC refrigerants registered as leaving China and the imports recorded as entering the EU. The EFCTC insists that this is largely consistent with the figure of 16.3MtCO<sub>2</sub>e estimated by the Environmental Investigation Agency last year.

In addition, the EFCTC's investigators looked at the flow of refrigerant from China into countries neighbouring the union. Taking into account the market growths in those countries, the investigators calculated there was an excess of 15MtCO<sub>2</sub>e, an amount which the EFCTC believes is being smuggled into the EU.

Murli Sukhwani of Chemours and a member of the EFCTC's data and investigation working group, described Oxera Consulting's figures as "a very big fat number" based on "very rigorous" methodology.

Tim Vink, Honeywell's director of regulatory affairs and vice-chair of EFCTC blamed the illegal trade on "a lack of awareness at national level and also inconsistent and

unharmonised enforcement” of the F-gas regulation.

“Low fines and discrepancies between member states in respect of penalties are not helping either, as is the lack of coordination and sharing of data between public entities and agencies,” he added.

“This black market has had a very corrosive effect on the legitimate supply chain, which consists of thousands of small and medium sized operators who have made substantial investments into the transition to low global potential alternatives, the responsible recovery and recycling and reclamation of HFCs.

“As a result, many small and medium sized enterprises have seen a dramatic drop in their business. It’s also detrimental to the European Union’s climate objectives.”

From calls to the EFCTC’s action line, passed on to the business investigation agency Kroll, there has been a reported 444 takedowns across 15 e-commerce platforms and evidence of 3,000 tonnes of product incoming illegally into the EU, which translates into 4.7MtCO<sub>2</sub>e.

[Cooling Post, 27 June 2020](#)

---

#### 14. Mobile air conditioning in rail vehicles

Rail vehicle heating and cooling systems both produce greenhouse gas emissions. In Germany, some 22 tonnes of the refrigerant R134a leaked from rail vehicle air conditioning systems in 2018, which is equivalent to the greenhouse effect of 31,500 tonnes of CO<sub>2</sub>. The European Union intends to gradually reduce the production and use of HFCs and replace them with less harmful substances in a phase down approach regulated by the [EU F-gas Regulation Nr. 517/2014](#). In some systems the combination of cooling with a heat pump function is possible which can reduce the energy needed for heating and therefore reduce CO<sub>2</sub> emissions as well.



The air-conditioning systems in the ICE 3 class 403 train use ambient air for cooling.  
Source: Deutsche Bahn AG

Alternatives to HFC air conditioning in the rail sector are refrigerant cycles with CO<sub>2</sub> or systems based on air cycle technology. For CO<sub>2</sub>-based cycles, there were only a few tests in rail vehicles, whereas systems based on air cycles have been already in regular service for a number of years in one class of the ICE high-speed train. Reliable data on the economic efficiency of these techniques is now available. In a [research project](#), optimized air conditioning system based on air-cycle technology had been tested in a train in regular service over a period of two years. Air conditioning systems based on air-cycle technology show advantages over usual air conditioning systems with fluorinated refrigerants in terms of energy efficiency and life cycle costs.

[The Umweltbundesamt, 24 June 2020](#)

---

## **5<sup>th</sup> 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:

- [31<sup>st</sup> Meeting of the Parties to the Montreal Protocol](#), 4 - 8 November 2019, Rome, Italy
- [Bureau Meeting of the 30<sup>th</sup> Meeting of the Parties to the Montreal Protocol](#), 3 November 2019, Rome, Italy
- [63<sup>rd</sup> Meeting of the Implementation Committee under the Non-Compliance Procedure of the Montreal Protocol](#), 2 November 2019, Rome, Italy



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 85<sup>th</sup> meeting of the Executive Committee

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 85<sup>th</sup> meeting has been postponed until immediately after the 42<sup>nd</sup> 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:

- [84<sup>th</sup> meeting of the Executive Committee](#)
- [83<sup>rd</sup> meeting of the Executive Committee](#)
- [82<sup>nd</sup> 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](#)

### **Their National Ozone Officers,**

On behalf of the United Nations Environment Programme (UNEP) Compliance Assistance Programme (CAP) teams in Bangkok, Manama, Nairobi, Panama City, and Paris, 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 our challenging times and what the world is now facing with the COVID-19 pandemic.

I would like to re-assure you that during this very difficult period, 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 assistance, including training, capacity building, and information and air monitoring services and will continue to provide technical assistance to support your work.

Our bilateral institutions and social distancing requirements, a number of our Regional Network and Technical meetings have been postponed. But please! Let the CAP teams continue to work with great dedication and diligence to support Article 5 countries with meeting their compliance, reporting and project-related needs. Our CAP teams continue to provide technical assistance, including training, capacity building, and information and air monitoring services and will continue to provide technical assistance to support your work.

Let's stay in touch! I hope you and your CAP team have had to adjust to the period of this and work in partnership to meet these new conditions. All of our staff are working remotely through a teleworking arrangement to ensure the continuous delivery of services to your countries. They are all equipped with work-from-home, and in UNEP headquarters through videoconferencing, email and phone. They are all active and available for communication with all National Ozone Officers.

Since 1988, UNEP/OzonAction has been your close partner in the implementation of the Montreal Protocol and we will continue to work with you on your country's compliance journey. We will continue to work with you on your country's compliance journey. We will continue to work with you on your country's compliance journey.

OzonAction is here to support you. If you have any needs, challenges, or if you need to share your situation, please reach-out and contact the member of OzonAction, including the Regional CAP teams if needed.

We will continue to work with you on your country's compliance journey.

Yours sincerely,  
James S. Curlin  
Acting Head, 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<sub>2</sub>-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<sub>2</sub>-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<sub>2</sub>-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<sub>2</sub>-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<sub>2</sub>-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<sub>2</sub>- 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

---

## RAC Technician Videos - Full length films!

OzonAction is very pleased to release two 'full length' videos for refrigeration and air-conditioning (RAC) sector servicing technicians: on 1) Techniques, Safety and Best Practice and 2) Flammable Refrigerant Safety.

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




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


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

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

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

 You can watch these videos on the OzonAction YouTube Channel:

- [Techniques, Safety and Best Practice](#)
- [Flammable Refrigerant Safety](#)

 The videos are also available for download by request from UNEP OzonAction: [unep-ozonaction@un.org](mailto:unep-ozonaction@un.org)



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

The flyer is available from the [OzonAction website](#)



## 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<sup>4</sup>). 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](#)**



## Update on new refrigerants designations and safety classifications

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

The factsheet, produced by [ASHRAE](#) in cooperation with [UN Environment Programme OzonAction](#) is updated every 6 months.

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

Read/download the [factsheet](#)

The factsheet, as well as more information on ASHRAE-UNEP joint activities and tools, is also available on the [ASHRAE UNEP Portal](#).

### Contact:

- [Ayman Eltalouny](#), OzonAction, UN Environment Programme
- [W. Stephen Comstock](#), Manager of Business Development EMEA, ASHRAE



## 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

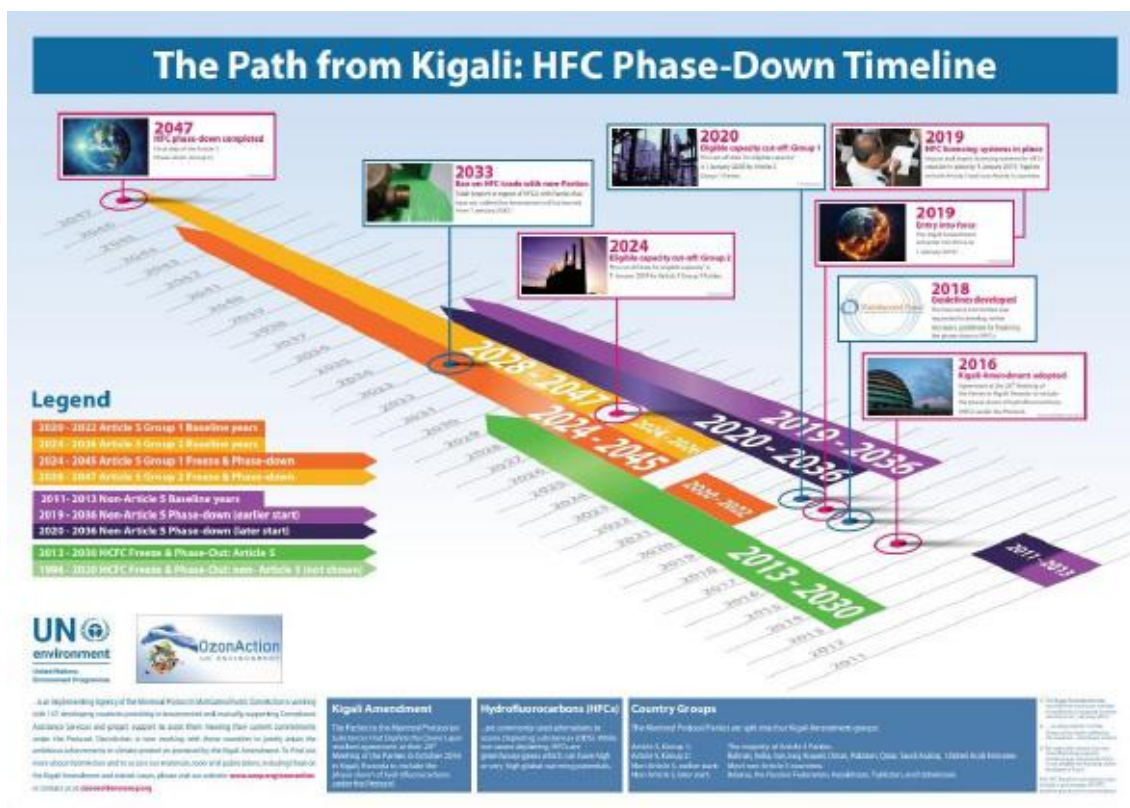




**Women in the refrigeration and air-conditioning industry: Personal experiences and achievements**

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.

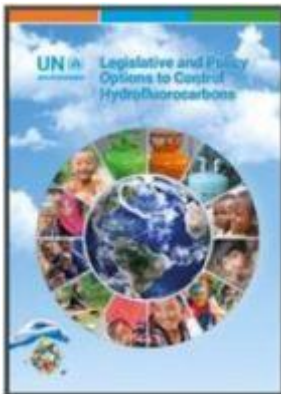
This application, consisting of short instructional videos on techniques, safety and best practice, serves as a complementary training tool for refrigeration and air-conditioning (RAC) sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training.

#### **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)

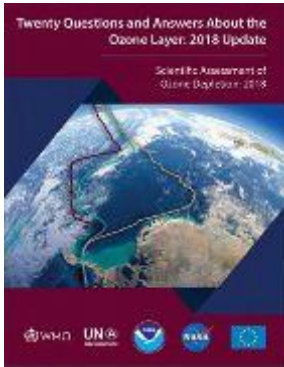
## PUBLICATIONS



### [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<sub>2</sub>-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](#)

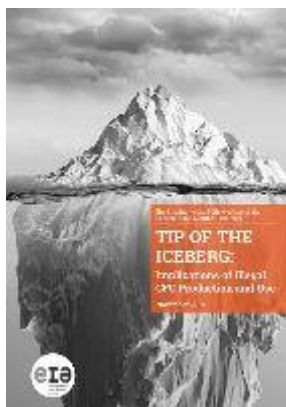




### [Impact of Standards on Hydrocarbon Refrigerants in Europe – Market research report.](#)

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, 2006-2018/1994-2019](#)** - 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).



[Accelerate #110](#) features a cover story on Clean Cooling, a new approach to HVAC&R.



[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*

---

**New International Journal of Refrigeration service for IIR members**

---



Access the complete archives of the International Journal of Refrigeration (IJR) online. Designed with IIR members in mind, this new and practical electronic subscription gives members substantial advantages:

- Immediate and permanent access to the latest research and to IJR archive
- Access the latest articles as soon as they become available online.
- 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](mailto:info@area-eur.be)



Click [here](#) to access recent OzoNews Issues [Request a PDF](#) of the current issue

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

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

If you have questions or comments regarding any news item, please contact directly the source indicated at the bottom of each article.

Prepared by: Samira Korban-de Gobert, OzonAction  
Reviewed by: Ezra Clark, OzonAction

If you wish to submit articles, invite new subscribers, please contact:  
Samira Korban-de Gobert,  
Tel. (+33) 1 44.37.14.52,  
[samira.degobert@un.org](mailto:samira.degobert@un.org)



---

UNEP, OzonAction · 1 rue Miollis · Bat. VII · Paris 75015 · France