Volume XXI | 15 January 2021

OzoNews is Turning 21!

In January 2000 UNEP OzonAction launched its e-news service: 'OzoNews'. Twenty-one years later, almost to the day, we are proud to provide the most recent edition of this bi-monthly information service to celebrate its uninterrupted and continuous dissemination.

OzoNews aims to bring you current information and updates related to the Montreal Protocol and ozone and climate protection, Science and technological advances, News stories, Montreal

Protocol and Multilateral Fund updates, UNEP and other Implementing Agencies meetings and activities, Upcoming events, and much more …

OzonAction is delighted to bring you **The OzoNews 21st anniversary edition.** Thank you for your continued interest, feedback, and invaluable support throughout the years.

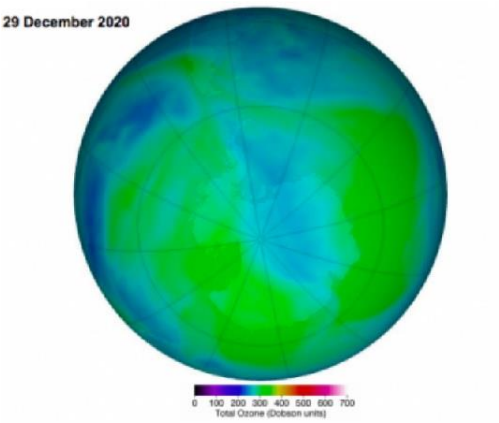
We wish all our readers a successful and productive year 2021.

Animation : https://www.youtube.com/watch?v=VvCu_Y3JYDw

In this issue:

GLOBAL

2. Record-breaking 2020 ozone hole closes



The Antarctic ozone hole — one of the deepest, largest gap in the ozone layer in the last 40 years — has closed,according to World Meteorological Organization (WMO) January 6, 2021.

The record-breaking 2020 Antarctic ozone hole finally closed at the end of December after an exceptional season due to naturally occurring meteorological conditions and the continued presence of ozone depleting substances in the atmosphere.

The 2020 Antarctic ozone hole grew rapidly from mid-August and peaked at around 24.8 million square kilometres on 20 September 2020, spreading over most of the Antarctic continent.

It was the longest-lasting and one of the largest and deepest holes since the ozone layer monitoring began 40 years ago. It was driven

by a strong, stable and cold polar vortex and very cold temperatures in the stratosphere (the layer of the atmosphere between around 10 km and round 50 km altitude). **The same meteorological factors also contributed to the record 2020 Arctic ozone hole**.

This is in contrast to the unusually small and short-lived Antarctic ozone hole in 2019.

“The last two ozone hole seasons demonstrate the year-to-year variability of the ozone hole and improve our understanding of the factors responsible for its formation, extent and severity,” said Oksana Tarasova, head of WMO Atmospheric Environment Research Division, which oversees WMO Global Atmosphere Watch network of monitoring stations. “We need continued international action to enforce the Montreal Protocol on ozone depleting chemicals. There is still enough ozone depleting substances in the atmosphere to cause ozone depletion on an annual basis,” said Dr Tarasova.

WMO’s Global Atmosphere Watch programme works closely with Copernicus Atmospheric Monitoring Service, NASA, Environment and Climate Change Canada and other partners to monitor the Earth’s ozone layer, which protects us from the harmful ultraviolet rays of the sun.

Strong Polar Vortex

Ozone depletion is directly related to the temperature in the stratosphere, which is the layer of the atmosphere between around 10 km and round 50 km altitude. This is because polar stratospheric clouds, which have an important role in the chemical destruction of ozone, only form at temperatures below -78°C.

These polar stratospheric clouds contain ice crystals that can turn non-reactive compounds into reactive ones, which can then rapidly destroy ozone as soon as light from the sun becomes available to start the chemical reactions. This dependency on polar stratospheric clouds and solar radiation is the main reason the ozone hole is only seen in late winter/early spring.

During the Southern Hemisphere spring season (August - October) the ozone hole over the Antarctic increases in size, reaching a maximum between mid-September and mid-October (NASA Ozone Watch image of 2020 ozone hole at its September peak pictured left). When temperatures high up in the atmosphere (stratosphere) start to rise in late Southern Hemisphere spring, ozone depletion slows, the polar vortex weakens and finally breaks down, and by the end of December ozone levels have returned to normal.

However, in 2020, a strong, stable and cold polar vortex kept the temperature of the ozone layer over Antarctica consistently cold, preventing the mixing of ozone depleted air above Antarctica with ozone rich air from higher latitudes.

For much of the 2020 season, stratospheric ozone concentrations around 20 to 25 km of altitude (50-100hPa) reached near-zero values with the ozone layer depth as low as 94 Dobson Units (a unit of measurement), or approximately one third of its normal value.

The EU Copernicus Atmospheric Monitoring Service reported that ozone analyses showed the ozone hole had closed on 28 December.

Every season, the appearance of the ozone hole and its evolution is monitored by means of satellites and a number of ground-based observing stations. Characteristics of the ozone hole, interactive maps, timeseries, current state and forecast are being prepared and monitored by the large ozone community through the services of different organizations

such as the Copernicus Atmosphere Monitoring Service (**CAMS**), NASA **ozonewatch** programme, **NOAA**, **KNMI**, **ECCC** and others.

Montreal Protocol

The Montreal Protocol on Substances that Deplete the Ozone Layer is the landmark multilateral environmental agreement that regulates the production and consumption of nearly 100 chemicals referred to as ozone depleting substances (ODS). Since the ban on halocarbons, the ozone layer has slowly been recovering and the data clearly show a trend in decreasing area of the ozone hole – subject to annual variations.

The latest WMO /UN Environment Programme Scientific Assessment of Ozone Depletion, issued in 2018, concluded that the ozone layer on the path of recovery and to potential return of the ozone values over Antarctica to pre-1980 levels by 2060. This is because of the long lifetime of the chemicals in the atmosphere.

The World Meteorological Organization (WMO), 6 January 2021

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3. NatRef heat pumps to the rescue

Regarded as a climate-friendly alternative to fossil-fuel boilers, heat pumps using natural refrigerants are expected to see growing adoption in 2021.


The Auer heat pump on the roof of a Colruyt shop in Etterbeek, Brussels, Belgium

The global building sector uses about 32% of all energy generated on Earth, with more than a third of it going to heating and cooling.

Buildings are thus an obvious target for solutions to the climate crisis, according to Project Drawdown, a global climate research project.

This is where heat pumps enter the picture, as they are very energy efficient compared to traditional fossil-fuel boilers, and have dramatically reduced GHG emissions, approaching zero if renewable electricity is used. Therefore, if we only use high-efficiency heat pumps going forward, the energy expenditure for buildings could be reduced by 30% to 40%, Project Drawdown says.

Currently only 3% of global delivered heat comes from heat pumps, but Project Drawdown expects this to increase to 20%-40% by 2050, saving up to 9.3 gigatons of CO_2e emissions.

Claus Schøn Poulsen, Center Manager at the Danish Technological Institute, agrees. “A widespread growth for heat pumps is expected [in 2021] as we turn our focus to electrification, and we are about to kick in the door when it comes to small heat pumps for residential housing,” he said.

End users also see the potential in heat pumps. German wholesale giant Metro AG has adopted a Heat Exit Program, to "step out" from using fossil fuels for heating. "Focus is on heat recovery, heat pumps, concrete core activation and natural ventilation," said Olaf Schulze, Director for Energy, Facility and Resource Management at Metro.

However, it is not enough to switch to heat pumps; they need to be natural refrigerant heat pumps, not HFC ones, according to Menno van der Hoff, Chief Executive Director of TripleAqua Licensing, a Dutch heat pump manufacturer. There is a "future necessity" to use natural refrigerants in HVAC due to tightening f-gas regulations, van der Hoff said during the ATMO/DTI Technical Conference in June 2020, stressing that manufacturers are already adapting and launching more natural refrigerant models. (The conference was organized by shecco, publisher of *Accelerate*.)

All of the most commonly used natural refrigerants are suitable for heat pumps, according to Poulsen. "Natural refrigerants such as hydrocarbons, CO_2 [R744] and ammonia [R717] will in particular apply to large heat pumps, whereas smaller heat pumps will involve the use of hydrocarbons and to some extent CO_2."

"In certain cases, safety issues related to the use of natural refrigerants lead to HFO refrigerants," Poulsen added. "These refrigerants can be a stepping stone towards natural refrigerants, but if there's ever any doubt, the environment should get the benefit of the doubt. The end game should be to use natural refrigerants in all installations."

R290 well established

Propane (R290) heat pumps have already made great strides forward in both commercial and domestic applications in the last few years. Belgian retailer Colruyt Group, for example, has started using R290 heat pumps from French manufacturer Auer for store heating, as a supplement to heat recovery from its R290 refrigeration systems.

The heat pumps from Auer are available in capacities ranging from 11-35kW (3.1-10TR), and up to 140kW (39.8TR) when installed in cascade, making them suitable for both domestic and commercial use. They are also highly efficient, with a COP up to 4.9, and capable of producing hot water up to 70°C (158°F), even in ambient temperatures down to -20°C (-4°F).

R744 expanding to new areas

R744 heat pumps are becoming increasingly popular, particularly in the European and Japanese markets, for both heating and cooling. In 2021, "we will see an uptake of CO_2 heat pump chillers, as these new products can provide both heating and cooling in a very compact and energy efficient way, not depending on flammable refrigerants," said Armin Hafner, Professor of Refrigeration at the Norwegian University of Science and Technology.

The U.S. market has been slower to jump on the heat pump trend but here, too, the industry is expecting an increased uptake of CO_2 heat pumps next year.

"Electrification is driving the heat pump water heater (HPWH) market upwards but probably not at the rate it would be pre-COVID," said John Miles, Managing Director, Eco2 Systems. "I would anticipate a 25% increase in the overall HPWH market to 125,000 systems [in 2021]." Next year, Eco2 Systems is planning to introduce a new generation of its CO_2 HPWH product line that is 15% more efficient, but the COVID-19 pandemic means the launch is "very delayed."

There are issues to confront in the U.S. market, one being lack of competition to drive down prices and increase adoption. “There is still a pressing need for more competition in the U.S. market for manufacturers of commercial-size CO_2 heat pump systems,” said Andy Baker from Seattle-based YourCleanEnergy. “Unitary cabinet-type CO_2 heat pump systems are still limited to Japanese manufacturers with high up-front cost.” For larger systems (approaching 100TR/ 352kW), U.S. manufacturers can be competitive, according to Baker, though they are often still reliant on foreign-made components.

There is plenty of potential, though, in the U.S. market, Baker said, particularly in his own region, the Pacific Northwest. “There are areas in this region with low-cost clean hydro-electricity; facilities with these energy resources can realize the greatest return from a CO_2 heat pump system.”

New applications

R744-based heat pumps are also expanding from commercial and domestic uses into much larger industrial applications. “Increasing capacities of the CO_2 components opens new markets and applications,” said Kim Christensen, Managing Director of Danish start-up Fenagy. “[For] industrial refrigeration and heat pumps above 500kW (142.2TR), there is a great potential for CO_2, to some extent competing with ammonia, of course.” Fenagy is developing a portfolio of R744 solutions ranging from 300kW-2MW (85TR-569TR), with the first products launching before Christmas 2020.

The cost per kW of capacity will still drop, “especially in the higher capacity range, due to the larger capacity [CO_2] components,” Christensen said.

Fenagy also expects the efficiency of natural refrigerant-based equipment to improve in 2021 as suppliers and manufacturers strive to optimize. “We have not seen the full impact of using ejectors and expanders yet,” Christensen said.

The U.S. market is also expecting efficiency increases in the coming year. “For transcritical CO_2 heat pump systems, we see the largest increase in efficiency coming from smarter integration of this equipment into new or existing facilities, specifically the increased use of low-grade waste heat as a source,” Baker said. “Automatically selecting the lowest-cost source of heat at all the right times brings down operation cost and drives up system COP,” he added, concluding that “it all comes down to good system design.”

R717 making inroads

R717 hasn’t been forgotten by the heat pump market either. “There is growing interest in low-charge ammonia heat pumps, particularly for [government-run] aquatic centers, which are huge users of energy,” said Tony Gleeson, CEO and company secretary for the Australian Institute of Refrigeration, Air conditioning and Heating (AIRAH).

Alternatives to traditional R717 compressor-driven heat pumps are also popping up. U.S. manufacturer Stone Mountain Technologies (SMTI) is developing an ammonia-water absorption heat pump, which is triggered by natural gas, to generate space heating and hot water. The unit is meant to compete with gas-fired boilers, and uses only half the gas of a boiler, while having twice the efficiency, according to SMTI’s CEO Michael Garrabrant.

The units are planned for sizes from 10,000BTU/ hour to 140,000BTU/hour, with COPs expected from 1.6 to 2. The absorption heat pumps were originally planned to hit the market in the beginning of 2021, but due to the COVID-19 pandemic the launch has been

postponed to 2022, according to SMTI's Vice President for Strategy and Marketing Scott Reed.

Accelerate Special Issue #112 – Cooling in 2021

ASIA AND THE PACIFIC

4. Embodying the Lifecycle Management of Fluorocarbons: Moving Forward with the Initiative on Fluorocarbons Life Cycle Management (IFL) - Operationalizing the concept into actions

Background

H.E. KOIZUMI Shinjiro, Minister of the Environment, Japan, announced the launch of the Initiative on Fluorocarbons Life Cycle Management (IFL) at COP25 of the United Nations Framework Convention on Climate Change (UNFCCC) in Spain, Madrid. Despite of the accomplishment of the Kigali Amendment to the Montreal Protocol, an additional 72 billion t-CO_2eq of fluorocarbons will be released into the air in the next four decades. Given the urgent need to address the effects of climate change comprehensively and the unprecedented increasing demand of fluorocarbons as refrigerants in the cooling sector, it is necessary to address emissions of fluorocarbons throughout their life-cycle, including leakage in the use of and discharge into the air during disposal. Promoting institutionalizing the life cycle management of fluorocarbons will significantly reduce emissions and contribute to mitigating climate change as well as ozone depletion (by HCFCs and CFCs).

The IFL is calling for its potential partners, such as governments, the private sector and international institutions to install sound policies and utilize technologies to control fluorocarbons emissions. This will lead to building relevant infrastructure, spur innovation, create sustainable economic growth and quality jobs. As of November 1st, 2020, 13 countries and international agencies, as well as many private sector organizations have participated in the IFL.

Since the launch of the Initiative, the Ministry of the Environment, Japan (MOEJ) and its partner countries and organizations have engaged in discussions for operationalizing the aims into actions through discussions and stakeholder consultations. Now the members have developed a Work Plan Proposal for the IFL for 2021 and are interested in engaging wider participation by their potential partners.

Objectives

- To provide information on a draft Work Plan Proposal for 2021 by the IFL to its partner countries and organizations, and those countries which are interested in participating in it to explore more opportunities to increase the appropriate management of refrigerants;-To showcase good practices, ongoing efforts and lessons learned relevant to the life cycle management of fluorocarbons by countries, international agencies, and the private sector; and
- To facilitate better understanding of how the life cycle management of fluorocarbons functions and how it delivers multiple benefits in scientific and policy contexts, whilst contributing to global efforts to protect the Ozone Layer as well as to taking a significant step towards a decarbonized world.

Side Event organised on 27 November 2020, by The Ministry of the Environment, Japan (MOEJ) and the Climate and Clean Air Coalition (CCAC), at the MOP32 of the Montreal Protocol.

LATIN AMERICA AND CARIBBEAN

5. Adiabatic gas coolers seen as key to viability of CO_2 in Latin America


Mexico City, Mexico

Six transcritical systems in Mexico count on adiabatic systems to compensate for high ambient temperatures, explains Güntner.

Correctly using adiabatic gas coolers is the key to increasing the viability of natural refrigerants, CO_2 (R744) in particular, in the warmer climates of Latin America, according to Raúl Alanis, Technical Sales of Güntner Mexico, a provider of adiabatic systems.

Alanis made this point during ATMOsphere America's Latin America-focused program in Spanish on October 22. (The online conference was organized by shecco) "Adiabatic technology can be combined with other technologies to keep systems simple, efficient, and safe," he explained.

All six transcritical systems installed in Mexico count on adiabatic condensers, which allows for hybrid usage, he said. By hybrid usage he means that at the switch-point of 21-22℃ (69.80-71.60℃), the system begins using water, providing higher energy efficiency at higher temperatures when compared to a system using synthetic refrigerants.

Alanis cited a distribution center in Mexico City (2,250m/7,382ft above sea level) that utilizes adiabatic gas coolers in a CO_2 system with two central parallel booster compressors.

The system has a total of cooling capacity of 1,082kW (307.7TR), 382kW (108.6TR) for low temperature and 840kW (238.9TR) for medium temperature. Additionally, it utilizes heat recovery to warm glycol for defrosting, which also allows for lower condensing temperatures.

According to Alanis, keeping systems in Latin America simple is key. “We still find ourselves in the first phases of projects using natural refrigerants, [so] it is convenient to maintain simplicity.”

R744, 11 January 2021, By Franco Sebastián D'Aprile

NORTH AMERICA

6. U.S. Enacts HFC Phase-Down Law as Part of COVID Relief Bill


EPA headquarters, Washington, D.C.

EPA is charged with establishing allowance program to cut HFC production/ consumption by 85% by 2036, in line with yet-to-be-ratified Kigali Amendment.

In a long-awaited move supported by a coalition of business and environmental stakeholders, the U.S. government has enacted bipartisan legislation authorizing a 15-year phase down of HFCs in alignment with the Kigali Amendment to the Montreal Protocol.

Originally introduced in January 2020 by the U.S. House of Representatives following a similar bill in the Senate, the American Innovation and Manufacturing Act of 2020 *(*AIM) requires the Environmental Protection Agency (EPA) to implement a phase down of the production and consumption of HFCs in order to reach approximately 15% of their 2011-2013 average annual levels by 2036.

AIM is part of a sweeping bipartisan legislative package, the Consolidated Appropriation Act, 2021, which includes a $1.4 trillion government spending bill and $900 billion COVID-19 relief package bill. President Trump, who will be replaced by President-Elect Joe Biden on January 20, signed the Act on December 27. AIM will:

- Phase down the production and consumption of HFCs through an allowance program
- Authorize the EPA to establish standards for the management of HFCs used as refrigerants through recovery, reclamation and improved servicing, repair, and disposal practices. This could reverse an EPA rule enacted in 2020 that rescinded a rule extending refrigerant leak repair requirements to HFCs and HFOs for

equipment containing more than 50lbs (23kg) of refrigerant, including most supermarket and industrial applications.
- Create a three-year grant program for small businesses, allocating $5 million annually toward increasing recovery and reclamation of refrigerants at end of life.
- Authorize the EPA to establish sector-based use restrictions, facilitating the transition to next-generation technologies.

The AIM law includes a list of pure HFCs targeted for phase down that is largely the same as that used in the Kigali Amendment. For HFCs like R404A, which consists of a blend of pure HFCs, “the allowances will be for the HFC components,” said Christina Starr, Senior Policy Analyst for the Environmental Investigation Agency (EIA). “So if you were producing or importing R404A, you'd need allowances for corresponding amounts of R125, R143A, and R134a.”

For HFC-HFO blends, only the HFC portion would be subject to allowance limits, she added.

Return to federal action

By implementing these measures, the EPA will resume its regulation of HFCs, which had been sidelined by the U.S. Court of Appeals ruling in 2017, and then by the EPA’s decision to expand upon that ruling.

In the absence of federal action, a number of states, led by California, have adopted the SNAP rules on HFCs, among other measures. California’s Air Resources Board last month approved new regulations that expand the state’s refrigerant restrictions considerably, including a 150-GWP cap on refrigerants used in new commercial and industrial equipment, beginning in 2022.

AIM would provide a more standard approach to HFC regulation across all states, though it would not prevent California from following through on its stricter provisions as they apply to refrigeration and air conditioning, noted Starr. Federal allocation rules would take over for niche applications deemed an "essential use" for which there are no alternatives, she added.[...]

Ammonia21, 7 January 2021, By Michael Garry

See also >>> Pandemic Relief Bill Mandates HFC Phasedown in Compliance with Montreal Protocol’s Kigali Amendment, Institute of Governance & Sustainable Development (IGSD), 8 January 2021.

7. Capture potent greenhouse gas for permanent destruction!

Mission:

To collect 10,000 pounds [4.5 tonnes] of CFC refrigerants such as Freon™, stored in cylinders or small cans, from companies who have agreed to sell their stockpiles to Tradewater at already-negotiated prices.

Tradewater, a mission-based environmental project firm, will destroy these potent greenhouse gases, certify their destruction, and sell the resulting high-quality carbon offsets, for which individual and corporate demand is growing rapidly. This is a market-driven solution to pollution. [...]

Timeframe:

September [2020] through Q1 2021 as a pilot project for an [Environmental Sustainability Rotary Action Group] ESRAG-Tradewater partnership. If both partners are satisfied with the results, we will launch Phase II to locate new stockpiles in the US, and phase III, during which we go international. ESRAG will leverage the power of Rotary to both help Tradewater track down and destroy the stockpiles, and engage Rotarians, their businesses and communities to purchase the high-quality credits created by CFC destruction. Our goal is the destruction of 1 million tonnes of CO_2 equivalent by the end of 2022, permanently removing these refrigerants as potential greenhouse gas emissions.

Volunteers needed:

2-4 volunteers from Rotary Clubs within 50 miles of each city in the pilot project (see list, below). Time commitment: 12 hours within a two-week period. Tradewater will provide online training to the volunteers. The project is conducted outdoors with sound COVID-prevention practices.

Destroying CFCs is a huge, immediate win in slowing global warming: Under the Montreal Protocol, both the manufacture of CFC refrigerants, and the manufacture of the appliances that use them, are now illegal because the gasses damage the ozone layer. They are also incredibly potent greenhouse gases (GHGs). The heat-trapping capacity of one pound of Freon™ is equivalent to 11,000 pounds of CO_2, Destroying CFCs has been ranked by Project Drawdown as one of the top most effective strategies to slow global warming.

The technological infrastructure and methodology to destroy CFCs are already in place. As an international network, Rotary Clubs have the potential to significantly expand Tradewater's capacity to find and secure stockpiles and market the offset credits that the CFC destruction creates. The climate benefit of destroying CFCs before they leak is immediate and permanent. Offsets created this way can be certified and are therefore eagerly sought by businesses committed to becoming carbon neutral. [...]

Background and research reports on Freon™ as a greenhouse gas

Under the Montreal Protocol, the refrigerant CFC-12 (brand name Freon™) has been banned from production in industrialized countries since the early 1990's because of its destructive impact on the ozone layer, but no mandate was set in place for destroying existing stockpiles. Now, the rapidly growing market in carbon offsets makes it feasible to find, purchase and destroy these stockpiles, and verify the elimination of this extraordinarily potent greenhouse gas. The result is high-quality, permanent carbon offsets.

A single 30 -pound cylinder of Freon™, when it leaks, has the same greenhouse gas impact as burning all the gasoline in two tanker trailers. Cylinders of CFCs stored around the world are a ticking time bomb. Proper collection and disposal of remaining supplies is the equivalent of eliminating over 17 years of U.S. carbon emission.

The American Carbon Registry offers an excellent overview of why and how CFC collection and destruction creates high quality, verifiable carbon offset credits.

ICF Study on Financing the Destruction of Unwanted Ozone-Depleting Substances through the Voluntary Carbon Market (2010).

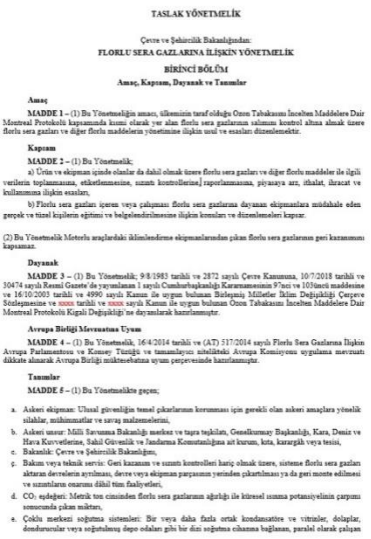
A significant amount of ODS (ozone depleting substances) still remains in cooling equipment, products, and stockpiles around the world. The high global warming potential of ODS means that their destruction has the ability to generate significant volumes of carbon credits, which can then be sold in the voluntary carbon market. This market creates incentives for the recovery and destruction of ODS through the carbon credits that can be earned. The buyers pay for real and verifiable emission reductions from the destruction of ODS that would have otherwise been emitted. [...]

The appendix on unwanted ozone-depleting substances draws on case studies from Colombia and India, offering a starting point to envision how Tradewater and ESRAG can work in these countries to locate, collect, aggregate and ultimately destroy CFCs in licensed hazardous waste management facilities.

Environmental Sustainability Rotary Action Group (ESRAG), January 2021

EUROPE & CENTRAL ASIA

8. Draft F-Gas Regulation to implement Kigali Amendment - Turkey



TASLAK YÖNETMELİK

Çevre ve Şehircilik Bakanlığından:

FLORLU SERA GAZLARINA İLİŞKİN YÖNETMELİK

BİRİNCİ BÖLÜM

Amaç, Kapsam, Dayanak ve Tanımlar

Amaç

MADDE 1 – (1) Bu Yönetmeliğin amacı, ülkemizin taraf olduğu Ozon Tabakasını İnceltен Maddelere Dair Montreal Protokolü kapsamında kısmi olarak yer alan florlu sera gazlarının salınımı kontrol altına almak üzere florlu sera gazları ve diğer florlu maddelerin yönetimine ilişkin usul ve esasları düzenlemektir.

Kapsam

MADDE 2 – (1) Bu Yönetmelik;

a) Ürün ve ekipman içinde olanlar da dahil olmak üzere florlu sera gazları ve diğer florlu maddeler ile ilgili verilerin toplanmasına, etiketlenmesine, sızıntı kontrollerine[raporlanmasına, piyasaya arz, ithalat, ihracat ve kullanımına ilişkin esasları,

b) Florlu sera gazları içeren veya çalışması florlu sera gazlarına dayanan ekipmanlara müdahale eden gerçek ve tüzel kişilerin eğitimi ve belgelendirilmesine ilişkin kuralları ve düzenlemeleri kapsar.

(2) Bu Yönetmelik Motorlu araçlardaki iklimlendirme ekipmanlarından çıkan florlu sera gazlarının geri kazanımını kapsamaz.

Dayanak

MADDE 3 – (1) Bu Yönetmelik; 9/8/1983 tarihli ve 2872 sayılı Çevre Kanununa, 10/7/2018 tarihli ve 30474 sayılı Resmî Gazete'de yayımlanan 1 sayılı Cumhurbaşkanlığı Kararnamesinin 9'ncu ve 103üncü maddesine ve 16/10/2003 tarihli ve 4990 sayılı Kanun ile uygun bulunan Birleşmiş Milletler İklim Değişikliği Çerçeve Sözleşmesine ve xxxx tarihli ve xxxx sayılı Kanun ile uygun bulunan Ozon Tabakasını İnceltен Maddelere Dair Montreal Protokolü Kigali Değişikliği'ne dayanılarak hazırlanmıştır.

Avrupa Birliği Mevzuatına Uyum

MADDE 4 – (1) Bu Yönetmelik, 16/4/2014 tarihli ve (AT) 517/2014 sayılı Florlu Sera Gazlarına İlişkin Avrupa Parlamentosu ve Konsey Tüzüğü ve tamamlayıcı nitelikteki Avrupa Komisyonu uygulama mevzuatı dikkate alınarak Avrupa Birliği mülkiyetlerine uyum çerçevesinde hazırlanmıştır.

Tanımlar

MADDE 5 – (1) Bu Yönetmelikte geçen;

a. Askeri ekipman: Ulusal güvenliğin temel çıkarlarının korunması için gerekli olan askeri amaçlara yönelik silahlar, mühimmatlar ve savaş malzemelerini,
b. Askeri unsur: Milli Savunma Bakanlığı merkez ve taşra teşkilatı, Genelkurmay Başkanlığı, Kara, Deniz ve Hava Kuvvetlerine, Sahil Güvenlik ve Jandarma Komutanlığına ait kurum, kota, karargâh veya tesisi,
c. Bakanlık: Çevre ve Şehircilik Bakanlığını,
ç. Bakım veya teknik servis: Geri kazanım ve sızıntı kontrolleri hariç olmak üzere, sisteme florlu sera gazları aktaran devrelerin ayrılması, devre veya ekipman parçasının yeniden çıkartılması ya da geri monte edilmesi ve sızıntıların onarımı dâhil tüm faaliyetleri,
d. CO_2 eşdeğeri: Metrik ton cinsinden florlu sera gazlarının ağırlığı ile küresel ısınma potansiyelinin çarpımı sonucunda çıkan miktarı,
e. Çoklu merkezi soğutma sistemleri: Bir veya daha fazla ortak kondansatöre ve vitriniler, dolaplar, dondurucular veya soğutulmuş depo odaları gibi bir dizi soğutma cihazına bağlanan, paralel olarak çalışan

Kigali Amendment adds to the Montreal Protocol the phase-down of the production and consumption of hydrofluorocarbons (HFCs). Under the Amendment, all countries will gradually phase down HFCs by more than 80% over the next 30 years and replace them with environmentally friendly alternatives. According to the UN Environment Programme (UNEP), this will help to avoid global warming by up to 0.4°C this century.

Kigali Amendment was accepted by the TBMM Foreign Affairs Committee on 29 May 2019 and approval process of the Amendment still continues in Turkey Grand National Assembly. Therefore, on 11 December 2020, the Turkish Ministry of Environment and Urbanization published this Draft Regulation that proposed to implement Kigali Amendment.

Directive (EU) 517/2014 was previously implemented by the Regulation on Fluorinated Greenhouse Gases. However, it was deemed not fully compliant with the Directive hence this Draft Regulation proposes to repeal the existing Regulation. [...]

Scope

Draft Regulation covers rules regarding the collection, labelling, leakage control, reporting, placing on the market, import, export and use of data on fluorinated greenhouse gases and other fluorinated substances, including those in products and equipment, issues regarding the training and certification of natural and legal persons whose operation is based on equipment that contains, or whose functioning relies upon fluorinated greenhouse gases. [...]

Mandatory usage areas and foreign trade

Before importing and placing on the market the product or equipment foreseen for mandatory usage areas and exempted from the placing on the market prohibitions specified in Annex 3 and Article 15, the manufacturer or importer of the said product and equipment must obtain permission from the Ministry.

The user must notify the Ministry in writing before the maintenance or technical service of the equipment, which is exempted from the usage prohibition specified in the 7th paragraph of Article 15, which is installed in mandatory usage areas of fluorinated greenhouse gas.

Principles regarding organizations operating in free-trade zones

According to Article 21 of the Draft Regulation:

- Organizations operating in free zones, provided that the prohibited products and equipment to Turkey's entry into the customs area, the Appendix 3 and are exempt from the ban placed on the market specified in Article 15,
- Organizations that bring fluorinated greenhouse gases or other fluorinated substances or products or equipment containing them to free zones; organizations that send fluorinated greenhouse gases, other fluorinated substances or products or equipment containing them outside the free zones or use, recycle, recycle, recycle or destroy fluorinated greenhouse gases or other fluorinated substances in free zones must notify the Ministry in writing.

Hydrofluorocarbon trade with countries that are not one of the parties to the Kigali Amendment to Montreal Protocol on Substances that Deplete the Ozone Layer is prohibited as of 1 January 2033. [...]

Turkish Law Blog, 6 January 2021, By Dila Şen

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9. German study of HFO and TFA due in early 2021

Research project will focus on the refrigeration/air conditioning sector, amid growing industry concerns about the long-term environmental impact of TFA.

When it escapes into the atmosphere, the HFO R1234yf – used widely in motor vehicle air conditioning and in food retail applications in blends with HFCs – lasts only up to two weeks. It then breaks down completely into trifluoroacetic acid (TFA), a highly durable and mobile substance.

TFA descends via rainfall as a form of “acid rain" to the earth; there it accumulates in various bodies of water, including rivers, streams, lakes and wetlands.

Numerous studies have been done about TFA’s potential for environmental harm. The consensus is that, for the foreseeable future, the accumulation of TFA will be too small to pose a threat to the environment and humanity.

But in sufficient quantities, TFA can be a destructive substance. In pure form, it is harmful when inhaled, and causes severe skin burns; in concentrations as low as that approaching 1mg/l, it may be toxic to some aquatic life forms.

Given the durability of TFA, and the growing use of R1234yf throughout the world in different applications, will there be a point when enough TFA has accumulated to harm the environment? How long would it take?

While R1234yf is allowed in Germany, the German Environment Agency (Umweltbundesamt or UBA) has been carefully monitoring the concentration of TFA in

drinking water. The UBA has set the Health- Related Indicator Value (HRIV) – the trigger point for taking action – for TFA in drinking water at 3 micrograms (µg)/l.

Meanwhile, the German Federal Government is funding a research project that will study HFOs and TFA, with a focus on the refrigeration/air conditioning sector. The study is called "Persistent degradation products of halogenated propellants and refrigerants in the environment: type, environmental concentrations and fate with special consideration of new halogenated substitutes with a low global warming potential."

“We hope to have it published beginning of [2021],” said Gabriele Hoffmann of the UBA. “There will be also an English version.”

Why risk it?

Many stakeholders throughout the global HVAC&R industry have expressed concerns about the potential environmental, health and safety impact of HFOs in the future as their usage continues to grow in 2021 and beyond.

Large-scale emissions of HFOs that convert to TFA could result “in yet another environmental crisis,” said János Mate, Senior Policy Consultant, Greenpeace. “Why take such risks? Have we not learned the key lesson the ozone and global warming crises have taught us: it is much easier to break than to restore nature’s balance.”

“We do not know the long-terms effect of these HFO refrigerants,” said Claus Schøn Poulsen, Central Manager, Danish Technological Institute. “The environment should have the benefit of the doubt.”

“There is a natural refrigerant available for every application that has been tried and tested and without any harm to the environment,” noted Wynand Groenewald, Founder of Future Green Now, a South African consultancy.

Collin Bootsveld, Project Engineer, Belgium grocer Colruyt Group, pointed out that it’s not just R1234yf (the HFO with the greatest conversion to TFA) but HFCs still in use like R134a and R143a that break down into TFA. “I suggest we add TFA to the existing list of ODP and GWP in order to evaluate chemical refrigerants,” he said.

Given the uncertainty around their future environmental impact, “ I see some market skepticism about HFOs, and the belief that they will eventually end up with their own phase-down situation in the future just like HCFCs and HFCs,” said Kurt Liebendorfer, Vice President of U.S. manufacturer Evapco.

“It’s difficult to have confidence in something that is relatively new compared to natural refrigerants, which have a long history of use and are already so abundant in the environment,” noted Caleb Nelson, Vice President of Business Development for Azane, a U.S. manufacturer of low-charge ammonia systems. “It’s obvious that even the HFO producers have a history of not knowing what they don’t know in terms of side effects of their chemicals.”

High GWP

Mate observed that HFO blends have a high GWP compared to natural refrigerants, such as R449A with a GWP of 1282 and R513A with GWP of 573. “But the chemical industry masquerades all HFOs as low-GWP refrigerants,” he said.

Those HFO blends are being aggressively promoted in the North American ice rink industry, with the support of the National Hockey League (NHL). Canadian contractor Cimco Refrigeration has been "fighting the very competitive push by HFO [blends] into the rink market," said Benoit Rodier, its Director of Business Development. "The NHL's position is hard to understand. They have been widely using natural refrigerants with no impact on the environment and now they are turning towards synthetic solutions with 700-GWP solutions."

Some observers believe that HFO blends, particularly as drop-in replacements for HFCs, will serve as a bridge to natural refrigerants. "These refrigerants may be necessary for some customers to reduce the number of current systems using refrigerants such as R22 and R404," said Richard Wayne Gilles, Senior Product Leader – Distributed Solutions for U.S. OEM Hussmann.

Stefan Jensen, Managing Director of Australian OEM Scantec Refrigeration Technologies, noted that mounting evidence suggests HFOs should be an interim solution only. He alluded to another concern about R1234yf – the production of the acid HF upon combustion. "It is believed that the combustion products of HFOs should be one of the factors that are considered in the standards and codes of practice regulating their use.

"Cooling in 2021" Accelerate Special Issue #112

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

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

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

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

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

Eligible nominees include customs and enforcement officers and / or their respective organizations who have been directly involved or instrumental in preventing illegal or

unwanted trade in HCFCs / HFCs as well as equipment or products containing or relying on the use of HCFCs / HFCs.

Eligible enforcement actions include the detection of an illegal shipment and the subsequent seizure, detention or sending back of the disallowed goods, as well as successful iPIC consultation preventing the issuance of export / import licenses for illegal or unwanted shipments.
Enforcement actions are eligible if they have not been submitted to any other award schemes.

Geographical scope and time period

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

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

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

Learn more >>>

FEATURED

OZONE SECRETARIAT

Overview for the meetings of the ozone treaties in 2021

- **11th ORM**, Geneva, Switzerland | 14 - 16 April 2021
- **66th IMPCOM**, Bangkok, Thailand | 12 July 2021
- **43rd OEWG**, Bangkok, Thailand | 12 - 16 July 2021
- **67th IMPCOM**, Nairobi, Kenya (tentative) | 23 October 2021
- **12th COP – 32nd MOP Bureau**, Nairobi, Kenya (tentative) | 24 October 2021
- **12th COP (part II) – 33rd MOP**, Nairobi, Kenya (tentative) | 25 - 29 October 2021

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

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

- Click **here** for the Executive Committee upcoming and past Meetings.
- **Executive Committee Primer – 2020** - An introduction to the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol.

OZONACTION

HCFC Quota and Licence Tracker - UNEP OzonAction launches a new desktop application to assist with HCFC licences and quotas - National Ozone Officers have the great responsibility of managing the allocation and monitoring of quotas for substances controlled under the Montreal Protocol. This process can be complex with many importers, especially if the country imports a range of different hydrochlorofluorocarbons (HCFCs) and mixtures containing HCFCs. To address this challenge, OzonAction developed a new desktop application that helps Ozone Officers with the tasks of planning, calculating, monitoring and managing consumption quotas and licences. It can be used on a daily basis to track and manage the current year's quota allocations for different importers, or for future planning by trying different scenarios that adjust the type of substances imported, their quantity, or the number of importers. The HCFC Quota and Licence Tracker allows Ozone Officers to see the effect of such scenarios on the national HCFC consumption and helps ensure that the quotas stay within agreed HCFC Phase-out Management Plan (HPMP) targets. For countries that have ratified the Kigali Amendment, in the future OzonAction will extend the tracker to include hydrofluorocarbons (HFCs) once countries begin designing their quota systems for those controlled substances.

To access the tools:

Click **HERE** to access the HCFC Quota tracker app

Click **HERE** to access the flyer for more information on the tracker

Click **HERE** to see the short video tutorial on the OzonAction YouTube Channel

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

Download:

- **Cold Storage and Refrigerated Warehouse**
- **Commercial, Professional and Domestic**

- **Fishing Vessel Application**
- **Refrigeration in Food Production and Processing**
- **Transport Refrigeration**

The new updated OzonAction GWP-ODP Calculator Application

“Quickly, efficiently and accurately convert between values in metric tonnes, ODP tonnes and CO_2-equivalent tonnes”

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

What’s new in the app:

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

The new and updated UNEP OzonAction ***GWP-ODP Calculator*** application will help you to convert between values in metric tonnes, ozone depleting potential (ODP) tonnes and CO_2-equivalent tonnes of substances controlled by the Montreal Protocol and their alternatives.

This application, available at no cost, is particularly useful for National Ozone Officers to assist with understanding and calculating quantities of controlled substances, both pure substances and mixtures, for quota assignment, reporting requirements, etc. Other stakeholders interested in ODP and global warming potential (GWP) values of controlled substances and their alternatives will also find this tool useful.

Operation of the application is very simple — just select a substance from the dropdown list and enter the known value in the appropriate field; the calculator will automatically perform the conversion between metric tonnes, ODP tonnes and/or CO_2-equivalent tonnes and

display the corresponding converted values. The ODP, GWP and information about the substance is provided. For mixtures, the components of the mixture and their relative proportions (metric, ODP, CO_2- equivalent tonnes) are also calculated.

The updated ***GWP-ODP Calculator*** application now includes a new Kigali Amendment mode. The app can now be used in two different modes: the regular "Actual Values" mode and the "Kigali Amendment" mode. In the Kigali Amendment mode, the GWP values provided are those specified in the Kigali Amendment to the Montreal Protocol, i.e. GWP values are only assigned to controlled HFCs. In this mode the GWP values used to calculate the refrigerant blends/mixtures only include GWP contributions from components that are controlled HFCs. The user can effortlessly switch between modes.

The OzonAction GWP-ODP Calculator uses standard ODP values and GWP values as specified in the text of the Montreal Protocol to make the conversions. Other ODP and GWP values from the recent reports of the Montreal Protocol Technology and Economic Assessment Panel and Scientific Assessment Panel as well as the Intergovernmental Panel on Climate Change (IPCC) are used when appropriate, with references to sources of all values used. The app includes new refrigerant mixtures (with ASHRAE- approved refrigerant designations).

This application is designed primarily for use by Montreal Protocol National Ozone Units and other related stakeholders. The application was produced by UN Environment Programme (UNEP) OzonAction as a tool principally for developing countries to assist them in meeting their reporting and other commitments under the Protocol and is part of the OzonAction work programme under the Multilateral Fund for the Implementation of the Montreal Protocol.

If you already have the application installed on your device, be sure to update to benefit from the new features. The app can be viewed in English, French or Spanish.

Using the application:

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

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

Watch the new short introductory tutorial **video** on the *GWP-ODP Calculator* - available now on **YouTube**

Read/download the **flyer** for more information

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**

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[4]). This guideline also provides a means by which colours can be assigned to printed materials, such as printed labels on refrigerant containers; these colours generally follow the familiar AHRI colours previously used for refrigerants.

It is very important that the range of stakeholders in the refrigeration and air-conditioning industry as well as NOOs and customs and enforcement personnel are aware of this change. **Cylinder colours can no longer be relied on as a means to identify the type of refrigerant in a container**. The principal method of cylinder identification now needs to be the container labels and markings. It is important to note that **flammable refrigerants** should include a red band on the top of the cylinder.

NOOs and technicians should be aware of this change and inform national stakeholders, as well as familiarising themselves with relevant container labels and markings for refrigerants. It will be important to inform and train customs officers of this change as colour codes have always been a helpful way to identify refrigerants. Given the possibility of mis-labelled or counterfeit refrigerants in cases of doubt/suspicion, it is recommended to verify the type of refrigerant using a refrigerant identifier

For more information read/download the factsheet

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 (September 2020 update).

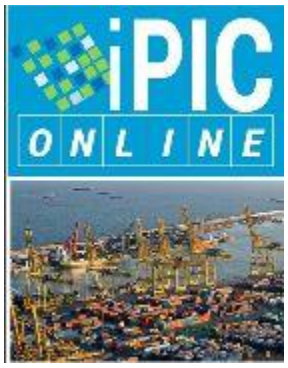
The factsheet, produced by **ASHRAE** in cooperation with **UN Environment Programme OzonAction** is updated every 6 months.

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).

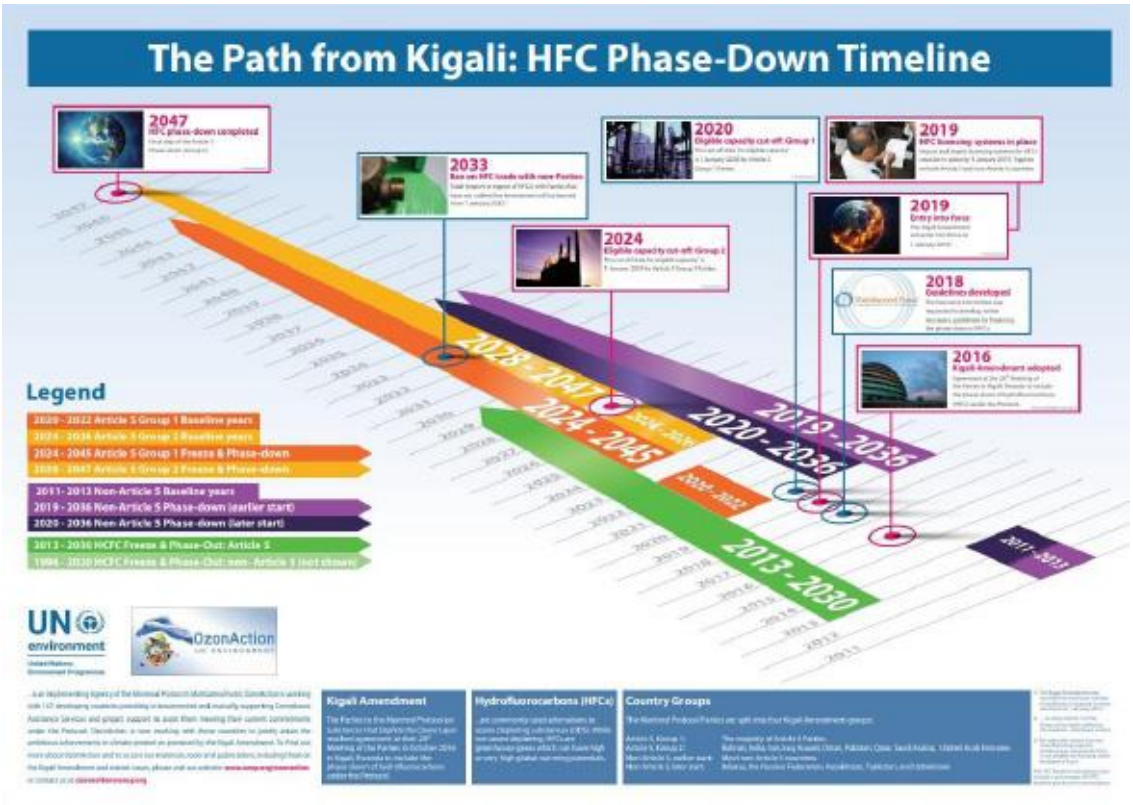
Download the publication

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 -

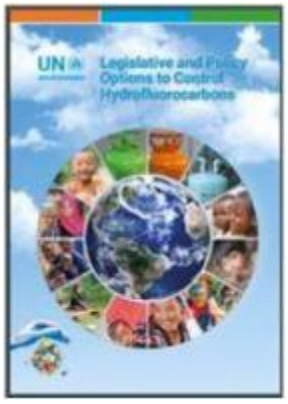
OzonAction has launched an exciting new application which hosts series of short instructional videos on techniques, safety and best practice for refrigeration and air-conditioning technicians.
This application, consisting of short instructional videos on techniques, safety and best practice, serves as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

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

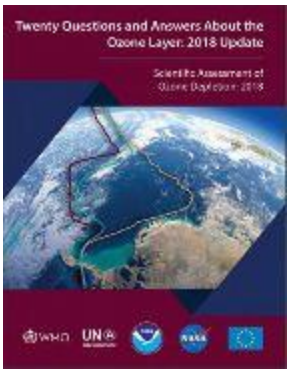
OzonAction Multimedia Video Application: Refrigeration and Air-conditioning Technician Video Series Available in the **Android Play Store** and **Apple Store/iTunes**. (Just search for "OzonAction", or scan this QR code)

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

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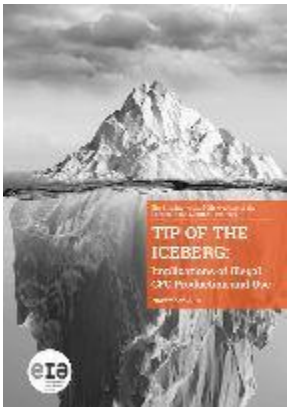
20 Questions and Answers about the ozone layer-2018 | **Figures**

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

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

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

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



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

Cold Hard Facts 3 - Review of the Refrigeration and Air Conditioning Industry in Australia
[...] This study provides a broad view of the composition, size and value of the industry, and projections for its future. This will assist industry and policy makers with management of ozone depleting substances as they are phased out, and synthetic greenhouse gases, including hydrofluorocarbons (HFCs) which are being phased down from January 2018.

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

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

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

Climate and Clean Air Coalition (CCAC), 2019

Latest issue of Centro Studi Galileo magazine, **Industria & Formazione, n. 9 - 2020**
(in Italian language).

"**World Guide to Transcritical CO_2 Refrigeration**", a free three-part resource looking at the global market penetration and potential of this natural refrigerant technology. As the use of transcritical CO_2 refrigeration systems increase at an exponential rate around the world, it has become apparent that there is a great need for reliable information from a neutral source. The newly included Part 3 focusses on specific trends relating to industrial applications and on the global transcritical CO_2 market in the future. It includes survey information, partner case studies and interviews, and "thought leader interviews" with important individuals from the industry.

MISCELLANEOUS

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

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

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

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

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

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

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

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

If you wish to submit articles, invite new subscribers, please contact:

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