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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 March 2020

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GLOBAL

1. COVID-19 pandemic: Letter from James S. Curlin, Acting Head, OzonAction, to the National Ozone Officers



Dear 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.

Due to travel restrictions and social distancing requirements, a number of our Regional Network and Thematic meetings have been postponed. Rest assured that the CAP teams are working on contingency plans to overcome this disruption and to re-schedule all postponed events once the situation allows. In the meantime, our Regional Coordinators are continuing with the Regional Network services to promote exchange of information and experiences between Ozone Officers.

Just like you and your colleagues, our CAP teams have had to adjust both their personal lives and work arrangements to meet these new conditions. All of our staff are now working remotely through a telecommuting arrangement to ensure the continuous delivery of support to your countries. They are well-connected with each other, to Paris, and to UNEP headquarters through video conferencing, email and phones. They are all online and available for communication with all National Ozone Units.

Since 1991, UNEP OzonAction has been your close partner in the implementation of the Montreal Protocol and we walk together with you on your country's compliance journey. We will continue down that path, even during challenging times such as during this pandemic.

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

Be safe and keep yourselves, your families and your colleagues healthy.

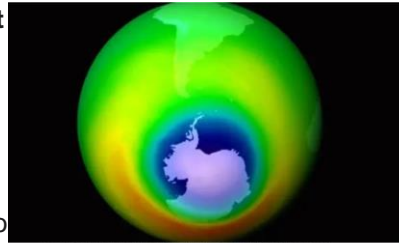
Yours sincerely,
James S. Curlin
Acting Head, OzonAction

See also: COVID-19 updates from the United Nations Environment Programme
<https://www.unenvironment.org/covid-19-updates>

2. Global efforts on ozone help reverse southern jet stream damage

Jet stream appears to have stopped moving south and may be moving back towards normal

International cooperation on ozone-depleting chemicals is helping to return the southern jet stream to a normal state after decades of human-caused disruption, a study shows.



Areas of depleted ozone, shown in blue, over the Antarctic in 1999. Photograph: AP

Scientists say the findings prove there is the capacity to heal some damaged climate systems if governments act promptly and in coordination to deal with the causes.

The southern jet stream is a powerful wind that shapes weather patterns and ocean currents in the southern hemisphere, particularly in the summer.

Up until about 2000 it had been shifting from its usual course and moving southwards towards the Antarctic at a rate of one degree of latitude each decade, affecting storm tracks and rainfall over South America, east Africa and Australia.

Previous research has shown this was primarily driven by the depletion of the ozone layer by manmade chemical compounds such as chlorofluorocarbons, hydrochlorofluorocarbons, found in fridges, aerosols and other industrial processes.

These chemicals, which were used in vast quantities until they started to be phased out under the United Nations 1987 Montreal protocol, thinned the ozone layer, causing a widening “hole” high above the south pole that affected wind patterns.

The new paper, published in the journal *Nature*, shows that the Montreal protocol has paused the southward movement of the jet stream since the turn of the century and may even be starting to reverse it as the ozone hole begins to close. Last September, satellite images revealed the ozone hole annual peak had shrunk to 16.4m sq km, the smallest extent since 1982.

“It’s a success story. This is more evidence that the Montreal protocol has led to the recovery of the ozone layer,” said the study’s lead author, Antara Banerjee, who works in the chemical sciences division of the National Oceanic and Atmospheric Administration and is a visiting fellow at the University of Boulder, Colorado.

The expected effect on people will vary from region to region. In Patagonia (southern Chile and Argentina), there should be more rain and less carcinogenic ultra-violet light. The findings will be of more concern for central South America (Uruguay, Paraguay, southern Brazil and northern Argentina), where ozone depletion was previously found to

bring more rainfall and wider bands of agricultural production. The same may also be true of east Africa and other desert areas in the mid-latitudes.

Previous studies suggest the reversal may also be good news for Australia, which has suffered more drought because the movement of the jet stream pushed rain-bearing storms away from its coast during winter. Whether this is enough to offset the rise in carbon emissions is another matter.

The restoration of ozone is not enough to push southern hemisphere weather patterns back on to a normal track because other industrial emissions – such as carbon dioxide and methane – continue to exert a disruptive force in the opposite direction.

“There is a tug of war between ozone recovery and increasing CO₂. That’s why we are seeing a pause. In the near future, the ozone factor could dominate and the jet stream will move back towards equator. But once the recovery is complete, CO₂ could push it southwards again,” Banerjee said.

Alexey Karpechko, a reviewer of the paper who works for the Finnish Meteorological Institute, said the paper illustrated how ozone depletion had been the main driver in atmospheric circulation.

“This is good news, definitely. It shows our actions can stop climate change,” he said. “We can see coordinated action works. It is a strong message to us as emitters of greenhouse gases. This shows we can manipulate the climate both ways: in a wrong way and by reversing the damage we have done.”

Whether this will affect the loss of Antarctic sea ice remains a major unanswered question. Previous studies suggested the ozone hole had a chimney-like effect that sucked some of the heat out of the atmosphere, which meant the south pole warmed more slowly than the north. But Banerjee said such a view was controversial and required further study.

[The Guardian, 25 March 2020. By: Jonathan Watts](#)

See also:

- Ozone layer is healing! Amidst Coronavirus gloom, Ozone cover above Antarctica records substantial recovery, article in [Financial Express](#), 27 March 2020
- The ozone layer is healing and redirecting wind flows around the globe, article in [New Scientist](#), 25 March 2020, By Layal Liverpool

3. Rare ozone hole opens over Arctic — and it’s big

Cold temperatures and a strong polar vortex allowed chemicals to gnaw away at the protective ozone layer in the north.

A vast ozone hole — likely the biggest on record in the north — has opened in the skies above the Arctic. It rivals the better-known Antarctic ozone hole that forms in the southern hemisphere each year.

Record-low ozone levels currently stretch across much of the central Arctic, covering an area about three times the size of Greenland (see 'Arctic opening'). The hole doesn't threaten people's health, and will probably break apart in the coming weeks. But it is an extraordinary atmospheric phenomenon that will go down in the record books.

"From my point of view, this is the first time you can speak about a real ozone hole in the Arctic," says Martin Dameris, an atmospheric scientist at the German Aerospace Center in Oberpfaffenhofen.

The hole's formation

Ozone normally forms a protective blanket in the stratosphere, about 10 to 50 kilometres above the ground, where it shields life from solar ultraviolet radiation. But each year in the Antarctic winter, frigid temperatures allow high-altitude clouds to coalesce above the South Pole. Chemicals, including chlorine and bromine, which come from refrigerants and other industrial sources, trigger reactions on the surfaces of those clouds that chew away at the ozone layer.

The Antarctic ozone hole forms every year because winter temperatures in the area routinely plummet, allowing the high-altitude clouds to form. These conditions are much rarer in the Arctic, which has more variable temperatures and isn't usually primed for ozone depletion, says Jens-Uwe Grooß, an atmospheric scientist at the Juelich Research Centre in Germany.

But this year, powerful westerly winds flowed around the North Pole and trapped cold air within a 'polar vortex'. There was more cold air above the Arctic than in any winter recorded since 1979, says Markus Rex, an atmospheric scientist at the Alfred Wegener Institute in Potsdam, Germany. In the chilly temperatures, the high-altitude clouds formed, and the ozone-destroying reactions began.

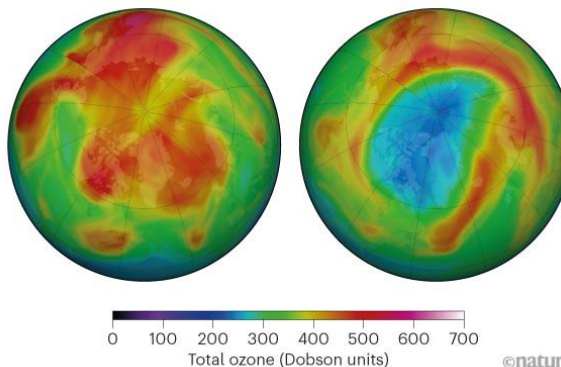
Researchers measure ozone levels by releasing weather balloons from observing stations around the Arctic (including the *Polarstern* icebreaker, which is frozen in sea ice for a year-long expedition). By late March, these balloons measured a 90% drop in ozone at an altitude of 18 kilometres, which is right in the heart of the ozone layer. Where the balloons would normally measure around 3.5 parts per million of ozone, they recorded

ARCTIC OPENING

A rare and record ozone hole has formed over the Arctic. An opening in the ozone layer appears each spring over the Antarctic, but the last time this phenomenon was seen in the north was in 2011.

23 March 2019

23 March 2020



Source: NASA Ozone Watch

©nature

only around 0.3 parts per million, says Rex. “That beats any ozone loss we have seen in the past,” he notes.

The Arctic experienced ozone depletion in 1997 and in 2011, but this year’s loss looks on track to surpass those. “We have at least as much loss as in 2011, and there are some indications that it might be more than 2011,” says Gloria Manney, an atmospheric scientist at NorthWest Research Associates in Socorro, New Mexico. She works with a NASA satellite instrument that measures chlorine in the atmosphere, and says there is still quite a bit of chlorine available to deplete ozone in the coming days.

Is it dangerous?

Things would have been much worse this year if nations had not come together in 1987 to pass the Montreal Protocol, the international treaty that phases out the use of ozone-depleting chemicals, says Paul Newman, an atmospheric scientist at NASA’s Goddard Space Flight Center in Greenbelt, Maryland. The Antarctic ozone hole is now on its way to recovery — last year’s hole was the smallest on record — but it will take decades for the chemicals to completely disappear from the atmosphere.

The Arctic ozone hole isn’t a health threat because the Sun is just starting to rise above the horizon in high latitudes, says Rex. In the coming weeks, there is a small chance the hole might drift to lower latitudes over more populated areas — in which case people might need to apply sunscreen to avoid sunburn. “It wouldn’t be difficult to deal with,” Rex says.

The next few weeks are crucial. With the Sun slowly getting higher, atmospheric temperatures in the region of the ozone hole have already started to increase, says Antje Inness, an atmospheric scientist with the European Centre for Medium-Range Weather Forecasts in Reading, UK. Ozone could soon start to recover as the polar vortex breaks apart in the coming weeks.

“Right now, we’re just eagerly watching what happens,” says Ross Salawitch, an atmospheric scientist at the University of Maryland in College Park. “The game is not totally over.”

[Nature, 27 March 2020, By: Alexandra Witze](#)

4. “COLD CHAIN 4 LIFE” Campaign

World Refrigeration Day (WRD) is an international celebratory day that raises awareness about refrigeration and air-conditioning and its contribution to modern life. WRD is widely supported by industry associations, societies, and international organizations and as well as governments and individuals. It memorializes the birth date (June 26th) of Lord Kelvin for whom the Absolute temperature Kelvin Scale is named.



For the 2020 celebrations, **WRD Secretariat**, **ASHRAE**, the **European Partnership for Energy and Environment (EPEE)**, the **International Institute of Refrigeration (IIR)**, and **UN Environment Programme OzonAction** are promoting a campaign on the importance of the refrigeration and air-conditioning Cold Chain sector and its vital contribution to food safety and food security, as well as for public health and wellbeing.

The **COLD CHAIN 4 LIFE** campaign is intended to make the public, policymakers, and end-users aware of the multiple aspects of the Cold Chain and its positive impact on our lives, for example in terms of preventing food waste/loss, protecting human health, contributing to employment and economic growth, environmental protection, and minimizing energy demand. The aim of this campaign is to motivate adoption of best practices to minimize food waste/loss throughout the supply chain (from farm to table), stimulate wise technology selection, and enhance operations by minimizing refrigerant leakage and maximizing energy efficiency.

The partners encourage everyone, including companies and professionals working in this sector, businesses and organisations that use refrigeration or air conditioning, governments, universities and schools, and members of the general public to join in the WRD celebrations this year.

For inquiries and/or to join as supporter, contact: [Stephen Gill](#), Head of Secretariat - World Refrigeration Day



5. Quantifying contributions of chlorofluorocarbon banks to emissions and impacts on the ozone layer and climate

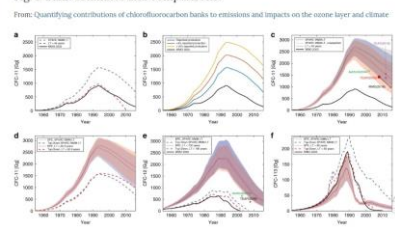
Abstract

Chlorofluorocarbon (CFC) banks from uses such as air conditioners or foams can be emitted after global production stops. Recent reports of unexpected emissions of CFC-11 raise the need to better quantify releases from these banks, and associated impacts on ozone depletion and climate change.

Here we develop a Bayesian probabilistic model for CFC-11, 12, and 113 banks and their emissions, incorporating the broadest range of constraints to date. We find that bank sizes of CFC-11 and CFC-12 are larger than recent international scientific assessments suggested, and can account for much of current estimated CFC-11 and 12 emissions (with the exception of increased CFC-11 emissions after 2012).

Left unrecovered, these CFC banks could delay Antarctic ozone hole recovery by about

Fig. 1: Bank estimates and comparisons.



six years and contribute 9 billion metric tonnes of equivalent CO₂ emission. Derived CFC-113 emissions are subject to uncertainty, but are much larger than expected, raising questions about its sources.

Read full [article](#)

Authors: Megan Lickley, Susan Solomon, Sarah Fletcher, Guus J. M. Velders, John Daniel, Matthew Rigby, Stephen A. Montzka, Lambert J. M. Kuijpers & Kane Stone

[Nature Communications](#), volume 11, Article number: 1380, 17 March 2020

6. Countries must take action on 'hidden' CFC stocks

In September 1987, many nations came together in Montreal, Canada, in response to an environmental alarm sounded by researchers. The stratospheric ozone layer, which shields the planet from the Sun's harmful ultraviolet radiation, was disintegrating over Antarctica. The culprit was clear: chlorofluorocarbons (CFCs), a class of chemical used in cooling systems and in products such as spray cans and foam insulation.



CFCs from older cooling units are not covered by the Montreal Protocol. Credit: Jason Larkin/Construction Photography/Aviation/Getty

That meeting is where the Montreal Protocol on Substances that Deplete the Ozone Layer was adopted — it would be ratified in 1989. CFC emissions fell as countries and corporations rolled out less-damaging chemicals.

Studies confirm that the ozone layer has begun its long recovery. And this has strengthened the Montreal Protocol's reputation as one of the best case studies for science-based policy: researchers identified a looming threat; governments took meaningful action; and the threat began to recede.

But CFCs didn't just deplete ozone. They have climatic effects, too, as greenhouse gases, and also in that they have changed how air circulates in the Southern Hemisphere — and probably beyond. Now a team led by researchers at the Cooperative Institute for Research in Environmental Sciences in Boulder, Colorado, reports in *Nature* how the Montreal Protocol has been helping to pause — or in some cases possibly reverse — the recent changes in atmospheric circulation driven by ozone depletion. Less ozone meant less absorption of incoming solar energy in the stratosphere. This cooled the lower stratosphere, strengthening the upper-atmospheric winds that circulate around Antarctica during austral summer. But as stratospheric-ozone conditions began to improve around the turn of the millennium, the previous change started to stabilize, and might even have begun to reverse, the researchers found.

This study demonstrates the enduring power of the Montreal Protocol — and of international environmental agreements — to protect the global commons. But another study, published in *Nature Communications* last week, reminds us why it is vital for

researchers to remain vigilant — and why their work is still needed.

There's no requirement in the Montreal Protocol to find and dispose of older CFC sources — such as old fridges and air-conditioning units — partly because the agreement was about future sources. Also, CFC banks have been regarded as small, but quite how 'small' has been the subject of considerable debate and study. Now, researchers from the Massachusetts Institute of Technology in Cambridge report that two types of CFC (CFC-11 and CFC-12) are leaking out of old cooling equipment and from building insulation — in greater quantities than had been estimated.

The researchers have calculated that these CFC “banks” are so large that they could potentially delay ozone recovery by six years, also adding the equivalent of nine billion tonnes of carbon dioxide to the atmosphere — similar to the amount that the entire European Union has pledged to cut from its emissions under the United Nations Paris climate agreement. The researchers also found higher-than-expected levels of CFC-113, a chemical previously used in solvents whose direct production is banned.

These latest findings follow research from 2018 and 2019 in which China was traced as a source of illegal CFC-11 emissions. China's government has reportedly cracked down on this, and the latest analyses — still preliminary — suggest that these emissions have decreased.

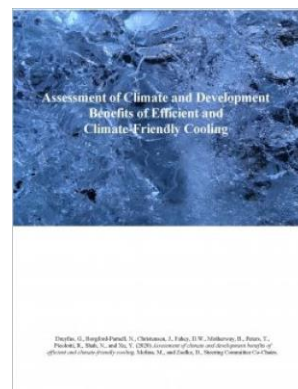
Tracking and disposing of older CFC sources will be essential if the Montreal Protocol is finally to achieve its goals. That will need some degree of action by the protocol's signatory countries — and sooner rather than later. That said, the protocol is a shining example for researchers and policymakers in other domains — not least in climate change — of how scientific evidence can drive global action.

[Nature, editorial, 25 March 2020](#)

7. Assessment of climate and development benefits of efficient and climate-friendly cooling

This report is the background document providing the basis for the Cooling Emissions and Policy Synthesis Report by the United Nations Environment Programme (UNEP) and the International Energy Agency (IEA) that is being published simultaneously. It was prepared under the guidance of a Steering Committee of leading scholars, government, think tank, and independent experts.

The planet has already warmed 1.0°C or more since pre-industrial times, and at the current pace will add 50% more warming to surpass 1.5°C as early as 2030, reaching levels outside human experience and making it more difficult for human and natural systems to adapt. As temperatures continue to increase, heat waves will become more frequent and intense, and societies will necessarily adapt by using more air conditioning and refrigeration to reduce heat-



related illness and death, ensure continuing productivity, and minimise food loss.

This implies a potentially very large additional demand for electricity with additional carbon emissions. Fast policy action can keep the growing demand for cooling from using up a significant amount of the remaining carbon budget for limiting warming to 1.5°C.

The initial schedule of the Kigali Amendment to the Montreal Protocol will avoid up to 0.4°C or more of warming by the end of the century from a phasedown of HFCs. Robust policies to promote best technologies currently available for efficient and climate-friendly cooling have the potential to reduce climate emissions from the stationary air conditioning and refrigeration sectors by 210–460 GtCO_{2e} by 2060.

A quarter of this mitigation is from phasing down HFC, and three-quarters from improving energy efficiency of cooling equipment and reducing electricity demand, which helps achieve a more rapid transition to carbon free electricity worldwide.

Authors: *Climate and Clean Air Coalition (CCAC) - Dreyfus, G., Borgford-Parnell, N., Christensen, J., Fahey, D.W., Motherway, B., Peters, T., Piccolotti, R., Shah, N., and Xu, Y., Molina, M., and Zaelke, D., Steering Committee co-chairs*

[Climate and Clean Air Coalition \(CCAC\), 2020](#)

8. Emissions of several ozone-depleting chemicals are larger than expected

Recovering and safely destroying the sources of these chemicals could speed ozone recovery and reduce climate change.



In 2016, scientists at MIT (Massachusetts Institute of Technology) and elsewhere observed the first signs of healing in the Antarctic ozone layer. This environmental milestone was the result of decades of concerted effort by nearly every country in the world, which collectively signed on to the Montreal Protocol. These countries pledged to protect the ozone layer by phasing out production of ozone-depleting chlorofluorocarbons, which are also potent greenhouse gases.

While the ozone layer is on a recovery path, scientists have found unexpectedly high emissions of CFC-11 and CFC-12, raising the possibility of production of the banned chemicals that could be in violation of the landmark global treaty. Emissions of CFC-11 even showed an uptick around 2013, which has been traced mainly to a source in eastern China. New data suggest that China has now tamped down on illegal production of the chemical, but emissions of CFC-11 and 12 emission are still larger than expected.

Now MIT researchers have found that much of the current emission of these gases likely stems from large CFC “banks” — old equipment such as building insulation foam,

refrigerators and cooling systems, and foam insulation, that was manufactured before the global phaseout of CFCs and is still leaking the gases into the atmosphere. Based on earlier analyses, scientists concluded that CFC banks would be too small to contribute very much to ozone depletion, and so policymakers allowed the banks to remain.

It turns out there are oversized banks of both CFC-11 and CFC-12. The banks slowly leak these chemicals at concentrations that, if left unchecked, would delay the recovery of the ozone hole by six years and add the equivalent of 9 billion metric tons of carbon dioxide to the atmosphere — an amount that is similar to the current European Union pledge under the UN Paris Agreement to reduce climate change.

“Wherever these CFC banks reside, we should consider recovering and destroying them as responsibly as we can,” says Susan Solomon, the Lee and Geraldine Martin Professor of Environmental Studies at MIT, who is a co-author of the study. “Some banks are easier to destroy than others. For instance, before you tear a building down, you can take careful measures to recover the insulation foam and bury it in a landfill, helping the ozone layer recover faster and perhaps taking off a chunk of global warming as a gift to the planet.”

The team also identified an unexpected and sizable source of another ozone-depleting chemical, CFC-113. This chemical was traditionally used as a cleaning solvent, and its production was banned, except for in one particular use, as a feedstock for the manufacturing of other chemical substances. It was thought that chemical plants would use the CFC-113 without allowing much leakage, and so the chemical’s use as a feedstock was allowed to continue.

However, the researchers found that CFC-113 is being emitted into the atmosphere, at a rate of 7 billion grams per year — nearly as large as the spike in CFC-11, which amounted to about 10 billion grams per year.

“A few years ago, the world got very upset over 10 gigagrams of CFC-11 that wasn’t supposed to be there, and now we’re seeing 7 gigagrams of CFC-113 that wasn’t supposed to be there,” says lead author of the study and MIT graduate student Megan Lickley. “The two gases are similar in terms of their ozone depletion and global warming potential. So this is a significant issue.”

The study appears today in *Nature Communications*. Co-authors with Lickley and Solomon are Sarah Fletcher, and Kane Stone of MIT, along with Guus Velders of Utrecht University, John Daniel and Stephen Montzka of the National Oceanic and Atmospheric Administration, Matthew Rigby of the University of Bristol, and Lambert Kuijpers of A/gent Ltd. Consultancy, in the Netherlands.

Read [full text](#)

[MIT News Office](#), 17 March 2020, By: Jennifer Chu

9. Remembering Eric Prieur, Food Logistics' 2020 Champion of the Year

Eric Prieur passed away in a plane crash while on his way to discuss the connection between food loss and waste and climate change. Here's why Food Logistics posthumously named Prieur Champion of the Year.

Eric Prieur, Carrier Transicold & Refrigeration System's former director of cold chain sustainability, was not looking for personal recognition. In fact, Jon Shaw, director of sustainability for Carrier, explains that it was the exact opposite — Prieur simply believed in the work that he was doing.

"Eric gave unselfishly — heart and soul — to a movement that was greater than himself, and he did it with great sincerity," Shaw says. "We owe him a debt of gratitude for his dedicated contributions to our business and the sustainability work that he deeply believed in."



On March 10, 2019, Eric Prieur was one of 157 passengers who died in the crash of Ethiopian Airlines flight 302. Prieur was en route to Nairobi, Kenya, on behalf of Carrier, to speak on the connection between food loss/waste and climate change at the United Nations Environment Assembly conference.

Prieur's contribution to the food industry, positions in industry organizations and oversight for academic research has posthumously earned him the recognition of Food Logistics' 2020 Champion of the Year. This annual award recognizes the industry's most influential professionals' hard work, vision and leadership in shaping the global food supply chain.

"I first met Eric shortly after he joined Carrier Transicold Europe, and we both worked in marketing communications. We had many spirited discussions, but he always stuck to his beliefs, and I admired his tenacity," Shaw says. "He was a multi-dimensional thinker, and was able to create innovative concepts and campaigns that were rooted in data analytics. It's not often you find someone whose brain works like that."

In 2015, Prieur was approached to work full-time on cold chain development, being fully aware that progress would sometimes be measured in millimeters. Shaw explained to him that initially, they may lose more than they would win, but those victories would be meaningful to so many people. After taking a day to think about it, Prieur accepted the position.

"Eric challenged us all on our assumptions about everything, from population growth to a bottom-up view as why food is lost or wasted. He recognized that there were many necessary steps to correct these things," Shaw explains. "He didn't want to just read something or see a presentation; he always wanted to understand the determining factors behind the conclusions."

While Prieur made strides in the industry, Shaw explains that his compassion reached

outside of the workplace.

“Working on two different continents meant that we had many conference calls and saw each other only a couple of times a year,” Shaw says. “I spent a few days with Eric last January working at Carrier’s office on the western outskirts of Paris, and we had several candid discussions about food loss and waste reduction and our aspirations for what Carrier could accomplish in the years going forward.

“On our last day together, he escorted me in the middle of the afternoon to the train station on the north side of Paris, so that we could continue the discussion. He didn’t have to do that, but that’s just who he was,” Shaw says.

Meanwhile, Prieur was not afraid to roll up his sleeves and go to work, often spending time in fields with growers to understand their business models, determine their pain points and how to solve them. He was learning Hindi to better communicate with participants in a pilot study in India, always going the extra mile to ensure that everyone felt validated.

“He was trusted, he was respected, he was fun-loving and he had an adventurous side that manifested itself whenever he took a vacation,” Shaw says. “In 2018, he biked from Paris to Milan [over 500 miles], making detours along the way to stop and visit relatives and friends. He was just so conscious about his impact.”

Prieur was a trailblazer for global programs aimed to reduce food waste and the resultant CO₂ emissions, and was at the forefront of leading real change in these areas with projects in India, Vietnam, and the Philippines. He influenced many people through his position and how he approached the topic of sustainability with great passion. He was often called on to speak at events around the globe, and helped increase Carrier’s level of participation and leadership in food loss and waste reduction on a global scale.

“Eric forged relationships with various organizations, such as the United Nations Environment Program (UNEP), the United Nations Food and Agriculture Organization and was one of the founding members of the Global Food Cold Chain Council (GFCCC). He also oversaw academic research and helped define and develop a cold chain certification program,” Shaw details. “The work he was engaged with continues to be critically important, not just on a global scale, but locally, as well.”

While Prieur was personally involved in many industry-wide projects and organizations, he always believed that he was a part of something much bigger than himself. His passion for reducing food waste set the bar for Carrier and others to continue his work in his memory.

For example, the GFCCC established the Eric Prieur Memorial Research Fund for Cold Chain Sustainability, which was seeded by donations from Carrier and other GFCCC members to help reduce food loss and waste while increasing global awareness for and expansion of a sustainable food cold chain. Funds will be used to develop case studies and refine data while also advancing other key sustainable cold chain activities in developing countries.

Individuals or organizations wishing to make non-tax deductible contributions to the Eric

Prieur Memorial Research Fund for Cold Chain Sustainability may do so at www.foodcoldchain.org/the-eric-prieur-memorial-research-fund/ or by sending a check payable to the Eric Prieur Memorial Research Fund, 2111 Wilson Blvd, 8th Floor, Arlington, Virginia 22201.

Prieur will be remembered, though. His contributions to the industry were immense and his loss has been greatly felt. Food Logistics, as well the other Rock Stars on this list, will continue to incorporate his knowledge about the interconnected relationship between food waste and the food supply chain by supporting the world's growing population.

"I think it's well deserved that Eric is the Champion of the Year. We are continuing the work that he was doing, and that's how we as an industry will remember him and honor his legacy," says Shaw.

Read on to learn more about the other [2020 Rock Stars of the Supply Chain](#).

[Food Logistics, 24 March 2020, By: Mackenna Moralez](#)

ASIA PACIFIC

10. 2020 Asia Environmental Enforcement Awards

The Asia Environmental Enforcement Awards publicly recognize and celebrate excellence in enforcement by government officials and institutions or teams combating transboundary environmental crime. The Awards are given to individuals and/or government organizations/teams that demonstrate excellence and outstanding leadership in enforcement of national laws to combat transboundary environmental crime. The thematic scope of the Awards covers any transboundary environmental crimes, such as illegal trade in wildlife, illegal trade in chemicals [including ozone depleting substances and HFCs] or waste, including plastic. 2020 is the fifth time the Awards will be given, and this year's Awards will be given to recipients who demonstrate excellence and leadership in one or more of the following categories:



- collaboration
- impact
- innovation
- integrity
- gender leadership

There will be also a separate category for Africa-Asia cooperation in the area of illegal trade in wildlife. The 2020 Awards will be given by the United Nations Environment Programme (UNEP) in partnership with the United Nations Development Programme (UNDP), the United Nations Office on Drugs and Crime (UNODC), the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the World Customs Organization (WCO) and the International Criminal Police Organization (INTERPOL).

The category for Africa-Asia cooperation in the area of illegal trade in wildlife is sponsored by UNDP and the Global Environment Facility (GEF)-financed, World Bank-led Global Wildlife Program.

Any government official and/or government institution or team working on fighting transboundary environmental crime in Asia or on fostering Africa-Asia cooperation in the area of illegal trade in wildlife for that category, is eligible to be nominated. Relevant agencies and individuals may include, for example: customs, police, wildlife and forestry authorities, environmental agencies, multi-agency taskforces, specialized agencies, judges and/or public prosecutors. Teams within government institutions (e.g. units, branches, divisions etc.) are also eligible. Recipients may be awarded in their individual capacity or as representatives of institutions/teams. Self-nomination is permitted.

For queries, please contact uneproap@un.org Please note that applications are only accepted through the online nomination form, not via email.

The 2020 [online nomination form](#)

Download the 2020 [Asia Environmental Enforcement Awards Information note](#)

11. Vietnam introduces law aimed at fighting climate change

Vietnam has introduced legislation to advance its greenhouse gas reduction goals as per the Paris climate accord, decreasing worries the fast-growing nation's reliance on coal would stymie those efforts.



The legislation includes a draft Law on Environmental Protection and a lower-level decree from the Environment Ministry. Together, they prepare Vietnam to decrease its emissions of greenhouse gases.

The combined laws use four main strategies: cap and trade; a ban on chemicals that destroy the ozone; corporate emission reporting rules; and a database of both emissions and the measures to decrease them. (...)

The draft legislation requires the Ministry of Natural Resources and Environment to come up with a list of companies emitting the most greenhouse gases in the nation and require them to regularly report their emissions. The ministry is supposed to introduce guidelines for the database by the end of 2020.

Besides this database, the legislation also proposes to phase in a ban on companies

using substances that destroy the ozone layer in the Earth's atmosphere. These include such chemicals as those used to produce air conditioners, fire extinguishers, and aerosol cans, for instance. (...)

VOA news, [19 March 2020](#)

WEST ASIA



الهيئة العامة للأرصاد وحماية البيئة
The General Authority Of Meteorology and Environment Protection

12. e-system for environmental clearance linked to customs (Saudi Arabia)

نظام إلكتروني للفسح البيئي مرتبط بالجمارك

تعتزم الهيئة العامة للأرصاد وحماية البيئة إنشاء نظام للفسح البيئي وربطه مع منصة الهيئة العامة للجمارك «فسح»، لضبط وأتمتة عمليات فسح المواد الكيميائية والنفايات الخطرة المقيدة، ومنع دخول المواد المستنفذة لطبقة الأوزون أو الاتجار غير المشروع.

وبحسب مصادر «الوطن»، تهدف الهيئة العامة للأرصاد وحماية البيئة إلى اختيار شركة لتقديم خدماتها لإدارة تقنية المعلومات ومساعدتها بإنشاء نظام إلكتروني للاستيراد والتصدير في كل من إدارة الوحدة الوطنية للأوزون وإدارة السلامة الكيميائية.

تشريعات وقوانين

تتمثل مهام وحدة الأوزون الوطنية في إجراء المسوحات وتوفير البيانات والمعلومات الخاصة باستهلاك المواد المستنفذة لطبقة الأوزون والقطاعات ذات العلاقة، وإعداد التقارير المطلوب إرسالها من قبل المملكة وإعداد الإجراءات التنفيذية لتطبيقها، وكذلك إجراء مسح شامل للتشريعات والقوانين الوطنية وتحليلها وإجراء التعديلات على التشريعات الموجودة أو سن تشريعات جديدة (إذا اقتضى الأمر). كما تهدف الوحدة إلى التعاون والتنسيق مع الوكالات المنفذة لإعداد وتنفيذ المشاريع الممولة متعددة الأطراف، وتحديث مناهج التعليم المهني والتأكد من تنفيذ إلزامية شهادة الممارسات السليمة لورش العمل الخاصة بخدمة وصيانة أجهزة وصيانة التكييف والتبريد والتنسيق مع الوكالات المنفذة لتدريب قطاع الجمارك والقطاعات الأخرى ذات العلاقة بروتوكول مونتريال، فضلا عن التعاون والتنسيق مع موظفي الجمارك والجهات المعنية الأخرى لإنفاذ التشريعات الخاصة بنظام التراخيص للمواد المستنفذة لطبقة الأوزون ومنع الاتجار غير المشروع، وتعزيز التوعية الجماهيرية بشأن حماية طبقة الأوزون ومتطلبات بروتوكول مونتريال وذلك بإعداد وتنفيذ البرامج والمواد التوعوية. (...)

أهداف نظام الفسح البيئي

- ضبط وأتمتة عمليات فسح المواد الكيميائية
- منع دخول المواد المستنفذة لطبقة الأوزون
- إنشاء نظام إلكتروني للاستيراد والتصدير

من مهام وحدة الأوزون الوطنية

- توفير بيانات استهلاك المواد المستنفذة لطبقة الأوزون

- إجراء التعديلات على التشريعات الموجودة أو سن جديدة

- إلزامية الممارسات السليمة لورش خدمة وصيانة أجهزة التكييف (...)

[Alwatan, 11 March 2020, By: Suleiman Al-Anzi](#)

NORTH AMERICA

13. Rare Arctic ozone hole stretches from Hudson Bay to Siberia

Rainbow-hued clouds spotted over the Arctic have resulted in a rare ozone hole over the region.

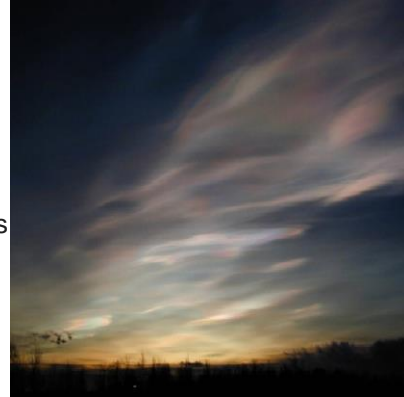
Throughout the month of March, so far, NASA satellites have been tracking a large hole in the Arctic ozone layer that appears to be the largest and most intense one ever seen.

The ozone hole over the Antarctic is a yearly event, typically opening up in August and sealing up by November, as a reminder of the impacts of human activities on the environment.

Carried by wind patterns, chemicals known as chlorofluorocarbons collect in the frigid winter stratosphere, some 15-25 kilometres above the surface. During the dark winter months over the south pole, temperatures at that altitude plunge to -78°C or lower, causing the CFCs to join together with the scarce amount of water found there, to form rainbow-hued 'nacreous' clouds - aka polar stratospheric clouds. When sunlight finally strikes these clouds, as the darkness retreats, they act as focal points for chemical reactions that destroy ozone.

While these processes happen over the Antarctic almost like clockwork every year, rarely, a similar - albeit smaller and less intense - hole can open up in the ozone layer across the Arctic.

Some Arctic ozone holes could be thought of simply as 'gaps' rather than a true hole. Due to weather patterns swirling around the north pole, stratospheric ozone 'piles up' over some regions, and as a result, it thins out in other regions.



These are often small - such that they are often called 'mini' ozone holes - and they do not last very long, due to the wind patterns eventually smoothing out these differences.

Now, however, a true ozone hole, produced by sunlight falling on nacreous clouds, has opened up over the Arctic, and it is quite wide.

According to Severe Weather Europe, who performed their own analysis earlier this week, this is likely a record-setting Arctic ozone hole. While there were ozone holes that had opened up before, notably in 2011 and 1997, they just don't measure up against what we are seeing now.

As they wrote on their website: *"Comparing the March 14th data ozone analysis for 2020, 2011 and 1997, we can see that all three years have an ozone hole present. But, 1997 and 2011 were not as intense as this year, which will likely make this March ozone hole a record strong one, for many decades in the past and perhaps also into the future."*

What was different this year is stratospheric temperatures over the Arctic. According to the temperatures plotted by NASA, the Arctic stratosphere typically warms up to above -78°C by mid-February. This prevents nacreous clouds from forming, and thus when the sunlight finally shines on that part of the world again, there is little to no ozone destruction.

Even just one year ago (the blue line in the graph) temperatures stayed well above the threshold for polar stratospheric clouds, except during a brief period in December. For 2019-2020, however (the multi-coloured line), temperatures dropped below the threshold in late November, and they have stayed there since.

As the forecast shows (the dark yellow portion of the multi-coloured line), temperatures are expected to climb in the days to come, due to the increase in the amount of sunlight received. As it warms up, the nacreous clouds will diminish, and there will be less ozone destruction, which will lead to the ozone hole sealing itself fairly quickly.

[The Weather Network, 19 March 2020, By: Scott Sutherland](#)

14. ASHRAE Offers Course on the Role of HVAC Systems on Infection Control

ASHRAE offers a course on the role of HVAC systems in infection control in hospitals.



The course, "[Designing and Operating High-Performing Healthcare HVAC Systems](#)," is one of 11 offerings in ASHRAE's Spring online instructor-led course series, taking

place on April 7. “Infection control is a primary purpose of HVAC systems in hospitals,” said course instructor, Dan Koenigshofer PE, MS Public Health, HFDP, SASHE. “Although COVID-19 is not considered an airborne contagion, the design and operation strategies described in this course may be helpful during the current pandemic. It appears that COVID-19 can be transmitted through aerosols. The movement and concentration of aerosols can be influenced by the HVAC system. Thus, it’s important for hospital engineers to understand the methods to remove and reduce airborne aerosols, using the HVAC system.”

This three-hour course focuses on the design and operation of HVAC systems in healthcare facilities. The course details the relationship of infection control and HVAC design, including application of [ASHRAE's HVAC Design Manual for Hospitals and Clinics, Second Edition](#), and [ANSI/ASHRAE/ASHE Standard 170-2017 Ventilation of Health Care Facilities](#). Key elements covered in the course include: infection control, comfort, reliability, safety, maintenance, energy, and flexibility.

Course topics are as follows:

- Discussion of costs of Hospital-Associated Infections (HAI) in the U.S.
- Controversial issues regarding HVAC and infection control such as air change rates and levels of filtration
- Engineering methods to maintain proper temperature and humidity
- How/why to pressurize to move air from clean to less clean areas
- The equation for the probability of getting an infection
- Reasons why the air velocity is limited – deposition and thermal plume
- The design of airborne infectious isolation rooms, protective isolation rooms, operating rooms, emergency depts, sterile processing department and infection control risk assessments

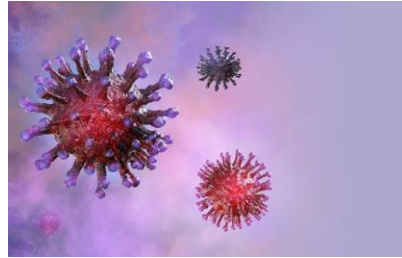
[The course will highlight the design, operation, and methods of filtration, UV lighting, and monitoring of pressure, temperature and humidity in HVAC systems for healthcare facilities.](#)

[Participants can access this instructor-led course from anywhere with an Internet connection and earn continuing education units/professional development hours for each course completed.](#)

[To register, visit the \[ashrae.org/onlinecourses\]\(https://www.ashrae.org/onlinecourses\)](#)

EUROPE & CENTRAL ASIA

15. REHVA (Federation of European Heating, Ventilation and Air Conditioning Associations) COVID-19 Guidance



As response to the coronavirus (COVID-19 or SARS-CoV-2) pandemic, REHVA experts drafted a guidance document on how to operate and use building services in areas with a coronavirus outbreak to prevent the spread of COVID-19 depending on HVAC or plumbing systems related factors.

This REHVA document considers the best available evidence and knowledge to date, utilizing an ongoing Dutch literature review elaborated by dr. Francesco Franchimon, complemented by international REHVA experts as a joint effort.

Due to the ever-changing information about the disease, the document will be updated and complemented with new evidence when it becomes available. REHVA thanks the co-authors of this document for their much-appreciated contribution.

[Download REHVA's Guidance document](#)

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

- [31st Meeting of the Parties to the Montreal Protocol,](#)
4 - 8 November 2019, Rome, Italy
- [Bureau Meeting of the 30th Meeting of the Parties to the Montreal Protocol,](#)
3 November 2019, Rome, Italy

- [63rd Meeting of the Implementation Committee under the Non-Compliance Procedure of the Montreal Protocol](#),
2 November 2019, Rome, Italy

Click [here](#) for Montreal Protocol upcoming Meetings Dates and Venue



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](#)

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

[Learn more >>>](#)



OZONACTION



[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



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.



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



[Update on new refrigerants designations and safety classifications - factsheet](#)

The purpose of this fact sheet is to provide an update on ASHRAE standards for refrigerants and to introduce the new refrigerants that have been awarded an «R» number over the last few years and introduced into the international market.

The United Nations Environment Programme (UNEP), represented by the OzonAction-Law Division, and ASHRAE have a Memorandum of Understanding to establish technical cooperation and mutual coordination toward providing professional technical services to the refrigeration and air-conditioning stakeholders (governmental, private, and public). The organizations work to ensure that up-to-date related technical information and standards are properly introduced and promoted.

[Download the Factsheet](#)

Contact:

W. Stephen Comstock, Manager of Business Development EMEA, ASHRAE

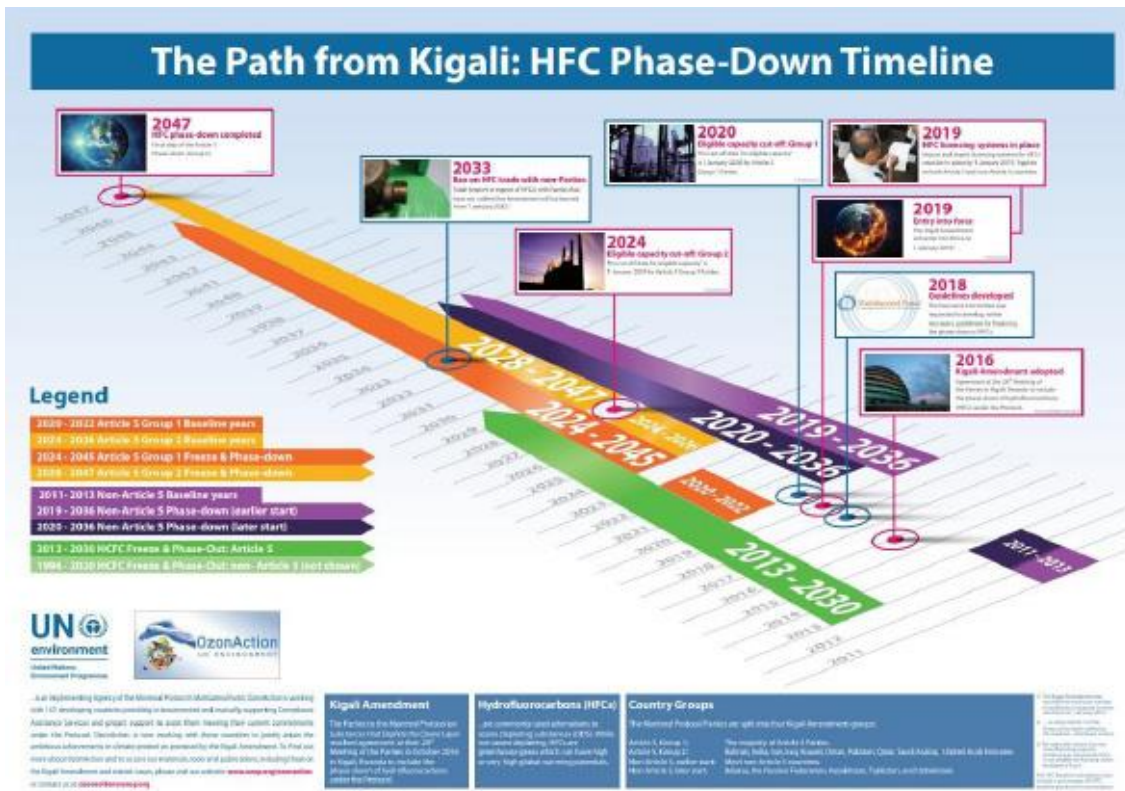
Ayman Eltalouny, Coordinator International Partnerships, UN Environment Programme OzonAction



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



GWP-ODP Calculator Smartphone Application

- Helps in understanding and reporting under the Montreal Protocol (and future commitments under the Kigali Amendment)
- The calculator will automatically perform the conversion between metric tonnes, ODP tonnes and/or CO₂-equivalent tonnes (or kg) and display the corresponding converted values
- The app includes both single component substances and refrigerant blends
- The components of a mixture and their relative proportions (metric, ODP, CO₂-eq) are also displayed.

Available for free from the Apple IOS store and [Google PlayStore](#). Search for “GWP ODP CALC” in the Playstore to install! Download it Now!

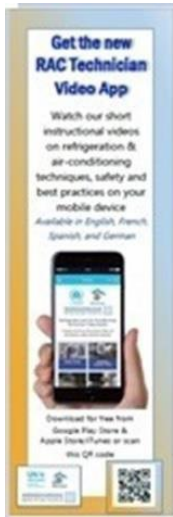
The application allow you to easily convert ODP, CO₂-eq and metric quantities of refrigerants and other chemicals.



OzonAction Smartphone Application WhatGas? Quickly search for the information you need

- | | |
|----------------------|--|
| • Chemical name | • UN number |
| • Chemical formula | • Montreal Protocol Annex and Control measures |
| • Chemical type | • Ozone depleting potential (ODP) |
| • ASHRAE designation | • Global warming potential (GWP) |
| • Trade names | • Blend components |
| • HS code | • Toxicity and flammability class |
| • CAS number | • Main uses |

OzonAction Smartphone Application WhatGas? Available for [free](#) in the Google Play and Apple IOS Store Scan the QR code or search for “UNEP”, “OzonAction” or “WhatGas?”



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.

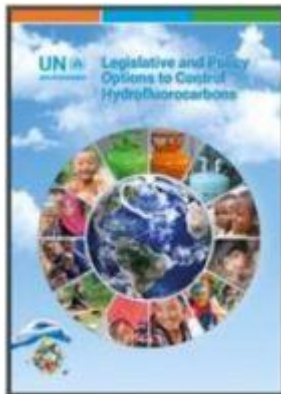
This application, consisting of short instructional videos on techniques, safety and best practice, serves as a complementary training tool for refrigeration and air-conditioning (RAC) sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training.

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)

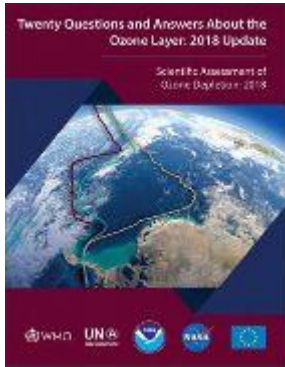
PUBLICATIONS



[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 CO₂-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](#)

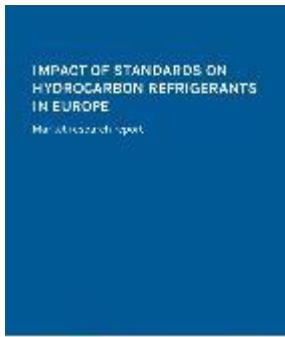
Available in 11 languages, the complete version of the International Institute of Refrigeration (IIR) International Dictionary of Refrigeration is now freely accessible online.

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](#)

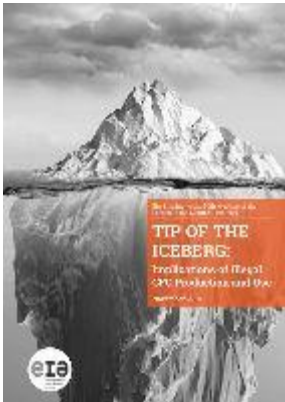


life front

[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



The Economist Intelligence Unit (EIU) newly launched report [The Cooling Imperative: Forecasting the size and source of future cooling demand](#) forecasts the size and source of future cooling demand out to 2030. Commissioned by the Kigali Cooling Efficiency Program (KCEP), this report quantifies the cooling market in unit sales and financially and maps out what the transition to more efficient, climate-friendly cooling could look like.



[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. 2 - 2020](#) (in Italian language).



[The nationally determined contributions \(NDC\) support Facility for efficient, climate-friendly cooling.](#) Launched in January 2020, the NDC Support Facility for Efficient, Climate-Friendly Cooling (NDC Support Facility) provides funding and guidance to organizations to support governments that want to integrate cooling solutions into the next round of their country's Nationally Determined Contributions (NDCs), which are expected to culminate at the 2020 UNFCCC climate negotiations (COP26) in Glasgow.

K-CEP hosted an information webinar on January 28th providing an overview of the program. Check out the [webinar recording](#) and [presentation slides](#).

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



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- 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

green ❄️
cooling initiative

[GIZ Proklima Cool Training is a series of international trainings on the safe use of natural refrigerants in the refrigeration and air-conditioning \(RAC\) sector.](#) Launched in 2014, these trainings have since supported the worldwide promotion of sustainable cooling technologies by providing training on the safe handling of natural refrigerants. Main target group are international RAC technicians and trainers as well as political decision makers from developing countries and emerging economies. Depending on the training program, the courses are offered as one-week or two-week packages aiming at NOU representatives and technicians, respectively.

Schedule 2020

- Technician Training: 4-15 May 2020
- Policy Training: 2-5 June 2020 (in English/French)
- Policy Training: 15-19 June 2020 (in Spanish)

[Learn more >>>](#)



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

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