

OzoNews

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

Volume XXIII | 15 January 2023

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OzoNews Turns 23!

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In January 2000 UNEP OzonAction launched its e-news service: 'OzoNews'. Twenty-three 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 since.

OzoNews brings 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 23rd 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 2023

OzoNews [archive](#) is available from OzonAction website

GLOBAL

1. Kigali Amendment latest ratifications



Congratulations to the latest countries which have ratified the Kigali Amendment:

Indonesia, 14 December 2022

Venezuela (Bolivarian Republic of), 5 December 2022

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

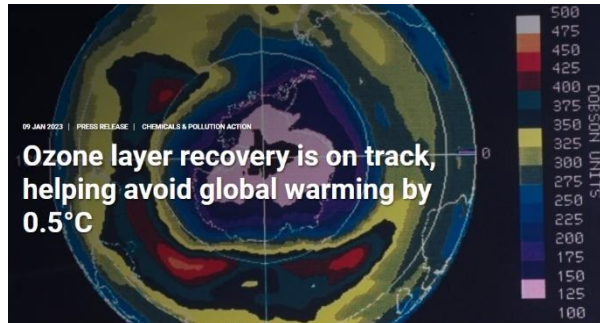
Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Status of Ratification 15 October 2016 to [date](#).

[United Nations Treaty Collection](#)

Image: UN Treaty Collection website

2. Ozone layer recovery is on track, helping avoid global warming by 0.5°C

NAIROBI, 9 January 2023 – The ozone layer is on track to recover within four decades, with the global phaseout of ozone-depleting chemicals already benefitting efforts to mitigate climate change. This is the conclusion of a UN-backed panel of experts, presented today at the American Meteorological Society's 103rd annual meeting. Examining novel technologies such as geoengineering for the first time, the panel warns of unintended impacts on the ozone layer.



On track to full recovery

The UN-backed Scientific Assessment Panel to the Montreal Protocol on Ozone Depleting Substances [quadrennial assessment report](#), published every four years, confirms the phase out of nearly 99% of banned ozone-depleting substances. The Montreal Protocol has thus succeeded in safeguarding the ozone layer, leading to notable recovery of the ozone layer in the upper stratosphere and decreased human exposure to harmful ultraviolet (UV) rays from the sun.

If current policies remain in place, the ozone layer is expected to recover to 1980 values (before the appearance of the ozone hole) by around 2066 over the Antarctic, by 2045 over the Arctic and by 2040 for the rest of the world. Variations in the size of the Antarctic ozone hole, particularly between 2019 and 2021, were driven largely by meteorological conditions. Nevertheless, the Antarctic ozone hole has been slowly improving in area and depth since the year 2000.

“That ozone recovery is on track according to the latest quadrennial report is fantastic news. The impact the Montreal Protocol has had on climate change mitigation cannot be overstressed. Over the last 35 years, the Protocol has become a true champion for the environment,” said Meg Seki, Executive Secretary of the United Nations Environment Programme’s Ozone Secretariat. “The assessments and reviews undertaken by the Scientific Assessment Panel remain a vital component of the work of the Protocol that helps inform policy and decision makers.”

Impacts on climate change

The 10th edition of the Scientific Assessment Panel reaffirms the positive impact that the treaty has already had for the climate. An additional 2016 agreement, known as the Kigali Amendment to the Montreal Protocol, requires phase down of production and consumption of many hydrofluorocarbons (HFCs). HFCs do not directly deplete ozone but are powerful climate change gases. The Scientific Assessment Panel said this amendment is estimated to avoid 0.3–0.5°C of warming by 2100 (this does not include contributions from HFC-23 emissions).

“Ozone action sets a precedent for climate action. Our success in phasing out ozone-eating chemicals shows us what can and must be done – as a matter of urgency – to transition away from fossil fuels, reduce greenhouse gases and so limit temperature increase,” said WMO Secretary-General Prof. Petteri Taalas.

The latest assessment has been made based on extensive studies, research and data compiled by a large international group of experts, including many from the World Meteorological Organization (WMO), United Nations Environment Programme (UNEP), the US National Oceanic and Atmospheric Administration (NOAA), the US National Aeronautics and Space Administration (NASA) and European Union.

Geoengineering

For the first time, the Scientific Assessment Panel examined the potential effects on ozone of the intentional addition of aerosols into the stratosphere, known as stratospheric aerosol injection (SAI). SAI has been proposed as a potential method to reduce climate warming by increasing sunlight reflection. Yet the panel cautions that unintended consequences of SAI “could also affect stratospheric temperatures, circulation and ozone production and destruction rates and transport.”

[UN Environment Programme \(UNEP\), 9 January 2023](#)

Image: UNEP website

See also >>> [The ozone layer recovery was largely covered worldwide, below a selection of featured articles:](#)

- Excerpt from 10 January 2023 [UN Daily Press Briefing by the Office of the Spokesperson for the Secretary-General](#), [...] I think the underlying importance is that it shows that when Member States get together, when the international community gets together, as they did

in approving the Montreal Protocol in 1989, it can have real positive impact. And that should be an example as countries continue to discuss, under the aegis of the UNFCCC, how we fight climate change, how we mitigate climate change, how we deal with climate change. That progress is possible if we found unity in purpose and unity in action. [...]

- [UN says ozone layer slowly healing, hole to mend by 2066](#) (Associated Press)
- [Ozone layer healing but imperiled by schemes to curb sun's heat](#) (RFI)
- [Earth's ozone layer on course to be healed within decades, UN report finds](#) (The Guardian)
- [Restoration of the ozone layer is back on track, scientists say](#) (The New York Times)
- [Ozone layer continues to heal, a key development for health, food security and the planet](#) (The Washington Post)
- [Ozone layer may be restored in decades, UN report says](#) (BBC)
- [Climat: la reconstitution de la couche d'ozone est en bonne voie](#) (Le Monde)
- [Climat: la couche d'ozone "en bonne voie" pour se reconstituer en quatre décennies](#) (BFMTV)
- [Ozone layer recovers, limiting global warming by 0.5C](#) (DW)
- [Ozone layer on track to recover within four decades](#) (ABC)
- [Antarctic ozone hole on course to heal in 2065](#) (The Times)
- [Earth's ozone layer recovering as damaging airborne chemicals decline](#) (The Wall Street Journal)
- [Ozone layer: How the hole was plugged](#) (Barron's)
- [Ozone layer to recover by 2060 amid global phaseout of chemicals, says UN](#) (The Irish Times)
- [Ozone layer is recovering again after China bans pollutants](#) (Daily Beast)
- [Ozone layer on track to fully recover within four decades, says UN report](#) (i24 News)
- [UNEP says ozone layer recovery on track](#) (Xinhua)
- [Ozone layer's recovery on track, averting 0.5c global temperature increase: UN](#) (Urdu Point)
- [Ozone layer slowly healing: UN](#) (The Daily Star)
- ['Fantastic news': Ozone layer on track to recover within decades, UN reports](#) (Euronews)
- [Ozone Layer over Antarctica should heal by 2066, UN says](#) (Vietnam News Explorer)
- [Hole in ozone layer healing, UN-led study shows](#) (Voice of America)
- [U.N. says ozone layer slowly healing, hole to mend by 2066](#) (The Hindu)

3. Dead NASA satellite returns to Earth after 38 years

A defunct NASA satellite has fallen back to Earth after 38 years orbiting the planet.

The Earth Radiation Budget Satellite, known as ERBS, was launched in 1984 aboard space shuttle Challenger.

Until 2005, data from ERBS helped researchers investigate how Earth absorbed and radiated energy from the Sun, and measured ozone, water vapor, nitrogen dioxide and aerosol concentrations in the Earth's stratosphere.



The US Department of Defense confirmed that ERBS reentered Earth's atmosphere on Sunday at 11:04 p.m. ET over the Bering Sea, according to a statement from NASA.

It wasn't immediately clear whether parts of the satellite survived re-entry. Most of the satellite was expected to burn up as it moved through the atmosphere. NASA had calculated that the risk of harm coming to anyone on Earth was very low – approximately 1 in 9,400.

The satellite far exceeded its expected two-year life span, operating for a total of 21 years.

An instrument on board ERBS, the Stratospheric Aerosol and Gas Experiment II (SAGE II), collected data that confirmed the ozone layer was declining on a global scale, NASA said.

That data helped shape the Montreal Protocol Agreement, an international agreement signed in 1987 by dozens of countries, that resulted in a dramatic decrease around the globe in the use of ozone-destroying chlorofluorocarbons (CFCs) – chemicals once commonly used in aerosol sprays, refrigeration, and air conditioners.

If the ban on CFCs hadn't been agreed, the world would be on track for a collapse of the ozone layer and an additional 2.5 degrees Celsius of global warming by the end of the century, a 2021 study found.

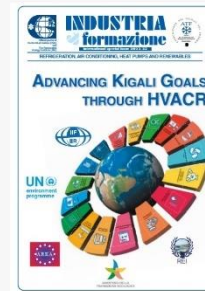
Today, SAGE III on the International Space Station collects data on the health of the ozone layer.

CNN, 9 January 2023, By Katie Hunt

Image: NASA's retired Earth Radiation Budget Satellite (ERBS) reentered Earth's atmosphere on Jan. 8, 2023.

Advancing Kigali goals through HVACR - International Special Issue 2022- 2023

- To provide an update on this global effort, The Centro Studi Galileo (CSG) and the Renewable Energy Institute (REI), with support from the International Institute of Refrigeration (IIR), The United Nations Environment Programme-OzonAction, (UNEP-OzonAction) and The Air conditioning and Refrigeration European Association (AREA), Ministero Della Transizione Ecologica, have collected experiences from around the world, compiled in this special publication, featuring papers from leading global institutions and experts, addressing the current situation, the challenges ahead, and sharing opinions from different National Ozone Units, on issues related among others to HVAC&R, training, and the role of women in the cooling industry.



*The **International Special Issue 2022- 2023** was officially launched during a side event at the Thirty-Fourth Meeting of the Parties to the Montreal Protocol in Montreal, (MOP34), 31 October – 4 November 2022 | Montreal, Canada*

Sustainable cold chains: Virtual Exhibition - The virtual exhibition for sustainable cold chains aims to highlight the critical role of cold chains in ensuring food safety and security, access to vaccines, reducing global warming and preventing ozone layer depletion.

The exhibition showcases commercially available cold chain technologies for food and vaccines, mainly targeting applications and equipment with refrigeration and cooling cycles that use ozone and climate-friendly refrigerants and have enhanced energy efficiency characteristics. It also aims to promote game-changing and systemic approaches, relevant initiatives, and not-in-kind solutions to cold chains

These technologies and approaches directly contribute to meeting national obligations under the Montreal Protocol on Substances that Deplete the Ozone Layer including its Kigali Amendment and the Paris Agreement on Climate Change. Sustainable cold chain contributes to the achievement of many **Sustainable Development Goals**.

The exhibition is ongoing and continuously updated with submissions accepted on a rolling basis. The partners of the exhibition will continue promoting the exhibition at all relevant events and throughout 2022 and beyond.

Click [here](#) for more information / submit a nomination >>>

Image: Sustainable cold chains website



Categories



1 exhibits

On site post-harvesting and/or precooling applications



8 exhibits

Storage of product, e.g. large warehouses / Distribution centers



0 exhibits

Storage on board ships, aircraft, and containers



4 exhibits

Food processing plants



1 exhibits

Transport (large and smaller trucks, smaller containers)



8 exhibits

Supermarkets (wholesale markets & Retailers)



1 exhibits

Food services (Restaurants, cafes, tourism facilities, etc)



2 exhibits

Vaccines and other pharmaceutical products



0 exhibits

Game-changing and systemic approaches

AFRICA

4. Rwanda banks on new financing to help restore Ozone layer

Rwanda is considering a new mechanism to ease access to affordable and eco-friendly fridges and air conditioners that are not harmful to the Earth's ozone layer and causing climate change. [...]



According to information shared by Rwanda Environment Management Authority, there is a scheme dubbed "A green on-wage financing mechanism" to make energy-efficient and climate-friendly refrigerators and ACs more affordable.

The scheme is under Rwanda Cooling Finance Initiative (R-COOL FI) to promote energy-efficient and climate-friendly cooling and recycling of existing inefficient systems.

The project aims to unlock \$4 million in financing to support the purchase of 12,500 energy-efficient and climate-friendly cooling products in Rwanda by 2024.

Martine Uwera, Rwanda's Focal Point of Montreal Protocol, said the initiative which is part of implementing Kigali Amendment can potentially help overcome key barriers, including the burden of upfront investment and the need for collaterals.

The program incentivises households and micro-entrepreneurs to return end-of-life cooling equipment and acquire certified higher-efficiency cooling appliances in exchange through a dedicated take-back scheme in partnership with interested vendors and an e-waste management company.

The energy-saving and eco-friendly refrigerators and air conditioners are discounted through credit at a discounted price, she said.

By 2020, Rwanda had drastically reduced, by 54%, the importation of gases known as 'hydro-chlorofluorocarbons (HCFCs)' that deplete the ozone layer as part of implementing the Montreal Protocols.

Rwanda reduced the importation of HCFCs from 4.1 tonnes in 2010 to 1.89 tonnes in 2020.

There was still a gap of 1.89 tonnes which Rwanda seeks to phase out by 2030.

"The importers have to import eco-friendly gases used in the equipment. We want to improve the financing mechanism so that consumers buy this equipment and also pay through their salary or income via banks," she said.

According to environmentalists, there is a need for increased uptake of ensuring energy efficiency of refrigeration and air conditioning equipment to reduce greenhouse gas emissions that are harmful to Ozone layer and causing climate change, according to environmentalists.

The call to increase uptake and investments in energy efficiency of refrigeration and air conditioning equipment follows a new UN-backed assessment report which suggests that Earth's ozone layer could recover completely within decades if more efforts are invested in phasing out ozone-depleting chemicals across the world.

"Consumers should embrace fridges with new technology, for instance, that consume less electricity because they are not harmful to the ozone layer. There is a need for more

incentives and investments to finance and increase the uptake,” Adeline Icyimpaye, an engineer at Munyax Eco Ltd, a distributor of renewable energy, told The New Times.

She said that besides saving the ozone layer, the technologies, if increased, will also save money for consumers.

“If equipment was consuming 5,000 Watt and this reduces to 1,000 Watt, it will both save money but also reduce harmful emissions to the ozone layer,” she said, adding that old fridges should be replaced in the country.

Recent studies indicate that there are an estimated over 88,000 refrigerators in Rwanda, of which an estimated 64,000 are classified as old and that this wastes electricity worth approximately Rwf4 billion annually. [...]

The New Times Rwanda, 15 January 2023, By Michel Nkurunziza

Image: The New Time Rwanda website - Fridges made in Rwanda

NORTH AMERICA

5. US EPA Proposes Phasedown of Manufacture and Use of HFC Refrigerants

On December 15, 2022, EPA proposed new regulations that would begin a phasedown of the manufacture and use of hydrofluorocarbons (HFCs). HFCs are widely used as refrigerants in industrial, commercial, residential, and automotive refrigeration systems, and are less widely used as propellants in foam-blowing and other industrial applications. In fact, HFCs have long been promoted as environmentally friendly substitutes for ozone-depleting chlorofluorocarbon (CFC) and hydrochlorofluorocarbon (HCFC) refrigerants as a result of the 1987 Montreal Protocol. Although HFCs do not damage the ozone layer, they have extremely long atmospheric lifetimes and high Global Warming Potentials (GWPs). Because of this, EPA has been working to restrict the use of HFCs for several years, but previous efforts have been stalled by lawsuits challenging EPA’s existing authority to regulate these compounds.

The authority to restrict the use of HFCs was provided by Congress as part of the American Innovation & Manufacturing (AIM) Act, which was signed into law in December 2020 and directed EPA to implement an 85 percent phasedown of the production and consumption of HFCs by 2035. As currently proposed, the phasedown would begin on January 1, 2025 with a ban on the manufacture or import of products using HFCs in specified amounts and in specified industrial sectors. Subsequent bans on the sale, distribution, and export of these products are proposed to follow in 2026 and 2027. Common HFC refrigerants include R-32, R-134a, and R-143a.

The specific HFC manufacture and use restrictions depend on the size of the refrigeration (or propellant) application as well as the industrial sector in which it is used. In some applications, specific refrigerants are banned across an industry sector and in other applications, the restrictions depend on the refrigerant charge capacity and the GWP of the



refrigerant blend in use. For example, industrial process refrigeration systems containing more than 200 pounds of refrigerant are limited to refrigerants (or blends) with a GWP of less than 150. Smaller industrial process refrigeration systems may contain refrigerants with a GWP of less than 300.

While existing equipment (as of December 27, 2020) is exempt from the restrictions and may continue to use HFCs, the restricted supply of new HFC products will lead to increased difficulty and expense in continuing to operate HFC equipment. This market effect has already been seen with the dwindling supply of ozone-depleting CFC and HCFC refrigerants available for older refrigeration systems. It is often prohibitively expensive to continue to operate and maintain these older systems, with retrofit or replacement becoming the only cost-effective option.

Manufacturers and distributors of products containing HFCs will need to transition to acceptable alternatives quickly to comply with the restrictions. The proposed rule also includes recordkeeping, labeling, and reporting requirements necessary for manufacturers and distributors to demonstrate product compliance. Operators of existing HFC systems should be aware of the phasedown so that the retrofit or replacement of existing systems can be appropriately planned and budgeted.

EPA is accepting comments on the proposed regulations until January 30, 2023. [Learn more >>>](#)

Lexology, 10 January 2023

Image: US Government Federal Register Website

6. Workforce Development Assessment Report- NASRC

Data-driven recommendations to grow the technician workforce

NASRC is proud to release the NEW **Workforce Development Assessment Report**, which proposes data-driven solutions to improve technician recruitment, training, and retention to grow the commercial refrigeration technician workforce.

Report findings are based on NASRC research to evaluate challenges and opportunities to grow the technician workforce.

[Download the report for FREE](#) stay tuned for opportunities to get involved in the coordinated implementation of the report recommendations.

The North American Sustainable Refrigeration Council (NASRC), January 2023

Image: NASRC



7. AIM Act: Technology Transitions Proposed Rule: US EPA GreenChill upcoming webinar

Date: 19 January 2023 **Time:** 2 – 3 PM Eastern

Topic: Presenters from the U.S. Environmental Protection Agency (EPA) will provide an overview of EPA's Proposed Restrictions on Certain Uses of Hydrofluorocarbons (HFCs) under Subsection (i) of the AIM Act. The webinar will focus on the refrigeration sector.



Register Now! [GreenChill Webinar: Technology Transitions Proposed Rule](#)

Note: EPA will not take public comments during the webinar but will respond to clarification questions about the proposed rule. The 45-day public comment period for this proposed rule closes on Monday, January 30, 2022.

You may review the [proposed rule](#) for further information on how to comment. You are able to view the public docket at <https://www.regulations.gov> by searching for docket number EPA-HQ-OAR-2021-0643. [More information about this proposed rule is on the EPA website.](#)

[US EPA GreenChill Program, 19 January 2023](#)

Image: USEPA GreenChill

EUROPE AND CENTRAL ASIA

8. Europe and Central Asia (ECA) Montreal Protocol Award for Custom, and Enforcement Officers (5th edition)

Nominations of Customs and Enforcement Officers from **Bulgaria, China, France, Georgia, Germany, Indonesia, Italy, Malaysia, Netherlands, North Macedonia, Poland, Romania, Russian Federation, Spain, Turkmenistan, Ukraine, Uzbekistan** as well as **the European Commission and OLAF** have been validated by the World Customs Organization, the Ozone Secretariat and UNEP Law Division's OzonAction Programme. The awardees shall receive the prestigious Montreal Protocol medals and certificates in recognition of their strong commitment to address illegal or unwanted trade in ozone-depleting substances and fluorinated global warming substances controlled under the Montreal Protocol and its Kigali Amendment. The award aims to providing recognition and visibility to those who support the implementation of the Montreal Protocol.



In total, 64 seizures were reported during the period 2019-2020: 14,617 refrigerant cylinders / ISO containers with more than 380 metric tons of hydrofluorocarbons (HFCs),

hydrochlorofluorocarbons (HCFCs) and chlorofluorocarbons (CFCs), and 215 pieces of equipment.

Informal Prior Informed Consent (iPIC) consultations between ECA countries and their trade partners prior to the issuance of the mandatory export and import licenses avoided 12 unwanted / illegal shipments of more than 167 metric tons of HCFCs and halons during the period 2019-2020.

In addition, Poland detected more than 31 metric tons of illegal HFC imports which had taken place in 2019-2020, and Spain detected illegal venting of more than 100 tons of refrigerants from recycling centers and illegal exports of more than 589 tons of hazardous waste.

OzonAction's Montreal Protocol Network for Europe and Central Asia (ECA network) is currently producing the award medals and preparing a virtual award ceremony which is tentatively scheduled for March 2023.

More recently, WCO's Operation Demeter VIII resulted in the seizure of 25 tons of substances controlled by the Montreal Protocol. Polish Customs seized 1,239 non-refillable cylinders containing more than 19 tons of refrigerant. Click [here](#) for more details.

Montreal Protocol Officers and focal points are encouraged to report seizures to the Ozone Secretariat ([Email](#)), so that parties to the Montreal Protocol can be informed accordingly. For the reporting format, please refer to the Ozone Secretariat's website [here](#)

Learn [more](#)

Contacts:

[Anna Kobylecka](#), World Customs Organization

[Gilbert Bankobeza](#), Ozone Secretariat

[Halvart Koeppen](#), UNEP Law Division OzonAction

Image: OzonAction

9. Germany Grants Bonus Subsidy to Home Heat Pumps that Use Natural Refrigerants

On January 1, 2023, Germany's new Federal Funding for Efficient Buildings program came into force, providing subsidies for various alternative heating systems, including heat pumps with a COP of

at least 2.7 – and a bonus for those charged with natural refrigerants.

According to Germany's Federal Office of Economics and Export Control, subsidies for heat pumps will cover up to 40% of their cost. This includes a basic subsidy of 25%, a 5% bonus if the refrigerant is natural and a 5% bonus if the heat source is ground, water or wastewater. (The two bonuses are not cumulative, however.)



In addition, a bonus of 10% can be granted for the replacement of an operational oil, gas floor, gas central, coal or night-storage heating system. Gas heating systems, with the exception of gas floor heating systems, must be at least 20 years old.

The primary natural refrigerant used in residential heat pumps in Europe is propane (R290).

The minimum eligible investment required for a subsidy is €2,000/US\$2,149 (gross). The eligible costs for energy refurbishment measures in residential buildings are capped at €60,000 (US\$64,466) per residential unit and calendar year, up to a maximum of €600,000 (US\$644,658) per building.

“The good news is that the funding environment for heat pumps will remain largely stable in 2023,” said Martin Sabel, Managing Director of the German Heat Pump Association, on the Federal Office of Economics and Export Control’s website.

Other technologies that are eligible for subsidies include solar collector systems, biomass heating and stationary fuel cell heating. In the construction and retrofitting of heat pumps and biomass systems for space heating, at least 65% of the residential units or areas supplied by the systems must be heated by renewable energies.

Upcoming changes

Starting in 2028, only heat pumps that use natural refrigerants will be funded, according to the Federal Office of Economics and Export Control. However, open negotiations about a new regulation could include partially fluorinated hydrocarbons. Depending on the outcome, there could still be changes in the promotion of heat pumps with propane.

The minimum required COP of 2.7 may go up to 3.0 in 2024. The German Heat Pump Association said there are projects in which such annual performance figures could not be achieved without additional measures, such as replacing heating distribution systems or building insulation.

Germany is also working on drafting a Blue Angel ecolabel for heat pumps. According to the German Environment Agency (UBA) interim report, which was released in September 2022, only domestic heat pumps charged with natural refrigerants will be awarded the Blue Angel certification.

Hydrocarbons21, 10 January 2023

Image: Aerial view of Berlin, Germany. Source: Wikimedia

See also >>>

[Minimum legal standards should exist for all heat pump installs](#) (Heating Ventilating & Plumbing (HVP) magazine, UK)

FEATURED

Summary of the 34th Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (MOP34), 31 October – 4 November 2022 | Montreal, Canada

- Read/Download the [full report](#)
- pre/post documents, United Nations Environment Programme (UNEP), Ozone Secretariat [MOP-34](#)
- [Daily highlights](#) Earth Negotiations Bulletin-International Institute for Sustainable Development (IISD) / [Presentations and statements](#) / [Side events](#)

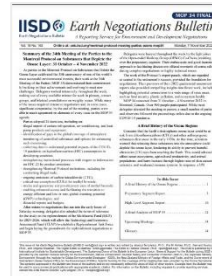


Image: ENB-IISD website

Overview for the meetings of the ozone treaties in 2022-2023 - Click [here](#) for upcoming and past Montreal Protocol Meetings dates and venues.

Online introductory course 'International legal framework on ozone layer protection'

Designed for government representatives and national stakeholders new to the Vienna Convention and Montreal Protocol, students of environmental law, and anyone interested in learning about the ozone treaties, the [online course](#) launched by the Ozone Secretariat aims to provide an introduction to the international legal framework on ozone layer protection.



United Nations Environment Programme (UNEP), Ozone Secretariat

Image: UNEP, Ozone Secretariat website

Free teaching kits on ozone layer and environmental protection

- New free online teacher toolkits and lesson plans based on the success of UNEP's Ozone Secretariat's [Reset Earth](#) animation and video game
- Targeting Tweens by adopting animation and gamification to create innovative online lessons to raise awareness on ozone layer and environmental protection
- Available online in digital and print format for universal access



Read/download >>> [Ozone Secretariat's education platform](#)

Image: UNEP, Ozone Secretariat website

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. [Learn more >>>](#)

Scientific Assessment of Ozone Depletion: 2022 - [Executive Summary](#)

[United Nations Environment Programme \(UNEP\), Ozone Secretariat, November 2022](#)





The Multilateral Fund for the Implementation of the Montreal Protocol

The Fund is dedicated to reversing the deterioration of the Earth's ozone layer. It was established by a decision of the Second Meeting of the Parties to the Montreal Protocol (London, June 1990) and began its operation in 1991. The main objective of the Fund is to assist developing country parties to the Montreal Protocol whose annual level of consumption of the ozone depleting substances (ODS) chlorofluorocarbons (CFCs) and halons is less than 0.3 kilograms per capita to comply with the control measures of the Protocol. Currently, 147 of the 197 Parties to the Montreal Protocol meet these criteria. They are referred to as Article 5 countries.

The Multilateral Fund is managed by an Executive Committee with equal membership from developed and developing countries. Since the inception of the Fund, the Executive Committee has held 91 meetings. The Fund Secretariat, located in Montreal, assists the Executive Committee in its tasks. Projects and activities supported by the Fund are implemented by four international implementing agencies and a few bilateral agencies.

Last 16 July 2022, following the adoption of interim budgets for the Multilateral Fund due to the Covid-19 pandemic, the Fifth Extraordinary Meeting of the Parties to the Montreal Protocol (5th ExMOP) decided on the replenishment of the Multilateral Fund for the triennium 2021-2023. The Parties agreed on a budget of US \$540 million for the triennium.

As at 5 December 2022, the contributions received by the Multilateral Fund from developed countries, or non-Article 5 countries, totaled over US\$ 5.02 billion. The Fund has also received additional voluntary contributions amounting to US \$25.5 million from a group of donor countries to finance fast-start activities for the implementation of the HFC phase-down.

To facilitate phase-out by Article 5 countries, the Executive Committee has approved 144 country programmes, 144 HCFC phase-out management plans and has funded the establishment and the operating costs of ozone offices in 145 Article 5 countries.

The 92nd meeting is scheduled for 29 May to 2 June 2023, in Montreal, Canada
The 93rd meeting is scheduled for 11 to 15 December 2023, in Montreal, Canada

>>> Click [here](#) for the Executive Committee upcoming and past Meetings and related documents.

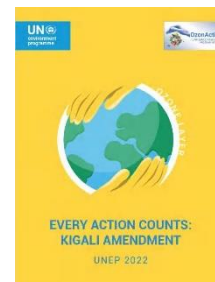


OzonAction Compliance Assistance Programme produces and outreaches a wide variety of information and capacity building materials and tools that support the implementation of the Montreal Protocol programs and assist Article-5 countries in meeting the compliance targets. These include publications, technology briefs and factsheets, mobile applications, videos, e-Learning, modelling, and database programs and special educational or certification programs.

The section below features several of our most recent products.
Visit [OzonAction website](#) for more information, discover the entire range of products.

Images in this section are by OzonAction

Every Action Counts: Kigali Amendment - UNEP 2022 - This brochure targets the general public and explains in a simplified manner what the Montreal Protocol and its Kigali Amendment signify. It includes some actions that everybody can do to support the Kigali Amendment. It also covers the relationship between the Kigali Amendment and Sustainable Development Goals. It introduces some examples of successful communication campaigns on the Kigali Amendment. [English](#) / [Spanish](#)



Gender Mainstreaming in the Montreal Protocol: Experiences in Latin America and the Caribbean - Taking into account that women and girls constitute half of the world's population and, therefore, represent half of the potential and innovation necessary to face the "triple planetary crisis" – climate change, nature and biodiversity loss, pollution and waste –, positioning people and the planet as central pillars of the transformation necessary to overcome it, and considering the guiding principles and the scopes of action of the Operational Policy on Gender Mainstreaming of the Multilateral Fund, the United Nations Environment Programme (Latin America and the Caribbean Office) ... [English](#) / [Spanish](#)



Refrigeration, Air-Conditioning, and Heat Pumps (RACHP)

Associations & Organizations: This Knowledge Map provides a global directory of RACHP associations, societies, and organisations around the world. These are key stakeholders for ensuring safe and efficient refrigerant transitions.

Local Technical & Vocational Education and Training (TVET): This Knowledge Map provides a global directory of TVET entities and centres around the world. These are the strategic partners for conducting and promoting training and certification programmes related to the refrigeration servicing sector.

Click [HERE](#) to access the OzonAction Knowledge Maps tool

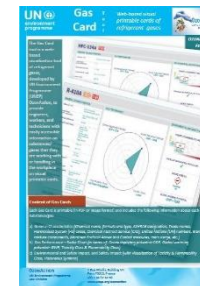
Click [HERE](#) to download the OzonAction Knowledge Maps tool flyer



Gas Card Tool: Web-based Visual Printable Cards of Refrigerant Gases

Content of Gas Cards - Each Gas Card is printable (in PDF or image format) and includes the following information about each substance/gas: a) General Characteristics (Chemical name, formula and type, ASHRAE designation, Trade names, Harmonized System (HS) codes, Chemical Abstract Service (CAS), United Nations (UN) numbers, Blend/ mixture components, Montreal Protocol Annex and Control measures, main usage, etc.) b) Gas Performance—Radar Chart (in terms of: Ozone depleting potential-ODP, Global warming potential-GWP, Toxicity Class & Flammability Class) c) Environmental and Safety Impact, and Safety Impact (with visualization of Toxicity & Flammability Class, Hazardous Symbols).

More Information - The Gas Card web based tool is part of UNEP OzonAction's portfolio of activities and tools to assist various stakeholders in developing countries, including customs officers and technicians, to achieve and maintain compliance with the Montreal Protocol on Substances that Deplete the Ozone Layer. In the left navigation bar of the Gas Card tool web page, you will find a list of commonly used HFCs and HFC Blends in different sectors. *



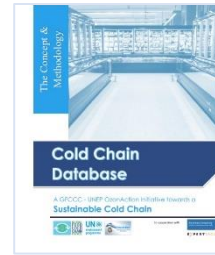
Using the Gas Gard web-based tool

- The Gas Gard tool is available online on the [OzonAction website](#)
- Read the full [2021 annual iPIC report](#)
- See the [flyer](#) introducing the new iPIC platform

* Based on the Overall Analysis of the Results of the Survey of ODS Alternatives Report (conducted in 119 countries from 2012 to 2015)

OzonAction and GFCCC launch the methodology questionnaires the Cold Chain Database Initiative

The Global Food Cold Chain Council (GFCCC) and the United Nations Environment Programme (UNEP) OzonAction announced the launch of their Cold Chain Database and Modeling initiative. The initiative marks the first formal step to assist developing countries in identifying their cold chain baseline along with consumption of relevant HCFCs or HFCs or other refrigerants. The initiative was conceived in 2019 and kicked off during the 31st Meeting of Parties to the Montreal Protocol (Rome, Italy), which concluded with the Rome Declaration on “The Contribution of the Montreal Protocol to Food Loss Reduction through Sustainable Cold Chain Development”.



> [GFCCC-UNEP OzonAction Cold Chain Modelling Press Release](#)

> [GFCCC-UNEP Cold Chain Database Methodology Final](#)

> For countries or partners interested to use the model data collection detailed questionnaires, please fill in the [Expression of Interest and NDA of Cold Chain Database](#) form and return to UNEP, [OzonAction](#)

Substances	Monthly HPMP Allowed	Monthly Consumption	Quota	Licence
...
...
...

HCFC Quota and Licence Tracker - 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.

Access the:

- [HCFC Quota tracker app](#)
- [Flyer for more information on the tracker](#)
- [Short video tutorial on the OzonAction YouTube Channel](#)

GWP-ODP Calculator Application - Updated- “Quickly, efficiently and accurately convert between values in metric tonnes, ODP tonnes and CO₂-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, CO₂-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 CO₂-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)

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.



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](#)

Updated OzonAction "WhatGas?" Mobile App-The OzonAction 'WhatGas?' application is an information and identification tool for refrigerant gases: ozone depleting substances (ODS), HFCs and other alternatives. It is intended to provide some 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.



This latest release includes the 2022 Harmonized System (HS) Codes for HFCs and blends, which facilitates the process of inspection and identification of controlled and alternative substances.

Scan the QR code to download the app (*currently available for Android devices only*). If you've already downloaded the app, to update visit the [Google Play Store](#)

RAC Technician Videos - Full length films!

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](#).

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. An AHRI revised guideline, first published in 2015, now removes paint colour assignments for refrigerant containers and specifies that all refrigerant containers should have the same paint colour from 2020 onwards. 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. **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. **Read/download the factsheet**

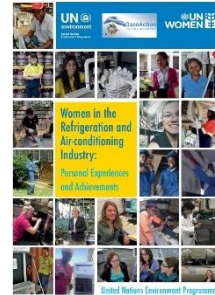


Contact: [OzonAction](#), UN Environment Programme

OzonAction's iPIC platform - Updated-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.



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 field and follow in their footsteps. **Read/download the publication**

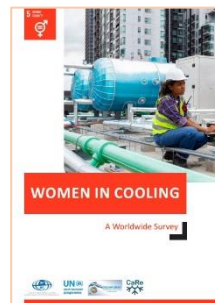


As part of IIR and UNEP OzonAction's partnership, a set of Cold Chain Technology Briefs was released over the past few years, which includes in-depth summaries about the cold chain in different key sectors. They include descriptions of technology, refrigerant options and trends and conclude with prospects and challenges. They cover the main cold chain sub-sectors, i.e., **Production & Processing, Cold Storage, Transport Refrigeration, Commercial & Domestic, and Fishing Vessels**. **Download the Cold Chain Technology brief in English | French | Russian | Spanish**



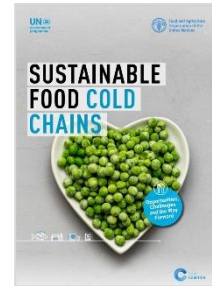
PUBLICATIONS

Results of a Worldwide Survey about Women in Cooling Released by IIR and UNEP OzonAction - Refrigeration, Air-Conditioning, and Heat-pumps (RACHP) are crucial for our health, nutrition, comfort, and well-being. It is one of the sectors that crosscuts many of the UN sustainable development goals and can contribute significantly to safeguard the environment, advance welfare of humanity and support the growth of employment and economics worldwide. Women are highly under-represented in this sector as indicated by the fact that only 6% of the members of national refrigeration associations/organisations/institutions are women. In order to

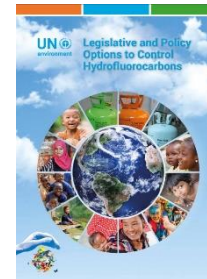


better understand the background, motivation, challenges, and opportunities faced by women working in RACHP a worldwide survey was undertaken by the International Institute of Refrigeration (IIR) and OzonAction of UN Environment Programme (UNEP) in cooperation with several partners. [Read/Download the Full Report](#)

Sustainable Food Cold Chains: Opportunities, Challenges and the Way Forward-This [UNEP-FAO] report explores how food cold chain development can become more sustainable and makes a series of important recommendations. These include governments and other cold chain stakeholders collaborating to adopt a systems approach and develop National Cooling Action Plans, backing plans with financing and targets, implementing and enforcing ambitious minimum efficiency standards. At a time when the international community must act to meet the Sustainable Development Goals, sustainable food cold chains can make an important difference.



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. [Read/download](#)



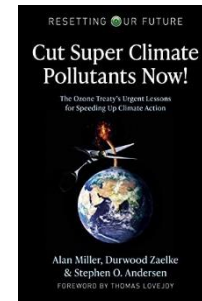
Latest issue of Centro Studi Galileo magazine,
Industria & Formazione, n. **10-2022**
(in Italian).



Green Cooling in public procurement How to advance the procurement of climate-friendly and energy-efficient cooling equipment in the public sector? Air conditioning in public buildings is often responsible for around 50% of total electricity consumption. Switching to climate-friendly cooling technologies ("Green Cooling") can reduce costs and energy consumption and improve the carbon footprint of public buildings. This study takes a closer look at the benefits of Green Cooling in the public sector and discusses current barriers and possible solutions. The information presented provides a solid basis to revise current procurement criteria for sustainable cooling systems in public buildings. **Read/Download the study**



Cut Super Climate Pollutants Now!: The Ozone Treaty's Urgent Lessons for Speeding Up Climate Action (Resetting Our Future). We have a decade or less to radically slow global warming before we risk hitting irreversible tipping points that will lock in catastrophic climate change. The good news is that we know how to slow global warming enough to avert disaster. Cut Super Climate Pollutants Now! explains how a 10-year sprint to cut short-lived "super climate pollutants" -- primarily HFC refrigerants, black carbon (soot), and methane -- can cut the rate of global warming in half, so we can stay in the race to net zero climate emissions by 2050.



Authors: Alan Miller, Durwood Zaelke, Stephen O. Andersen.

E-Book on Process Safety Management (PSM) Training for Ammonia Refrigeration - a new e-book about the critical elements of a process safety management (PSM) training program for facilities operating an ammonia refrigeration system.

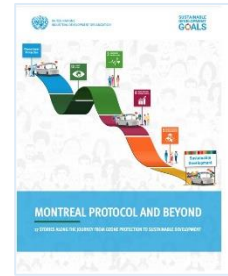
The e-book, titled "**7 Keys to a Compliant PSM Training Program for Ammonia Refrigeration**," outlines important questions a facility's program should address and questions that trained plant personnel should be able to answer. Topics covered include:

- Safety hazards and health considerations
- Emergency shutdown procedures
- Addressing deviations from system operating limits
- Risks and costs of non-compliance with regulatory standards

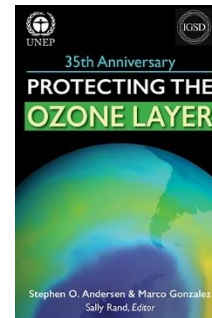
Request free Download [here](#)



Montreal Protocol and beyond: 17 stories along the journey from ozone layer protection to sustainable development - The 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals (SDGs) embody the global commitment to build a more sustainable future for all. These universally agreed objectives address the most urgent environmental, social and economic challenges of our time... [Read/Download here](#)



Protecting the Ozone Layer - 35th Anniversary Edition - a new book celebrating the 35th Anniversary of the Montreal Protocol. The electronic version (Kindle Edition) of the book has become **available for purchase \$3.03 on Amazon**. The book highlights successes and documents innovation during the first 35 years and inspires new ambition to strengthen protection of stratospheric ozone and climate before Earth passes tipping points. The book tells the story of the Montreal Protocol, revealing a model of cooperation, collaboration, universal ratification, record of compliance with over 99 per cent of controlled ozone-depleting substances (ODSs) phased out, the ozone layer on the path to recovery, the 2007 Montreal Adjustment, and the 2016 Kigali Amendment moving the Montreal Protocol further into environmental protection. Unfinished business includes: HCFC phase out, ODS bank management, HFC phase down, uncontrolled ozone-depleting greenhouse gas nitrous oxide (N₂O), feedstock exemptions for plastics production, and dumping of obsolete cooling appliances. [The book was released at 34th Meeting of the Parties to the Montreal Protocol on 31 October 2022.](#)



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

Prepared by: Samira Korban-de Gobert
Reviewed by: James S. Curlin

If you wish to submit articles, invite new subscribers, please contact:
Samira Korban-de Gobert, samira.degobert@un.org



